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The conference has a double-blind peer-review process.

Any paper submitted for the conference is reviewed by at least two international reviewers with expertise in the relevant subject area. Based on the reviewers' comments, papers are accepted, rejected or accepted with revision. If the comments are not addressed well in the improved paper, then the paper is sent back to the authors to make further revisions. The accepted papers are formatted by the conference for publication in the proceedings.

Aims & Scope

Traditionally, it is seen that change and transformation in the field of social sciences takes a little more time compared to fields such as health, technology and engineering. However, this situation seems to have started to change with the Covid-19 epidemic disease. It is expected that changes will occur in human and social behavior during and after the Covid 19 epidemic disease. These changes have started to show themselves in many fields related to social sciences, especially education, psychology, sociology and economy. For this reason, **this conference focused on** the changes and innovations in the field of social sciences that started with Covid 19. However, the organizing committee also recognizes the value of traditional knowledge in the social sciences. For this reason, the conference is also open to traditional studies in the field of social sciences.

The **aim of the conference** is to bring together researchers and administrators from different countries, and to discuss theoretical and practical issues in all fields of social sciences. At the same time, it is aimed to enable the conference participants to share the changes and developments in the field of social sciences with their colleagues.

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Relationship between Motivation and Listening Achievement in Learning Chinese as Second Language in Malaysia

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Abstract: Motivation is a major factor in the success or failure of students in learning second language. Low motivation will affect language learning. Therefore, this study will assess the motivation towards subject of Chinese as Second Language in national primary school among Year 4 students as well as examine the relationship between Second Language Motivational Self-System (L2MSS) and listening skills achievement. The instruments used to analyze motivation are Listening Achievement Test (UPM) and L2MSS Questionnaire which are divided into 3 components, namely Ideal Second Language Self (IL2S), Ought to Second Language Self (OL2S) and Second Language Learning Experience (L2LE). A simple random sampling method involving 48 participants was randomly selected in this study. The results of the study showed that the study participants had a significant relationship of IL2S component with listening skills. However, students did not show a significant relationship of OL2S and L2LE components in listening skills achievement. Based on the findings of the study, a discussion on the possible contributing factors is presented along with the implications of the results of this study in the field of motivational studies. Institutions and educators need to plan curricula, syllabi and teaching methodologies accordingly to maintain and strengthen motivation with listening achievement in learning.

Keywords: Chinese as Second Language, Listening Achievement, Motivation

Introduction

In the last 15 years, the importance of learning Chinese as a second language (CSL) has become increasingly popular and attracted increasing attention within and outside China (Gong et al., 2020). Today, Chinese language obtained the most speakers in the world (Wang, 2016). Nearly 100 million people (about 16% of the world's population) speak using Chinese language (source: quoted from China News Service (Cai, 2014). Therefore, learning CSL is growing rapidly in the world (Gong et al., 2020; Zhang et al., 2020), a tendency to learn CSL in Malaysia is also increasing. The subjects of Chinese, Tamil, Arabic and other mother tongues such as Iban, Semai Language and Kadazandusun Language are offered as additional subjects to non-native learners (Chuah et al., 2020). Thus, National Primary Chinese Language (Bahasa Cina Sekolah Kebangsaan, *BCSK*) as additional subjects are offered in most national schools in mastering the student's language in Malaysia. This will help non-native speakers to strengthen access and opportunities to learn languages other than their mother tongue. This is in line with the Malaysian Education Blueprint (Pelan Pembangunan Pendidikan Malaysia, *PPPM*) 2013-2025 which was launched to ensure all students from all ethnic groups and communities to learn at

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least three languages to enable them to collaborate and communicate effectively with friends among Malaysians and other countries in today's global world.

Literature Reviews

Achievement in Listening Skills

York et al., (2015) define achievement operationally through a test based on teacher assessment in a test. In other words, achievement is usually measured through examination results where students are tested for each subject. Academic performance will be negatively affected by low academic engagement, limited motivation, and passive behavioral behaviors (Carter et al., 2011). Therefore, academic achievement is one of the most important components in the education system. Good academic achievement serves as a passport to further studies to a higher level. The study of academic achievement is very important to help educators to identify the situations the develop and grow of students. Therefore, the main function of academic achievement is as a yardstick to the amount of knowledge acquired by a person.

However, various studies (Chen et al., 2021; Asbulah et al., 2018; Oga-Baldwin & Fryer, 2020; Oh, 2019; Tan et al., 2016; Wei, 2013) have explained that achievement in listening, speaking, reading and writing skills is closely related to an individual's level of motivation in language learning. There are studies revealing that the motivation of students who learn a second language is at a satisfactory level only. This is in line with the findings of Tan et al., 2016. Thus, the underlying B2 learning mechanism has not been fully explored by highly motivated students (Han, 2017) achieving outstanding achievement in listening in order to acquire and generate knowledge more efficiently (Deci et al., 1991) in learning. Thus, most researchers (Chen et al., 2021; Csize ´r & Kormos, 2009; Henry, 2010, 2011, 2015; Huang, Hsu, & Chen, 2015; Oga-Baldwin & Fryer, 2020; Oh, 2019; Palmer, 2005; Siridetkoon & Dewaele, 2018; Taguchi, Magid, & Papi, 2009) agreed that motivation is a very important factor in language learning, especially it is very important for a person in mastering skills in a second language. Clearly, motivation has been the focus of empirical researchers in studying theories in the context of second language learning in addition to mother tongue in recent times (Boo et al., 2015). Thus, it can be explained that a student cannot achieve goals in learning a second language if they are not motivated in learning a second language.

Researchers (Chen et al., 2021; Henry, 2010, 2011, 2015; Huang, Hsu, & Chen, 2015; Oga-Baldwin & Fryer, 2020; Oh, 2019; Siridetkoon & Dewaele, 2018) believe that second or additional language learners will devote sufficient effort to achieve their goals until successful. Therefore, learning goals are important in learning a second or foreign language. Unfortunately, studies show the level of student motivation is not encouraging in learning CSL. Thus, a study on the relationship of motivation with achievement in listening skills is needed for students learning BCSK as an additional language in primary school.

Motivation in Second Language Learning

Motivation is a process that motivates a person to do something. Motivation is seen as an order or systematic steps to influence an individual in carrying out a task (Abdullah et al., 2019). Thus, research on motivation began to be a highly controversial issue beginning 50 years ago. Since the introduction of motivation by (Gardner & Lambert, 1959), motivational research on second language has undergone many changes. The development of motivation in second language learning begins with the social psychological period (Crookes & Schmidt, 1991; Gardner, 1979), subsequent research has changed to the cognitive-situated period (Crookes & Schmidt, 1991), oriented period process (process-oriented period) (Dörnyei & Otto, 1998; Williams & Burden, 1997) and to the socio-dynamic period (Dörnyei, 2005, 2010). The last motivation theory proposed by Dörnyei (2009) in second language is the Second Language Motivational Self System (L2MSS) to date. The Second Language Motivational Self-System (L2MSS) is used to study second language learning. This theory is based on possible theories and theories of the future of the self in the field of psychology. This theory includes three main components, namely Ideal Second Language Self (IL2S), Ought Second Language Self (OL2S) and Second Language Learning Experience (L2LE). The next section will discuss in more detail the developments in second language learning motivation.

L2MSS consists of three components, namely IL2S, OL2S and L2LE which are strongly influenced by the self -concept used in psychology (Higgins, 1987). The emphasis of the IL2S component in L2MSS is a B2 specific aspect of one's self -ideal. If one wants to speak in a second language, then IL2S will reduce the contradiction between the real self and the ideal. The OL2S component is that a person believes should have a responsible

attitude, duty, multi -tasking to avoid the possibility of negative outcomes. Whereas, this L2LE component corresponds to Higgins (1987) and Rajab et al (2012) i.e. self and more extrinsic instrumental motifs. This L2LE is closely related from the 'executive' motive to the learning environment and experience (e.g., teacher, curriculum, peer group, experience).

Currently, researchers are more focused on L2MSS where they measure student motivation and achievement. However, there is still a lack of studies that investigate the motivation of Chinese language learning from the point of view of L2MSS. Therefore, this study attempts to provide a description of listening skills from the point of view of L2MSS among students in BCSK learning. From the introductory statement and problem statement above, the researcher will conduct this study by assessing the upward motivation of students in BCSK learning.

Research Objective

The researcher determined several objectives of this study. The objectives determined by the researcher are as follows:

1. Identify the achievement of listening skills and the level of motivation among primary school students in learning BCSK.
2. Identify the relationship between each component of L2MSS with the achievement of listening skills among primary school students in learning BCSK.

Methodology

Research Design

This study uses quantitative data collection methods. This study uses two types of research instruments, namely the L2MSS Questionnaire and the Listening Assessment Test (UPM). The L2MSS questionnaire contained a five -point Likert scale consisting of 18 items, of which 6 items were associated with IL2S, another 6 with OL2S, and another 6 with L2LE as an instrument. The items of this questionnaire were mostly adapted from Taguchi et al. (2009). Taguchi et al. (2009) used six scales namely from Strongly Disagree to Strongly Agree. Since most local respondents are more accustomed to answering questionnaires that use five scales, the L2MSS Questionnaire will use five scales namely Strongly Agree, Agree, Disagree and Disagree, Disagree, and Strongly Disagree in this questionnaire. This adjustment was made because primary school students may be more familiar with the five -scale questionnaire items compared to the six -scale questionnaire items like the original questionnaire. Prior to distributing the L2MSS Questionnaire, the English version was translated into Bahasa Malaysia and the language used was appropriate to the level of the students. In addition, the Listening Assessment Test (UPM) instrument was also used in this study.

Moreover, the sampling technique used in this study is simple sampling. With this, the study sample involved is 48 Year 4 students from six national schools. The participants meet the characteristics required in this study who have received education under BCSK subjects in national primary schools from Year 1 to Year 3. Table 1 shows the demographics of the participants involved in this study.

Table 1. Demographics by study participants involved in the study

Demographics	Frequency (n=48)	Percentage (%)
Gender		
Male	23	47.92
Female	25	52.08
Age		
9	-	-
10	48	100
11	-	-
Races		
Malay	44	91.67
Chinese	1	0.02
India	2	0.042
Other	1	0.02

Data Analysis

Data obtained and processed from the L2MSS and UPM Questionnaires were included in SPSS 23.0. Part A of the L2MSS Questionnaire is a form of participant background information and feedback on the questionnaire items. Background information is about gender, last year's BCSK results and age. Participants' responses to the questionnaire items were calculated in the form of five scales where Strongly Agree equals five points, Agree equals four points, No opinion equals three points, Disagree equals two points, and finally Strongly Disagree equals one eyes. Meanwhile, UPM contains 20 questions taken from instructional materials used by students in classes. UPM Instrument and L2MSS Questionnaire were used to answer research questions 1 and 2.

Research Objective 1: Achievement of listening skills and the level of motivation among primary school students in learning BCSK.

Based on Table 1 shows the analysis of UPM, found that the level of mastery of listening skills is (mean = 8.58, SD = 2.923) which is at a high level. Meanwhile, Table 1 also shows the analysis of L2MSS, found that the level of mastery of listening skills is (mean = 8.58, SD = 2.923) which is at a high level. There are three components that contribute to the overall mean of second language learning motivation including IL2S, OL2S and L2LE. Among the three components of L2MSS, IL2S ranked highest (M = 3.93, SD = .687), L2LE was in second place (M = 3.18, SD = .862), and OL2S was in third place (M = 3.05, SD = .98). The IL2S mean score is the highest among the L2MSS components, while the OL2S mean score is the lowest among the L2MSS components and this is similar to the Dornyei & Chan (2013) study.

Table 2. Levels of UPM and L2MSS for BCSK students

	Mean	SD
UPM	8.58	2.923
L2MSS		
IL2S component	3.93	.687
OL2S component	3.18	.862
L2LE component	3.05	.978

Research Objective 2: Relationship between each component of L2MSS with the achievement of listening skills among primary school students in learning BCSK.

To obtain the relationship between UPM and L2MSS scores, Pearson (r) correlation was used. This formula was performed to look at the relationship between student scores and each component of L2MSS, namely IL2S, OL2S and L2LE. Finally, to see to what extent each component of L2MSS students can predict achievement in listening skills. Table 2 shows Guilford's guidelines (from Rodziah, 2004) in determining the strength of a relationship that is very weak ($r < 0.20$), followed by a weak relationship ($r = 0.20$ to 0.40), moderate ($r = 0.40$ to 0.70), strong ($r = 0.70$ to 0.90) and very strong ($r < 0.90$).

Table 2. Value of the correlation coefficient with the strength of the relationship

Correlation coefficient, r	Strength of the relationship
Less than 0.20	Very weak
0.20-0.40	Weak
0.40-0.70	Average
0.70-0.90	Strong
More than 0.90	Very strong

Source: Rodziah, 2004

Table 3. Correlation between UPM's achievement and IL2S component in L2MSS

		UPM	IL2S
UPM	Pearson Correlation	1	.420
	Sig. (2-tailed)		.040
	N	48	48
IL2S	Pearson Correlation	.420	1
	Sig. (2-tailed)	.040	
	N	48	48

Table 3 shows the correlation between UPM's achievement in BCSK learning with the IL2S component. Based on Guilford guidelines (Table 2), the relationship between L2MSS motivation with listening skills achievement was moderate [$r(48) = 0.42$] and showed significant ($p < .05$) between listening skills achievement with IL2S component level in L2MSS motivation. This indicates a significant relationship between the level of IL2S component with the achievement of listening skills. Next, Table 4 shows the correlation between UPM's achievement in BCSK learning with the OL2S component. Based on Guilford guidelines (Table 2), the relationship between L2MSS motivation and BCSK listening skills achievement was weak [$r(48) = 0.110$] and insignificant ($p < .456$) between listening skills achievement and OL2S component levels in L2MSS motivation. This indicates that there is no significant relationship between the level of OL2S component in L2MSS motivation with the achievement of listening skills.

Table 4. Correlation between UPM's achievement and OL2S component in L2MSS

		UPM	OL2S
UPM	Pearson Correlation	1	.110
	Sig. (2-tailed)		.456
	N	48	48
OL2S	Pearson Correlation	.110	1
	Sig. (2-tailed)	.456	
	N	48	48

Furthermore, Table 5 shows the correlation between UPM's achievement in learning with the L2LE component. Based on Guilford guidelines (Table 2), the relationship between L2MSS motivation with listening skills achievement was weak [$r(48) = 0.137$] and insignificant ($p < .355$) between listening skills achievement with L2LE component levels in L2MSS motivation. The null hypothesis is rejected. This indicates that there is no significant relationship between the level of L2LE component in L2MSS motivation with listening skills achievement.

Table 5. Correlation between UPM's achievement and L2LE component in L2MSS

		UPM	L2LE
UPM	Pearson Correlation	1	.137
	Sig. (2-tailed)		.355
	N	48	48
L2LE	Pearson Correlation	.137	1
	Sig. (2-tailed)	.355	
	N	48	48

Discussion

The IL2S component was shown to have a significant relationship with listening skills in BCSK learning. These findings are supported by the study of Rahman & Sahayu (2020) who explain motivation as an important element in producing perfect learning. Most of the study participants were of the opinion that IL2S motivation had a greater impact on the way of learning and achievement of UPM. Garavalia & Gredler (2002) state that students who have effective goals, use appropriate learning strategies and assess learning needs, tend to achieve higher levels than other students. The IL2S component in L2MSS motivation has a significant relationship with student academic achievement. A significant positive relationship between these two variables is supported by the findings from (Halim et al., 2017) who found motivation to be important for academic achievement. Furthermore, the correlation between UPM and IL2S may be associated with the young people of the study participants being too idealistic towards IL2S. Instead of describing the realistic possibilities of themselves in the future, study participants on IL2S may reflect their hopes and positive attitudes toward their future.

However, the OL2S component and the L2LE component showed no significant relationship with listening skills in BCSK learning. This may be due to the weak learning drive in the student. The findings of this study are contrary to Lamb (2012) who showed that L2LE is the most significant component by high school students from Indonesia in language learning. This is also supported by (Tan et al., 2016) who proved that university students who are taking Mandarin courses have a significant correlation between achievement and L2LE. However, the age of the study participants should also be taken into account. This may be due to the young age of the study participants, so this causes them to lack the desire to further their studies to university. This is supported by Dunn and Dunn (1978) who stated that motivation is built when there is an internal urge in students to participate in learning, especially listening skills to BCSK learning. The findings of the study showed

that each study participant had a different level of motivation and was at a moderate level of motivation. The results also found that there is a significant relationship between IL2S and UPM achievement, but there is no significant relationship between OL2S and L2LE with UPM achievement. Thus, this study hopes that the parties involved as well as each individual can play their respective roles in improving excellence in achievement, especially in CSL learning.

Conclusion

In conclusion, Kannan (2019) is of the view that listening is the first step in language learning, whether the child's mother tongue or an additional language before the child is able to speak, read or write. Therefore, listening skills become key skills in human interaction (Ismail et al., 2011). This is in line with (Vandergrift, 2008) that listening is the most important skill for second/foreign language learning, especially in the early stages. Motivation is seen to have its own importance in the life of each individual and even in every layer of society and is often associated with the purpose of the student himself and his own interest in a subject or activity.

Scientific Ethics Declaration

The authors declare that the scientific ethical and legal responsibility of this article published in EPESS journal belongs to the authors.

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Using Learner Feedback to Improve Teacher Practices in Materials Adaptation

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Abstract: Commercial textbooks are doomed to disappoint user expectations to various extents because irrespective of origin (global/local), they are designed with an idealised classroom in mind, and their prescribed configuration probably won't be compatible with the ever-diversifying contexts of L2 teaching and learning. Even in the case of a longtime bestseller, EFL teachers may need to customise the student-purchased materials often based on their perceived learning needs, and learner feedback is not as a rule sought on the mostly teacher-led modifications to the textbook content and procedures. Therefore, this study aimed to demonstrate how Maley's (2011) inputs-processes-outcomes model could be used to evaluate and adapt an intermediate unit on modals of deduction, and examine how a multicultural group of 14 prep students from a major metropolitan state-run university in Turkey reacted to the teacher's adaptive practices. Descriptive analyses of students' activity ratings and retrospective reflections demonstrated that the addition of two scaffolded grammar tasks proved better for generating student interest and facilitating learning than replacement of another guessing game with the relatively more open and difficult task on video-based end-of-unit writing activity. Despite being independent users (B1), the participants indicated greater liking for the use of visual aids, ample practice opportunities, collaborative group work, explicit focus on grammar, and learner translations respectively. While their fewer dislikes mainly concerned video quality, activity difficulty and duration, there was almost unanimous agreement that they finally achieved to develop an increased awareness of how to use modality in English. A quick comparison of the 20-item quiz results also showed a considerable increase in their learning gains, for the mean number of correct answers more than doubled from pre- to post-test.

Keywords: Inputs-processes-outcomes model, Materials adaptation, Retrospective evaluation

Introduction

More than two decades ago, Tomlinson (2001, p. 66) reconceptualised L2 materials as "anything... to facilitate the learning of a language", whether produced in "linguistic, visual, auditory or kinesthetic" forms, and presented through print or other media (e.g. live performance, CDs/DVDs, and the internet). And ever since then, the global coursebook, perhaps the most controversial but indispensable product of the ELT industry, has not remained unaffected by the digital revolution sweeping across sectors and communities. The English course as we know today also has come to "provide for everything" the users could possibly want (e.g. downloadable lessons, online activities, videos, whiteboard and test-generating software), to the extent that teachers are supposed to neither supplement it with anything nor feel guilty about it (Littlejohn, 2011, p. 180). However, the teacher-chosen but student-purchased coursebook as a learning partner is no similar to that Benjamin Franklin (as cited in Abbott, 2019, p. 66) recommended to "keep [one's] eyes wide open [for] before marriage [adoption], half-shut afterwards". In the presence of even the most compatible match for their unique classroom, the responsible teacher probably won't fail her learners, and shall employ a range of adaptation strategies in an attempt to teach and include them all.

Contrary to popular opinion, adaptation is therefore not just about alleviatory treatment, but rather more of "a reconciliatory action between the teacher's proposed plan and their reactions" (Simsek, 2017, p. 278). Despite

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the lack of a common language for describing the ways in which teachers can transform L2 materials, McGrath (2013) has rightly indicated that three major distinctions could at least be derived from various schemes (e.g. Maley, 2011; McDonough & Shaw, 2003; McGrath, 2002; Richards, 2001; Tomlinson & Masuhara, 2004) according to the basic nature of their treatments: i.e. *omission* in the *minus* category, referring to partial use (subtracting quantitatively and abridging qualitatively) and non-use of materials (if given as homework); *addition* in the *plus* category, referring to provision of extras (extending with similar items), unintended and alternative uses (exploiting existing materials creatively), more difficult versions, or totally new materials (expanding texts and tasks); and *modification* in the *zero* category, referring to changes in the sequencing (reordering), language (rewriting) and content (replacing) of activities.

An examination of existing studies on textbook consumption has demonstrated that they seemed preoccupied with investigations into the type (e.g. native/non-native, pre-/in-service, or novice/experienced) of teachers that made more adaptations (e.g. Dunford, 2004; Tsui, 2003; Yan, 2007), their rationales for adapting the materials (e.g. Botelho, 2003; Mede & Yalcin, 2019; Tsobanoglou, 2008), and preferred techniques (e.g. Kara, 2019; Simsek, 2017) in different teaching-learning situations. In spite of the focus on teacher self-reports of textbook use, only a few case studies could still be found where the coursebook researchers enacted adaptation strategies and elicited learner views on their transformations of a given (part/unit of) material (e.g. Duarte & Escobar, 2008; Murphy, 1993). Also, it has long been recommended in the coursebook literature that instead of undertaking the laborious task of evaluating a whole coursebook retrospectively, or satisfying oneself with impressionistic evidence, teachers should conduct micro-evaluations, or more precisely, focus on the effectiveness of the specific tasks that they have actually used in the classroom (Ellis, 1996, 1998, 2011; McGrath, 2002; Murphy, 1993). In this way, they can more easily determine whether their self-chosen materials are deemed useful and engaging by “the students as consumer-readers”, and also how efficient they themselves have proved in “mediating between the materials and the learners” (McGrath, 2002, p. 184; Swales, 1995, p. 6).

For this reason, the current study sought to both instantiate how an intermediate unit from a best-selling global coursebook could be made more learner-friendly through the use of addition, and modification strategies, and explore the impact of teacher adaptations on their learning alongside student perceptions of task effectiveness. Maley’s (2011) inputs-processes-outcomes (IPO) framework was especially chosen for the unit analysis and adaptation because of its practicality in guiding materials evaluation and development. There are three pillars of materials design in the IPO model: *inputs*, referring to varied text types (printed/visual/auditory); *processes*, referring to “a set of generalisable pedagogical procedures” to be applied to the inputs in different combinations, and *outcomes*, referring to the goals to be achieved through participation in the processes, with material (e.g. student compositions) and pedagogical (e.g. improved test performance) types as direct products of student learning, besides educational (e.g. critical thinking skills) and psycho-social (e.g. group solidarity) ones relating to even broader objectives (Maley, 2011, pp. 386-387, 2013). By varying the interaction between the coursebook texts (inputs) and processes, the teacher as “the evaluator-reader” attempted to exercise choice for her learners to develop the desired learning outcomes in this study (Swales, 1995, p. 6). Therefore, the following research questions were addressed here: What are the student-perceived strengths and weaknesses of the adapted lesson? How much student learning has taken place as a result of the adapted lesson?

Method

In this mixed-methods study, the participants were formed by a multicultural group of 14 intermediate students (10 female and four male, aged 17-20) (i.e. five Turkish, six Turkic, two Syrians and one Afghan) studying at the English preparatory class of a major metropolitan state-run university in Turkey due to their easy accessibility. During the descriptive analyses of their activity ratings, reflective writing and quiz results, qualitative and quantitative approaches were utilised simultaneously in order to gain a fuller picture of student reactions to teacher-led adaptations of the course material.

Data Collection and Analysis

For the purpose of judging the effectiveness of the teacher’s adaptive manipulations of an intermediate unit on modals of deduction, a nine-item self-report questionnaire was developed on the basis of related literature (Ellis, 1998; Murphy, 1993). The first six items on the learner questionnaire were closed-ended and got them to decide whether each of the three teacher-created activities were fun/boring, and useful/no-use. As in Murphy’s (1993) example, the students were informed of the alternative glosses for the terms of interest and usefulness (i.e. fun>enjoyable, interesting; useful>makes it easier to learn/understand; no-use>unhelpful, difficult). There were

three open-ended items that wanted the students to reflect on the things they liked and disliked about the adapted lesson, as well as what they gained/learned from it. The students were informed of the study purpose and their anonymity was ensured by assigning case numbers (e.g. S8). They were also allowed to respond to the questionnaire in the common/native language of the classroom (Turkish) to promote their self-expression, and translated participant quotations were amply provided.

Besides seeking learner views, a teacher-made 20-item quiz was administered twice to determine what changes took place in their learning from pre- to post-test. The three-section test was focused on evaluating and raising students' grammatical awareness. As a result, they were required to decide if the modal verbs had the same/different meaning in sentence pairs, correct the mistake (of misjudging probability) in conversations, and complete a speculative text using the target grammar. The qualitative data from the learner questionnaire was subjected to descriptive analysis and quantified in this study. Consequently, ratios of interest and usefulness were calculated on the basis of the 14 students' ratings of teacher-created tasks. The qualitative findings from their written reflections were also formulated as thematic statements, and the frequencies/percentages of occurrence were appropriately tabulated. Finally, the change in the mean number of correct answers was determined to evaluate the student progress over the adapted lesson.

Procedure

The *Headway* series has both been a reliable yardstick for judging the quality of any English course and provided the core methodology around which EFL teachers can build both form-focused and communicative lessons for learners worldwide. For this reason, the tenth unit, entitled "Beyond belief", from *Headway 5e Intermediate Student's Book* (Soars et al., 2019a) was chosen for examination and adaptation with Maley's (2011) inputs-processes-outcomes model. To begin with, two auditory texts (i.e. long dialogues with at least 10 turns) and ten images (i.e. eight with functional and two with decorative purposes) were used for introducing the target language, while written texts might have better served to concentrate conscious attention on the grammatical forms. The inputting texts to the two following activities were however found efficient in providing learners with abundant examples of present and past modals of deduction and developing a feeling for speculative grammar. In the first of the processing activities, the students were requested respectively to look at the illustrations of eight optical illusions (inherently intriguing), guess which of them related to the eight lines (e.g. "It looks like a skeleton. It can't be a lady") from the listening, point to the pictures being talked about, and identify the ones the woman could not see (Soars et al., 2019a, p. 100). In the second case, they were similarly asked to guess what the conversation was about (i.e. what went wrong) just by looking at Rick's side of the conversation, work out with their partners Alex's side, tick the most likely answer (e.g. "He may have forgotten his passport/Hannah could have forgotten her passport") to the comprehension questions (e.g. "Why was Alex furious?"), and finally check their responses again after listening to the full conversation (Soars et al., 2019a, p. 102). Therefore, both processing activities were considered useful for going beyond simple contextualisation in that they guided the learners from the very first into making deductions.

Yet, the participants, being mostly Middle Eastern and Asian expatriates, were accustomed to a traditional didactic culture of education, and seemed to care more about their exam performance. They sought teacher authority on the subject-matter and preferred the grammatical knowledge to be dictated to them. The coursebook's *grammar spots*, on the other hand, made use of discovery questions (e.g. "Which sentence is the most sure? Which are less sure?") in order for the learners to formulate the grammar rules for themselves (Soars et al., 2019a, p. 100). The present material could still have generated enough language focus, if only they were also helped to become aware of the difference between degrees of possibility and dual use of all true modals (not just *must*) for expressing epistemic and non-epistemic (root) meanings (e.g. "Remember *must* also expresses obligation. What is the past of these sentences?") (Soars et al., 2019a, p. 103). Consequently, the addition of two scaffolded grammar activities, i.e. probability scale and bilingual table completion, was considered to do no harm to their learning (Simsek, 2010). In the first of these activities, the students individually ranked further examples from the first listening on a scale of low- to near-certainty (e.g. "I'm not sure about that. It may [50% sure] be a candlestick" vs. "It must [90% sure] be a soldier – he's wearing a helmet") (Soars et al., 2019a, p. 137). Secondly, student groups were given a scaffolding table with relevant hints (e.g. "The speaker thinks something was possibly true") and asked to classify the modal sentences they had underlined in both tapescripts by time (as present/past), polarity (as positive/negative) and degree of certainty (as near/low-certainty). They finally inserted their Turkish translations because cross-lingual links were considered to increase their chances of retaining and retrieving new knowledge.

During the productive phase, two subsequent practice activities were adopted with only minor changes in interaction patterns and procedures to increase learner involvement, while another two were omitted due to time constraints and relative challenge. In the teaching of both present and past modals, pairs initially engaged in controlled output practice, i.e. by taking turns to read the lines (e.g. “I can’t find my ticket.”) in their coursebook and responding to them (e.g. “You must have dropped it”) using the bracketed cues (e.g. “*must, drop*”) (Soars et al., 2019a, p. 103). Then, they switched into the relatively less controlled activities, where groups of four (originally pairs), for instance, listened to five short conversations, wrote modal sentences (about their negotiated guesses) (e.g. “They can’t be at home...”) in response to the cued questions (e.g. “Where do you think the people are? At home? In a restaurant? In a pub?”) and also gave reasons for their conclusions (e.g. “...because they’re paying for the drink”) (Soars et al., 2019a, p. 101). The last coursebook activity involved holding a whole-class discussion on “the different meanings” of modal verbs, or more precisely, which ones could complete the given sentences (e.g. “He <can’t/may/could/might/must/should> have been born in the 1960s”) (Soars et al., 2019a, p. 103). In the adapted lesson, the teacher also elicited their explicit knowledge on epistemic (e.g. *should* for what is possible) and non-epistemic uses (*should* for what is advisable).

Because just another guessing game (i.e. researching urban myths and testing peers with true/false statements) was suggested in the teacher’s book for consolidation (Soars et al, 2019b, p. 130), the teacher chose to replace it with a video-based writing activity on the American myth of discovery to ensure relevance and skills balance. The interactive phase of the adapted lesson started with the students’ choral response, “Columbus did!” to the teacher’s provocative question, “Who discovered America? ... Did he really?”. Upon viewing the funny clip from *Horrible Histories Series 4, Episode 6 (Potty Pioneers)*, where serious doubts about Columbus’s discovery were aroused (Brigstocke & Connelly, 2012), the students were asked to do an internet search and write their conclusions about alternative discoverers of America. Having predicted classroom constraints, the teacher also devised a factsheet from Maurer’s (2017, pp. 69-70) article about the discovery of America, so that they could invest more time in reading different stories about Viking, Irish and Japanese explorers, assessing their plausibility and reformulating speculative sentences in a descending order of possibility. In return for the teacher’s adaptive practices, the learners were ultimately expected to have a good command of English modality (pedagogical), work collaboratively, think critically and reflectively (educational), and develop cultural awareness (psycho-social).

Results and Discussion

When the 14 prep students were asked to evaluate the effectiveness of their teacher’s adaptive practices by using Murphy’s (1993) 2-point Likert scale, the results in Table 1 were obtained. By looking at their interest and usefulness ratios, the two scaffolded grammar activities, probability scale and bilingual table completion, were found better at both generating enjoyment and promoting learning than the apparently more difficult reformulation activity based on the comic video prompt.

Table 1. Results from students’ ratings of task effectiveness

Adaptive Practices	Interest Ratio (Fun/Boring)	Usefulness Ratio (Useful/No-use)
Addition of probability scale	14:0 (1:0)	14:0 (1:0)
Addition of bilingual table	13:1 (1:0.07)	13:1 (1:0.07)
Replacement with video-based writing	10:4 (1:0.40)	8:6 (1:0.75)

In addition to rating these teacher-created activities in terms of interest and usefulness, the participants were also requested to elaborate on their likes and dislikes about the adapted lesson, as well as ultimate attainments. According to Table 2, their responses concentrated more on the students’ self-perceived benefits (84%) from the adapted lesson than on its limitations (16%). Despite being independent users (B1), the participants expressed appreciation primarily for ample practice opportunities (S6: “We solved a lot of examples and were able to practise well”) (f=8), collaborative group work (S14: “Group work let us have discussions and chat about the subject, so we did the activities without getting bored”) (f=6), explicit focus on grammar (S9: “The thing that I liked in this lesson was detailed presentation of modal verbs and comprehensible handling of the subject”) (f=5), and use of learner translations (S7: “Translating sentences was good reinforcement. It helped us keep information in mind”) (f=4).

Yet, the most-cited advantage of the adapted lesson turned out to be the use of visual aids (f=11). The adjectives, “exciting” (S4), “entertaining” (S12), “facilitating” (S13) and “lasting” (S2) were commonly preferred to characterise the incorporation of the graphic organisers (probability scale and bilingual table) and funny clip from *Horrible Histories* into the processing and interactive phases of the instruction. Due to the

complexity of the English modal system and previous failed attempts, the majority of the respondents like S4 (“Placing the sentences into the summary table added vigour to the lesson. Everything fell into place in my mind more rapidly”) and S8 (“Probabilometer was very useful for me. I used to confuse modal verbs because I misunderstood their possibilities [degrees of possibility]”) seemed more pleased with the catalytic effect of alternative learning mediums.

As to which other factors contributed to enhanced learning and retention, few were however as specific as S1, who also acknowledged the role of skills integration (“It was much better to be able to do reading, listening, speaking and grammar on the same day”) (f=3) and active participation (“Today’s lesson is one where we, too, have been very active... Being different from our usual was good and fun”) (f=2). Similarly, only four participants, taking a more holistic approach to lesson evaluation, distinguished the given case collectively as a “pleasant” diversion from classroom routines (e.g. textbook (in)dependency in S1’s terms). Moreover, S14 drew attention to the affective dimension of their learning process: “When the lesson is enjoyable, it stays in one’s mind... We learn by enjoying what we receive, and we aren’t afraid of making mistakes... Your way of teaching was very relaxing”.

Table 2. Results from students’ retrospective evaluation of the adapted lesson

User Responses	f	%
Likes (I liked...)	46	52
ample practice opportunities	8	9.09
collaborative group work	6	6.81
use of an amusing video as a lead-in to writing activity	6	6.81
use of visual organisers for clarifying and summarising complex concepts	5	5.68
explicit focus on grammar	5	5.68
use of learner translations	4	4.54
diversion from the monotony of classwork	4	4.54
acquisition of general knowledge	3	3.40
integration of the language skills	3	3.40
active participation	2	2.27
Dislikes (I disliked...)	14	16
video quality	7	7.95
activity difficulty	4	4.54
activity duration	2	2.27
topic selection	1	1.13
Gains (I learned/developed...)	28	32
increased awareness of how to use modality	13	14.77
facts about the discovery of America	6	6.81
new words	3	3.40
how to make cross-lingual comparisons	2	2.27
how to practise grammar communicatively	2	2.27
group work skills	1	1.13
deductive reasoning skills	1	1.13
Total	88	100

*Respondents gave multiple answers.

It can also be observed from Table 2 that more than half of their complaints (f=8) related to the components of the video-based end-of-unit writing activity, namely, the picture and sound quality, video length (S11: “The video can be longer, and the quality of sound and images should be better”) and thematic choice (S14: “The [cueing text] reading was a bit boring because the topic wasn’t attractive”). A closer look at their negative reactions to activity duration and difficulty also showed that just as high-achievers (S2: “I didn’t like that it took so long to complete the activities. There were too many sentences in the Columbus activity”) could lose interest because of the time on task, so low-achieving students could get bored if they encountered “challenging questions” (S9) that might cause them to “feel as if [they] knew nothing” (S10).

Finally, when they were surveyed about their gains from the adapted lesson, 13 out of 14 students asserted that they finally achieved to develop an increased awareness of how to use modality in English (S4: “After this lesson, I really came to understand them [modals] consciously. I learned their present, past and even passive uses. I noticed my misconception. I used to think modal verbs had past forms [inflections]... May and might were the same and could replace each other. I learned the subtle difference between them”). While six participants referred to the learning of facts about the discovery of America (S6: “I got to know some interesting

events about America's discovery"), only three of them actually indicated their liking for acquisition of such general knowledge (S12: "I enjoyed it [Columbus activity]. We obtained very useful knowledge. It was fun"), and also went on to state that acquisition of new words was another gain from their learning experience. It was worth noting that only three students again undertook higher-order reflections in the current study group. S1 and S5 addressed how their learning was facilitated by comparisons between the common/native and target languages as well as communicative use of newly-learned grammar/structures (S5: "Doing more activities than usual, comparing and reinforcing with our mother tongue, using mathematical formulas and expressing our learning with our own sentences have been effective in that [better learning]. But what matters most is the product of our own pen"), whereas S3 remarked on improved adaptivity to group work and inferencing abilities.

Apart from the responses to the learner questionnaire, student performance on the teacher-made quiz underwent evaluation. A quick comparison of their results revealed that the mean number of correct answers grew from 4.85 on the pre-test to 9.92 out of 20 items on the post-test. In other words, the students, on the average, more than doubled their scores from pre- to post-test. The considerable increase in the learning gains resonated with their self-reported outcomes and was considered encouraging despite constraints on time and sampling. As Ellis (1998) pointed out, dual evaluation of tasks, as presently constituted, investigates not only the extent of learning from a task (i.e. whether the task works) but also the learners' own views of the task (i.e. how it can be improved), and is not frequently undertaken due to the amount of time and effort they cost the evaluator. Despite offering valuable insights into the effectiveness of the materials L2 teachers teach by, micro-evaluations still have not received adequate attention in the literature also because they are often found "too localised and too small scale" (Ellis, 2011, p. 232).

Yet, the few existing studies that focused on (at least) the teacher and/or student reviews of the adapted lesson revealed similar patterns of adaptive action and learner reaction. In one of the earliest examples, Murphy (1993) analysed 20 teachers' opinions on the experience of conducting task evaluation with their secondary school pupils in Malaysia, and similarly found that their students, with a dislike of their textbook and traditional teaching methods, demanded variety and responded positively to the use of group work and real-life tasks, while they rejected those embodying difficult content. Duarte and Escobar (2008), who compared 15 Colombian students' perceptions of their global English coursebook (*Cutting Edge Intermediate*) and the locally adapted material for greater sociocultural compatibility, also reported that 93% of them expressed enjoyment of participation in the activities of the latter primarily because the adapted material enabled them to not only recycle grammar and varied vocabulary at the right level of difficulty, through the use of more familiar, realistic situations, and in a more integrated way, but also develop their cognitive abilities in problem-solving activities.

Despite being limited to 14 (in)experienced instructors' self-reported beliefs about adapting another global English coursebook (*New English File Intermediate*) at the English preparatory department of a private university in Turkey, Mede and Yalcin's (2019) qualitative analysis of their reflective essays, lesson plans and semi-structured interviews uncovered similar motives for teacher practices; for instance, they tended to omit repetitive tasks, add warm-up and exam-related (reading) activities, modify the class mode and content of speaking tasks mainly to increase student interest and classroom interaction, and also to maintain the prescribed pace. In a recent study by Karatepe and Civelek (2021), a dialogue activity for teaching requests was likewise modified, and 100 Turkish EFL teachers' views were surveyed with a 19-item questionnaire and semi-structured interviews after examining the original and adapted versions. 96% of the teacher respondents indicated a preference for the adapted activity because the addition of pragmatic awareness-raising exercises (i.e. focus on direct/indirect requests, modals and politeness markers, discussion on request strategies and comparisons between Turkish and English uses) and the more popular discourse role-play tasks were believed to foster their students' pragmatic development and language use.

Conclusion

As is often the case with non-native contexts, where (government-)published coursebooks are imposed upon teacher- and student-users, EFL teachers from different educational stages in Turkey have lately admitted their reluctance to carry out materials adaptation for various reasons (i.e. lack of time, heavy workload, students' low-proficiency and exam-orientation) but attributed it more to lack of confidence, or more precisely, their own lack of knowledge and experience in making modifications to existing coursebooks (Karatepe & Civelek, 2021). Consequently, the present study sought to instantiate how an intermediate unit from a best-selling global coursebook could be made more learner-friendly through the use of addition and modification strategies, and also explored the impact of teacher adaptations on their learning alongside student perceptions of task effectiveness. Descriptive analyses of students' activity ratings and retrospective reflections demonstrated that

the addition of two scaffolded grammar tasks, probability scale and bilingual table completion, proved better for generating student interest and facilitating learning than replacement with the relatively more open and difficult task on video-based end-of-unit writing activity. Despite being independent users (B1), the students also indicated greater liking for the use of visual aids (i.e. graphic organisers and video prompt), ample practice opportunities, collaborative group work, explicit focus on grammar, and learner translations respectively. While their fewer dislikes mainly concerned video quality, activity difficulty and duration, there was almost unanimous agreement that they finally achieved to develop an increased awareness of how to use modality in English. A quick comparison of the 20-item quiz results also showed a considerable increase in their learning gains, for the mean number of correct answers more than doubled from pre- to post-test. In the light of these findings, the teacher as reflective practitioner might be well-advised to consider offering alternatives to the video content (e.g. local historical, detective or medical mysteries) and communicative output (e.g. spoken, written or multimodal texts) so as to increase contextual relevance and accommodate different learning styles. Such co-use of student-based and learning-based evaluations can thus be argued to incorporate accountability in teacher actions and inform development of future learning tasks (Ellis, 1998, 2011).

Recommendations

Although the current micro-evaluation was not intended to make generalisations but rather document the impact of teacher adaptations of a grammar unit on the learning and attitudes of a specific group of intermediate learners of English at tertiary level, the sample size (n=14), sampling method (convenience sampling) and duration (eight 45-min periods) could be listed among the limitations of this study. Future research should consider evaluating the efficiency of published coursebooks (global/local) and their adapted versions by different teacher types (e.g. expertise levels and language backgrounds) through the use of multiple data sources (e.g. classroom discourse) besides self-reports and achievement tests.

Scientific Ethics Declaration

The author declares that the scientific ethical and legal responsibility of this article published in EPSS journal belongs to the author.

Acknowledgements or Notes

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Bayesian Network Approach in Education: A Bibliometric Review Using R-Tool and Future Research Directions

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Abstract: The development and multiple variations in technology and science have endured the education. Nevertheless, education is one of the primary components that uphold the development of a country. In the meantime, diverse technologies have been introduced to blend in education. For example, Bayesian Networks is a probability-based data modelling approach that illustrates a set of variables and their conditional dependencies through a Directed Acyclic Graph (DAG). Each node formed inside the graph has a Conditional Probability Table (CPT). Therefore, the endurance of this bibliometric review is to identify peer-reviewed literature on the Bayesian network approach in education. Scopus citation databases are used in the data-gathering phase. In addition, PICOS Framework and PRISMA approach were obtained and analysed for keyword search on the research topic. This bibliographic data of articles published in the journals over ten years were extracted. R-tool and VOS viewer were used to analyse the data contained in all journals and articles. This bibliometric review shows the usage of the Bayesian network approach in education, especially in educational application development. The findings from 87 articles extracted show that teaching and learning activity delivery and educational management have improved. The findings show an increasing trend in published studies related to the Bayesian network in education. Next, the United Kingdom and the United States became highly productive countries in the publication of studies within the scope of the Bayesian network. Next, interdisciplinary became the primary choice in the publication of studies in the field of Bayesian networks. The level of predictive accuracy generated through the Bayesian network approach improves the quality of educational application development. However, the findings of previous studies indicate that there is a need to extend the Bayesian network approach in education.

Keywords: Bayesian Network, R-tool, Bibliometric Analysis, Technology, Teaching Application

Introduction

Education has undergone drastic developments since the world faced the Covid-19 pandemic. 80% of schools had been affected by the Covid-19 pandemic (Azrin & Nurfaradilla, 2021). The Covid-19 pandemic has drastically impacted the world education system (Teras et al., 2020). Practices in teaching and learning activities that have long depended on the classroom are also affected, and all teaching activities are carried out with the help of technology (Chabibie, 2020).

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Based on a United Nations Educational, Scientific and Cultural Organization (UNESCO) (2019) report, as many as 74% of students worldwide are affected by this Covid-19 pandemic. This situation makes teachers and students rely on technology solely to collaborate to access Education. The post-Covid-19 situation, has applied the importance of technology in the world of Education. As a result, there is a need to provide learning aids that students can access even as the world faces a pandemic such as Covid-19. According to Raja and Nagasubramani (2018), technology has become compulsory for fulfilling 21st-century education skills among students. According to Al-Qozani and Aleryani (2018), the use of technology has opened up space in the world of Education to facilitate students' access to Education from a place without time limitations and gaps between teachers.

Developments in technology today recreate a vital role in life. The 21st-century era is often considered the era of technology (Raja & Nagasubramani, 2018). It is also seen as the basis of economic growth of a country where the effect can be felt in every field, one of which may be Education. The Covid-19 pandemic has prompted the ranks of teachers to explore e-teaching methods and platforms such as Google Classroom, Google Meet, and Zoom. Cai et al., (2020) stated that teachers played a critical role in adapting e-teaching during the Covid-19 pandemic period, which had suddenly changed the pattern of teaching delivery method. As a result, the quality of the teaching and learning process can be improved. Its conveyance and gathering are expanded through a few procedures, for example, PC-supported programming, network frameworks, data sets, and data frameworks. Furthermore, the use of teaching aids helps stimulates interest and invigorates students thinking skills in this digital age and has been thought of and perceived as an impetus for the educating and growing experience. In many fields of computer science, artificial intelligence (AI) is a challenging and creative field. Using the computer-assisted instructional system (CAI) can provide an ideal instructional environment and easily stimulate students' enthusiasm and initiative to learn, thus significantly enhancing the instructional effect (Huang & Zhou, 2022). The increasing development of multimedia technology and integration with other leading technologies will undoubtedly encourage the further development of CAI. The Bayesian network approach is one of the artificial intelligence techniques often used in education. Bayesian Network is one of the applications of data mining that produces an interactive opportunity prediction model in the form of a description of the relationship between variables and provides information on probabilities.

Antecedent of Bayesian Network

A Bayesian network is an approach derived from the Bayesian theorem. The Bayesian network approach serves as an approach used in software development to determine the uncertainty measured using probabilities. Thomas Bayes put forward this theorem with the basic formula:

$$P(B|A) = \frac{P(A|B)P(B)}{P(A)}$$

Bayesian Network is a Directed Acyclic Graph (DAG) equipped with a Conditional Probability distribution Table (CPT) for each node. Each node addresses a domain variable, and each arrow between nodes addresses a probabilistic reliance (Pearl, 1988). Bayesian networks can generally calculate the conditional probability by assigning values to other related nodes. Naive-Bayes Bayesian Network is a simple structure with nodes classified as parent nodes from several other nodes.

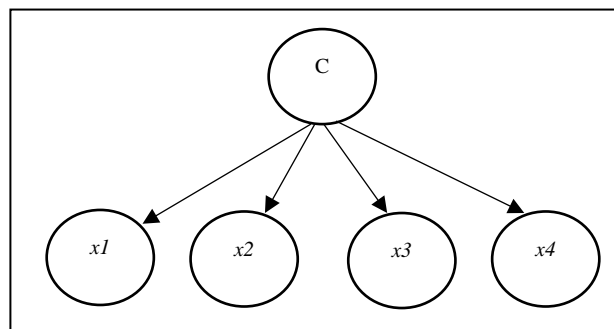


Figure 1. Bayesian network tree

Figure 1. Shows the structure of a Bayesian network classified using probability nodes. The calculation of the chance value at a node in the Bayesian Network structure is by the following formula:

$$P(X_1) = \sum_{j=i}^x P(X_1 - Y_1)$$

In conclusion, a Bayesian network is an approach that can represent uncertainty and reasoning in the field of artificial intelligence. Bayesian network is represented by an actual state and not a process of reasoning the probability of joint events between two events X_1 dan X_2 , where the probability of $P(X_1) > 0$ determined by the above formula.

Bayesian Network Structure

The Bayesian Network is a probabilistic graphical structure that illustrates causal relationships between interrelated variables. There are four things that Bayesian Network can offer as a method (Dita et al., 2018):

- i. Bayesian Networks can easily handle inaccuracies or problems with data.
- ii. The Bayesian Network allows one to learn about causal relationships. The learning process becomes essential when trying to understand the domain of a problem.
- iii. The Bayesian Network can facilitate a combination of domain and data knowledge.
- iv. Bayesian Network offers an efficient and principled approach to avoid overfitting the data.

Bayesian Network approach involves two steps which are creating the network structure and estimating the probability value of each node. One of the algorithms that can be used to form the network structure is to use the Maximum Spanning Tree algorithm. The Bayesian Network consists of two components, the Directed Acyclic Graph (DAG) and the Conditional Probability Table (CPT) for each attribute variable (Han & Kambe, 2001). DAG can be denoted by $G = (X, E)$, where X consists of variables called nodes and E is a pair of nodes connected by an arrow line. Nodes on the DAG represent random variables, while arrows indicate probabilistic dependence relationships between attributes. The arrow line only points in one direction and does not rotate back to its original node. The use of the Bayesian network in the development of software and applications in education is also seen to have a comprehensive impact. According to Dita et al., (2018) the Bayesian Network approach was used in developing an Intelligent Tutoring System (ITS) that can recommend materials appropriate to students' level of understanding. Meanwhile et al., (2015) used the Bayesian Network approach to identify the relationship between the factors of this study and analyse the data as it can represent variables in the form of nodes and relationships with directional lines. Constraint-based algorithms and score-based algorithms were used to generate networks in several categories to make comparisons and identify the factors that most influenced student learning in the subject of Additional Mathematics. Past studies have shown that this Bayesian Network approach is widely used for software development and educational applications. In line with that, this bibliometric analysis explores the literature on the Bayesian Network approach in education in the Scopus database. Furthermore, it aimed to answer the following research question:

1. How far has the Bayesian Network approach in education research progressed in the publication?
2. What is the scientific productivity pattern in the Bayesian Network approach in education field research?
3. What is the main area of the Bayesian Network approach in education research?
4. What is the future direction of the Bayesian Network approach in education?

It attempted to divulge publishing trends, patterns of scientific productivity, patterns of research conducted, and the primary area of the Bayesian Network approach in education.

Method

This study was conducted using the PRISMA approach (Preferred Reporting Items for Systematic Review and Meta-Analysis) and Bibliometric analysis to answer all research questions. The PRISMA approach is used to shortlist and select articles from Scopus databases based on the research topic. In addition, the PRISMA method has a specific procedure of how it is produced and a comprehensive scope that enfolds all appropriate materials and can replicate other researchers with the same approach to discussing a topic. Table 1 shows the inclusion and exclusion criteria for selecting and shortlisting the articles from the Scopus database.

Table 1. Inclusion and exclusion criteria

Inclusion	Exclusion
The article period of 2012 to 2021.	Duplicate article with same author and topic removed
The article focusses Bayesian network approach in education.	Bayesian network in other areas than education is excluded in this analysis.
English language papers only analysed in this study.	Other than English language excluded.

Data Collection

Data analysis begins with a keyword search by applying inclusion and exclusion criteria. Then, the keywords and search strings can be repeated to get the latest material and future research.

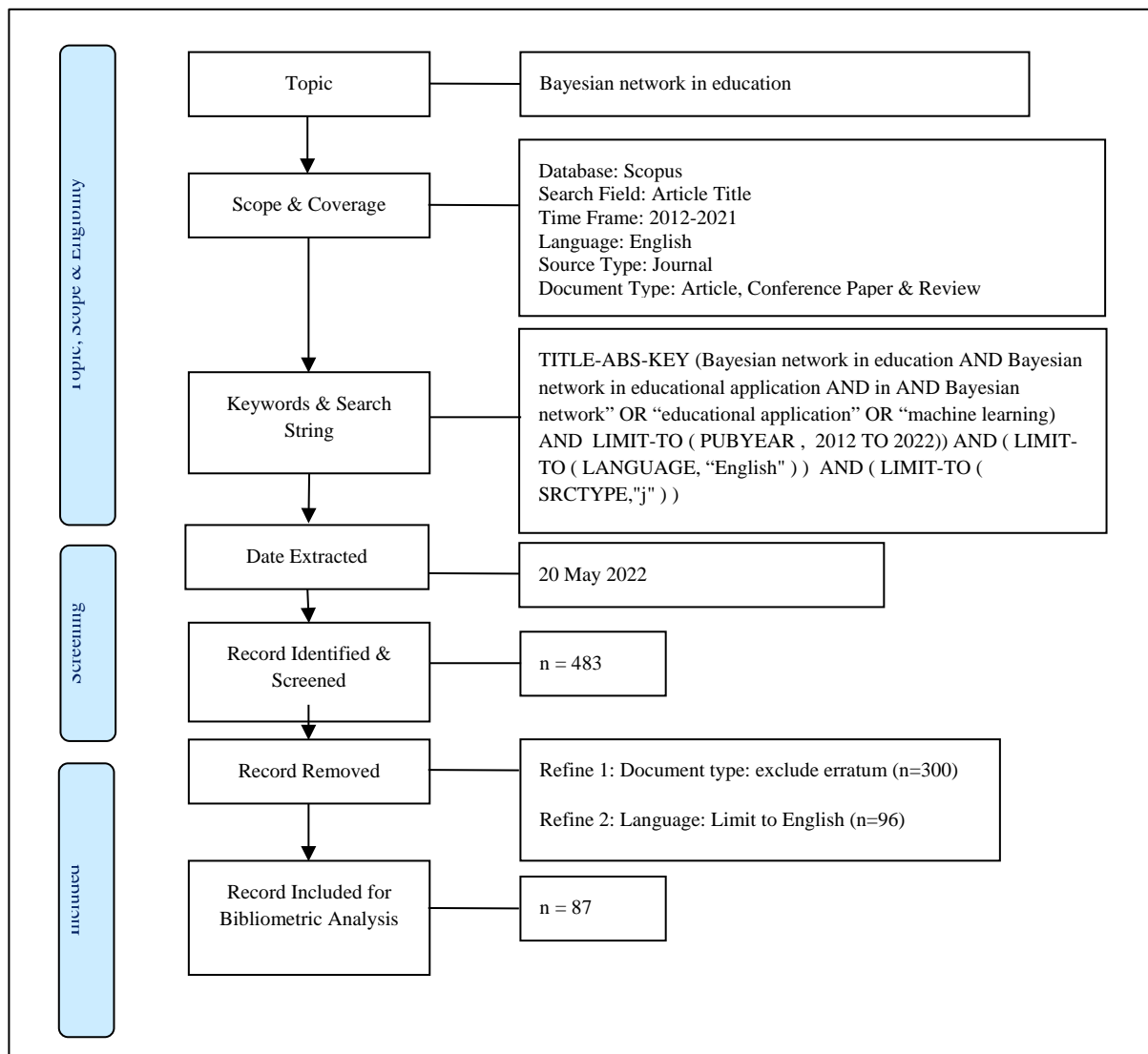


Figure 2. PRISMA flowchart of data inclusion and exclusion (Page et al., 2021)

This study included all the reports written in English from 2012 to 2022. Furthermore, excluding the erratum (n=300) to avoid twofold counting. Finally, 87 records are distinguished and downloaded for additional analysis. As in Table 2, three sets of keywords were used to select and shortlist the articles from the Scopus database. The primary keyword is the Bayesian network approach in education. While the secondary keyword is Bayesian network in educational application. The keywords used in this bibliometric analysis regarding Bayesian network and model are depicted in Table 2, in which the set of keywords are used with “AND” or “OR” operator.

Table 2. List of keywords

Keywords set	Keywords
Keywords_Set1	“Bayesian network in education” OR “Bayesian network”
Keywords_Set2	“Bayesian network in educational application”
Keywords_Set3	“Bayesian network” OR “educational application” OR “machine learning”

Data Analysis and Finding

In this study, performance and bibliometric analysis were blended to answer the research question. Based on Harzing (2007), the Bibliometrix R package and Perish software was used to conduct citation and publication analysis by running performance analysis. Meanwhile, VOSviewer were used to map the author's keyword. The usage of this software determined the significance of the study and involved prior Bayesian network clusters. On the other hand, the Total Link Strength (TLS) was used to decide the centrality of the study. The density of the scope is utilized to decide the research extension's internal strength or level of interaction within a network. Then again, the novelty was identified through the median value of the average publication. Average publication years greater or equal to the median value were considered a novel and the other way around.

Publication and Citation Trend

Table 3. Annual total citation

Year	N	TC	Mean TC per Art	Mean TC per Year	Citable Years
2012	4	224	56.00	5.60	10
2013	5	54	10.80	1.20	9
2014	4	4	1.00	0.13	8
2015	1	1	1.00	0.14	7
2016	5	71	14.20	2.37	6
2017	3	102	34.00	6.80	5
2018	5	8,3	1.67	0.42	4
2019	10	27	2.70	0.90	3
2020	20	20	1.00	0.50	2
2021	30	90	3.00	3.00	1
Total	87	601,3			

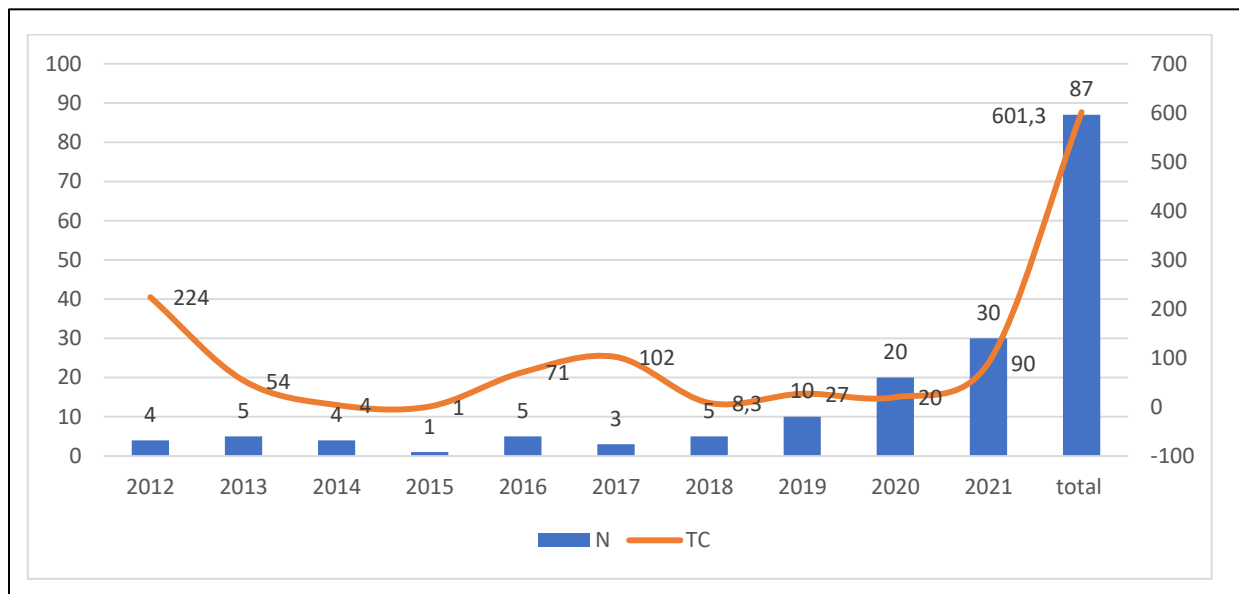


Figure 3. Total publication and citation on Bayesian network from 2012 to 2021

There were 87 publications on the Bayesian network in education research retrieved from the Scopus database for this study. The first publication for 2012, “Evaluation of simulation games for teaching engineering and manufacturing,” was included in the analysis (Hauge & Riedel, 2012). The number of publications related to the Bayesian network in education remained in the single digits from 2012 until 2018. However, the publications have been steadily increased since then (Table 3). The trend line shows that the number of publications increases polynomials ($R^2 = 601.33$), more significant than the linear increase.

Scientific Productivity Pattern

A total of 416 authors contributed to the publication of the Bayesian network in education research. Table 4 lists the number of publications based on countries has contributed. Based on the analysis, most authors have only published once on the topic of Bayesian networks in education. On the other hand, the United Kingdom became the country where it produced the most publication among the other 14 countries. Table 4 shows the United Kingdom published 18 publications, followed by United States with a complete publication of 16 publications, whereas Italy with seven publications.

Table 4. Top 10 countries contributed to publication on bayesian network in education

Country	Total Citations	Average Article Citations	Total Citation
United Kingdom	18	16	160
United States	16	14	179
Australia	5	7	115
Italy	7	6	58
Germany	6	5	78
China	3	1.5	50
South Korea	5	4	34
Spain	5	4	57
Netherland	5	3	20
Iran	5	3	0

Main Area of the Research on Bayesian Network in Education

The primary province of the Bayesian network in education research was distinguished utilizing keyword analysis. The analysis shows, only 49 of the 3249 keywords used by the authors outperformed the minimum occurrence level of 10 (Figure 4). Model, computer vision, structure, and machine learning are the main clusters that emerge from the map. The keyword overall strength was determined by generated the Enhanced Strategic Diagram (Figure 4). The link strength showed on centrality and meanwhile frequency showed by density. The average year of publication determined the novelty of publication. The high density shows publication on scope of child epidemiology, risk assessment of learning, besides interdisciplinary shows research on bayesian network in education related to students.

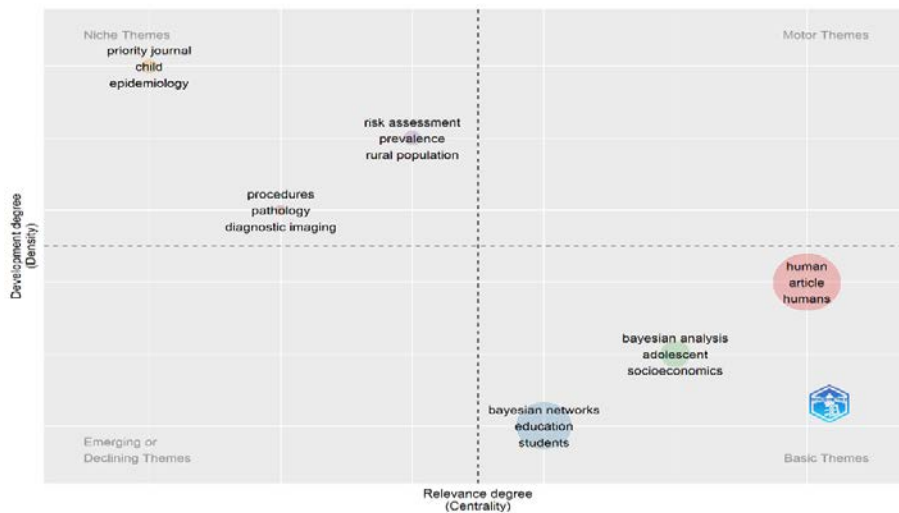


Figure 4. Enhanced Strategic Diagram (ESD)

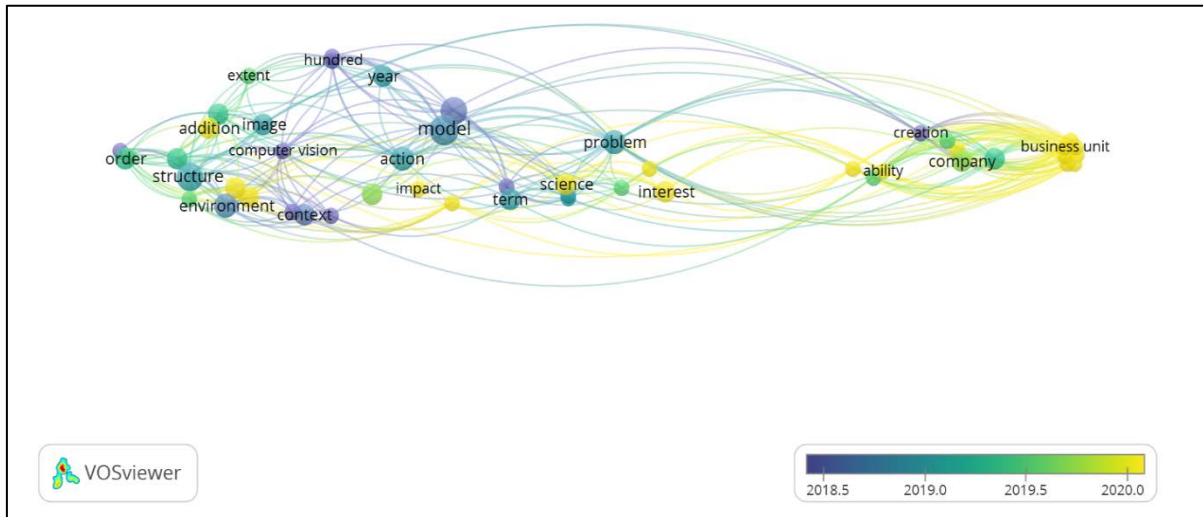


Figure 5. The co-occurrence of the author's keyword with minimum threshold of 10

Discussion and Future Direction

Bayesian networks were constructed in the current study of 'Probabilistic Arguments in Systems Intelligence' by Pearl (1988), which prompted the acceptance of probability and decision theory in artificial intelligence. The Bayesian Network officially allows for efficient representation and careful reasoning with definite science. Bayesian networks make it possible to be able to work from experience as well as combine the best artificial intelligence and neural networks. Bayesian networks are a family of probabilistic graph models. According to Devni et al., (2016), data mining in education has become widespread. Bayesian network, which is one of the data mining approaches, is also one of the main components inherited in data mining. Therefore, the use of the Bayesian network in education is increasing where the development of intelligence-based systems can facilitate educators' educational affairs. Furthermore et al., (2017) found that using the Bayesian network in the development of e-learning-based applications facilitates the ability to conclude the characteristics of individual users by receiving information data in the form of input from the user. Thus, the development of artificial intelligence applications in education can be realized using the Bayesian network approach. Moreover, the e-learning platform developed in the future can be expanded in all educational institutions using Bayesian Network. The Bayesian network approach was successfully implemented to generate individual student reports (Salwa et al., 2021). In this case, the method provides recommendations related to an e-learning session attended by students. Thus, the need to use the Bayesian network approach in education is increasing to guide students in making a decision related to learning. The finding can be girded by the increasing trend in implementing studies from 2018 to 2021 (Table 3). In particular, studies for 2019 and 2020 in Bayesian networks in education have increased. Thus, the future of the Bayesian field is envisioned to increase. This can be seen through the findings of previous studies that show the significance of the Bayesian network approach in the development of educational applications and software.

Conclusion

Overall, the findings of previous studies show that research trends in the field of Bayesian networks show an increased over the past five years. The use of the Bayesian network approach in the development of educational applications has also shown an increase. Bayesian networks are increasing in line with the expansion of artificial intelligence and data mining in education (Johnson et al., 2022). The increasing use of tablet and smartphone facilities among school students also contributes to developing applications using the Bayesian network approach and artificial intelligence that facilitate the decision-making process in terms of learning (Huang & Zhou, 2022). This study's findings describe the situation in using the Bayesian network in education, particularly aspects of trends, the number of publications, and the country published. It also discusses the future direction of the Bayesian network in education. However, the trend shows an increase in the use of Bayesian networks in education. There is still a need to expand research related to Bayesian networks in education. In particular, studies related to the importance and benefits of using Bayesian networks in studies should also be conducted. Studies on the importance and benefits can show productivity in using the Bayesian network approach in education.

Scientific Ethics Declaration

The authors declare that the scientific ethical and legal responsibility of this article published in EPESS journal belongs to the authors.

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Effect of Dark Triad Personality on Cyberbullying Behavior among Malaysian University Students

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Abstract: Cyberbullying has become more prevalent in this age due to the increased usage of electronic gadgets, the Internet, as well as the personality traits of the aggressor. The purpose of this study is to examine the effects of Dark Triad personality traits on cyberbullying behaviour among university students. The personality model adopted in this study is the Dark Triad Model, which includes Machiavellianism, Narcissism and Psychopathy. This current study used a cross-sectional quantitative research design to collect data through online questionnaires. This study utilized the 9-Item Cyberbullying Offending Scale and the 12-Item Dirty Dozen scale to gather the data. A total of 400 samples from Malaysian public university students were selected based on the convenience sampling methods. The data were analyzed using descriptive and inferential statistics through SPSS version 27. The finding shows a low level of cyberbullying behaviour among Malaysian university students. The findings also indicated that all three dark traits (i.e. Machiavellianism, Psychopathy, Narcissism) are significantly correlated with cyberbullying behaviour. Meanwhile, the regression analysis indicates that both Psychopathy and Machiavellianism significantly positive affect cyberbullying behaviour. The study contributes to the existing literature by providing evidence from the Malaysian perspective, which is a collectivistic culture in nature. Additionally, the findings provide information to the stakeholders as guidelines for future intervention and prevention programs development for cyberbullying.

Keywords: Dark Triad, Machiavellianism, Narcissism, Psychopathy and Cyberbullying

Introduction

In this digital era, online social media usage has become a ubiquitous phenomenon among youth as it acts as a vehicle for individuals to connect and build relationships virtually. With the rapid increase in social media usage, cyberbullying has emerged as a new form of bullying that occurs in cyberspace, becoming a salient issue that needs to be focused on. Cyberbullying activities include engaging in a short online argument utilising malicious languages, harassing by spamming derogatory messages, circulating spiteful rumours, impersonating someone else with ill intentions and purposely isolating a person from an online group (Willard, 2007). The huge online platform enables massive numbers of people with perceived anonymity to view or participate in

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online bullying, making the situation even more distressing (Watts et al., 2017). The motivations that led perpetrators to conduct this negative behaviour may stem from jealousy, boredom, revenge and/or seeking acknowledgement from others (Varjas et al., 2010).

This problematic social media use has become a troubling issue in Malaysia, as the country was ranked sixth among 28 countries worldwide in a report recently released by tech review site “Comparitech” (Nur, 2020). Malaysia was also second in problematic social media use in Asian countries (Nur, 2020). These perturbing statistics of cyberbullying cases in Malaysia have called for immediate attention to tackle this matter at hand to ensure the wellbeing of online users. Information about the factors and predictors of cyberbullying is critical to learning about this problematic behaviour. As the number of cyberbullying cases has steadily grown in Malaysia, it is crucial to provide empirical research data on this area of study. Hence, the knowledge implication of this study is that it can contribute to the existing literature in the conceptual areas of cyber bullying. In addition, there is still a lack of literature that researched the effects of dark triad personality such as Narcissism, Machiavellianism and Psychopathy traits on cyberbullying (Alonso & Romero, 2017), as most of the past studies focus on the other aspects of bullying. The psychological reasons behind cyberbullying behaviour may shed some light on the motivators that galvanise this immoral act. Hence the findings from this study can provide some essence of personality traits on cyberbullying behaviours to further understand the motive of the perpetrator.

Previous research has shown that cyberbullying can cause various negative outcomes that can be detrimental to both the physical and psychological health of the victims (Zhang et al., 2020). Negative emotions and behaviours, such as social anxiety, poor concentration, substance abuse, and even suicide are to be expected from the victims. This is because the consequences of cyberbullying attacks are just as harmful as traditional bullying or perhaps even worse. Traditional bullying differs from cyberbullying in terms of the time and frequency of the attack from the perpetrators. For instance, a victim who was physically bullied at school may feel safe during the evenings and nights as the person are in the comfort of his own home during those times. Whereas cyberbully victims are not blessed with that safe period of harassment, as it will continuously occur every time of the day due to the support of media circulation. In addition, the harassment is presented towards a larger virtual audience which can be more humiliating for the victims to show their faces in public (Peluchette et al., 2015). To make things worse, embarrassing pictures, videos or comments towards the victim can be downloaded and shared repeatedly in multiple social media platforms, which eventually leads to the person becoming viral and a target for harassment as well as a laughingstock. Hence, this present research can be one of the attempts to understand the pattern of this negative antisocial online behaviour to curb this problem from being more widespread. By knowing the effects of the personality traits towards cyberbullying behaviour, this can assist future researchers to apply the knowledge in detecting cyberbullies that exist online as conducted by past research, in which they incorporate the dark triad features in a machine-learning algorithm to detect cyberbullying among Twitter communities (Balakrishnan et al., 2019).

Cyberbullying research among young adults, or more specifically, university students, is critical as they are equally susceptible to the harm of cyber aggression. Based on past research, it has been asserted that almost all university students are internet literate and have higher access to the internet for their studies (Lai et al., 2017). Thus, this increases the percentage of university students as cyber users, which justifies the need to investigate further the cyberbullying incidence among this population. According to Gilroy (2013), there is a higher probability for university students to be engaged in cyberbullying behaviour when exposed to an extensive amount of Internet and social media. Research on this population is necessary to comprehend the nature of this phenomenon fully. This present study can add new knowledge and empirical data related to the influence of Narcissism, Machiavellianism and Psychopathy as the dimensions of the Dark Triad personalities on cyberbullying behaviour among university students in Malaysia. This is because it has been stated that not much research has been done on the university students regarding cyberbullying (Watts et al., 2017). Thus, with the data gathered through this study, the levels of cyberbullying behaviour among university students in Malaysia can be brought to light and assist future researchers in further investigate this research area.

From previous studies, numerous researchers have discovered that personality traits, such as the Dark Triad Personality and the Big 5 Model, can be one of the predictive factors for antisocial online behaviours, including cyberbullying (Moor & Anderson, 2019). Some researchers have utilised the Dark Triad Personality model in their research, whereas few incorporated the Big 5 Model to predict cyberbullying behaviour (Van Geel et al., 2017). In this research, the Dark Triad model, which encompasses the traits of Machiavellianism, Narcissism and Psychopathy, is utilised as the personality model. This model fits for this research due to the theoretical perspectives of each trait associated with cyberbullying behaviour. Since the three Dark Triad traits are linked with values such as power, hedonism, and manipulation, people high on these traits may use cyberbullying as a

coping method to feel powerful, entertained, or relieved from ordinary real-life issues (Kircaburun et al., 2018). By investigating the linkages between personality traits and cyberbullying, one may assess what personality trait has a significant relationship with this negative online behaviour, which can contribute to society in terms of aiding educators to develop effective strategies to guide and demotivate students from cyberbullying behaviours. However, studies on the relationship between personality traits and cyberbullying are pretty scarce (Alonso & Romero, 2017). Thus, this study aims to examine the effects of Dark Triad personality traits on cyberbullying behaviour among university students in Malaysia.

Literature Review

Personality Traits

Personality traits can be defined as a neuropsychic system capable of making several functionally identical stimuli and triggering and facilitating equivalent (meaningfully consistent) reactive and expressive behaviour (Allport, 1961). This definition implies that personality traits do not mean that people would react the same way regardless of any situation, instead, there is a concept of variance. The newer definitions of personality traits acknowledge that personality traits are related to inconsistency based on different situations, as pointed out by Allport (1961). Moor and Anderson (2019) defined personality traits as the relatively constant patterns of thinking, feeling, and attitude that represent the inclination to react in specific ways according to situations. Social and personality psychologists have substantiated that personality traits can precisely specify specific differences in behaviour even from environments (Gosling et al., 2002).

In this study, personality traits refer to the dark personality traits often associated with negative, undesirable behaviour that can cause harm to others, such as cyberbullying. The personality model deemed fit for this study is the Dark Triad model (Paulhus & Williams, 2002). This model consists of three dimensions that are Narcissism, Machiavellianism and Psychopathy. Narcissism can be described as an extreme feeling of entitlement and superiority. Machiavellianism is the likelihood of the person manipulating others deliberately. Psychopathy refers to incautious thrill-seeking behaviour and lack of empathy (Paulhus & Williams, 2002). The personality traits are measured by using the 12-item Dirty Dozen Dark Triad Scale (Jonason & Webster, 2010).

The Dark Triad Model

Several personality models have been applied by previous researchers to study the correlation between cyberbullying and personality traits. The Dark Triad Model is utilised as the underpinning theory in this study. The Dark Triad Personality is the most widely accepted model of malicious personality traits (Paulhus & Williams, 2002). The dark triad concerns three socially unappealing personality traits: narcissism, Psychopathy, and Machiavellianism. The trait *Narcissism* can be defined as an enhanced sense of superiority, uniqueness, and self-importance while demeaning others (Rauthmann & Kolar, 2012). *Psychopathy* can be described as a stable pattern of blatant indifference and abuse of the rights of others with a pronounced affinity for deception and manipulation. *Machiavellianism* is a trait that involves deception and manipulation for personal gain in relationships due to their fear of rejection (Rauthmann, 2011). Even though the traits of the Dark Triad Model are commonly displeasing, it is essential to highlight that they are still within the normal, sub-clinical range, which makes people who scored high in these traits can still be considered normal and should not be confused with those in forensic and clinical populations (Vernon et al., 2008). However, it is erroneous to assume that people with these subclinical traits are less harmful to society and themselves than to the clinical population with the same traits (Gibb & Devereux, 2014). Past research found that people often view narcissists as socially unpleasant despite being in a clinical or subclinical population (Leary et al., 1997; Paulhus, 1998). The trait psychopathy is also deemed the most malicious among the other traits in the Dark Triad, even at a subclinical degree, as it was found to influence a broad range of self-report behavioural measures of antisocial behaviour (Paulhus & Williams, 2002; Rauthmann, 2012). People that score high in Machiavellianism are regarded as dishonest, and deceitful, and perceive that interpersonal manipulation is the secret to achieving what they want in life; hence they act as such (Jones & Paulhus, 2009).

Furthermore, despite their disparate backgrounds, the dimensions in the "Dark Triad" share several similar characteristics. All three traits have the disposition to exhibit self-glorifying, emotional indifference, and aggression to the varying extent as they possess socially malicious personalities (Paulhus & Williams, 2002). Paulhus and Williams (2002) also discovered that the Dark Triad traits all displayed a common core of disagreeableness in non-clinical samples, which makes it frighteningly normal for them to behave destructively

in social situations. Other research also supported the statement, claiming that these three characteristics are considered exploitative as they exhibit an indifference to the damage they inflict on others in the pursuit of their goals." (Jones & Paulhus, 2011, p. 253). According to Jones and Figueredo (2013), all three characteristics have an antagonistic essence of callousness and manipulation in nature, which are in line with the previously stated research. When compared to the Big Five Model, the Dark Triad traits have shown that they all have one commonality, which is low agreeableness (Paulhus & Williams, 2002; Jakobwitz & Egan, 2006). Hence, it is not surprising that people with the Dark Triad traits suffer psychosocial consequences (Jonason, Li & Czarna, 2013) because of a lack of self-control, emotional intelligence, and equity sensitivity (Goodboy & Martin, 2015).

Cyberbullying Behaviour

Cyberbullying can be described as any vile act against another cyber user through the internet or other digital technologies, such as distributing or uploading deeply offensive content or using other forms of social harassment (Willard, 2006). Cyberbullying is classified into seven categories by Li (2007) and Willard (2006): flaming, online harassment, cyberstalking, denigration, masquerading, trickery and outing, and exclusion. Furthermore, cyberbullying behaviour can also be defined as causing distress to others by the constant means of technology (Slonje et al., 2013). However, previous research discovered that university students disagreed with the definition (Gibb & Devereux, 2014). They stated that there is an issue with the evolving nature of technology, which calls for a more comprehensive set of behaviours related to cyberbullying. The participants asserted that cyberbullying should be associated with the perceived distress of victims and not solely based on the intended harm of the perpetrator. The operational definition of the present study is aligned with the definition provided by the university students in the past research, as the study focused on the most integral elements that are most commonly included in defining cyberbullying behaviour, which is repetition and harm caused to the victim. Aside from that, cyberbullying has been associated with other indirect forms of aggression, which makes it vary from traditional bullying, due to its perceptually covert nature (Gibb & Devereux, 2014).

Social media, e-mail, chat rooms, instant messages and mobile phones are all the typical platforms where cyberbullying tends to take place. Since many of today's students are members of the digital generation, educators should be mindful of the cyberbullying issue and recognise that it affects teens and young adults. As stated in past research, college students spend most of their time online due to the nature of their studies which require them to access the internet. Thus, this increases the probability of them engaging in cyberbullying behaviours (Lai et al., 2017). Aside from that, Calvete et al. (2010) discovered that cyberbullying is linked to proactive aggression, the rationale for violence, openness to violence, and a lack of perceived social support from peers. Cyberbullying, which relates to persistent, deliberate, and malicious online activities directed at weaker people (Patchin & Hinduja, 2015), has been linked to psychopathy from the Dark Triad traits, and sadism from Dark Tetrad traits specifically (Van Geel et al., 2017). Thus, these could potentially lead university students to cyberbully others as they could be more exposed to these factors.

Prevalence of Cyberbullying among University Students

There is a large amount of research surrounding cyberbullying among adolescents. However, there seems to be a scarcity of articles that have the research samples of university students (Watts et al., 2017). This study aims to tackle this research gap to provide more knowledge on cyberbullying. Thus, it is rational to conduct a thorough review of the limited existing research that has been done on university samples.

According to a study by Gibb and Devereux (2014), it was discovered that about 52% of college students are involved in cyberbullying behaviours, which is quite a high level of incidences compared to previous estimates in the study. Their study employed 297 college students, 67.4% of whom were female, to take part in an online survey to test the correlation of the dark triad personality with cyberbullying. This study used the Cyberbullying Questionnaire (CBQ; Calvete et al., 2010) as the instrument to measure cyberbullying behaviour. The research findings were aligned with past research that stated cyberbullying behaviour can still occur at the university level (e.g. Kowalski et al., 2013; MacDonald & Roberts-Pittman, 2010). The plausible reason for this result may be due to university students' time spent on the Internet (Lai et al., 2017). Based on Gilroy (2013), university students are more inclined to engage in cyberbullying behaviour when exposed to the Internet for a considerable amount of time. Furthermore, a systematic literature review conducted by Watts et al., (2017) aimed to increase awareness of the ongoing phenomenon of cyberbullying among undergraduates. Their study analysed numerous databases to look for existing literature on cyberbullying. A total of 100 articles were examined, with 54

included in the final literature review. From this study, it can be discovered that high school cyberbullies were much more likely to cyberbully in university (e.g., Beran et al., 2012), with the sample of 1368 Canadian and American college students. This claim can be supported by a study conducted by Chapell et al., (2006) studied 119 students and found that 54% (14 of 26 participants) of college cyberbullies were also cyberbullied when they were in high school and elementary school. A researcher also claimed that male university students are more likely to be cyberbullies than females (Ozden & Icelliglu, 2014).

Most of the research previously was conducted in Western countries, and still limited study from Asian countries like Malaysia. From Malaysian perspective, the cyberbullying phenomenon has not yet been thoroughly investigated. There is still scarce research regarding this topic among Malaysian samples (Lai et al., 2017). Thus, the data obtained on cyberbullying cases in Malaysia is quite limited. In 2013, 389 incidents of cyberbullying were identified based on the data published in a local newspaper. In contrast to 250 cases in 2012, this figure had risen by 55.6 per cent in 2014. Nevertheless, it is erroneous to assume that the article considers all cyberbullying cases, in fact, many cases are unreported due to the victims' silence. Their silence may be stemmed from feelings of helplessness, embarrassment, and depression.

A study from Malaysia was conducted by Lai et al. (2017), it was stated that 66% (470 out of 712) of their samples have experienced cyberbullying. The research gathered up a total of 712 public and private university students as their participants. Males comprised 310 (43.5%) of the total participants, while females made up 402 (56.5%). The study consists of 374 Malays, 64 Chinese, 109 Indians, 160 Borneo native peoples, and five other ethnic groups. The findings of the stated research is in line with a more recent study conducted at a university in Johor Bahru, Malaysia, which has a total sample of 400 undergraduates comprising 32% male respondents and 68% female respondents. The study also discovered that 61% of their 244 respondents have experienced cyberbullying. The result of this study further proves that cyberbullying is currently on the rise, particularly among university students in Malaysia, due to the high incidence rate. According to an online safety site, this is analogous to the situation in the United Kingdom, where 69% of young people were cyberbullied (Cyber Bullying Statistics, 2015). However, the trends exhibited by Malaysia are pretty contrasting with the USA, as research in the latter country only showed 21.9% of college students having been cyberbullied (MacDonald & Roberts-Pittman, 2010).

Finally, cyberbullying among Malaysian students in higher education institutions has reached alarming levels. From an academic standpoint, cyberbullying can have a negative impact on victims' academic success due to mental and physical complications caused by cyberbullying. Thus, it is essential to carry out this research to obtain more empirical data on the level of cyberbullying behaviour among university students in Malaysia.

Types of the Dark Triad Personality Traits among University Students

The model of the Dark Triad personality consists of three malevolent traits: Machiavellianism, Narcissism and Psychopathy. Hence, the present research intended to identify the type of Dark Triad personality that exists among university students in Malaysia. According to a previous finding by Mumin (2021), out of all the dark traits, the trait Narcissism appeared to be the most prevalent among university students in Malaysia. The study incorporated the same Dark Triad instrument, the Dark Triad Dirty Dozen Scale, and obtained data from 549 respondents to study the role of Dark Triad personality as a buffer against stress. Aside from that, Vedel and Thomsen (2017) also found the same trend in their results, with Narcissism scoring highest, followed by Machiavellianism and Psychopathy in their university student samples. The research aimed to see if there are any pre-existing Dark Triad distinctions between academic majors, which involved 487 students. The same result can be seen in a study by Rauthmann and Kolar (2012), which also showed Narcissism as the most prevalent type of dark personality trait and Psychopathy with the least prevalent score. The study also used the Dirty Dozen Scale on 244 respondents to examine the perceived darkness of Narcissism, Machiavellianism and Psychopathy.

However, a study by Rauthmann and Kolar (2012) related to the relationship between bullying behaviours and the Dark Triad showed differing results. The research finding showed that the trait Machiavellianism scored the highest level out of all the three traits, followed by Narcissism and Psychopathy. Interestingly, it can still be observed that Psychopathy remained the least prevalent among university students. These findings may probably be because psychopathy is known as the most malicious trait in the Dark Triad Model (Rauthmann & Kolar, 2012). Hence, due to the varying results of the Dark Triad personality traits among university students, the need to conduct this study is deemed more significant to contribute further knowledge in dark personality traits. The findings could potentially be beneficial for preventing and intervening in cyberbullying problems.

Dark Triad Personality Traits and Cyberbullying Behaviour Relationships

This section discusses the findings from prior studies investigating the relationship between personality traits and cyberbullying among university students. Goodboy and Martin (2015) conducted a study to examine the relationship between the dark triad personality traits and self-reported cyberbullying behaviours. This study accumulated 227 questionnaires from college students to report their traits of narcissism, psychopathy, and Machiavellianism as well as their cyberbullying behaviours. It was revealed that all three dark traits were correlated with cyberbullying. In the same vein, a study by Van Geel et al., (2017) also found that Narcissism, Machiavellianism and Psychopathy have a significant relationship with cyberbullying. However, those studies were conducted among university students in the USA, which is individualistic culture and cannot be generalised to other countries, especially Malaysia. Thus, this research fills up the gap by conducting research among public university students in Malaysia.

Upon further investigation, most prior research on this topic had discovered inconsistent results on the relationship between personality traits and cyberbullying. For instance, Kircaburun et al., (2018) studied the direct and indirect associations of the Dark Tetrad traits with Problematic Social Media Use (PSMU), such as cyberbullying, by using 761 participants from a Turkish university. The participants consist of 274 male and 487 female university students. This study showed that only Machiavellianism and Psychopathy were directly associated with cyberbullying. The trait of Narcissism was indirectly correlated with cyber-trolling, which was another type of PSMU (Kircaburun et al., 2018). This finding did not align with the previous research that asserted all the Dark Triad traits were correlated with cyberbullying behaviour from the USA sample. (Goodboy & Martin, 2015; Van Geel et. al, 2017). These inconsistent findings could be due to the different geo-locations between the studies.

A study by Balakrishnan et al. (2019) found that cyberbullying detection mechanism was greatly enhanced with the assistance of factoring in the user's personality. Out of the Dark Triad traits, psychopathy emerges as the most significant trait that can effectively detect bullies online (Balakrishnan et al., 2019). This result is supported by previous researchers that had concurred that the trait psychopathy has a significant positive relationship with cyberbullying (Goodboy & Martin, 2015; Van Geel et al., 2017; Kircaburun et al., 2018). Hence, the current research could potentially aid future researchers in detecting cyberbullies online by factoring in the related personality traits of a cyberbully.

In conclusion, a few limitations exist in the prior research regarding this subject. Some studies are conducted on samples from only one university. Besides that, none of those mentioned above articles are located near the geo-location of Asia. Hence, the research result cannot be fully applied to populations beyond the geo-locations of the studies. The previous research also has the issue of inconsistency in the results. Some studies claimed that all the Dark Triad traits were correlated with cyberbullying while others have conflicting results. This research can overcome the limitations by conducting research in Malaysian public university students. Therefore, this study tested the following hypotheses:

- H1 There is a significant positive relationship between Machiavellianism and cyberbullying behaviour among university students.
- H2 There is a significant positive relationship between psychopathy and cyberbullying behaviour among university students.
- H3 There is a significant positive relationship between narcissism and cyberbullying behaviour among university students.

Effects of the Dark Triad Personality Traits on Cyberbullying Behaviour

A large body of past literature had elucidated the effects of personality traits on problematic social media uses such as cyberbullying. However, studies on the potential role of dark personalities were entirely overlooked (Kircaburun et al., 2018). But there are still some available studies that can give a good picture on how these dark traits are related to cyberbullying. A study done by Gibb and Devereux (2014) among 297 college students aimed to investigate cyberbullying behaviours among university samples. Most of the participants were non-Hispanic White (67.4%), female (61%), and heterosexual (91.9%). Cyberbullying Questionnaire was modified and completed by the participants (CBQ; Calvete et al., 2010). The Dark Triad short form scale, which measures Machiavellianism, subclinical narcissism, and subclinical psychopathy, was then completed by the participants. Cyberbullying behaviour was more likely reported by people who scored high on a subclinical test of

psychopathy. Cyberbully victims, men, and people with subclinical psychopathy also participated in a broader spectrum of cyberbully behaviour. The findings of their study showed that individuals that scored high in subclinical psychopathy were more inclined to engage in cyberbullying behaviour, hence this supported their hypothesis that psychopathy trait is related to cyberbullying. Meanwhile, the other two traits, Machiavellianism and narcissism were not significant predict cyberbullying. Another study by Goodboy and Martin (2015) also revealed that psychopathy emerged as the unique predictor of cyberbullying among 227 undergraduate students (104 male, 112 female, 11 sex not identified) from the United States of America. Their study used the Dirty Dozen scale (Jonason & Webster, 2010) to measure the Dark Triad personality and the Revised Adolescent Peer Relations Instrument (RAPRI) to measure the cyberbullying behaviour. In the same vein, a study by Pabian et al., (2015) conducted among 324 Belgian participants to study the effect of Dark Triad personality traits on cyber aggression also discovered Psychopathy as the only significant predictor of cyber aggression, which includes cyberbullying.

Furthermore, Safaria et al. (2020), that examines the relationship and the effects of Dark Triad personality on cyberbullying behaviour, had collected 2407 respondents from Indonesia. The study discovered a contradicted result from previous research in which Machiavellianism is the strongest predictor of cyberbullying behaviour, followed by Psychopathy and Narcissism. The instruments used in the study are the Short Dark triad (SD3) and a one-item cyberbullying scale. Hence, the finding of this study showed that there would be a significant positive effect of Machiavellianism on cyberbullying behaviour among university students.

Van Geel et al., (2017) researched to investigate the relationship between personality traits with traditional bullying and cyberbullying. The study included two personality models, the Big Five Model and the Dark Triad Model, with the addition of subclinical sadism. 1568 respondents are ranging in age from 16 to 21 years old, with 61.9% of them being female. The European Cyberbullying Intervention Project Questionnaire was used to assess cyberbullying (Del Rey et al., 2015). The Short Dark Triad Questionnaire (Jones & Paulhus, 2014) considers the presence of the dark triad. This study showed that sadism is a significant predictor of cyberbullying, while narcissism and psychopathy were only slightly substantial. Machiavellianism, on the other hand, was not significant. This study is in line with a study by Kircaburun et al., (2019) which found that Psychopathy and Sadism were the only traits that influence cyberbullying as a result showed that men with Sadistic traits are more inclined to engage in cyberbullying behaviour, while Psychopathy played a role in cyberbullying behaviour among women. The research involved 772 Turkish university students (280 male, 492 women) recruited through convenience sampling. These findings contradicted the earlier research by Goodboy and Martin (2015) and Gibb and Devereux (2014), which showed that only psychopathy was found to be a significant predictor. The past researchers concluded psychopathy was the sole trait related to cyberbullying. Hence, it is rational to note that in the model, psychopathy can be raised as the only predictor of cyberbullying.

Finally, it can be concluded that some researchers have substantiated that psychopathy is the sole predictor of cyberbullying behaviour out of all the Dark Triad traits (Goodboy & Martin, 2015; Gibb & Devereux, 2014) meanwhile another research showed Machiavellianism to be the strongest predictor of cyberbullying behaviour (Safaria et al., 2020). However, research that included the trait Sadism in the study had discovered varying results as it was asserted that psychopathy was shown to be only slightly significant predictor (Van Geel et al., 2017). Thus, it is important to conduct this research to bring a broader understanding of personality traits and cyberbullying behaviour among university students. Therefore, this study tests the following hypotheses regarding the influence of the Dark Triad personality traits on cyberbullying behaviour.

- H4: There is a significant positive effect of Machiavellianism on cyberbullying behaviour among university students.
- H5: There is a significant positive effect of psychopathy on cyberbullying behaviour among university students.
- H6: There is a significant positive effect of narcissism on cyberbullying behaviour among university students.

Research Framework

This research aims to study the effects of dark triad personality traits on cyberbullying behaviour among university students in Malaysia. This study utilised the Dark Triad Personality Model as the fundamental model for the study to measure the effects of personality traits on cyberbullying behaviour among Malaysian university students. The conceptual framework of this study is shown in Figure 1. This research used three sub-dimensions

of the Dark Triad Model, such as Narcissism, Machiavellianism, and Psychopathy as the predictor of the cyberbullying behaviour among university students in Malaysia.

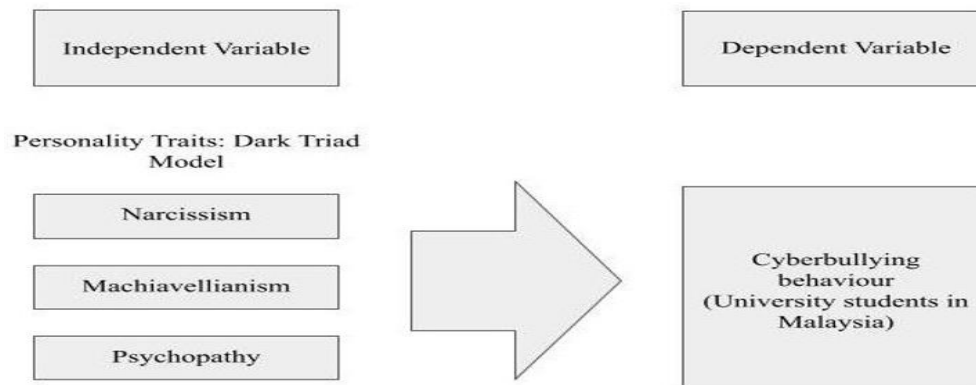


Figure 1. Conceptual framework of study

Method

Research Design

The research design is based on a quantitative approach using descriptive, correlational and non-experimental causal studies. This research utilised a cross-sectional design that enables the researcher to acquire a large amount of data at one point. The researcher used questionnaires to measure the variables of personality traits and cyberbullying behaviour as it is deemed the most suitable research design to collect specific and well-structured quantitative data for the data approach (Kumar, 2019). The data will be analysed using descriptive and inferential statistics.

Population and Sampling

The population of this study is university students in Malaysia. The targeted sample to represent the population data is obtained from public university students in Malaysia. The total number of students in public higher education institutions in Malaysia has reached around 706,550 students, which is significantly higher among females compared to male students (Hirschmann, 2021). Based on the Krejcie and Morgan table, the minimum sample size required for this study is around 384 respondents (Krejcie & Morgan, 1970). However, to maximise the response rate of the data collection, the targeted sample size decided for this research will be 400 public university students. Due to the wide range of the population and the difficulty to get the sampling frame of the population, this study utilised non-probability sampling, a convenience sampling method to select the respondent. The questionnaires were distributed online through WhatsApp, Twitter, Instagram and Facebook to reach the targeted sample.

Research Instrument

There are three sections in the questionnaire of this study. Section A is to obtain demographic information, that consists of 4 items, which are age, gender, race, and place of study. In Section B, to measure the variable of personality traits, which is utilised the 12-item Dirty Dozen Dark Triad Scale developed by Jonason and Webster (2010). This 12-item questionnaire is used to assess Machiavellianism, Psychopathy and Narcissism based on a 5-point Likert scale (1 = strongly disagree; 5 = strongly agree). All dimensions in the scale scored a Cronbach's Alpha of above .79. The items in this instrument were proved to have acceptable psychometric properties such as construct validity (Jonason & Luévano, 2013), and it is reliable over time and across several tests (Jonason & Webster, 2010). In Section C, the Cyberbullying Offending Scale (Patchin & Hinduja, 2015) measures the level of cyberbullying behaviour among the respondents. The questionnaire consists of 9-items that represent the most integral elements commonly included to define cyberbullying, which are repetition and harm. It only included five response options, on a scale of 0 (never) to 4 (many times). Researchers have revealed that the Cyberbullying Offending Scale has excellent psychometric properties, where the alpha coefficient of the original scale exceeded 0.89 and has a high construct validity and internal reliability

(Hamburger et al., 2011). The inter-item correlations for each item in the scales exhibited relatively high numbers, and it was statistically significant (Patchin & Hinduja, 2015).

Data Collection Procedure

The researcher used online platform to collect the data due to the ease of implementation (Kokkinos et al., 2016). The online tool “Google Form” is used to create online questionnaires in order to directly receive responses from respondents. It circulated through various social media and messaging apps such as WhatsApp, Twitter, Instagram and Facebook to acquire the data more easily as it is more widespread and cost-effective. Potential respondents may read the instructions and the confidentiality agreement stated in the online questionnaire. Hence, the respondents that choose to answer the questionnaire can be considered that they are already given informed consent. Aside from that, the researcher also asked fellow students from various public universities in Malaysia to spread the questionnaire to their friends and other students in their respective universities to participate in the study.

Data Analysis

This study uses descriptive and inferential statistics to analyse the data through SPSS Version 27. The descriptive will be used to analyse the demographic information and the overview of the study variables. Pearson correlation analysis and Multiple Linear Regression are used to test the hypothesis. Pearson Correlation analysis is conducted to determine the relationship between personality traits and cyberbullying behaviour. The value will be regarded as significant if the value is $p < 0.01$ for two tails, which means that the dimension is correlated to cyberbullying. Their r values will also be examined to identify the strength of their relationship. Multiple Linear Regression analysis is used to determine the effects of personality traits on cyberbullying. It is suggested from previous research that Multiple Regression should be conducted in addition to correlations when studying the influences of Dark Personality due to the common core they share (Furnham et al., 2013). This is calculated by analysing the β value in the standardised coefficient table of each personality dimension.

Results and Discussion

Demographic Profile of Respondents

A total of 400 online questionnaire responses were received from public university students all over Malaysia. The response rate for this study is 100%, as the target number of samples is precisely 400. All data obtained from the students were used in the data analysis. Table 4.1 presents the demographic information of the respondents in this study. The results indicated that most of the respondents were female students, with 283 (70.8%) and only 117 male students (29.3%) participated in the study. Most respondents are aged between 18-22 years (70.5%) followed by 110 students aged 23-37 years (27.5%). Students aged 28-32 and above 33 years old have the same value, only 4 students (1.0%). Most of the respondents are of Malay ethnicity, with a total of 336 students (84.0%), 39 are Chinese (9.8%), 9 are Indians (2.3%), 8 are Bumiputera Sabah (2.0%), 3 are Bumiputera Sarawak (0.8%), and 5 respondents answered others (1.3%). Most respondents are from UiTM with 121 students (30.3%), followed by UTM with 115 students (28.7%), UM with 33 students (8.3%), and UMT with 24 students (6.0%) and the rest of the universities have below than 5% response rate.

Prevalence of Cyberbullying Behaviour among University Students

The first objective of this study is to examine the prevalence of cyberbullying among undergraduate students in Malaysia. Table 4.1 shows the level of cyberbullying behaviour among the respondents. The level of cyberbullying behaviour is identified through the 9-item Dirty Dozen scale questionnaire, which consists of a 5-point Likert scale of 0 (never) to 4 (many times). Based on Table 4.1, the level of cyberbullying behaviour among university students is low as the overall mean for the variable is 0.35 (SD = 0.622). The highest mean score out of all the items is seen to be Item-5, which is spreading rumours about someone online (M=0.58, SD=0.993).

Meanwhile, the lowest mean score is Item-8, which relates to creating a mean or hurtful web page about someone (M=0.16, SD=0.588). However, it can be observed that the mean score for each item is in the low-

level range as all of them are below 1.33. Most university students (93.8%) have a low level of cyberbullying behaviour, while 4.5 per cent students scored moderate, followed by 1.8 per cent with high cyberbullying behaviour.

Table 4.1. Descriptive analysis of items for dimension cyberbullying behaviour

No.	Item	N f (%)	O f (%)	AFT f (%)	ST f (%)	MT f (%)	Mean	S.D.
1.	I cyberbullied others.	303 (75.8)	53 (13.3)	33 (8.3)	5 (1.3)	6 (1.5)	0.40	0.813
2.	I posted mean or hurtful comments about someone online.	301 (75.3)	53 (13.3)	36 (9.0)	5 (1.3)	5 (1.3)	0.40	0.804
3.	I posted a mean or hurtful picture online of someone.	308 (77.0)	51 (12.8)	27 (6.8)	10 (2.5)	4 (1.0)	0.38	0.801
4.	I posted a mean or hurtful video online of someone.	306 (76.5)	49 (12.3)	27 (6.8)	11 (2.8)	7 (1.8)	0.41	0.868
5.	I spread rumours about someone online.	272 (68.0)	59 (14.8)	43 (10.8)	17 (4.3)	9 (2.3)	0.58	0.993
6.	I threatened to hurt someone online.	346 (86.5)	26 (6.5)	13 (3.3)	9 (2.3)	6 (1.5)	0.26	0.757
7.	I threatened to hurt someone through a cell phone text message.	339 (84.8)	29 (7.2)	20 (5.0)	7 (1.8)	5 (1.3)	0.28	0.745
8.	I created a mean or hurtful web page about someone.	364 (91.0)	20 (5.0)	6 (1.5)	8 (2.0)	2 (0.5)	0.16	0.588
9.	I pretended to be someone else online and acted in a way that was mean or hurtful to them.	338 (84.5)	30 (7.5)	16 (4.0)	10 (2.5)	6 (1.5)	0.29	0.786
Overall Mean							0.35	0.622

*Note: 5-Likert scale is used, where N=Never, O=Once, AFT=A Few Times, ST=Several Times, MT=Many Times, f=frequency, %=percentage, S.D.=standard deviation

The result of descriptive analysis indicated that the overall level of cyberbullying behaviour is low, as 93.8% of university students scored low level in cyberbullying behaviour, while only 7.3% scored moderate to a high level. However, despite the low level of cyberbullying behaviour, more than half of the participants (55.8%) responded that they had acted in at least one of the cyberbullying behaviours specified, whereas 44.3% reported that they had not engaged in any of them. This result raises a concern about cyberbullying behaviour among university students, which justifies the need to expand and focus our research on this population.

The finding of the present study is consistent with previous research, in which MacDonald and Roberts-Pittman (2010) stated that only 8.6% of American college students in their study, reported cyberbullying someone else. Meanwhile, a study among 1,263 Malaysian young adults by Balakrishnan and Fernandez (2018) found that 20.3% of their samples reported cyberbullying, which is quite comparable to the result of the present study. Hence, there is evidence that cyberbullying behaviour also happens beyond school years, even at a low level. It is important to consider the overall level of cyberbullying behaviour to avoid being too simplistic by just considering whether or not students engaged in cyberbullying. This is because cyberbullying does not follow any known patterns. Individuals may have simply participated in a single act of cyberbullying behaviour and therefore been mislabelled as 'cyberbully,' even though one incident of cyberbullying does not indicate one is a cyberbully, as has been stated (Slonje et al., 2013).

There are a few possible reasons for this finding. One of the plausible reasons is from previous research, that it has been stated that Malaysian university students showed low intention to engage in cyberbullying due to being subjected to negative social pressure from their friends and family towards the behaviour (Shaikh et al., 2021). Besides that, students in higher education settings do not tolerate cyberbullying as easily, since they tend to express more empathy towards the victims (Watts et al., 2017). Hence, this explains the low level of cyberbullying behaviour among university students in this present study.

Aside from that, according to Baldasare et al. (2012), participants in their study expressed reluctance to label their behaviour as cyberbullying, as they claimed that they were 'just joking' and tend to associate the term 'cyberbullying' with adolescent behaviour. Participants may also refuse to admit to the negative behaviour due to their tendency to look at themselves in higher regard. Thus, the low rates of cyberbullying obtained in the present and prior studies were most likely due to reporting bias, as participants were either reluctant to classify themselves as cyberbullies or perceived the behaviour as unfit to the definition of cyberbullying.

Types of Dark Triad Personality among University Students

The second objective of this study is to determine the Dark Triad personality types among university students. The descriptive statistics and prevalence for each Dark Triad personality trait (Machiavellianism, Psychopathy, Narcissism) are presented. Table 4.2 shows the descriptive statistics of Machiavellianism. The overall mean of Machiavellianism is 2.50 (SD = 0.91), which can be considered moderate. More students scored low in Machiavellianism (45.5%) compared to the moderate level (44.3%). Only 10.3 per cent of university students scored high in Machiavellianism. As for the Psychopathy traits, the overall mean for Psychopathy is 2.11 (SD = 0.84), which is considered low among university students. Most of the students scored low in Psychopathy (66.3%). While 115 university students (28.7%) scored moderate, followed by 20 students that scored high (5.0%) in Psychopathy. Next, for the dimension of Narcissism in the Dark Triad personality traits, the overall level of Narcissism among university students is moderate with a score of 2.84 (SD = 1.03), as all the items have a mean score of moderate level.

Table 4.2. Types of dark triad personality

Variables	Mean	S.D.	Level
Machiavellianism	2.50	0.91	Moderate
Psychopathy	2.11	0.84	Low
Narcissism	2.84	0.50	Moderate

Mean value (Low = 1.00 - 2.33; Moderate = 2.34 - 3.67; High = 3.68 - 5.00)

The findings indicated that Narcissism emerged as the most prevalent trait among university students. This is because 99 university students (24.8%) have a high level of Narcissism, which is higher compared to the other two Dark Traits, Machiavellianism (10.3%) and Psychopathy (5%). The overall level of Narcissism and Machiavellianism is moderate meanwhile, the level of Psychopathy among university students is low. The findings of previous studies also showed a similar trend in which the level of Narcissism is the highest in the Dark Triad personality, followed by Machiavellianism and Psychopathy among university students in Malaysia (Mumin, 2021). Vedel and Thomsen (2017) also presented the same pattern in their findings, as their university student samples also scored Narcissism as the highest, then Machiavellianism and Psychopathy. Thus, it can be observed that the findings for the Dark Triad personality traits of the present research align with the past studies.

This finding would probably be because the traits of Psychopathy and Machiavellianism were known to be the "darkest" among the Dark Triad (Rauthmann & Kolar, 2012), which can result in a lower prevalence rate compared to the trait Narcissism. Furthermore, it would also make sense that respondents' answers to the questionnaires were influenced by their social desirability as it is a self-administered questionnaire. Thus, participants would be more comfortable admitting their Narcissistic traits than Machiavellianism and Psychopathic traits.

Relationship between Dark Triad Personality Traits and Cyberbullying Behaviour.

The third objective of this study is to identify the relationship between the Dark Triad personality traits and cyberbullying behaviour among university students. Table 4.3 shows the relationship between Dark Triad personality traits and cyberbullying behaviour. The findings indicated a significant positive relationship between the Dark Triad personality traits and cyberbullying behaviour among university students.

The findings of the present study showed that there is a significant positive relationship between the Dark Triad personality traits and cyberbullying behaviour among university students. Of all the Dark Triad traits, Machiavellianism has the highest correlation to cyberbullying behaviour ($r = 0.417, p < 0.001$), indicating a moderate correlation. Meanwhile, Psychopathy ($r = 0.376, p < 0.001$) and Narcissism ($r = 0.274, p < 0.001$) both have significant weak correlation with cyberbullying behaviour (Dancey & Reidy, 2007). Hence, the results indicated that Hypothesis 1, Hypothesis 2 and Hypothesis 3 are accepted.

The result of this present study can be supported by various past research, in which they reported consistent results. Goodboy & Martin (2015) examined the association between the dark triad personality traits and self-reported cyberbullying behaviours across a body of research. They found that all three Dark Triad traits positively correlate to cyberbullying behaviour among college students. Previous studies had discovered a positive and significant relationship between personality and cyberbullying behaviour, in which they incorporated the Dark Triad personality as the personality construct of their study (Shaikh et al., 2021). Research that aims to identify bullying trends within Twitter by referring to the relationship between personality traits and cyberbullying also found that Psychopathy is the most significant trait that can be used to detect cyberbullies online (Balakrishnan et al., 2019). The result of the study was consistent and can be supported by much previous research that reported Psychopathy to have a significant correlation to cyberbullying. Even though there are studies that support the present research, there were also a few past research that contradicts the current findings. Kircaburun et al., (2018) studied the direct and indirect associations of the Dark Tetrad traits with Problematic Social Media Use (PSMU), such as cyberbullying. The results of the study reported that only Machiavellianism and Psychopathy were directly associated with cyberbullying behaviour. Besides that, A study also found that all the three Dark Triad traits have a positive correlation with cyberbullying behaviour, however, the correlation between them was classified as weak correlation (Van Geel et al., 2017).

The reason for these conflicting findings may be due to the fact that the study conducted has a different geo-location, which could affect the findings mainly if the instrument used was translated into a foreign language. Besides that, some of the research also used other instruments to measure the Dark Triad traits, as some used the Short Dark Triad questionnaire instead of the Dirty Dozen questionnaire. Since the questionnaires were developed based on different conceptual definitions of the Dark Triad personality traits, the measuring system of the questionnaire can cause differing results. However, as for the studies that have consistent findings with the present research, the result is most probably due to personality being the driving component that triggers irrelevant thinking, which tends to boost engagement and attracts people to cyberbullying (Kubiszewski et al., 2015). Aside from that, the finding could also be because of the malevolent nature of each Dark Triad personality trait, which is deemed as probable to be correlated with cyberbullying due to the expected negative core they share.

Table 4.3. Relationship between dark triad personality traits and cyberbullying behaviour

Dimension	Cyberbullying Behaviour	
	r	p
Machiavellianism	0.417**	<0.001
Psychopathy	0.376**	<0.001
Narcissism	0.274**	<0.001

Note: **. Correlation is significant at the 0.01 level (2-tailed)

Effects of the Dark Triad Personality Traits on Cyberbullying Behaviour

The last objective of the present study is to identify the effects of the Dark Triad personality traits on cyberbullying behaviour among university students. The Variance Inflation Factor (VIF) value for each dimension of the Dark Triad personality trait is all lower than 2.5, thus there is no issue of multicollinearity among the independent variables (Johnston et al., 2018). The regression analysis findings in Table 4.4 indicated that the Dark Triad personality traits significantly influenced cyberbullying behaviour. The trait of Machiavellianism ($\beta = 0.28$, $p < 0.01$) and Psychopathy ($\beta = 0.223$, $p < 0.01$) have significant positive effects on cyberbullying behaviour among university students, supporting Hypotheses 4 and 5. However, Narcissism did not significantly affect cyberbullying behaviour of university students ($\beta = 0.07$, $p > 0.01$), Hence, the finding did not support Hypothesis 6. The regression analysis indicated that Machiavellianism and Psychopathy both significantly positively affect cyberbullying behaviour. However, the Narcissism trait does not significantly influence cyberbullying behaviour of university students.

Table 4.4. Multiple regression analysis between the dark triad traits and cyberbullying behaviour

Variables	Cyberbullying Behaviour		
	β	P-value	VIF
Machiavellianism	0.280	<0.001	1.460
Psychopathy	0.223	<0.001	1.297
Narcissism	0.076	0.132	1.283

Note: $R^2 = 0.221$, $F = 37.464$, $P\text{-value} = <0.001$

The current study found that Machiavellianism was the most influential predictor of cyberbullying and followed by Psychopathy. The findings are consistent with the results of the previous study by Safaria et al. (2020) that was conducted in Indonesia. As stated by Paulhus and Williams (2002), Machiavellianism is a personality characterised by the externalisation of blame, emotional coldness, and interpersonal strategies to manipulate others for personal gain. Barlow et al., (2010) stated that this Machiavellianism trait tends to see the world cynically with distrust by using others and exploit the weaknesses of others, resent intense emotional involvement with others, and have been found to lack empathy. This finding is consistent with a study by Kircaburun et al., (2018) stated Machiavellianistic traits would move past moral standards, and an absence of guilt can be the unique determinant of antisocial online behaviour.

Gibb and Devereux (2014), as well as Goodboy and Martin (2015), also found that psychopathy is the only significant predictor of cyberbullying behaviour, while Machiavellianism and Narcissism did not significantly predict cyberbullying. Hence, this showed that past researchers also supported the Psychopathy trait as one of the significant predictors of cyberbullying behaviour. Another study by Van Geel et al., (2017) showed that the Psychopathy and Narcissism traits are only slightly important predicts cyberbullying behaviour, meanwhile, Machiavellianism is not necessary. This is probably because Psychopathy was a substantial predictor of cyberbullying, which is consistent with a study about "internet trolling" (Buckels et al., 2014), where psychopathy was shown to be a predictor of trolling, albeit with a lesser impact size than sadism. Psychopathic individuals tend to perform destructive behaviour patterns in interpersonal relationships, using skits and warmth to manipulate others to profit themselves. According to Hare (1999), a psychopath also tends to have high impulsivity and a disposition toward reckless, inappropriate, immoral, or even violent conduct. Meanwhile et al., (2008) mentioned that psychopath tends to lack empathy and do not feel guilty for their destructive behaviour toward others. This is because people with high levels of psychopathy are more aggressive and less sympathetic than others, which are all the traits of a cyberbully (Ang et al., 2011). The immediate thrill of realising that they are possibly harming another person may motivate these people's actions and encourage their proclivity to engage in similar acts in the future.

However, in the present study, Narcissism does not influence cyberbullying behaviour among undergraduate students in Malaysia. According to Kircaburun et al. (2018), narcissism was not associated with cyberbullying, among other attributes. It is possible that after psychopathy is considered, narcissism's impact on interpersonal violence fades away. One of the plausible reasons for this finding is that perhaps the narcissistic trait involves a pattern of self-centred, arrogant thinking and behaviour, a lack of empathy and consideration for other people, and an excessive need for admiration. Thus, this characteristic is only focused on themselves rather than others.

Implication of Study

The present research contributes to a greater understanding of the following ways to grasp better and minimise cyberbullying. First, Dark Triad personality characteristics will be used to investigate previously understudied cyberbullying behaviour. Second, only a few researchers have recruited university students as sample participants. Most of the research on cyberbullying has been conducted on pupils in schools. Even studies focusing on university students only covered a small aspect of cyberbullying. As a result, this study contributes to the recent findings by identifying the personality attributes contributing to cyberbullying among Malaysian university students. This study proposed that two traits of the Dark Triad personality, which are Machiavellianism and psychopath, significantly contributed to the cyberbullying behaviors among undergraduate students from a Malaysian perspective.

This research provides empirical evidence to the Malaysian government, students, IT practitioners, psychologists, university management, parents, and other stakeholders. It will enable them better to understand personal factors' influence on cyberbullying behaviour. The research shows the influence of the Dark Triad personality traits that lead to cyberbullying behaviour among Malaysian university students. This study also aids Malaysia's relevant authorities in developing effective methods to counteract cyberbullying, such as mentoring, role-playing, and legal action to raise awareness of the seriousness of cyberbullying. One of the most critical components in reducing cyberbullying is raising awareness. Educating students about cyberbullying is essential to any effective bullying prevention strategy. Campbell (2005) also says that promoting student understanding can help prevent cyberbullying. Moreover, an individual's level of understanding of cyberbullying can significantly impact their actions. Individuals who have a better awareness of cyberbullying and its effects on victims are less likely to engage in this conduct than those who do not (Lee & Shin, 2017).

Furthermore, to prevent immoral conduct such as cyberbullying in today's digital age, the primary step is to identify the factors that influence such behaviour. It has been proposed that personality traits are crucial explanatory determinants for cyberbullying behaviour, which includes victimisation and aggressiveness (Fang et al., 2020). Policymakers can figure out ways to decrease and manage the negative effects of technology in society by focusing on the factors of personality traits. The present research can provide knowledge on the influence of Dark Triad personality traits, which can be of practical use by applying it to detect cyberbullies online as previously done by Balakrishnan et al. (2019). The previous research incorporates the Dark Triad features in a machine-learning algorithm to detect cyberbullying among Twitter communities. Thus, the finding of this present research can be one of the reasonable attempts for policymakers to curb cyberbullying issues by seeing them online and taking legal actions against them.

The outcomes of this research are likely to help Malaysia achieve Sustainable Development Goal 16: Peace, justice, and strong institutions. Understanding the social variables connected to cyberbullying will also benefit Malaysia's National Transformation 2050 (TN50). This, however, will only have a short-term effect on society. In the long run, parents, universities, and the government should establish rules or policies to minimise cyberbullying by considering the findings of this research. This will assist families and universities in fostering an environment where university students find it challenging to engage in cyberbullying.

Limitation and Recommendations

When analysing the results, some limitations need to be addressed. To begin with, the collection of data was convenient, which caused the inability to generalise the findings of the study to the population as a whole. This engendered most of the respondents in the present study to be female graduates, which limits the generalisability of the findings. Secondly, self-report measures risk eliciting socially desired responses as they tend to look at themselves in higher regard. Thirdly, the present study's limitation is that it only looked at a limited set of behaviours and did not account for all conceivable cyberbullying activities. Individuals who stated that they did not participate in any of these behaviours may have acted in other behaviours that would fit the definitional criteria for cyberbullying, such as harassing someone on Instagram. Lastly, previous studies discovered another dark trait, which is Sadism (tendency to find joy in the suffering of others) that can be incorporated into the Dark Triad to become the Dark Tetrad personality traits. According to Van Geel et al. (2017), Sadism appears to influence cyberbullying behaviour. However, the present study did not include Sadism in the cyberbullying research.

More study is needed to delve deeper into the influence of the Dark Triad personality traits on cyberbullying. Continued research on the role of personality in increasing cyberbullying could aid in developing preventative and intervention initiatives such as anti-bullying educational programmes for parents, educators, and students to help lessen or remove the problem. There are several suggestions that can be listed for future research. Firstly, in order to attempt a generalisation of the findings, future studies may use random sampling to conduct research to increase the accuracy of representation due to the lack of bias. Secondly, future studies could improve by incorporating additional data, such as from interviews, to avoid the risk of biased responses. Thirdly, as new technologies are produced, future studies should continue to study the conceivable spectrum of cyberbullying behaviours and disruptive behaviours associated with these new technologies as it would further characterise and widen the profile of people who engage in cyberbullying behaviour. Last but not least, it is recommended that future studies investigate the trait Sadism, by replicating the same methodology of the present research and using the model of Dark Tetrad personality traits.

Conclusion

In conclusion, cyberbullying among youth has become a great issue today. Cyberbullying can have egregious effects on its victims in which it can lead students to attempt and commit suicide. Prior study has centred on high school students, with university students almost entirely neglected. As a result, the focus of this research has been on further investigating and evaluating cyberbullying by identifying factors that affect university students.

Investigating personality factors related to cyberbullying behaviour could give significant knowledge to researchers, universities, policymakers, the Malaysian government, and practitioners. This research showed the psychological element, such as the Dark Triad personality traits, could drive Malaysian public university students to engage in cyberbullying. This study used the Dark Triad personality trait model to examine the

cyberbullying behaviour of Malaysian university students. The findings obtained from the study can be used as criteria to predict cyberbullying behaviour.

This study tested Dark Triad personality factors as antecedents of Malaysian students' attitudes. The data analysis results suggest that all three Dark Triad personalities (Machiavellianism, Narcissism, Psychopathy) are significantly correlated to cyberbullying behaviour. This study also reports that the level of cyberbullying behaviour among university students is low. The study confirms that Machiavellianism and Psychopathy can lead to the development of cyberbullying attitudes of Malaysian undergraduates. Meanwhile, the Narcissism trait is not an antecedence of cyberbullying behaviour. Therefore, it can be concluded that most of the findings are in line with empirical shreds of evidence from the literature. The Dark Triad personality traits have given an exciting insight into cyberbullying behaviour among Malaysian undergraduate students. It eventually helped this study to highlight the relationship and the effects between toxic cyberbullying behaviour and personality traits.

Scientific Ethics Declaration

The authors declare that the scientific ethical and legal responsibility of this article published in EPESS journal belongs to the authors.

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Parent Groups Established with Instant Messaging Applications for Math Lessons During Covid-19: Parents' Opinions

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Abstract: It is known that communication between parents and instructors has decreased significantly due to the lockdowns and distance education implemented due to Covid19. This shortcoming is being attempted to be remedied via instant messaging applications. Therefore, the purpose of this study is to learn what parents' opinions are of parent groups that math teachers have created using online instant messaging applications like WhatsApp, Bip, Telegram, etc. during the Covid-19 pandemic. Semi-structured interviews were used to collect data for the study, which was planned as a case study, and content analysis was used to analyze the data. Five male and five female parents of secondary school-aged children make up the study group, they were chosen using the criteria sampling method. The parent groups created using instant messaging applications are commonly used for announcements, homework, homework controls, the distribution of course materials, video URLs, reminders, and the delivery of lesson URLs and passwords for online courses. Students in certain groups also sent mathematics questions to the parent groups, where the problems were answered by the students' teachers. Although it is clear that these groups are helpful for parents in general, there are some drawbacks, including teachers' loss of interest in the groups towards the end of the school year, concerns about security of personal information, late-night messages, and unnecessary talks.

Keywords: WhatsApp, Parent groups, Mathematic lesson, Instant messaging applications

Introduction

The Covid-19 outbreak, which has become a pandemic, has affected not only the field of health but also the economy, education and social fields. The rapid spread of Covid-19, which was first seen in Wuhan, China in December 2019, has caused social troubles and concerns in many countries of the world (Karatepe et al., 2020). Therefore, many countries have temporarily suspended face-to-face education and accelerated distance education activities. In addition to existing applications to ensure communication with students and parents, live lessons and online courses have been carried out by educational institutions in almost every country (Chang & Satako, 2020). During this process, elementary, secondary and high schools in Turkey continued teaching activities through TRT EBA TV channels and Education Information Network (EBA). Not only is it limited to TV channels, but also synchronous education opportunities, in which teachers and students interact simultaneously, have increased. In this way, to provide effective education and training, Turkey, like most countries, has adopted digital technology and carried out the distance education process.

However, it is known that this situation weakens communication between parents and teachers. Creating chains of home and school life and ensuring continuity in education is achieved with successful school-family cooperation (Çağdaş & Seçer, 2011). However, studies have revealed that family involvement is important and contributes to children, educators, families and schools at all levels (Atabey & Tezel-Şahin, 2011; Çakmak, 2010; Özdamlı & Yıldız, 2014; Wahyuni & Febianti, 2019; Wasserman & Zwebner, 2017). According to

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Hamlin and Flessa (2018), the academic success of children with family members who communicate regularly with the school and support their child based on this communication is higher. This shows the importance of family involvement. However, this requires an effective link between teachers and parents.

Creating chains of home and school life and ensuring continuity in education is achieved with successful school-family cooperation (Çağdaş & Seçer, 2011). Schools use many different ways to maintain communication between parents and teachers. Techniques such as phone calls, newsletters, correspondence, photographs, booklets, school visits, notice boards, tape and video recordings, brochures, newsletters, portfolio files, meetings, and arrival and departure times are the most common (Aktaş-Arnas & Yaşar, 2011; Çağdaş & Seçer, 2011; Çalışkan and Ayık, 2015; Temel et al., 2010; Tezel-Şahin & Özyürek, 2016; Tuncer et al, 2018). However, due to the pandemic, the fact that we have switched to distance education and the lockdowns have inevitably caused old habits to be replaced by new methods and techniques (Balcı, 2017). In the last few years, thanks to the diversification and expansion of the use of new technologies, communication channels between teachers and parents have increased through Internet-based computer or smartphone applications (Thompson, 2009). Researchers state that new technologies provide communication between parents and teachers and this will continue increasingly in the future. (Avcı, 2020; Balcı & Tezel-Şahin, 2018; Wasserman & Zwebner, 2017). With the help of instant messaging applications such as WhatsApp, Telegram, and Bip, uninterrupted and fast communication can be achieved (Shechtman & Boucherian, 2015). The importance of these applications has increased with the pandemic.

Since instant messaging applications allow direct messaging anytime and anywhere, using these applications significantly increases mutual accessibility between parents and teachers (Ayçiçek, 2019; Shechtman & Boucherian, 2015). In the literature (Avcı, 2020; Balcı & Tezel-Şahin, 2018; Sanders, 2016; Wasserman & Zwebner, 2017), it is possible to find many studies examining the intended use of instant messaging applications in terms of teachers. However, studies examining the opinions of families, which is another side of the use of instant messaging applications, are less common (Tuncer, 2021). In some studies, it is emphasized that it is important to investigate the use of these applications, which are stated to have significant disadvantages as well as advantages, in terms of putting forward the necessary recommendations for proper use (Avcı, 2020; Bouhnik et al., 2014). This study is carried out to reveal reasons for using instant messaging groups for mathematics lessons in families' communication with their children's teachers, the advantages and disadvantages of them and the opinions of parents on this practice.

Method

In this study, one of the qualitative research methods, the case study, was used. In the case study, the fact or event that the researcher cannot directly control is examined in depth by focusing on the questions of how and why (Yıldırım & Şimşek, 2018). This study aims to reveal the reflections of parents' groups created for mathematics lessons through instant messaging applications on the parents and how they are evaluated by the parents during the pandemic process.

Study Group

The study group consists of five male and five female participants selected by criterion sampling method. All cases meeting a predetermined set of criteria are studied. The criterion or criteria can be prepared by the researcher or a previously created criteria list can be used (Patton, 2005). The criterion used in the selection of the participants is that the children of the participants go to secondary school and are included in the parent groups created for the mathematics course through instant messaging applications.

Data Collection Tools and Data Collection

The qualitative data obtained in this study were collected with the "semi-structured interview". The semi-structured interview technique is relatively more flexible than the structured interview method. In addition to the certain level of standardization this method provides, it can be seen as more suitable for educational research due to its flexibility (Ekiz, 2003). Thus, it was aimed that the participants would express their opinions independently and without limitations.

A semi-structured interview protocol was prepared by the researchers after the literature review to determine the opinions of the parents participating in the study on the usability of the groups created in instant messaging applications. During the development of the qualitative data collection tool, two separate experts (Psychological Counseling and Guidance specialist, Mathematics Education specialist) were asked to examine the interview form. Also, the appropriateness of the language used in the form was edited according to the views of a Turkish Education field expert. Then, a pilot study was conducted with two participants and the feedback obtained from the semi-structured interview form designed as a measurement tool with the experts was compared. After the edits, its suitability in terms of language was reconsidered and the necessary arrangements were made by taking the opinions of the experts in the field of Turkish Teaching. This phase was used to structure the interview questions and was not presented as a finding. Then, an average of 30-minute interviews were held with the parents voluntarily.

Data Analysis

The data collected as a result of "semi-structured interviews" were analyzed with the "content analysis" method. Content analysis is the process of arranging and interpreting the concepts and relationships that can understandably explain the collected qualitative data within the framework of codes and themes (Yıldırım & Şimşek, 2013). The interviews recorded in the first stage of the analysis process were transferred to an Office program. The diversification method was adopted in the data analysis process. First, the data was coded with open coding and a draft code tree was created. Then the coding made by two independent researchers and the coding made by the researchers who carried out this study were compared and necessary corrections were made by discussing the conflicting coding. According to the Miles and Huberman (1994) formula, the consistency rate between the coders was found to be 84%. In the analysis process, explanations were made by giving a code number (P1, P2, ...) to the participants whose opinions were taken, so that the names were hidden in the semi-structured interview records considering ethical principles. Then, direct quotations were made to convey the views of the participants, the code of the participant was specified, and the interview notes were given in quotation marks. In the last stage, the data were interpreted considering the literature and the quantitative data of the study.

Results and Discussion

The categories obtained as a result of the content analysis categories related to codes, frequencies of these codes and the verbatim quotations from parents about these categories are given below. Also, the participant codes given in the parentheses after the quotations indicate which participant stated the note.

Genders of the Participants in the Groups

Table 1 shows which parents are included in the groups created with instant messaging applications.

Table 1. Parents in the groups

Group participants	f	Quotations
Only mother	5	“As our teacher is a woman, woman-to-woman communication is easier.” (P2) “I am the only one in the group because my husband is working.” (P6)
Only father	2	“My wife doesn't have a smartphone so only I participate.” (P7) “I don't want anyone else to have my wife's phone number.” (P3)
Both mother and father	3	“We're both in the groups so that if one of us skips a message, the other reads it.” (P8) “Our teacher specifically asked us both to be in the group.” (P5)

Five of the parents who participated in the study stated that there were only mothers in the groups, while two parents stated that only the father was involved. Three of the participants stated that both parents were in the group together. In groups with only mothers, mothers stated that women can communicate better because the teacher is a woman and they are busy because their husbands are working. However, they emphasized that mothers are generally included in the groups and fathers are busy. Only one of the men in the fathers' groups stated that his wife did not have a mobile phone, and the other stated that he did not want others to see his wife's

mobile phone number. In the groups in which both parents were involved, the participants stated that the teacher wanted both the mother and the father to be present and that this was a more appropriate way to follow the child together.

Instant Messaging Applications Used

The results regarding the applications in which the mathematics teachers of the children of the participants set up the groups are presented in Table 2.

Table 2. Instant messaging applications used

Applications	f	Quotations
WhatsApp	7	"I'm quite happy that I already have the application on my phone, so we didn't need to install a second application." (P4)
Telegram	1	"Although I am glad we are using Telegram after rumours about WhatsApp, I would prefer a native software." (P5)
Bip	2	"Better having a local application, I feel our data is safe." (P1)

Participants mostly use the WhatsApp application (n=7). They stated that the reason is that the WhatsApp application is already so common. Two users stated that they are happy to use the Bip application because it is local, and one user stated that they use the Telegram application, but would prefer to use a local application instead.

The Most Common Intended Purpose of Groups

The most common intended purpose of groups is given in Table 3 according to the opinions of the participants.

Table 3. The most common intended purpose of groups

Category	Code	f	Quotations
The most common intended purpose of groups	Announcements	8	"Announcements are made about the school or the extra lessons" (P1)
			"Since our teacher is also a classroom teacher, she also makes announcements about the class" (P2)
	Homework checks	6	"The teacher sends the assignments from the group." (P4)
			"We take a picture of our child's homework and send it to the teacher." (P5)
	Course materials	2	"Teacher sends us lesson notes and questions in pdf" (P9)
			"Our teacher shares YouTube URLs of some topics with us" (P3)
	Video URLs	6	"Reminders about the lesson are sent from the group." (P10)
			"URLs are sent to the group before each lesson." (P5)
	Reminders	9	"Sometimes, when EBA (Educational Information Network) is busy, the password is sent from here." (P6)

In the analysis of Table 3, it is understood that the groups mostly use the URLs and passwords of online lessons, announcements, reminders and assignments. Also, it is understood that assignments are made in groups and homework control is carried out in some groups. In very few groups, course materials and video URLs related to the courses were shared.

Positive Aspects of the Groups

The positive aspects of the groups created for the mathematics lesson are given in Table 4 according to the opinions of the participants.

Table 4. Positive aspects of the groups

Category	Code	f	Quotations
Positive aspects of the groups	Supervision	4	“My child completes his homework because the teacher checks them.” (P3)
			“The math teacher gives feedback on the students who do not attend the classes” (P4)
	Question-solving	4	“My child can send the questions he cannot solve to the group and learn the solution immediately.” (P2)
			“We can also see the math questions other kids send and their solutions.” (P6)
	Fast communication	7	“We can reach the teacher immediately during the day.” (P2)
Being free	5	“It is very good that it is not paid like a phone call or an SMS.” (P8)	
Motivation	3	“Our teacher always motivates our children” (P10)	

According to Table 4, it has been understood that the dominant factor in terms of the positive aspects of the groups is to provide fast communication. Also, it is understood that the applications are free, the mathematics teachers inform the parents of the students who do not attend the lesson, they supervise the students by checking homework and they solve the mathematics questions in groups. Thus, students can both find answers to their questions and see the solutions to the questions asked by other students. Also, it is understood that mathematics teachers use groups for motivating children.

Negative Aspects

The negative aspects of the groups created for the mathematics lesson are given in Table 5 according to the opinions of the participants.

Table 5. Negative aspects of the groups

Category	Code	f	Quotations
Negative aspects of the groups	Unnecessary conversations	5	“Sometimes there are unnecessary discussions.” (P7)
			“It is unnecessary to discuss personal matters in a group and expose everyone to these messages.” (P3)
	Teacher's loss of interest	2	“Towards the end of the year, our teacher started not responding to messages. I understand they're tired, but if this group was created, they should do their part.” (P4)
	Messages sent late	7	“Announcements in the middle of the night are annoying.” (P5)
Security concerns	4	“It is quite annoying to share personal information in groups” (P6) “I wish that no parent could see my phone number” (P8)	

In the analysis of Table 5, it is understood that the most notable negative aspect of the groups is the late-hour messages. Unnecessary discussions or discussing personal matters in groups are also among the negative aspects. Sharing personal information in groups and that group members can see the phone numbers of other group members also cause security concerns. Some participants stated that towards the end of the year, teachers lost interest in groups.

Conclusion

In this study, notable results were obtained in the light of the purposes of instant messaging groups in the communication of families with mathematics teachers, the advantages and disadvantages of them and the opinions of parents on this matter. It is seen that usually mothers participate in the class groups created to communicate with the teachers. It can be said that the reason for this situation is that men are not at home due to their workload. This is also consistent with the results of Tuncer (2021). The gender roles in Turkish society are quite different (Dedeoğlu, 2012). It is important that both parents are included in the groups, and it is clear that a

family participation process carried out in this way will also have positive results on students' performance (Mayangsari & Aprianti, 2017). Also, parents and teachers, as two common partners of education, have to work together to carry out the best education.

Another result of the study is about the instant messaging applications used. While the WhatsApp application is mostly used in the classes, Bip and Telegram applications follow. The main reason for this may be the prevalence of these applications (CNN TÜRK, 2021). However, most parents think that it would be safer to use local applications. According to another result of the study, groups are mostly used to send announcements, homework, homework checks, course materials, video URLs, reminders, and online lesson URLs and passwords. Avcı (2020); Balcı and Tezel-Şahin (2018), Duru and Çöğmen (2017), Tuncer (2021), and Wasserman and Zwebner (2017) have also reached consistent results. However, the use of parent groups to send online lesson URLs and passwords, which are not included in these studies, is an understandable situation since the lessons are instructed online during the pandemic.

In the consideration of the results of the study, it is understood that the positive aspects of the parent groups are the supervision of the students, the solving of the mathematics questions in the groups, the ability to communicate quickly with the mathematics teacher, the free applications and the motivation of the students. Balcı and Tezel-Şahin (2016) and Tuncer (2020) also reached similar results. According to another result of the study, the negative aspects of the groups are the unnecessary conversations made in the groups, the loss of interest of the teachers in time, the messages sent late at night and the safety concerns. In the literature review, it is seen that there are studies reaching similar results (Avcı, 2020; Balcı & Tezel-Şahin, 2018; Wahyuni & Febianti, 2019).

Recommendations

This study was carried out with parents who were included in the parent groups created for mathematics lessons and had children at the secondary school level. Comparisons can be made by checking how these practices are conducted in different education levels and different courses. Also, notifying the group rules to everyone after the group is created can prevent unwanted situations. With a family education program, family education and awareness studies can be carried out on how to provide school-teacher-family communication in digital environments and what to pay attention to.

It may also be appropriate to disseminate the solving of math problems in parent groups, and even to set specific time intervals for this. Also, it is important to increase father participation in parent groups. Responsibility should not be left only to mothers. It is also important for teachers to keep their interest in the parent groups they created. It is clear that parent groups are considered positive for parents. Therefore, dissemination of this practice is thought to be important. However, some restrictions should be applied, such as turning off messaging or assuring that only the teacher can send messages after a certain hour.

Scientific Ethics Declaration

The authors declare that the scientific ethical and legal responsibility of this article published in EPESS journal belongs to the authors.

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Benefits of Service-Learning through Community Volunteer Programmes to Pre-University Students

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Abstract: Service-learning in the Malaysia context is a course-based, credit-bearing education experience in which students participate in a structured service learning activity that meets academic and societal demands (Balakrishnan et al., 2022). Service-learning is a method of community engagement that is enriching students and empowering the community. This study discusses the findings of service-learning via volunteerism for the community by pre-university students. The objective of the study is to investigate the effect of service-learning via community volunteer programmes on the students who enrolled in the Critical Analysis of Current Issues course at the pre-university level. A mixed methods approach was used in the research design, whereby participants' responses to their level of comprehension, level of knowledge, level of social responsibility, level of personal development, and level of academic achievement related to their involvement in community volunteer programmes were assessed with a pre- and post-test questionnaire. Document analysis of participants' reflections of their experiences conducting the community volunteer programmes was also conducted. Responses were analysed to identify key themes and subthemes. The findings reveal that the mean for their level of comprehension, personal development, and academic achievement was high for both the pre- and post-test. The mean for their level of comprehension, knowledge, social responsibility, personal development, and academic achievement was higher in the post-test. The mean for their level of knowledge and social responsibility was at a medium level for the pre-test. However, this was at a high level in the post-test. This shows that the participants showed significant improvement in their knowledge and social responsibility from involvement in voluntary programmes. Finally, recommendations for youth empowerment in becoming involved in community volunteer programmes were highlighted.

Keywords: Pre-university students, Service-learning, Community volunteering programme

Introduction

Service-learning is a practical and experiential form of education where students learn from being involved in community volunteer work and where the tasks are connected to the topics in a course (Beehr et al., 2010). Service-learning via volunteerism is a method of instruction that combines learning through service for the

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community with an aim to foster civic and social responsibility among students. Through the collaborations and interactions during community engagement, participants' life skills and personal development, such as social skills are developed. Service-learning can be instrumental in instilling the qualities of being proactive and creating the willingness to act on current issues surrounding the pre-university students.

Service-learning is related to Service Learning Malaysia (SULAM) – University for Society, which was introduced by the Malaysian Higher Learning Institutions (HLIs). Experiential learning is the focus of SULAM as SULAM “is part of a university class and a form of experiential education in which students engage in activities that address human and community needs together with structured opportunities intentionally designed to promote student learning and development” (Department of Higher Education Malaysia, 2019, 84).

Service-learning as a community engagement program was included as part of the Critical Analysis of Current Issues (PNAP0283) course assessment of the ASASIpintar pre-university programme. The course outcomes, which are related to volunteerism, encourage pre-university students to be initiative-taking and act on the current issues surrounding them and be involved in community engagement. The group project on volunteerism was called the Youth-Led Project and forty marks were allocated for the course task and assessment. The marks were distributed into four aspects: overall class project, peer evaluation, individual reflection paper, and group exhibition. Marks were allocated for individual reflection as Osborne and Renick (2006) stressed that learning derives from the reflection that students have done during their volunteering experiences in relation to the course content.

The group project on volunteerism is introduced as part of the Critical Analysis of Current Issues (PNAP0283) course as youths in pre-university programme often have creative change-making ideas. This is due to their earnest passion for a variety of social causes, and they desire to make a difference through their commitment in turning their inspiration into action. As a class, students discussed and chose one of the significant issues of concern currently faced on the college campus, in the surrounding community, or at a state, national or global level. Then, they proposed a project and at least three subtopics for the proposed project. Students then chose to participate in one of the groups which were formed based on subtopics and each group comprised of four to six students. Some projects that were conducted by the students were voluntary work with the Malaysian Federation of the Deaf (MFD), beach cleaning, feeding those in need, and a project with an orphanage.

Literature Review

Students may gain benefits from community volunteer work. Eppler *et al.* (2011) investigated college students' attitudes and motives in a service-learning course where they tutored low-income English Language Learning kindergartners, first-, and second-graders in reading. The researchers explored the benefits for elementary school children. The focus was on the measurement of changes in the college students' motivations for voluntary work and social attitudes, and effects on the kindergartners' reading performance and achievement goals. The findings showed that in comparison with non-service-learning college students, the service-learning students volunteered more hours, had higher gains in esteem and protective motives. Besides that, there was a significant increase in participants' motivation to volunteer for their professional growth.

There was a positive correlation between hours tutored and increases in the kindergartners' reading scores, and the kindergartners showed increases in adaptive achievement goals. Eppler *et al.*'s (2011) findings suggest that benefits of the service-learning project were reciprocal. The researchers concluded that through volunteerism, students may gain confidence as they get the chance to try new activities and get involved in new projects. This may lead to a sense of achievement among the involved students where the students exhibited higher gains in esteem, felt better about themselves and had better coping skills in handling personal issues (Eppler *et al.*, 2011).

However, Beehr *et al.* (2010) highlighted that nonrequired volunteers had stronger commitment to and satisfaction with their university. Not only that, but they also shared stronger internal and weaker external motivations to volunteer compared to required volunteers. The researchers investigated required versus nonrequired volunteerism, internal and external motivations for volunteering, and attitudes of student volunteers towards their university among 273 college students made up of non-volunteers, required volunteers, and nonrequired volunteers.

Although Beehr *et al.*'s (2010) findings showed that nonrequired volunteers were more committed in carrying out voluntary work, Sax *et al.*, (1999) findings proved that although pre-college service participation is

controlled and made compulsory to students, the participation in volunteer service during the undergraduate years resulted in a variety of cognitive and affective outcomes measuring nine years after entering college. Moreover et al., (2013) stressed that individuals who participated in a combination of voluntary and mandatory community-based civic activities as an adolescent are most likely to continue participating in voluntary work. However, the researchers highlighted other factors that positively lead to continued community engagement which include religiosity, sense of belonging in school, achievement, and parents who are actively engaged in civic activities.

In addition, Cheung et al., (2015) findings showed that volunteers' social responsibility has a positive effect on volunteerism six months later, but not a positive effect on social responsibility. These results suggest that the emphasis on social responsibility is crucial to sustain volunteerism. The findings also indicated the need for universities to plan and organize volunteering projects which encourage students' volunteerism and social responsibility.

Method

This study utilized a mixed method research methodology. The instruments used to collect the quantitative data were pre and post-tests, which contained five main questions. The Likert scale range of 1 to 10, with 1 being the least acquired and score 10 as the most acquired, was used in the pre and post-tests. The pre and post-tests had related questions. The questionnaire was adapted from Selvaratnam's (2013) study. The objective was to investigate the effects of service-learning through community engagement on the participants. The pre and post-tests were tabulated through the SPSS software package and the data were analysed descriptively. Document analysis of the students' reflections provided the qualitative data to triangulate the quantitative data. Responses in the reflections were analysed to identify key themes and subthemes.

Participants

The participants of the study were sixty-two students of a pre-university programme at a public university in Malaysia. The participants were aged 18 years. As part of the assessment for the Critical Analysis of Current Issues Course (PNAP0283), the pre-university students conducted a class project named the Youth-Led Project which was related to current issues.

Results

The results of this study discuss the obtained research outcome by first presenting the research respondents' profile followed by the descriptive and inferential research outcome.

Respondents' Demographic Profile

Sixty-two participants participated in this research. Demographic data on gender are presented in Table 1 below.

Sample Profile based on Gender

The information in Table 1 shows the sample profile based on gender. Out of the overall sixty-two students involved in this research, 18 or 29.0 percent were male students whereas the other 44 or 71.0 percent were female students. This shows that the total of respondents among female students were more than the total of male students in this research.

Table 1. Sample profile based on gender

	Number	Percentage
Male	18	29.0
Female	44	71.0
Total	62	100.0

Instrument Reliability Test

The Cronbach's alpha reliability results for pre and post-test on the level of comprehension, knowledge, social responsibility, personal development, and academic achievement related to the Community Volunteer Programme among students are displayed in Table 2.

Table 2. Instrument reliability

Variables	Cronbach's Alpha	Number of Items
Level of comprehension		
• Pre-test	0.754	4
• Post-test	0.810	4
Level of knowledge		
• Pre-test	0.767	4
• Post-test	0.862	4
Level of social responsibility		
• Pre-test	0.879	4
• Post-test	0.789	4
Level of personal development		
• Pre-test	0.873	4
• Post-test	0.849	4
Level of academic achievement		
• Pre-test	0.908	3
• Post-test	0.803	3

Table 2 above shows the range of reliability for pre and post-test level of comprehension, knowledge, social responsibility, personal development, and academic achievement related to the Community Volunteer Programme among students is between 0.754 to 0.908. Hence, the above Cronbach's alpha showed that the instrument used has good and acceptable reliability.

Normality Distribution

The Skewness and Kurtosis statistical test was employed to determine the key relative frequency distribution. Based on the statistical analysis, research variables had normal distribution which obtained a variable test result between ± 2 standard deviations. The test result demonstrating statistical values of Skewness and Kurtosis is shown in Table 3. Therefore, the data in this result were suitable for further analysis.

Table 3. Normality distribution

	Skewness		Kurtosis	
	Statistics	Std. Error	Statistics	Std. Error
Level of comprehension				
• Pre-test	-.687	.304	.733	.599
• Post-test	.210	.304	-.419	.599
Level of knowledge				
• Pre-test	-.750	.304	1.979	.599
• Post-test	-.211	.304	.248	.599
Level of social responsibility				
• Pre-test	-.328	.304	-.343	.599
• Post-test	-.523	.304	.896	.599
Level of personal development				
• Pre-test	-.989	.304	1.742	.599
• Post-test	-.401	.304	.876	.599
Level of academic achievement				
• Pre-test	-1.093	.304	1.749	.599
• Post-test	-.109	.304	-.855	.599

Students' Level of Comprehension related to the Community Volunteer Programme

In this section, the level of students' comprehension related to the Community Volunteer Programme was measured in the pre and post-test. The descriptive analysis is shown in Table 4 below.

Table 4. Students' level of comprehension related to community volunteer programme pre and post test

No	-Statement	Pre-test		Post-test	
		Mean	SD	Mean	SD
1	Volunteer	7.85	1.458	8.44	1.002
2	Volunteerism	7.23	1.664	8.19	.989
3	Criteria of volunteerism	6.68	1.836	7.98	1.109
4	Ways to involve in volunteering programmes	7.21	1.549	7.95	1.372
	Overall	7.24	1.238	8.14	.900

(Level: Low = 1.00 – 4.00, Medium = 4.01 – 7.00, High = 7.01 – 10.00)

The results in Table 4 show that the mean range of the level of students' comprehension in the pre-test is between 6.68 to 7.85 which is medium to high level. Overall, the pre-test score for the comprehension level (mean = 7.24, SD = 1.238) among students related to the Community Volunteer Programme is at a high level. The mean range of the level of students' comprehension in the post-test is between 7.95 to 8.44 which is at high level. Overall, this shows that the post-test score for the comprehension level (mean = 8.14, SD = 0.900) among students related to the Community Volunteer Programme is at a high level.

Students' Level of Knowledge Related to the Community Volunteer Programme

In this section, the level of students' knowledge related to the Community Volunteer Programme was measured in the pre and post-test with four items, respectively. For clearer representation, the descriptive analysis is shown in Table 5 below.

Table 5. Students' level of knowledge related to the community volunteer programme pre and post test

No	Statement	Pre-test		Post-test	
		Mean	SD	Mean	SD
1	Volunteer	7.63	1.571	8.13	1.109
2	Volunteerism	7.06	1.628	7.89	1.161
3	Criteria of volunteerism	6.53	2.030	7.82	1.138
4	Ways to involve in volunteer programmes	6.79	1.757	7.92	1.441
	Overall	7.00	1.346	7.94	1.025

(Level: Low = 1.00 – 4.00, Medium = 4.01 – 7.00, High = 7.01 – 10.00)

The results in Table 5 show the mean range of students' level of knowledge in the pre-test is between 6.53 to 7.63 which is medium to high level. Overall, the score of knowledge level (mean = 7.00, SD = 1.346) for the pre-test among students related to the Community Volunteer Programme is at a medium level. The mean range of the level of students' knowledge in the post-test is between 7.82 to 8.13 which is at a high level. Overall, this shows that the score for the level of knowledge (mean = 7.94, SD = 1.025) among students related to the Community Volunteer Programme in the post-test is at a high level.

Students' Level of Social Responsibility related to the Community Volunteer Programme

In this section, the level of students' social responsibility related to the Community Volunteer Programme was measured in a pre and post-test with four items, respectively. For clearer representation, the descriptive analysis is shown in Table 6 below.

The results in Table 6 above show the mean range of students' level of social responsibility in the pre-test is between 6.08 to 8.15 which is medium to high level. Overall, the score of social responsibility level (mean = 6.85, SD = 1.730) among students related to the Community Volunteer Programme is at a medium level in the pre-test.

Table 6. Students' level of social responsibility related to the community volunteer programme pre and post test

No	Statement	Pre-test		Post-test	
		Mean	SD	Mean	SD
1	I like to share information related to volunteer programmes.	6.08	2.227	7.23	1.850
2	I will report if there is a need for volunteer programmes.	6.11	2.334	7.23	1.712
3	I can contribute ideas related to volunteer programmes.	7.08	1.721	7.84	1.369
4	I can contribute manpower for volunteer programmes.	8.15	1.716	8.74	1.200
	Overall	6.85	1.730	7.76	1.217

(Level: Low = 1.00 – 4.00, Medium = 4.01 – 7.00, High = 7.01 – 10.00)

The mean range of students' level of social responsibility is between 7.23 to 8.74 which is at a high level in the post-test. Overall, this shows that the score for social responsibility level (mean = 7.76, SD = 1.217) among students related to the Community Volunteer Programme in the post-test is at a high level. The findings which show that the involvement in voluntary work enhanced students' social responsibility are supported by responses from students' reflections as shown in the excerpt below:

"We can make a difference. I become more aware of the issues around me as I can have a real and valuable positive effect on people, communities, and society in general."

"I feel like I am part of the community. Volunteering makes me feel part of something besides my studies, friends, and family."

Students' Level of Personal Development Related to the Community Volunteer Programme

In this section, the level of students' personal development related to the Community Volunteer Programme was measured in a pre and post-test with four items, respectively. For clearer representation, the descriptive analysis is shown in Table 7 below.

Table 7. Students' level of personal development related to the community volunteer programme pre and post-test

No	Statement	Pre-test		Post-test	
		Mean	SD	Mean	SD
1	I am interested in running volunteer programmes.	8.31	1.869	8.69	1.301
2	I always make effort to find information about volunteer programmes.	6.23	2.213	6.94	1.845
3	I can manage volunteer programmes.	6.71	1.876	7.73	1.621
4	I have the interpersonal interaction skills to run volunteer programmes.	7.10	1.897	8.06	1.401
	Overall	7.08	1.675	7.85	1.291

(Level: Low = 1.00 – 4.00, Medium = 4.01 – 7.00, High = 7.01 – 10.00)

The results in Table 7 show the mean range of the level of students' personal development is between 6.23 to 8.31 which is medium to high level. Overall, the score for personal development level (mean = 7.08, SD = 1.675) among students related to the Community Volunteer Programme is at a high level in the pre-test. The mean range of students' level of personal development is between 6.94 to 8.69 which is at medium to high level in the post-test. Overall, this shows that the score for personal development level (mean = 7.85, SD = 1.291) among students related to the Community Volunteer Programme in the post-test is at a high level.

The responses from the students' reflections also showed that the students' interpersonal interaction improved as shown in the extract below:

“I learn to engage with people that I have never known before and I make some effort to at least make the kid gain something that day. I become more determined to convince the underprivileged people about the importance of education. The involvement in this project encourages me to be an educator one day.”

The response was shared by a student who conducted a voluntary project, ‘Education for the Underprivileged Children’ which aimed to tutor the Indigenous children. The students planned and conducted activities such as educational games and sports activities. Another student highlighted improvement in her social interaction as shown in the excerpt below:

“I learn how to communicate effectively with my friends and others. I believe that the opportunity to deal with a lot of people helps me gain more knowledge. I observe my group members’ communication skills, how they choose their words to make people understand them and to avoid hurting people with harsh words, especially when they tried to break the ice with the Indigenous kids who were shy.”

Besides improving their interaction skills, participants also commented that they learned about leadership and teamwork. One participant highlighted that the leader of her project ‘Education for the Underprivileged Children,’ showed a good example of inspirational leadership where she managed conflicts and miscommunication among group members efficiently. The leader was reported to focus on behaviour and events, and not on individuals’ personalities despite the negative attitudes shown earlier by some of the group members such as consistently coming late for group meetings, and carelessly performing tasks. A reflection from another member for the ‘Education for Underprivileged Children’ project reported that eventually all her group members were committed for the project, as shown in the excerpt below:

“All of us did our part in the project and I can guarantee that each one of us was grateful for the opportunity given to plan and carry out this project. Although at first there were few members who missed meetings and did not complete their tasks, we managed to resolve the issue.”

Another student highlighted in her reflection of her voluntary work, ‘Food for the Homeless,’ the experiences that she had gained from the group project as shown in the excerpt below:

“Through volunteering I can challenge myself by doing something different. I am able to discover my hidden talents and achieve my personal goals.”

For this project, the group of students cooperated with Dapur Jalanan, a Non-Governmental Organisation (NGO), to prepare and distribute food for the homeless in Kuala Lumpur. Some students shared their gratitude for being given the chance to contribute to people who are in need. The experience made them appreciate their privileged life more.

Students’ Level of Academic Achievement Related to the Community Volunteer Programme

In this section, the level of students’ academic achievement related to the Community Volunteer Programme was measured from a pre and post-test with three items, respectively. For clearer representation, the descriptive analysis is shown in Table 8 below.

Table 8. Students’ level of academic achievement related to community volunteer programme pre and post-test

No	Statement	Pre-test		Post-test	
		Mean	SD	Mean	SD
1	Involvement in volunteer programmes helps my academic achievement.	6.98	2.123	8.13	1.287
2	Involvement in volunteer programmes helps my critical thinking.	7.98	1.860	8.74	1.070
3	Involvement in volunteer programmes helps build persistence and retention related to my academic achievement.	7.85	1.791	8.53	1.170
Overall		7.61	1.774	8.47	.998

(Level: Low = 1.00 – 4.00, Medium = 4.01 – 7.00, High = 7.01 – 10.00)

The results in Table 8 show the mean range of the level of students' academic achievement in the pre-test is between 6.98 to 7.98 which is medium to high level. Overall, the score of students' academic achievement level in the pre-test (mean = 7.61, SD = 1.774) related to the Community Volunteer Programme is at a high level. The mean range of the level of students' academic achievement in the post-test is between 8.13 to 8.74 which is at a high level. Overall, this shows that the score for the academic achievement level (mean = 8.47, SD = 0.998) in the post-test among students related to the Community Volunteer Programme is at a high level.

Interestingly, the reflection from one of the participants showed that the hours spent for the planning and execution of the project did not really affect her commitment for her studies. She elaborated that with effective time management and good teamwork, she could juggle both responsibilities. This is shown in the excerpt below:

“When we first started, I am worried that I may not be able to focus on my studies as there is so much to be done for the voluntary project. However, my teammates cooperated well, and we managed to divide our time for studies and also the project.”

Comparison of Pre and Post-test Score for the Level of Comprehension of the Community Volunteer Programme

Ho1 There is no significant difference between the pre and post-test scores of students' comprehension level of the Community Volunteer Programme

The comparison of the pre and post-test scores for the level of comprehension of the Community Volunteer Programme among students is exhibited in Table 9.

Table 9. Pre and post t-test scores of students' comprehension of the community volunteer programme

	Pre-test		Post-test		T value	Sig. P
	Mean	SD	Mean	SD		
Comprehension level	7.24	1.238	8.14	.900	-6.128	.000

**p<0.01

Based on the results of statistical test data as shown in Table 9, there is a significant difference in score of students' comprehension level towards the Community Volunteer Programme [t = -6.128, p = 0.000], p < 0.01 between pre and post-test. Hence, **Ho1 is rejected**. This result shows that the score of students' comprehension level towards the Community Volunteer Programme in post-test (mean = 8.14, SD = 0.900) is higher than the pre-test (mean = 7.24, SD = 1.238).

Comparison of Pre and Post-Test Score for the Level of Knowledge towards the Community Volunteer Programme

Ho2 There is no significant difference between the pre and post-test score of students' knowledge level towards the Community Volunteer Programme

The outcome of pre and post-test score comparison for the level of knowledge towards the Community Volunteer Programme among students is exhibited in Table 10.

Table 10. Pre and post t-test score of students' knowledge level towards the community volunteer programme

	Pre-test		Post-test		t value	Sig. P
	Mean	SD	Mean	SD		
Knowledge level	7.00	1.346	7.94	1.025	-5.739	.000

**p<0.01

Based on the result of statistical test data as shown in Table 10, there is a significant difference in the score of students' knowledge level towards the Community Volunteer Programme [t = -5.739, p = 0.000], p < 0.01 between pre and post-test. Hence, **Ho2 is rejected**. This result shows that the score of students' knowledge level towards the Community Volunteer Programme in post-test (mean = 7.94, SD = 1.025) is higher than pre-test (mean = 7.00, SD = 1.346).

Comparison of Pre and Post-test Scores for the Level of Social Responsibility towards the Community Volunteer Programme

Ho3 There is no significant difference between the pre and post-test scores of students' social responsibility level towards the Community Volunteer Programme

The outcome of pre and post-test scores comparison for the level of social responsibility towards the Community Volunteer Programme among students is exhibited in Table 11.

Table 11. Pre and post t-test scores of students' social responsibility level towards the community volunteer programme

	Pre-test		Post-test		t value	Sig. P
	Mean	SD	Mean	SD		
Level of social responsibility	6.85	1.730	7.76	1.217	-5.126	.000

**p<0.01

Based on the results of statistical test data as shown in Table 11, there is a significant difference in score of students' social responsibility level towards the Community Volunteer Programme [$t = -5.126$, $p = 0.000$], $p < 0.01$ between pre and post-test. Hence, **Ho3 is rejected**. This result shows that the score of students' social responsibility level towards Community Volunteer Programme in post-test (mean = 7.76, SD = 1.217) is higher than pre-test (mean = 6.85, SD = 1.730). This is supported by the analysis of the participants' reflections, as one of them reported that she had managed to **make a difference** from the real and valuable positive effect on people, communities, and society in general. This is shown in the excerpt from her reflection below:

"I realise that I am responsible not just for my life. I must contribute to the community and society."

Comparison of Pre and Post-test Scores for the Level of Personal Development towards the Community Volunteer Programme

Ho4 There is no significant difference between the pre and post-test score of students' personal development level towards the Community Volunteer Programme

The outcome of pre and post-test score comparison for the level of personal development towards the Community Volunteer Programme among students is exhibited in Table 12.

Table 12. Pre and post t-test score of students' personal development level towards the community volunteer programme

	Pre-test		Post-test		T value	Sig. P
	Mean	SD	Mean	SD		
Level of personal development	7.08	1.675	7.85	1.291	-5.117	.000

**p<0.01

Based on the result of statistical test data as shown in Table 12, there is a significant difference in score of students' personal development level towards the Community Volunteer Programme [$t = -5.117$, $p = 0.000$], $p < 0.01$ between pre and post-test. Hence, **Ho4 is rejected**. This result shows that the score of students' personal development level towards the Community Volunteer Programme in post-test (mean = 7.85, SD = 1.291) is higher than pre-test (mean = 7.08, SD = 1.675). Data from the participants' reflections supported this as shown in the excerpt below:

"I realized that the small things that we do, can bring greater effect in someone's life. Throughout this project I have changed to be a better person and my soft skills have improved. This project makes us believe in the quote, 'Living is giving.'"

Another excerpt from the students' reflections supported this:

"I feel I have more worth. Doing something for other people make me always remind myself that I can optimize my energy and I have to do something that bring good things for this universe."

Comparison of Pre and Post-test Scores for the Level of Academic Achievement towards the Community Volunteer Programme

Ho5 There is no significant difference between the pre and post-test scores of students' academic achievement level towards the Community Volunteer Programme

The outcome of pre and post-test scores comparison for the level of academic achievement towards the Community Volunteer Programme among students is exhibited in Table 13.

Table 13. Pre and post t-test scores of students' academic achievement level towards the community volunteer programme

	Pre-test		Post-test		T value	Sig. P
	Mean	SD	Mean	SD		
Level of academic achievement	7.61	1.774	8.47	.998	-4.302	.000

**p<0.01

Based on the results of statistical test data as shown in Table 13, there is a significant difference in score of students' academic achievement level towards the Community Volunteer Programme [$t = -4.302$, $p = 0.000$], $p < 0.01$ between pre and post-test. Hence, **Ho5 is rejected**. This result shows that the score of students' academic achievement level towards the Community Volunteer Programme in post-test (mean = 8.47, SD = 0.998) is higher than pre-test (mean = 7.61, SD = 1.774). An analysis of the students' responses in their reflections support the finding that involvement in voluntary work does not necessarily affect academic performance as shown in the following excerpt:

"I become better at time management as I know that I have to complete assignments, course work and at the same time executing the activities for the voluntary work. I do not see my studies is affected."

Pre and Post Test Score Difference of Comprehension Level between Male and Female Students

Ho6 There is no significant difference between pre-test score of comprehension level towards the Community Volunteer Programme between male and female students

Ho7 There is no significant difference between post-test score of comprehension level towards the Community Volunteer Programme between male and female students

The t-test outcome to assess pre and post-test score difference of comprehension level towards the Community Volunteer Programme between male and female students is displayed in Table 14.

Table 14. Pre and post t-test score difference of comprehension level towards the community volunteer programme between male and female students

Comprehension Level	Gender	N	Mean	SD	t Value	Sig. P
Pre-test	Male	18	6.64	1.412	-2.563	.013
	Female	44	7.49	1.082		
Post-test	Male	18	7.85	.888	-1.668	.101
	Female	44	8.26	.888		

**p<0.01

The result from t-test analysis as shown in Table 14 found that there is a significant difference in pre-test comprehension level towards the Community Volunteer Programme [$t = -2.563$, $p = 0.013$], $p < 0.05$ between male and female students. Therefore, **Ho6 is rejected**. This outcome shows pre- test comprehension level among female students (mean = 7.49, SD = 1.082) is higher than male students (mean = 6.64, SD = 1.412).

However, in Table 14, it was found that there is no significant difference in post-test comprehension level towards the Community Volunteer Programme [$t = -1.668$, $p = 0.101$], $p > 0.05$ among male and female students. Hence, **Ho7 is accepted**. This means that there is no difference in post-test comprehension level among male and female students.

Pre and Post Test Score Difference of Knowledge Level between Male and Female Students

Ho8 There is no significant difference between pre-test score of knowledge level towards the Community Volunteer Programme between male and female students

Ho9 There is no significant difference between post-test score of knowledge level towards the Community Volunteer Programme between male and female students

The t-test outcome to assess pre and post-test score difference of knowledge level towards the Community Volunteer Programme between male and female students is displayed in Table 15.

Table 15. Pre and post t-test score difference of knowledge level towards community volunteer programme between male and female students

Knowledge Level	Gender	N	Mean	SD	t Value	Sig. P
Pre-test	Male	18	6.54	1.466	-1.759	.084
	Female	44	7.19	1.263		
Post-test	Male	18	7.60	.982	-1.708	.093
	Female	44	8.08	1.020		

**p<0.01

The result from t-test analysis as shown in Table 15 shows that there is no significant difference in pre-test knowledge level towards the Community Volunteer Programme [t = -1.759, p = 0.084], p > 0.05 between male and female students. Therefore, **Ho8 is accepted**. This means that there is no difference in the pre-test knowledge level among male and female students.

Similarly in Table 15, it was found that there is no significant difference in post-test knowledge level towards the Community Volunteer Programme [t = -1.708, p = 0.093], p > 0.05 among male and female students. Hence, **Ho9 is accepted**. This means that there is no difference in post-test knowledge level among male and female students.

Pre and Post Test Score Difference of Social Responsibility Level between Male and Female Students

Ho10 There is no significant difference between pre-test score of social responsibility level towards the Community Volunteer Programme between male and female students

Ho11 There is no significant difference between post-test score of social responsibility level towards the Community Volunteer Programme between male and female students

The t-test outcome to assess pre and post-test score difference of social responsibility level towards the Community Volunteer Programme between male and female students is displayed in Table 16.

Table 16. Pre and post t-test score difference of social responsibility level towards the community volunteer programme between male and female students

Social Responsibility Level	Gender	N	Mean	SD	t Value	Sig. P
Pre-test	Male	18	6.28	1.843	-1.706	.093
	Female	44	7.09	1.645		
Post-test	Male	18	7.29	1.448	-1.975	.053
	Female	44	7.95	1.070		

**p<0.01

The result from t-test analysis as shown in Table 16 shows that there is no significant difference in pre-test social responsibility level towards the Community Volunteer Programme [t = -1.706, p = 0.093], p > 0.05 between male and female students. Therefore, **Ho10 is accepted**. This means that there is no difference in the pre-test social responsibility level among male and female students. Similarly in Table 16, it was found that there is no significant difference in post-test social responsibility level towards Community Volunteer Programme [t = -1.975, p = 0.053], p > 0.05 among male and female students. Hence, **Ho11 is accepted**. This means that there is no difference in post-test social responsibility level among male and female students.

Pre and Post-test Score Difference of Personal Development Level between Male and Female Students

Ho12 There is no significant difference between pre-test score of personal development level towards the Community Volunteer Programme between male and female students

Ho13 There is no significant difference between post-test score of personal development level towards the Community Volunteer Programme between male and female students

The t-test outcome to assess pre and post-test score difference of personal development level towards the Community Volunteer Programme between male and female students is displayed in Table 17.

Table 17. Pre and post t-test score difference of personal development level towards the community volunteer programme between male and female students

Personal Development Level	Gender	N	Mean	SD	t Value	Sig. P
Pre-test	Male	18	6.13	1.766	-3.079	.003
	Female	44	7.48	1.485		
Post-test	Male	18	7.08	1.419	-3.234	.002
	Female	44	8.17	1.103		

**p<0.01

The result from t-test analysis as shown in Table 18 found that there is a significant difference in pre-test personal development level towards Community Volunteer Programme [$t = -1.706$, $p = 0.093$], $p > 0.05$ between male and female students. Therefore, **Ho12 is rejected**. This outcome shows pre-test personal development level among female students (mean = 7.48, SD = 1.485) is higher than male students (mean = 6.13, SD = 1.766).

Similarly in Table 17, it is shown that there is a significant difference in post-test personal development level towards the Community Volunteer Programme [$t = -3.234$, $p = 0.002$], $p < 0.01$ among male and female students. Hence, **Ho13 is rejected**. This outcome shows post-test personal development level among female students (mean = 8.17, SD = 1.103) is higher than male students (mean = 7.08, SD = 1.419).

Pre and Post-test Score Difference of Academic Achievement Level between Male and Female Students

Ho14 There is no significant difference between pre-test score of academic achievement level towards the Community Volunteer Programme between male and female students

Ho15 There is no significant difference between post-test score of academic achievement level towards the Community Volunteer Programme between male and female students

The t-test outcome to assess pre and post-test score difference of academic achievement level towards the Community Volunteer Programme between male and female students is displayed in Table 18.

Table 18. Pre and post t-test score difference of academic achievement level towards the community volunteer programme between male and female students

Academic Achievement Level	Gender	N	Mean	SD	t Value	Sig. P
Pre-test	Male	18	6.93	1.762	-1.981	.052
	Female	44	7.89	1.721		
Post-test	Male	18	8.19	.972	-1.438	.156
	Female	44	8.58	.996		

**p<0.01

The result from t-test analysis as shown in Table 18 shows that there is no significant difference in pre-test academic achievement level towards the Community Volunteer Programme [$t = -1.981$, $p = 0.052$], $p > 0.05$ between male and female students. Therefore, **Ho14 is accepted**. This means that there is no difference in pre-test academic achievement level among male and female students.

Similarly in Table 18, it was found that there is no significant difference in post-test academic achievement level towards the Community Volunteer Programme [$t = -1.438$, $p = 0.156$], $p > 0.05$ among male and female

students. Hence, **Ho15 is accepted**. This means that there is no difference in post-test academic achievement level among male and female students.

Discussion

The present study was designed to investigate the effects of service-learning through community volunteer programme on the participants. The findings showed pre-university students benefit from service-learning through community engagement. This is consistent with Bromnick et al., findings (2012) where students clearly gained benefit from both voluntary work and the reflection on their experiences.

The present study's findings demonstrating students' higher scores for post-test comprehension and knowledge level prove that the students are more aware of voluntarism, criteria of voluntarism and ways to involve in voluntary work. The students found ways they could contribute to the betterment of society, and they learned that their actions have a broader impact on society. This finding supports Gray's (2010) previous research which highlighted that being involved in voluntary work helps students realise they could make a difference in society. However, further research may need to be conducted to understand if such level of knowledge is applied in their real-lives.

This result shows that the score of students' personal development level towards the Community Volunteer Programme in post-test is higher than pre-test. This supports previous research (Gray, 2010) which showed that voluntary work had a positive effect on character and personal development and helped developed individuals' skills. Through engagement in voluntary work, students acquire important abilities and dispositions through the identification, planning and implementation of the action. As shown in this study's findings, the pre-university students developed important skills, including problem solving, conflict resolution and empathy. This corroborated the findings of Mária Jármai and Palányi's (2015) which showed that voluntary work has several advantages which positively influences the development of an individuals' personality. Since soft-skills are greatly needed in study and working life, this sort of experiential pedagogy should be encouraged and implemented at all levels of learning.

The findings in this study demonstrated that with good cooperation, voluntary group work enhances the sense of personal and collective efficacy. Through resolution of conflicts, students learned that there are responsible ways to address issues, and that everyone can play a role in social change. This is consistent with the observations of O'Dell et al., (2016) that voluntary work promotes individual growth which is likely to inspire long-term participation in social change activities. Conflict resolution and problem solving are life-long skills needed for students to ensure that in any situation, they can systematically organise their thoughts and solve an issue.

It is also shown in this study that the post-test personal development level among female students is higher than male students. This is consistent with the findings of Darawsheh et al., (2020) which highlighted that female students manifest a more positive attitude and more dedication in carrying out voluntary work. Further research can be conducted to validate the qualitative reasoning of female students developing better than their male counterparts.

The result in this study evidenced the score of students' academic achievement level towards Community Volunteer Programme is higher in the post-test. This finding is in agreement with Selvaratnam's (2013) findings which found that there was an increment in the level of academic performance in post-test when students involved in volunteerism. The participants' level of academic achievement showed the highest mean and that could imply involvement in voluntary work did not negatively affect academic performance.

Conclusion

Pre-university students aged 17 to 18 years old normally possess creative change-making ideas as they have heartfelt passion for a variety of social causes, and they want to make a difference. The inclusion of the volunteering project in the Critical Analysis of Current Issues course of the ASASIPintar UKM Program is to help the students gain a sense of empowerment as they engage in projects designed to result in change of attitude, information sharing and involvement in an important social cause. Voluntary work may be linked with individual benefits. Involvement in Community Projects (Magoon, 1980, as cited in Educational Services Division, 2007) could help develop leadership in students. Volunteering can help students gain confidence by

giving them the chance to try something new and build a real sense of achievement. Moreover, student engagement in voluntary work may help students enhance their employability (Bromnick et al., 2012; Paine, 2014).

Recommendations

Youths are often an untapped source for creative change-making ideas. They normally are passionate about social issues, and they want to contribute to the society. Thus, educational administrators must support them at every step of the process by promoting volunteer work among the youth. Administrators and lecturers can help the students gain a sense of empowerment as they engage in projects planned. Below are the actions that could be taken by administrators and lecturers to assist students in accomplishing their voluntary programs:

- 1) assist students with the formal correspondence with relevant authorities
- 2) include voluntary work as part of course assessment as this motivates students to do their best to secure satisfactory results.

Although this may seem like “forcing” them to commit to voluntary work, findings from previous research (Domaradzki & Walkowiak, 2021; Selvaratnam, 2013) have shown that involvement in voluntary work instills social responsibility among students. This may eventually make them volunteer on their own. Students instilled with voluntary work through service learning would have been equipped with knowledge, skills, and values that will enable them to adapt, adjust and initiate service learning within their own capability. The deep learning and ripple effect involved would transform every student into a better human being.

Scientific Ethics Declaration

The authors declare that the scientific ethical and legal responsibility of this article published in EPESS journal belongs to the authors.

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The Biggest Winners and Losers of the Coronavirus Crisis Based on European Macroeconomic Data

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Abstract: The 21st century has brought significant changes for economic operators, not only from a technological point of view. Some of these changes have been positive, while others have created major challenges or problems that have had to be adapted to very quickly. The COVID-19 pandemic or the Russian-Ukrainian conflict have triggered a clear crisis process in many countries and businesses. However, it is assumed that crises do not affect everyone in the same way. This study aims to examine the impact of these two events on certain European countries. To this end, five macroeconomic indicators have been selected and their changes before and after the crises are examined. The study seeks to answer the question of how the crisis events have affected the basic macroeconomic indicators of the countries and whether it can be said that the crisis has left everyone worse off. Are some countries more resilient to the current adverse trends? We base our analysis not only on macroeconomic indicators, but also review the evolution of the IMD competitiveness indicator as a confirmation. The macroeconomic indicators and the competitiveness report will show how the macroeconomic and competitiveness situation of each country has changed following the outbreak of the COVID-19 pandemic, which was also significantly affected by the Russian-Ukrainian conflict. By reviewing this period, it will become clear to what extent the countries under study were affected by the events and it will be possible to identify which countries can be considered the biggest losers.

Keywords: COVID-19 pandemic, Russian-Ukrainian conflict, crisis, competitiveness

Introduction

The study was designed to examine the impact of the COVID-19 crisis on economic indicators. It is hard to argue that the crisis has had some form of impact on all countries. It is in the nature of crises that a good period can be followed by a bad period in the life of an economic agent, very often referred to as a crisis or recession. The word crisis conveys a negative connotation. Everyone thinks of downturns, poor results or negative effects, but in reality it is far from certain that a crisis always has negative consequences. In order to prove this, it is necessary to examine the question of whether crises have actually caused a setback for everyone or whether they have caused the opposite. There is a strong presumption that some countries' economic indicators even improved after the crisis and the focus of this study is now on GDP as a measure of economic growth. However, economic growth cannot be the only measure to prove this assumption. More complex, multidimensional indicators need to be looked at, so that in addition to economic growth, changes in competitiveness can also provide evidence. Two basic assumptions have been made in writing this paper.

- H1: There is a strong assumption that there were countries after and during the crisis that did not suffer a significant decline in GDP and even an increase in GDP during the crisis. There are significantly fewer of these countries, so that for the majority of them COVID-19 has indeed had a negative impact on GDP.

- H2: There is a strong presumption that the claim that the crisis necessarily has a negative impact on everyone is not true. There are some countries whose international competitiveness has been strengthened even under the impact of COVID-19, so that they have been able to maintain their competitive position during the crisis. It can also be assumed that countries can be grouped into different categories in terms of whether they are winners or losers from the crisis. The grouping is based on which countries have experienced positive changes in GDP and competitiveness, and which countries have experienced a deterioration in these indicators.

Simple macroeconomic data were used for the hypotheses. Before examining the hypotheses, we clarify the concept of national competitiveness and the nature and significance of crises. It is also important to distinguish between the onset and course of crises and recessions, as the two concepts are not the same. The first part of this paper deals with this. In the second part, we will look at the results of statistical or research organisations that can provide real evidence that the hypotheses are or are not correct.

Results and Discussion

Theory of the National Competitiveness – Why not GDP?

The competitiveness of the national economy is one of the most important conditions for development and progress. By this, we mean the ability of a nation to create a social and economic environment in which its actors are best able to create value added that is recognised on the world market. The maintenance of prosperity becomes the driving force of competitiveness in the national economy, prosperity is not the basis of competitiveness, but its goal. Competitiveness in the national economy is crucially a competition of skills, and in particular economic skills. At the same time, this definition does not ignore the social aspects of competitiveness, as factors that are not directly related to market value creation but nevertheless affect a country's performance must also be taken into account (Chikán, 2006). Competitiveness is the balance of advantages and disadvantages that a country can achieve by selling its own products on international markets. (OECD, 1992) Another OECD formulation is that competitiveness is a measure of a country's ability to produce goods and services that can be sold on international markets under free market conditions, while maintaining and raising the living standards of its population in the long run (OECD, 1992). The competitiveness of a nation is a measure of its ability to produce goods and services that are (also) sellable on world markets under perfectly competitive conditions, while increasing the real income of its citizens (Rapkin, 1995). A country is not competitive if its actors are highly productive and operate at low cost, but cannot provide jobs for its population. According to Porter (2003), the standard of living of a nation is determined by the productivity of its economy, which measures how much goods and services a country has produced using a unit of human, financial and natural resources. Productivity is what allows a nation to support high wages, a strong currency and ensure a return on capital, and hence a high standard of living. Competitiveness is an indicator of national economic performance that expresses how efficiently a nation utilises the human, financial and natural capital at its disposal (Porter, 1990, 1993). Krugman (2003) relates competitiveness to participation in international trade. In his view, trade between two countries normally increases the income of both countries. According to Jeffrey Sachs, the competitiveness of one country is the lack of competitiveness of another country. According to the European Commission (2012), the competitiveness of a country is a guarantee of the well-being of its citizens. Competitiveness in the national economy means growth in output, high employment and a sustainable environment, and one of its key elements is adaptability, which also increases resilience to shocks. The objective is to increase competitiveness, for which there is no single EU definition. According to the Commission's 2003 definition, competitiveness is the ability to raise the standard of living of the population and to improve employment, while taking into account sustainability criteria. One of the main foundations of EU competitiveness is the so-called "competitiveness pillar". The White Paper was one of the key factors in establishing competitiveness. The Delors report states that increasing competitiveness is not an end in itself, but a means to increase prosperity and living standards. This goal can only be achieved with an adequate level of employment, and therefore an economy is considered competitive if it can create a sufficient number of jobs while maintaining high economic growth. As can be seen from the above interpretations, economic growth and competitiveness are linked at several points. It can also be said that competitiveness is almost the basis of economic growth, since improved economic outcomes may require a strengthening of competitiveness. If one's competitiveness deteriorates, one will, after a while, no longer have the skills to ensure that one can remain competitive. The logical consequence of this is a decline in indicators, a drop in productivity or a negative change in financial indicators. Yet economic analyses tend to focus on GDP. GDP is the total value of goods and services produced for final consumption in a given country, whether produced domestically or by a foreign operator. The above interpretations of competitiveness have repeatedly shown that it is not enough to think in

terms of GDP alone, as it is equally important to look at changes in quality of life indicators. The latter is also affected by the crisis, not only in terms of GDP. Following this logic, it is therefore important to examine the impact of the COVID-19 crisis on economic indicators, but it is equally important to show the impact on competitiveness or quality of life indicators. One thing is certain. The crisis is still having an impact and there is hardly any economic operator who has not suffered some positive or negative consequences. The question is whether or not this can be identified in the same way for countries. The following outlook will explain this.

The Difference between Crisis and Recession

The concept and meaning of crisis for the organisation has changed significantly in recent decades. In the early 1990s, crisis was still understood as the inadequate response of the organisation to the situation. A crisis situation was defined as a situation in the life of an organisation in which the balance of the organisation was upset and a kind of temporary disorder arose, requiring immediate and urgent intervention by management. As time went by, it became increasingly important to look at the environmental factors and to identify the main causes of the crisis in terms of the extent to which the environment could be observed and adapted to. Increasingly, the crisis was seen as an inadequate response to environmental change. It was interpreted as a mismatch between the organisation and the environment, as previous solutions, which had worked well in the past, no longer served the organisation's objectives. It became apparent that existing management techniques do not always help the organisation, so in addition to product and technological innovations, the use of leadership, organisational and management innovations became increasingly important. This has not only required a transformation of decision-making mechanisms or procedural rules, but in many cases the crisis has also led to a restructuring of the entire organisation, forcing those involved to renew part or all of the organisational processes. This has now led to a situation where crises have become almost closely associated with innovation, modernisation, revitalisation and opportunity. According to modern approaches, there is no difference between a crisis situation and a situation of opportunity. For modern organisations, dealing with a crisis is not an emergency, a panic, a 'necessary evil', but an opportunity to develop, to transform, to renew. Crisis is also an opportunity, a chance for renewal. Crisis is a regular event in the life of organisations, which affects everyone and can affect everyone. The only difference is that some organisations can manage it well or even prevent its effects, while others suffer the consequences, put out fires or, in the worst case, are forced to cease their activities. Crisis management is also a form of change management, but the stakes are much higher for the organisation to remain a player in the business world. A recession is when an economy experiences a few months of GDP contraction, a crisis is when, after such a contraction, GDP falls by a few for a few years or stagnation. It is also common to talk about stagflation and depression. The latter refers to a recession that is persistent or severe and causes significant social damage. A recession is a decline in economic activity associated with a fall in output at the national economy level. GDP does not necessarily have to go negative to be a recession, a significant and sustained slowdown is sufficient. Whichever the case, such crises always have a negative impact on the living standards of a wide section of society, and cases such as stagflation can only exacerbate this. Stagflation refers to a high inflation rate in a context of stagnation. Stagnation, i.e. a slowdown or stagnation of economic growth, and inflation are negative because, when a crisis develops, the inflationary effect further erodes the value of people's real income, which can lead to an increase in poverty. Arthur Okun expressed this relationship in terms of a simple indicator called the Misery, or poverty index. The Misery index is the sum of two simple macroeconomic indicators, the unemployment rate and the inflation rate. The higher the value of the index, the more unfavourable the degree of poverty in society. A crisis means a slowdown in economic growth, when consumption usually falls and the unemployment rate is unfavourable. The purchasing power of money falls, as reflected in inflation. In such a situation, economic agents can buy less real goods for each unit of income, and their needs are therefore met at a lower level. All this leads to lower satisfaction, lower living standards, i.e. increasing social impoverishment. However, the common feature of organisational and economic crises is clear. They always affect the broadest range of people, so they usually affect many people.

Winners or Losers? Which One are You?

In 2011, the Washington Post published a study that looked at who was worst off after the crisis. Five things were examined in this. Inflation, national debt, changes in GDP, unemployment and budget deficit. These numbers were added up and those with the most negative change were the biggest losers. After the covid epidemic, this became relevant again. Even today, the question is who are the biggest losers of the epidemic. Three groups were formed. The indicators of the winners changed positively. In the indifferent group, the indicators did not change significantly, while in the losers group, these indicators dropped significantly. At the same time, not only the macroeconomic parameters have changed, but also competitiveness. Competitiveness

was also significantly transformed by COVID, we also examined these from the competitiveness reports. The 2001 survey is a good illustration of the issues we raised in the first hypothesis. The authors examined five economic parameters to detect the differential impact of crises. They found that some countries even improved their indicators after the crisis. We wanted to see for ourselves how this is evolving. First, we present statistics from the Economist, which show that there was a wide variation in GDP trends across OECD countries. Some countries, such as Ireland or China, have seen significant GDP growth, while countries such as Spain or Portugal are among the big losers in the crisis, according to the Economist.

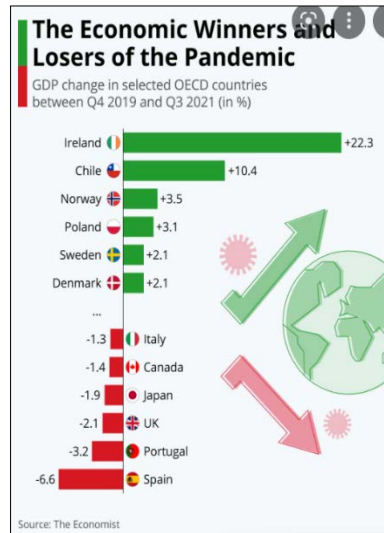


Figure 1. The economic winners and losers of the pandemic. GDP change in selected OECD countries between Q4 2019 and Q3 2021 (in percent) - Source: Economist

League table of nations					
Selected OECD countries, % change during the covid-19 pandemic*					
(Ranking out of 23 [†])	GDP	Household income per person	Share prices [‡]	Investment	Public debt to GDP [§]
Denmark (1)	2.1	3.4	57.3	12.1	3.5
Slovenia (2)	1.2	10.1	33.0	6.8	7.4
Sweden (3)	2.1	2.0	50.4	5.6	6.2
Norway (4)	3.5	4.0	31.3	-8.5	-9.0
Chile (5)	10.4	32.7	-5.6	6.7	11.9
Ireland (=6)	22.3	4.8	17.1	-78.8	0.9
Poland (=6)	3.1	3.3	25.4	-7.1	5.0
Netherlands (8)	1.7	1.7	30.8	-4.3	5.6
United States (9)	1.4	6.2	24.4	3.6	18.9
Australia (=10)	-0.2	3.5	9.1	7.4	10.2
Canada (=10)	-1.4	9.4	25.9	0.7	11.6
Finland (12)	1.5	-0.8	31.3	-1.3	9.7
Hungary (13)	0.6	0.1	16.9	4.2	11.1
Greece (14)	1.2	1.5	1.1	19.0	21.8
France (=15)	-0.1	0.7	17.4	1.3	14.4
Italy (=15)	-1.3	-0.2	18.5	6.9	20.1
Belgium (=17)	0.5	1.1	2.2	2.4	14.5
Portugal (=17)	-3.2	-0.3	27.1	0.5	12.0
Austria (19)	1.1	-5.8	18.6	-1.1	14.0
Germany (20)	-1.1	-0.9	15.6	-1.9	13.6
Japan (21)	-1.9	1.0	17.4	-3.8	20.7
Britain (22)	-2.1	-2.3	-2.2	-7.4	21.9
Spain (23)	-6.6	-6.3	-7.2	-6.5	22.3

*Compares Q3 2021, or latest available data, with Q4 2019. Share-price data are monthly figures. †Average score of five indicators: changes in real GDP, real household income per person, share prices, gross fixed capital formation, net public debt to GDP. ‡National all-share or broad index. §Percentage points. Uses gross data for Greece. Sources: OECD; IMF; World Bank; national statistics; The Economist

Figure 2. League table of nations . selected OECD countries, % change during the COVID-19 pandemic - Source: OECD Statistics

We get a much more nuanced picture when we look behind the scenes. Macroeconomic performance is not solely dependent on changes in GDP. In addition to GDP, we also need to look at factors such as household income and consumption, or the evolution of investment in a country. In relation to hypothesis H1, it is also strongly suggested that the propensity to invest has also evolved very differently across countries. It is also very interesting to see that although there were some countries where GDP increased following the COVID-19 crisis,

it is very interesting to see that even in countries with increasing GDP, investment rates did not increase in all cases. The example of Ireland illustrates this well, as although it has shown a significant increase in GDP, it is clear that it is not the increase in the investment rate that explains the better economic performance. In this respect, Ireland is a curious exception. This is interesting because, in principle, if the GDP of a country has increased as a result of the COVID-19 crisis, the volume of investment in that country has not typically moved into negative territory. Such countries include, for example, the Nordic countries, but the biggest winner in this respect is also China, where the volume of investment has also risen, not just the total value of goods and services for final consumption.

The covid crisis has changed the situation of countries. It didn't have the same effect on everyone. There were countries that did not suffer much damage as a result of the crisis, while there were groups of countries where the declines were significant. We examined this in relation to OECD and EU countries. Poland, for example, was a big loser from the epidemic, which suffered a significant drop in competitiveness in Europe. At the same time, there were countries that were able to stably maintain their competitive position. Among these we can find, for example, the Czech Republic. Hungary did not fall significantly in the competitiveness rankings, but at the same time, our macroeconomic results fell significantly. All this can be said in relation to several countries, since macroeconomic indicators have basically deteriorated in most countries. Competitiveness has already been discussed in the literature section. It is much more than simply producing or supplying something and intending it for final use. The above findings on competitiveness are supported by the Swiss-based competitiveness research organisations. The Institute for Management and Development (IMD) and the World Economic Forum (WEF) publish annual competitiveness studies. These clearly show what was already reported in the Washington Post in 2011. The international organisations also provide data to show that changes in national competitiveness have not taken the same form across countries. There were some countries that were able to strengthen their position in the international competitiveness rankings even after the COVID-19 outbreak. However, one thing needs to be mentioned and corrected here. Achieving competitiveness requires economic actors to make targeted investments and investments. The expected impact of an investment can be felt years later, so it is also possible that countries that have shown competitiveness gains under COVID may still be reaping the benefits of their actions a few years ago. If we were to look at international competitiveness rankings, say five years after COVID, we might not get the same results. As a follow-up to this study and to our research, we will have this opportunity and it will be worth looking at macroeconomic indicators and international competitiveness rankings a few years later.

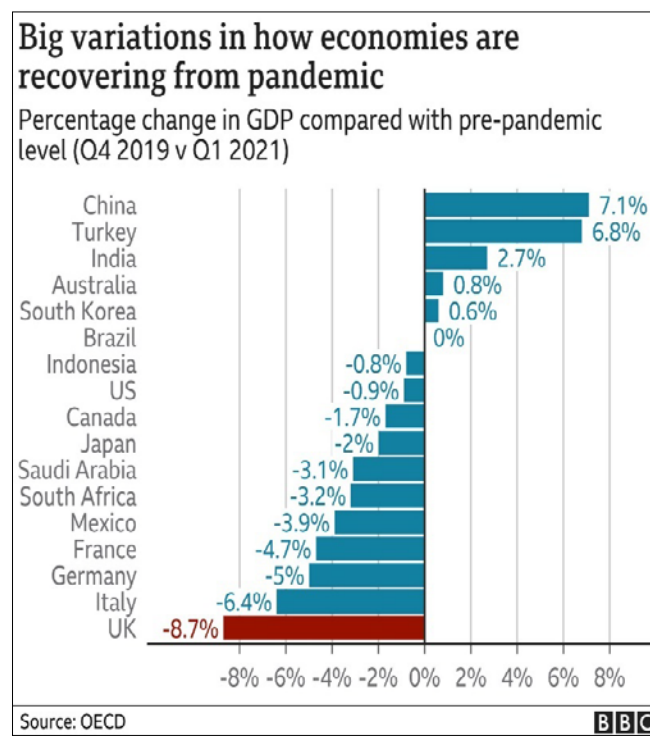


Figure 3. Big variations in how economies are recovering from pandemic - Source: OECD Statistics

In the 21st century the competitive national economy can only be improved by establishing the conditions of the knowledge-based (innovative) economy. Knowledge and human capital has a leading role in that process. This is why strengthening competitiveness requires the investments into knowledge, thus we need to spend more on education (sciences), innovation, research and development, like many countries do (for example the Scandinavian countries). We can come to the conclusion when examining competitiveness that there will always be economic participants, who are forced to face a decline for some reason. The aim of these lesser developed participants is to catch up, but in order to do so they have to be able to answer the questions of what to compete with and how to gain a competitive edge on the global and local markets. The covid crisis fundamentally affected the economic situation of the countries. Macroeconomic indicators were adversely affected in most countries. However, they show a more varied picture in terms of competitiveness. Several countries were able to strengthen their competitiveness or manage to keep it stable. At the same time, there were countries that were at a significant competitive disadvantage. Poland is the best example of how to turn a competitive country into a less competitive one. It is also a general finding that the winners during the crisis were those who were innovative. In addition, it is important that the country is prepared, has reserves and knows how to prepare for crises. The following table also provides evidence that some countries are able to stay below the pre-crisis level of COVID-19. This raises questions about how to recover quickly from the crisis and get back on the growth path. The answer is quite clear. It is not a question of waiting for a miracle from subsidies and EU transfers, but of focusing on competitiveness. If competitiveness could be kick-started and strengthened everywhere, it could bring with it positive spin-offs such as the acquisition of markets or an increase in turnover. This study was not intended to address such issues. The only objective we had in mind was to see the range of countries that have actually been able to get through the period so far with minimal losses. Of course, in time, the situation there may change and a negative process may start.

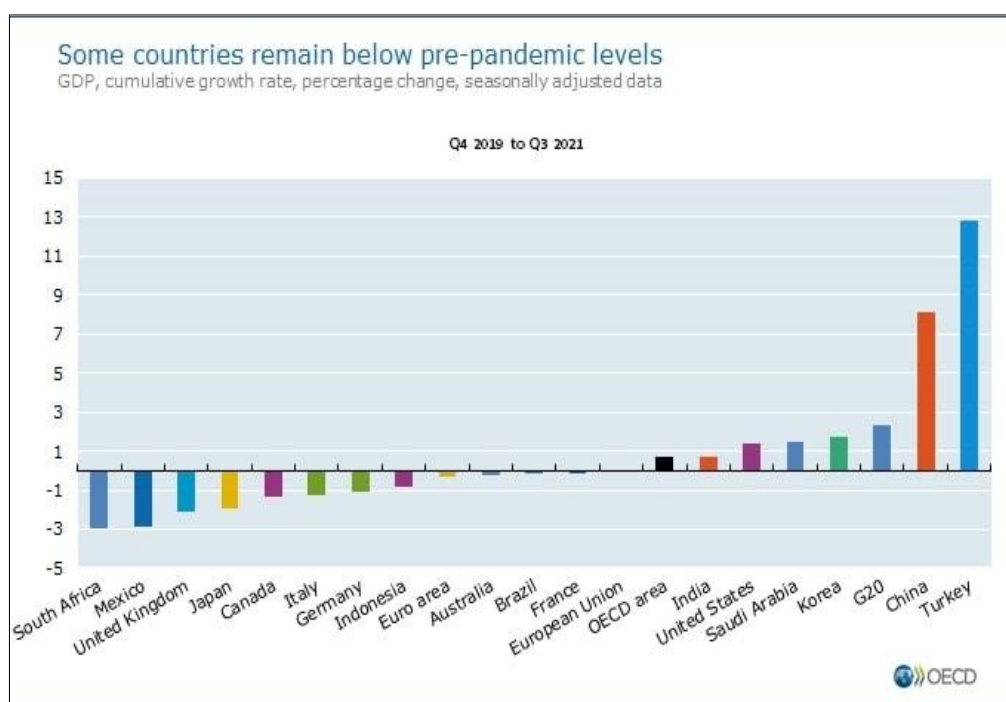


Figure 4. Some countries remain below pre-pandemic levels - Source: OECD Statistics

Conclusion

The basic aim of this study was to test two of our hypotheses. Testing these two hypotheses required statistical insight on our part. In addition to basic macroeconomic statistics, we reviewed the two following reports on competitiveness:

IMD: World Competitiveness Yearbook
WEF: Global Competitiveness Report

In addition to these two competitiveness papers, we also used the Economist and OECD papers and reports. As a reminder, the first hypothesis was the following:

H1: There is a strong presumption that after and during the crisis, there were countries that did not suffer a significant decline in GDP and even an increase in GDP during the crisis. There are significantly fewer of these countries, so that for the majority of them COVID-19 has indeed had a negative impact on GDP.

This hypothesis can be regarded as confirmed. To prove it, all we need to do is look at the statistical values that we can see, for example, next to the names of the countries in relation to GDP. But it was not just the GDP that made countries winners and losers. In many places, there were also differences in household income, changes in the structure of consumption or even the volume of investment. Investment volumes also varied widely across countries. While investment rose in some countries, it fell in others. In principle, it was inevitable that where GDP fell, investment would fall. However, we did find countries where the opposite was true, with investment falling despite GDP growth. There can be only one explanation for this. They are not getting GDP growth from investment, but from other sources. One can fully agree with the 2011 study by Gonzalo Munyo and Ernesto Talvi. Indeed, countries can be divided into groups according to how far they have overcome the effects of the crisis, whether they have achieved good or bad results as a consequence of the crisis. China is clearly the winner of the crisis and we can see this clearly in our study. Indeed, there are also countries that are losers from the crisis. Germany is one of them, as we can see and feel the downturn in its macroeconomic data. We have also been able to show that the crisis has indeed affected everyone, but that some have not suffered a major setback.

A similar conclusion can be drawn for the other hypothesis, which has also been confirmed. In it, we argued that this interesting phenomenon can be observed in the same way in international competitiveness rankings. Namely, that crises do not necessarily cause a decline in competitiveness. Some countries have been able to strengthen their competitiveness even after 2020 or have not experienced a decline. The best example of this is the IMD competitiveness material, which clearly shows the results and rankings for 2022. There are several countries that have even managed to strengthen their competitiveness, while others have unfortunately experienced a significant decline in competitiveness. This includes Poland. Indeed, Poland can be said to be one of the big losers in the crisis. This is because, immediately before the pandemic, their national competitiveness was still on a very good trajectory. Then, as a result of COVID-19, this momentum was interrupted and it suffered a serious drop in the competitiveness rankings. Add to this macroeconomic data and the picture becomes even more nuanced. Although Poland's GDP did not fall significantly, investment rates declined here too. As investment will be lower, the impact will probably only be felt in the future. Hypothesis H2 also suggested that countries could be grouped into different categories, as Talvi did in 2011.

H2: There is a strong presumption that the claim that the crisis will necessarily have a negative impact on everyone is not true. There are some countries whose international competitiveness has been strengthened even under the impact of COVID-19, so that these countries have been able to maintain their competitive position during the crisis. It can also be assumed that countries can be grouped into different categories in terms of whether they are winners or losers from the crisis. The grouping is based on which countries have experienced positive changes in GDP and competitiveness, and which countries have experienced a deterioration in these indicators.

The groups could be named in terms of being clear winners or losers following the COVID-19 pandemic. GDP and competitiveness provide the main basis for comparison. It can be concluded that China is by far the biggest winner from the COVID-19 situation. With its increasing competitiveness, GDP is also growing strongly. The biggest losers include the UK, Germany and Poland. This is because either their GDP has fallen a lot or their competitiveness has fallen too. The latter is very bad because while GDP is only a given, a weakening competitiveness means that the country cannot do much in the present to build its future.

Scientific Ethics Declaration

The authors declare that the scientific ethical and legal responsibility of this article published in EPESS journal belongs to the authors.

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Development of a Value -Based Curriculum Model for the Environment in the Vocational College Standard Curriculum in the Field of Refrigeration and Air Conditioning: A Needs Analysis

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Abstract: This curriculum model is a value-based model of environmental sustainability built through the Vocational College Standard Curriculum of Refrigeration and Air Conditioning (VCSC_ RAC). Concerning that, this study proposes a Research, Design and Development (DDR) approach which is a multi-method development research approach. The study will go through three phases and use several different research tools in each phase. The involvement of study participants from expert groups and user groups consisting of field lecturers will be able to provide various inputs and consider aspects of the model's needs in addressing the problem of the impact of refrigerants on the environment through VCSC_ RAC. The purpose of this study is to identify the needs analysis for the development of this curriculum model. The study was conducted by survey method that is using questionnaires. Questionnaires were distributed to Vocational College (VC) lecturers in the field of Refrigeration and Air Conditioning (RAC) throughout Malaysia. Researchers have found that there is a need to build a value -based curriculum model for the environment. The findings of this study indicate the need for the curriculum model to be built through VCSC_ RAC based on values towards the environment. The emphasis on the value aspect of the environment is very relevant so that the quality of teaching and learning in VC can be improved to provide students with values, awareness and responsibility towards the environment.

Keywords: Curriculum model, Needs analysis, Design and development, Suitability, Usability.

Introduction

Environmental Education should be a component of a holistic lifestyle because it is the knowledge that needs to be passed on to humans (Raman & Abu Bakar, 2019). Environmental Education should place a greater emphasis on ongoing and regular practice because this problem is entrenched in human attitudes and is less impactful despite the latest actions, laws, and advances in addressing environmental issues. Investing in the future construction of a sustainable society is the finest investment if it begins in the early stages of schooling (Raman & Abu Bakar, 2019).

The primary goal of education is to generate students who are environmentally conscious and enthusiastic. We need to be able to develop an understanding of community members first, which requires a transformative educational approach. Issues of environmental awareness and sustainability, as well as changing attitudes and behaviours toward the environment, society and economy, require a transformative educational approach

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(Kalsoom & Khanam, 2017). If teachers are not equipped to teach the younger generation about the importance of environmental sustainability, there are also impediments for the next generation to solve environmental concerns (Ashmann & Franzen, 2017). If teachers are willing to teach about environmental sustainability, then there will be a profound impact on the students themselves. To deliver environmental education, teachers should consider the use of existing materials and human resources. The views of teachers who emphasize environmental sustainability awareness illustrate the importance of environmental sustainability. Teachers' practice can familiarize students with the concept of sustainability and develop an awareness of environmental sustainability in them to influence students' awareness (Major et al., 2017). All levels of society will be given awareness and be able to contribute to understanding and facilitate continuity, not only at the individual level. In learning content, this should be a core concept of continuous practice and teaching (Wamsler et al., 2018). In shaping the changes needed to achieve sustainable development, teachers play a very important role in producing teachers who are responsible for a sustainable future (UNESCO, 2010). Therefore, teacher education programs need improvement so that teachers' awareness and attitudes toward the environment become one of the things that affect the ability of teachers in the implementation of Environmental Education (Yusof et al., 2013). In the learning process, students need to go through behaviour and oral language both explicitly and implicitly. Teachers' positive attitudes towards environmental care are closely related to positive behaviours towards environmental care. Students also build knowledge and behaviour not only through a planned formal learning process but also based on observations made.

Problem Statement

RAC field students in VC follow the VCSC_RAC curriculum. Students in this RAC field will learn about refrigerants. Before students use refrigerants in their learning, they should be made aware of the dangers that these refrigerants pose to the environment, such as global warming and ozone layer depletion. Something must be done to avoid the current environmental degradation, which is growing increasingly frightening. Extreme weather conditions have been impacted by global warming and ozone layer depletion. To sustain and restore ecosystems, collective efforts and individual awareness must be increased (Aarnio-Linnanvuori, 2019). This problem that arises is rooted in human attitudes and behaviours themselves but is less effective even if there are legal actions or technological innovations created to solve this problem. Changes in attitudes and behaviours can only be achieved through education if it is put into practice (Yalcin et al., 2016). Most environmental awareness programmes should focus on environmental care and economic development awareness to provide a more sustainable environment in terms of social issues (Mahat et al., 2014). We must also remember that education is more than just the content of knowledge that must be transmitted; it is also a way of life that must be maintained. Because environmental education is taught across the curriculum in Malaysia, teachers must be creative in integrating lesson content with environmental education (Rahman et al., 2018). According to Mukaddes and Agnello (2009), students are given the opportunity in sustainable education to integrate considerations of the environment in taking any decision more prudently. Dedicated teachers can maintain, animate and instil positive values in students (Maheshwari, 2005).

Ozone is a molecule that contains 3 oxygen atoms. Ozone acts as an earth protector that absorbs ultraviolet rays from the sun. Chlorofluorocarbons (CFCs) and Hydrochlorofluorocarbons (HCFCs) are major ozone depleters in the stratosphere. Ozone Depleting Potential (ODP) is a scale that measures the ability of ozone-depleting substances or Ozone Depleting Substances (ODS) such as CFCs and HCFCs that destroy ozone. CFCs have a higher ODP than HCFCs. The ozone layer that protects the earth is undergoing depletion because of human activities. The effects of ozone depletion are such as skin cancer, eye diseases, weakening of the immune system and so on. Global warming is an increase in the average temperature of the air on the earth's surface and sea since the middle of the 20th century and is expected to continue. Global Warming Potential or Global Warming Potential (GWP) is a relative measure of the heat of greenhouse gases trapped in the atmosphere. The effects of global warming such as extreme weather changes, heat waves, prolonged hot weather as well as droughts will cause changes in the pattern of rainfall distribution.

The teacher in teaching and learning is a person who is always present and near to the students. Teachers are supposed to use VCSC_RAC to teach kids values that will help them appreciate the environment. This is a way for students to learn about the environment while servicing and maintaining the RAC system in the early phases of their education before entering the industrial sector. As a result, this curriculum model construction study is critical for integrating environmental values in VCSC_RAC. This is done to ensure that pupils are aware of the importance of the environment from a young age in the classroom before entering the industrial sector.

Purpose of the Study

This study aims to identify the need to build a curriculum model in VCSC_RAC based on values toward the environment.

Research Questions

Phase One (Needs Analysis)

- a. Why is it necessary to build a Curriculum Model based on values towards the environment?
- b. What are the content requirements in the construction of a value-based Curriculum Model for the environment?

Needs Analysis

Studies on the appreciation of students' values nowadays are very few (Mohamad Khairi et al., 2015). Researchers emphasize that students need to be provided with knowledge of values and must be reinforced with awareness, confidence, appreciation, and practice. This can only be done when the school is considered as an institution that is aware of the value aspect that can provide sufficient opportunities for students to appreciate and practice these noble values. According to Witkin (1997) needs analysis is a method used to identify the gap between the current situation and the target situation. While McKillip (1997) stated that needs analysis is the value of judgment for certain groups that have problems that need to be solved. Needs analysis aims to investigate existing issues and needs to build this curriculum model. The designed curriculum model can serve as a practical guide, on how learning pedagogy can help teachers meet the needs of students to attract their interest in the subject through engaging teaching methods (Saleh & Siraj, 2016). Needs analysis in this study will be conducted through a survey method to identify the need for the construction of this curriculum model based on the views of lecturers of Vocational College-Refrigerant and Air Conditioning (VC_RAC) in Malaysia. Study participants were given a set of questionnaires in the form of a Likert scale to obtain feedback on the need for the construction of this curriculum model.

The purpose of the questionnaire sent to VC_RAC instructors was to evaluate if they should have a curriculum model that includes the value aspect of awareness activities in their classes. This curriculum model can be used as a guide by lecturers in the teaching process, and its application is most effective when lecturers use it in workshops. The study's questionnaire items were created using Constructivism Theory and Priority Theory as a guide, as well as the Bennert Model (1974) and the Taba Development Model (1962). Model content requirements and model construction requirements are the two fundamental constructs explained by this theory. As a result, a requirements analysis study is required to determine the need for the creation of this curriculum model.

Operational Definition

Refrigerant

In a RAC system, a refrigerant is used as a heat absorber in the evaporator and removes that heat in the condenser. Under low-pressure conditions, the refrigerant changes shape from a cold liquid to a cold gas in the evaporator during the evaporation process. The refrigerant will change shape from a hot gas to a hot liquid under high-pressure conditions during the condensation process that takes place in the condenser. Other names for refrigerants are freon, fron, genetron, isotron and neon. These names exist based on the countries that use them. The use of refrigerant varies according to the system that requires it as well as having different boiling points at different pressures. There are 4 types of refrigerants according to the chemical elements contained in the refrigerants, namely CFC, HCFC, HFC and HC. Researchers will try to apply environmental elements in the curriculum model so that students have an environmentally responsible nature while doing the work of servicing the RAC system.

Environmental Education

The process of environmental education involving human interaction with the environment is known as Environmental Education. For the sake of universal well-being, humans need to manage the environment with full responsibility. It is a learning process to understand human interaction with the environment and how the environment is managed wisely. The focus of this scholarly paper is to build awareness, foster positive attitudes as well as encourage students to take note of issues related to the environment. Therefore, the definition of Environmental Education in this study refers to the application of environmental elements in VCSC_RAC.

Application of Environmental Values Through the Curriculum

According to the Center for Curriculum Development (1998), the application of values across the curriculum refers to the process of inserting, integrating, and making connections about the environment into the content of all subjects. The environmental elements to be implemented in VCSC_RAC are consistent with the integration in all subjects. RAC students will use cooling materials in teaching and learning up to the world of employment in the industrial sector after graduation. Therefore, the value requirement on the environment in the VCSC_RAC curriculum model is necessary.

VCSC_RAC

At Vocational Colleges (VC), VCSC is a specialized education curriculum for students pursuing post-secondary vocational education and training at VC. VCSC is formulated according to the occupational competency standards set by the occupational standards organization and its level of learning meets the requirements of the Malaysian Qualifications Framework (MQA) levels 1 to 4. The structure of VCSC consists of three modules namely (1) academic modules, (2) vocational modules and (3) competency modules (KPM, 2011). In 2012, VCSC was first introduced in 15 selected pilot VCs. In the context of the general goals of the national education system, VCSC is designed to form a strong, knowledgeable and highly skilled human capital, namely: (1) to produce students with high-level job competencies and meet the needs of the industry; (2) fostering professional character; (3) to produce competent students who are competitive entrepreneurs in their chosen vocational field; (4) provide knowledge for further studies at higher levels; and (5) fostering a love of lifelong learning (MOE, 2011a). In this context, VCSC refers to the VCSC of the RAC field.

Methodology

This paper aims to look at how this curriculum model acts as a special guide for RAC lecturers to apply values to the environment through their teaching. The model that will be designed can serve as a practical guide that allows this model to help lecturers meet the needs of students and be able to attract their interest in applying values to the environment through interesting teaching methods. This needs analysis study used a set of questionnaires for data collection. The questionnaire was adapted and modified from the study of Ariffin (2018). The questionnaire used a five-point Likert scale of 1 = strongly disagree, 2 = disagree, 3 = disagree, 4 = agree, and 5 = strongly agree. This questionnaire consists of 3 sections. Part A is related to demographic factors and contains 5 questions related to a career as a VC_RAC lecturer. Part B deals with the content requirements of the model on aspects of environmental values. Part C deals with the curriculum model construction requirements in the recommended VCSC_RAC. The respondents of the study consisted of lecturers who teach RAC subjects in VC around Malaysia involving the Southern Zone, Central Zone, Eastern Zone, Northern Zone, Sarawak Zone and Sabah Zone. A total of 121 respondents were involved in the study which was self-managed by the researchers through Google Forms distributed through *Whatsapp* and Telegram applications. The data obtained were analysed through descriptive statistics using SPSS Version 23. Descriptive statistics were used in this study because the data generated can be considered as a summary of the entire data set (Saleh & Siraj, 2016). It is also able to provide information directly and easily. The descriptive statistics used were frequency, percentage, mean and standard deviation. The analyses were performed using descriptive statistics including percentage, frequency, and mean score. This analysis was used to show the composition of respondents and demographic characteristics of teachers such as gender, age, VC_RAC zone, academic qualification, and teaching experience.

Table 1 Interpretation of mean score of VC_RAC lecturer approval (Pallant, J, 2010)

Mean Score	Mean Score Interpretation
1.00 – 2.33	Low
2.34 – 3.66	Medium
3.67 – 5.00	High

Findings

Section a (Demographics)

The distribution of respondent data is described as shown in Table 2 covering gender, age, academic qualification, VC_RAC Zone and teaching experience.

Table 2. Demographics

Aspect		Percentage
Gender	Male	65.3% (N=79)
	Female	34.7% (N=42)
Age	20 until 30 years old	11.6% (N=14)
	31 until 40 years old	38.8% (N=47)
	41 until 50 years old	26.4% (N=32)
	51 until 60 years old	23.1 (N= 8)
Academic Qualification	Certificate/Diploma	4.1% (N=5)
	Bachelor's Degree	88.4% (N=107)
	Master's Degree	7.4% (N=9)
	Philosophy Doctor	0.8% (N=1)
Zon VC_RAC	VC Southern Zone	24% (N=29)
	VC Central Zone	24% (N=29)
	VC Eastern Zone	26.4% (N=23)
	VC Northern Zone	23.1% (N=21)
	VC Sarawak Zone	5.8% (N=7)
	VC Sabah Zone	12.9% (N=12)
Teaching Experience	Less than 2 years	5.8% (N=7)
	2 until 5 years	30.6% (N=37)
	6 until 10 years	5% (N=6)
	11 until 15 years	10.7% (N=13)
	15 until 20 years	5.8% (N=7)
	More than 20 years	43% (N=52)

A total of 121 VC_RAC lecturers were distributed by gender into 79 male lecturers (65.3%) and 42 female lecturers (34.7%). In terms of age, the highest percentage was in the group of 31 to 40 years (38.8%) while the group of 20 to 30 years had the lowest percentage. Next, for academic qualifications, the majority have a bachelor's degree while other qualifications have a low percentage. The percentage of VC_RAC lecturers who answered the questionnaire from the Zone in the Peninsula is higher than in the Sabah/Sarawak Zone because there is only one VC_RAC in Sarawak and 3 VC_RAC in Sabah compared to the number of VCs in the Peninsula. However, in terms of teaching experience, the percentage of VC_RAC lecturers who have been teaching for more than 20 years is ahead and recorded the highest percentage compared to other teaching period categories.

Overall, the findings of this need analysis questionnaire can be considered strong and answer the needs analysis research question because the respondents are comprised of field lecturers who have academic/professional qualifications and extensive teaching experience in the field of RAC. Most of them have taught for more than 10 years and have other qualifications such as Sijil Kemahiran Malaysia (SKM) book author, curriculum drafter, Assessing Officer of the Skills Development Department, Internal Verification Officer, Professional Technologist (TS) Malaysian Board of Technologist (MBOT), Vocational Training Officer (VTO) instructor certificate, Vocational Training Executive (VTE), skills competition judges and so on. The researcher found that the findings of the needs analysis obtained from these respondents who consist of RAC lecturers with extensive experience are the results of very valuable and high value and strong findings due to the aspects of the respondents that have been described in detail above.

Section B (Model Content Requirements)

This section is intended to determine the extent to which VC_RAC lecturers need this curriculum model in their teaching, and this is measured based on the question items that have been distributed to the respondents through the questionnaires. The level of needs is measured based on the interpretation of mean values which are divided into three levels of achievement, namely low level of achievement (Mean 1.00 to 2.33), medium level of achievement (Mean 2.34 to 3.66) and high level of achievement (Mean 3.67 to 5.00) (Pallant, J., 2010). Table 3 shows the analysis of all items found in the content requirements of this model. Overall, all items in the model content requirements construct are at a high level of interpretation. The interpretation of the mean score to obtain teachers' agreement on the need to build this curriculum model is shown in Table 3

Table 3. Mean scores and standard deviations for all items found in the model content requirements construct

Item	Mean	Standard Deviation	Interpretation
1. Elements of environmental values need to be implemented in the VCSC-RAC.	4.62	.536	High
2. The application of elements of environmental values in VCSC-RAC can educate students to be concerned about the environment.	4.65	.512	High
3. The application of value elements of the environment in VCSC-RAC can shape positive behaviours towards the environment.	4.56	.546	High
4. The application of value elements of the environment in VCSC-RAC can provide knowledge and form a positive attitude towards the environment.	4.50	.565	High
5. The application of value elements of the environment in VCSC-RAC can create the nature of interdependence between humans and the environment.	4.45	.516	High
6. The cause of environmental pollution is human attitudes.	4.63	.519	High
7. The quality of the environment is very important in a country.	4.67	.490	High
8. Eco-friendly means not harming the environment.	4.64	.500	High
9. Schools/educational institutions play a role in increasing students' awareness of the environment.	4.56	.546	High
10. Teachers play a role in producing students who are positive towards the environment.	4.54	.563	High
11. Teachers are responsible for achieving the objectives of value-based learning toward the environment.	4.36	.632	High
12. Teachers play a role in raising awareness about the impact of refrigerant gases on students.	4.57	.560	High
13. Teachers have a role in increasing students' awareness of global warming and ozone depletion due to the release of refrigerant gases into the atmosphere in teaching.	4.55	.562	High
14. Teachers play a role in raising the awareness of students who belong to individuals who handle refrigerants and can have an impact on global warming and ozone layer depletion.	4.61	.522	High
15. Teachers play a role in raising students' awareness of the responsibility not to release refrigerants into the atmosphere while doing maintenance work on Refrigeration and Air Conditioning systems.	4.60	.510	High

Table 4. Mean of overall construct model content requirements

Frequency (N)	Mean	Standard Deviation
121	4.5675	.39074

Based on Table 4, the mean value for the entire model's content requirements construct is 4.5675 while the standard deviation is .39074. This indicates that the selected respondents strongly agree with the content requirements of the model. This is because the level of agreement of the requirements to the content of the model is in the range of the 'agree' and 'strongly agree' scales. This indicates that a value-based model content on the environment in VCSC_RAC needs to be built as guidance in teaching to produce environmentally responsible students while using refrigerants in servicing and maintaining RAC systems.

Section C (Requirements for Model Construction)

Table 5 shows the analysis of all the items found in the requirements for the construction of this model. Overall, all items in the construct of requirements for the model are at a high level of interpretation.

Table 5. Mean scores and standard deviations on all items found in the construction requirements for model construction

Item	Mean	Standard Deviation	Interpretation
1. A comprehensive guide is needed to increase awareness of values towards the environment.	4.64	.483	High
2. I need guidelines to increase the environmental values in teaching.	4.59	.543	High
3. Increasing environmental values needs to have a specific process.	4.53	.533	High
4. I need guidance in the process of increasing environmental values.	4.49	.593	High
5. Students need to be guided with the right methods to increase the value of the environment.	4.60	.491	High
6. The process of increasing the value of the environment should be based on various activities in teaching.	4.56	.546	High
7. An activity-based model for increasing environmental values needs to be built.	4.50	.550	High
8. The construction of teaching models is necessary for the application of values to the environment.	4.50	.550	High
9. The construction of teaching models can promote environmental awareness among students.	4.49	.518	High
10. The construction of teaching models is suitable for students in the field of Refrigeration and Air Conditioning who frequently use refrigerants.	4.52	.564	High

Based on Table 6, the mean value for the entire construct of the need for the construction of this model is 4.5413. This indicates that the selected respondents strongly agree with the model construction requirements. This is because the level of agreement of the requirements for model construction is in the range of 'agree' and 'strongly agree'. This indicates that the construction of value-based models of the environment in VCSC_RAC needs to be built as guidance in teaching to produce environmentally responsible students while using refrigerants in servicing and maintaining RAC systems.

Table 6. Mean for overall construct requirements for model construction

Frequency (N)	Mean	Standard Deviation
121	4.5413	.42459

Discussion and Implications of the Study

The National Philosophy of Education intends to produce balanced and harmonious human beings physically, emotionally, spiritually, and intellectually based on faith and obedience to God (Center for Curriculum Development, 2005). Producing a moral and ethical society is one of the challenges for the country to become a developed country by 2020 (Mohamad Khairi et al., 2015). To realize the country's aspirations, the stability and purity of the country's education system is an important foundation. In shaping morals, one needs to master knowledge, skills, and good attitudes. Findings for the first research question regarding the lecturer's perception of the need to build a model showed that respondents believe that this model can increase students' awareness of the environment. This is seen through the findings regarding the tendency of respondents to use this model as a guide in appropriate teaching based on the topics taught. Respondents' perceptions of the overall construct have shown a positive perception of the need for the construction of this model. This shows that the respondents agreed on the need to build a model that leads to students' awareness of the environment. This has been emphasized in VCSC_RAC which suggests that lecturers can use available resources more effectively to enable students to obtain additional information and resources.

The results of the needs analysis found in phase one showed that the respondents had a positive perception of the construction of the model which serves as a guide. In other words, the researcher has obtained a license to continue the study in phases after getting answers at the needs analysis stage. Findings from this needs analysis also support Chong's (2012) view that changes in education in Malaysia require changes in teaching and learning in the 21st century. Therefore, teaching and learning methods based on environmental awareness in VCSC_RAC should be exposed to students. These findings enable this model to be implemented as a support and guide for the lecturers in teaching. Since the findings of this needs analysis are support and guide to teaching, then these findings can be used as a platform to design a model that can be used as a guide by lecturers to create student awareness of the environment. This is one of the alternative approaches to teaching for the future and the formation of a flexible and organic curriculum according to the mould of the Industrial Revolution 4.0.

Conclusion

Findings from the needs analysis show that there is a need to produce a teaching guide that is based on environmental awareness as a guide to lecturers. This is in line with UNESCO's requirement that educators should also play a role in creating students' awareness of the environment. Educational practitioners need to take advantage and make the best use of opportunities to build a learning environment based on environmental awareness. The findings of this needs analysis show that it is time for researchers to be allowed to build a curriculum model as a guide in teaching. The construction of a value-based curriculum model for the environment should be implemented for this purpose. It can be concluded that the findings of the needs analysis indicate that there is a need to build a curriculum model that can create awareness of the impact of refrigerant emissions on the atmosphere that can cause global warming and ozone layer depletion.

Scientific Ethics Declaration

The authors declare that the scientific ethical and legal responsibility of this article published in EPESS journal belongs to the authors.

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Implementation of Higher Order Thinking Skills (HOTs) in Teaching Malay Language Writing Skills among Preschool Teachers

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Abstract: In the Malaysian Education Development Plan (PPPM 2013-2025), one of the aspects that is the focus is the implementation of Higher Order Thinking Skills in teaching and learning in schools. In this regard, teachers need to apply HOTs in teaching in order to train and improve students' thinking skills creatively and critically. In addition, in teaching Malay writing skills, teachers need to be more creative in determining HOTs-based teaching methods as writing skills are the most difficult skills to master compared to other skills. Therefore, HOTs are important to be applied in the teaching of writing skills starting from the early stages of education in preschool in order to train preschoolers to think high level and be cultured with HOTs. Hence, preschool teachers need to master the knowledge on the implementation of HOTs so that the teaching process are of excellent quality and can stimulate the thinking of the students to the highest level of HOTs. Thus, this concept paper will discuss the problem of the implementation of HOTs in Malay language writing skills, the importance of teachers applying HOTs in teaching and learning by detailing the planning and implementation of HOTs in pedagogy as well as parsing the teaching and learning strategies of HOTs.

Keywords: Higher order thinking skills, Preschool teachers, Teaching and learning, Writing skills, National preschool standard curriculum.

Introduction

One of the government's efforts in ensuring that the education system today is comparable to that of developed countries, the Ministry of Education (MOE) has introduced the Education Development Plan (PPPM 2013-2025). In this PPPM (2013-2025) programmed, various goals need to be achieved to ensure that teachers and pupils are at the maximum level of quality. One of the MOE's aspirations in PPPM 2013-2025 is to inculcate HOTs where teachers are expected to apply HOTs to the maximum extent possible in teaching and learning in the classroom. Thus, Malay language education is no exception in realizing the MOE's aspiration. In addition, Malay Language is a core subject that must be mastered by all students from preschool education to secondary school level.

In the National Preschool Standard Curriculum (KSPK revision 2017), Malay writing skills are one of the important skills organized in the communication pillars of language skills besides listening and speaking skills and reading skills. There are content standards, learning standards and performance standards that preschoolers need to master. Among the points highlighted is the HOTs which is explicitly stated in the writing of learning

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standards where preschool teachers need to elaborate learning standards in teaching and learning in the classroom with emphasis on HOTs (BPK KPM, 2016). The MOE's aspiration in PPPM (2013-2025) is in line with KSPK's goal which aims to develop the potential of students aged four to six years as a whole and integrated in physical, emotional, spiritual, intellectual, and social aspects through a safe and nurturing learning environment as well as fun, creative and meaningful learning activities. This is to enhance their skills, instill confidence and develop a positive self-concept in the students so that they are ready for the challenges and follow the next learning (BPK, MOE 2016). Thus, HOTs serves as an important element that preschool teachers need to apply in teaching Malay language writing skills to foster a culture of critical, creative and innovative thinking as early as preschool education.

In the implementation of Malay Language education teaching in pre-school, these writing skills include mechanical and mentalist writing skills. Children need to be exposed to mechanical and mentalist writing skills in a balanced and integrated manner at the preschool education level. Mechanical writing skills begin at the early education stage which involves a lot of fine motor skills activities (Ummu Afifah et al, 2021), whereas mentalist writing skills involve children's thoughts or opinions that emphasize the meaning of the writing produced by them (Tompkins & Jones, 2019). In this regard, the main focus of the discussion is on the mentalist writing skills which is, the teacher needs to train the thinking skills of pupils from the early stages of education in preschool. In this regard, this is very closely related to HOTS. In teaching Malay Language writing skills, preschool teachers need to apply the HOTS element during the teaching and learning process in the preschool classroom. HOTS are emphasized in teaching and learning so that teachers can stimulate structured and focused thinking among students. HOTS descriptions are focused on four levels of thinking such as table 1 (BPK KPM, 2016).

Table 1. Thinking levels (Moe, 2014)

Stages of thinking	Descriptions
Applying	Using knowledge, skills, and values in different situations to implement things
Analyzing	Evaluate information into small parts to understand more deeply and link between the sections
Evaluating	Make considerations and decisions using knowledge, experience, proficiency, and value and justify
Creating	Produce creative and innovative ideas or products or methods

Literature Review

Thinking Skills

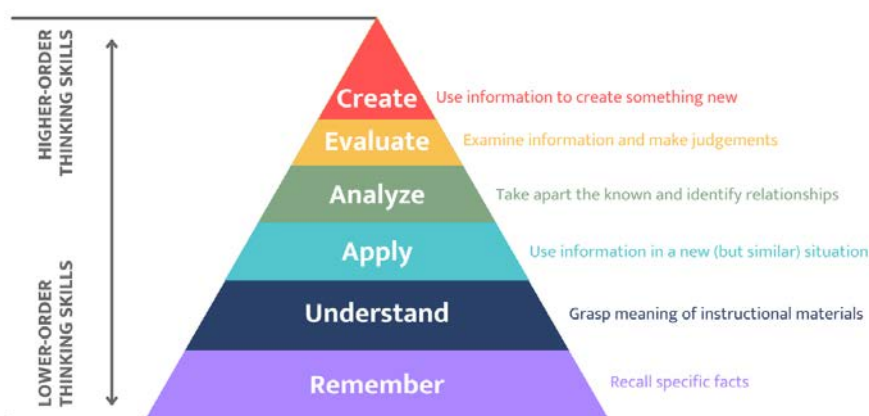


Figure 1. Levels of thinking

Levels of Thinking Skills

Based on Bloom's theory (The Anderson Review 2001), thinking skills have different levels ranging from the level of the simplest thinking ability to the most critical. There are 6 levels (Figure 1) in the Anderson review

hierarchy adopted in the Curriculum and Assessment Standards Documents (DSKP) to be used as guidance by teachers. Each level has specific indicators of skills with the characteristics of abilities and mastery of thinking skills in accordance with the appropriateness of the development of the pupil's self-potential. There are two main levels of thinking skills which are lower-order thinking skills (LOTS) and higher-order thinking skills (HOTS). The figure below shows the levels of thinking skills and a description of the characteristics of thinking abilities and mastery for each level.

Higher- Order Thinking Skills (HOTS)

HOTs are defined as the ability to apply knowledge, skills, and values in making reasoning and reflection to solve problems, make decisions, innovate and be able to create things (MOE, 2013). HOTs can be identified in Content Standards (SK) and Learning Standards (SP) through thought-level verb statements in Anderson's revision Bloom Taxonomy such as Figure 2. Based on the definition of HOTs in Figure 2, HOTs refers to the skills of applying, analyzing, evaluating and creating. In the context of this study, this skill was identified as the level of thinking that is the focus in the determination of the Content Standards (SK) and Standards of Learning (SP) for Malay Language subjects in the writing skills of preschoolers that need to be applied by the teacher in the classroom to ensure that preschoolers master the HOTs skills.

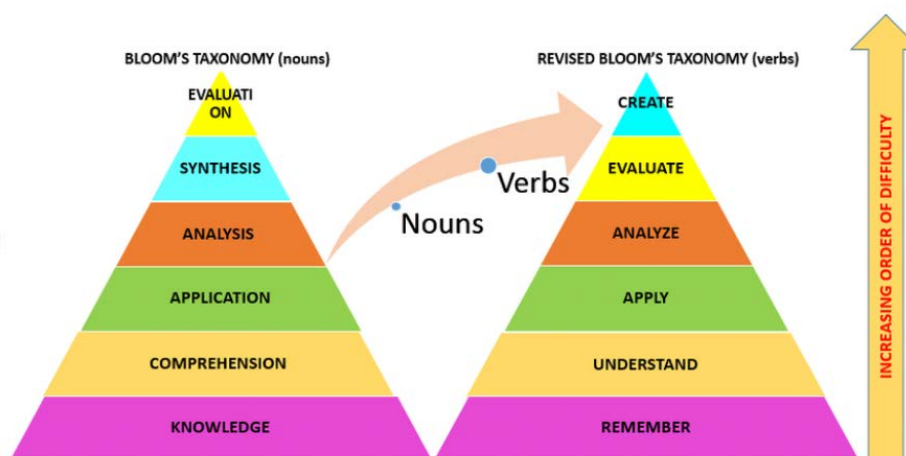


Figure 2. Thinking level hierarchy (Moe, 2014)

HOTs are the highest level in the cognitive process hierarchy. HOTs occurs when a person gets new information, stores in memory and organizes, associates with existing knowledge and generates information to achieve a purpose or solve complex situations. Therefore, HOTs are very important to everyone as HOTs can challenge someone to perform, analyze and manipulate information (Widad et al, 2011). Therefore, we can look from various perspectives to solve problems in certain situations especially high-level critical problems. (Mokhtar, 2017).

HOTs is explicitly stated in the curriculum so that teachers can translate in teaching and learning to stimulate structured and focused thinking among students. HOTS description focuses on four levels of thinking which are the skills of applying, analyzing, evaluating and creating. This skill is identified as the level of thinking that is the focus in the determination of the Content Standard (SK) and The Standard of Learning (SP) for the subjects taught in schools to ensure that students master the HOTs as envisaged by the MOE. At the level of applying, it requires students to use knowledge, skills, and values in different situations to do something. In this context, students are able to solve problems by applying concepts that they understand through teaching and learning activities. Among the verbs related to the level of applying thinking are drawing, pointing the way, adopting, using, pointing, solving, classifying, drawing, implementing, checking, sketching, complementing, adapting, building, and predicting (BPK KPM, 2014).

At the analysis level, students are able to map the information into small parts to understand more deeply and connect the links between the sections. In this context, students are able to interpret the roles and functions of each small part to understand a whole concept. Among the verbs related to the level of analytical thinking are identifying, categorizing, examining, separating, conducting experiments, screening, explaining, displaying,

predicting, analyzing, explaining, detecting, examining, testing, comparing, evaluating, distinguishing, and investigating (BPK KPM, 2014).

Next, the level of evaluate thinking can be realized when the pupil makes judgments and decisions using knowledge, skills and values and gives justification. Among the verbs related to the level of evaluation thinking are evaluating, choosing, considering, prioritizing, defining, discussing, confirming, defending, proposing, discussing, evaluating, supporting, concluding, using, assessing, reasoning, and making decisions (BPK KPM, 2014).

The level of create thinking is the highest level of HOTS which is pupils come up with creative and innovative ideas or products or methods. Among the verbs related to the level of thinking of creating are planning, developing, generating, installing, reorganizing, predicting, creating, preparing, constructing, formulating, designing, combining, proposing, and composing, (BPK KPM, 2014).

However, in the context of teaching and learning in preschool specifically in writing skills, preschool teachers are limited in determining the level of HOTS based on the learning standards contained in the 2017 revision KSPK. This is because, learning standards preschool Malay writing skills do not all characterize HOTS verbs. However, it does not prevent preschool teachers from applying the HOTS element in teaching and learning writing skills. Preschool teachers need to be creative in diversifying teaching techniques because if they clearly understood about the implementation of HOTS, it is a form of application that HOTS can be applied according to the appropriate level of the pupil's thinking and the main factor is that the teacher needs to understand and be creative in diversifying the teaching strategy starting from the preparation before teaching which involves the work of selecting learning standards and content standards determining the teaching aids that correspond to the level of learning standards that has been chosen, set up questions based on HOTS and determine the type of assessment that challenges the students' minds. At the implementation stage, teachers need to carry out learning activities in the classroom in a manner of delivery that can generate students' ideas, and always actively involve students in teaching and learning activities. At the assessment level, the teacher needs to prepare written questions that challenge the student's mind according to the level of suitability of the pupil.

HOTS also needs to be understood as the ability to apply knowledge, skills and values in making reasoning and reflection to solve problems, make decisions, innovate and be able to create things. HOTS includes critical thinking, creative and reasoning skills and thinking strategies. Critical thinking skills are the ability to evaluate an idea logically and rationally to make reasonable judgments using reasonable reasoning and evidence. Creative thinking skills, on the other hand, are the ability to produce or create something new and valuable by using original imagination and thinking not according to the prevalence, meantime, when reasoning skills are the ability of the individual to make judgments and judgments logically and rationally. Finally, thinking strategies are a structured and focused way of thinking to solve problems (BPK KPM 2013).

HOTS can be applied in the classroom through activities in the form of reasoning, inquiry learning, problem solving and projects. Teachers and pupils need to use thinking tools such as thought maps and mind maps as well as high-level questioning to encourage pupils to think (BPK KPM, 2014).

Thus, the teacher's understanding of the meaning of HOTS as well as the use of verbs in the level of thinking found in the curriculum document enables the teacher to prepare the appropriate teaching and learning content and work out the content of the subjects that meet HOTS. Teachers need to be able to elaborate curriculum documents by identifying the appropriate use of HOTS verbs according to the subjects taught and being able to apply them in the form of teaching and learning activities that challenge the mind and stimulate the learning of students.

The Implementation of Higher-Order Thinking Skills in Malay Language Writing Skills

Writing skills is one of the important skills in learning the Malay language that is emphasized in the education curriculum in Malaysia (Norfaizah et al, 2015). This is because the writing skill process is the highest and complex language skill to be mastered in the Malay language subjects. Writing skills are also more challenging to teach pupils as most pupils are unable to fully master writing skills. This situation is due to the need for the writing skills themselves which requires an individual to think before, during and after the writing process is implemented. (Marzni et al, 2018).

According to (Olness, 2005), the teaching of writing skills is a structured condition in which children are guided through the correct writing steps. Teachers have a complex task in creating a learning environment that provides exploratory opportunities during writing learning (Mack, 2012). In teaching and learning Malay Language, writing skills are one of the skills that all students need to master from primary to secondary school level (Hijrah et al, 2019). Therefore, teachers need to have the best teaching methods and strategies to ensure the effectiveness of teaching during teaching and learning writing skills in the classroom. Teaching writing skills needs to involve students more in writing activities and not just teacher centered.

However, the teaching methods of writing in schools are more conventional in nature and discourage the creativity of pupils today. Therefore, bilateral interaction and active learning that contribute to creative thinking cannot occur in the classroom (Azieyana & Christina 2018). Accordingly, pupils often have trouble sparking and generating ideas in writing. Lack of ideas is a common problem for students when they start writing which affects the quality of the writing produced (Dian et al, 2018).

Therefore, teachers play an important role in planning the teaching and learning process with the aim of providing knowledge input to students as well as providing meaningful experiences to students. This is highly dependent on the ability of teachers to use the variety of teaching methods and approaches to convey knowledge to students to maintain their attention in the classroom (Marzni et al, 2018). Therefore, writing skills are very closely related to thinking skills. According to (Ahmad Fikri & Zamri 2019), the lack of students in mastering thinking skills will make them weak in writing. If writing skills do not improve, the ability of pupils to express their thoughts or ideas through written form will decrease or not develop (Hamzah et al, 2018).

In this regard, the implementation of HOTs in teaching and learning writing skills is very important to attract interest as well as to be able to improve pupils' thinking skills through activities that can promote pupils' thinking skills. Through the planning and implementation of such activities, guidance from teachers is essential so that thinking practices can be enhanced in teaching and learning writing skills (Nur Shahirah & Zamri Mahamod, 2021). Malay language teachers need to have knowledge and mastery of HOTs as the thinking skills can influence the teachers' perception of the effectiveness of teaching and learning in the 21st century (Shahirah & Mahamod, 2021).

In the context of preschool, HOTs should be applied through the planning and implementation of teaching and learning effectively. Planned activities should provide a nourishing and enjoyable experience, actively and safely engaging pupils. Teachers are encouraged to use creativity to select, organize, process and diversify activities based on the Learning Standards so that activities in the form of reasoning, inquiry learning, problem solving, and projects can be applied (BPK, MOE 2016).

However, a researched by (Zaidon & Ayob, 2013) in preschool classes showed that teachers are less emphasized on the aspects of the writing process to students, but rather on the mechanical aspect of writing. This statement is also supported by (Graves & Stuart, 1985) and (Mahzan Arshad, 2012) which is that the writing training in schools emphasizes the structure of the language that does not mean anything to children other than not being interested in them. Preschool teachers lack writing activities that require children to generate their own ideas or write for the purpose of communicating (Siti Iwana Sharizah Abu Samahet al, 2013). Past studies have also shown that preschool teachers regularly use copying, training, and questioning activities as the main activity in writing teaching strategies. This proves that preschool teachers do not have a special approach in teaching writing. This situation can create an imbalance in language literacy at the preschool level. The thinking of preschoolers will be more aroused if the teacher is well versed in diversifying teaching methods especially in writing skills (Sharizah et al, 2014).

Therefore, preschool teachers need to master their knowledge in applying HOTs to preschoolers especially in the ability to write Malay Language by mastering knowledge in planning and implementing to ensure that HOTs teaching and learning strategies are implemented effectively.

Implementation of HOTs Based on Ministry of Education (MOE) Guidance.

Planning and Implementation of HOTs in Pedagogy

An effective HOTs teaching and learning approach needs to be pupil-centered by actively engaging them in teaching and learning through thought-challenging assignments and questions. Therefore, teachers need to create a conducive classroom environment to stimulate students to think. Teachers can also use thinking tools

and questioning techniques to inculcate critical and creative thinking among students. Pedagogy involving thinking students has long been implemented, through programme such as Critical and Creative Thinking Skills (KBKK) implemented in schools in 1994. This programme is continued and strengthened with the introduction of HOTS as recommended in PPPM (2013-2025). The knowledge, skills, values, and attitudes that an individual has play an important role in the process of thinking. All these aspects become the background for reasoning and reflection so that it allows an individual to think a higher level in the context of being able to make decisions, solve problems, innovate, and create. In this process, four high levels of thinking are given focus which is to apply, analyze, evaluate, and create (BPK KPM, 2014).

Therefore, in order to implement HOTS in teaching and learning process, teachers need to do research by referring to the standard of learning stated in the Curriculum and Assessment Standard Document (DSKP). The standard of learning is a statement of what students should know and can do. If the statement refers to the level of HOTS, the teacher needs to perform actions such as referring to the learning standards and identifying the appropriate elements of HOTS to be applied (BPK KPM, 2014). If the verb in learning standards does not characterize HOTS, teachers are encouraged to diversify the content of the lesson by applying HOTS in any part throughout the teaching and learning process. For example, in preschool writing skills, learning standards for BM 3.2.5 is copying simple sentences. If viewed this learning standards does not characterize the element of HOTS that a preschool teacher needs to apply in principle. However, the preschool teacher can insert HOTS during the induction set activities and during the teaching activities including the method of questioning by unearthing the idea of the pupil before the simple sentence copying activity is carried out at the end of the learning.

After the teacher has finished determining the learning standards, teacher needs to plan a teaching and learning by providing a Daily Lesson Plan (RPH) and Learning Aids (BBB). Teachers need to state the objectives of learning explicitly and provide activities that allow students to use HOTS. Teachers also need to provide BBB that can promote student HOTS (BPK KPM, 2014).

At the implementation of teaching and learning stage, teachers need to use appropriate thinking tools with the pupil level by asking questions that can encourage students' HOTS as well as creating a classroom environment that helps students to use HOTS (BPK KPM, 2014). Assessment activities conducted at the end of teaching and learning process should provide questions about HOTS to challenge the students' thinking. In the closing part of teaching and learning, teachers also need to reflect on the effectiveness of teaching and learning in promoting students' HOTS (BPK KPM, 2014).

HOTS Teaching and Learning Strategies

Teachers need to plan and implement HOTS through various teaching and learning strategies that are effective and in line with the objectives of teaching and learning. The teaching and learning strategies that can be used are constructivism, contextualized learning, project-based learning, inquiry, and future studies. The right strategy will help create a classroom environment that allows the pupil to think.

Constructivism is an understanding that pupils actively build their own knowledge or concepts based on existing knowledge and experience. Teachers need to ask high-level questions so that pupils can think and use the knowledge received with existing knowledge to build new knowledge. The teacher should encourage pupils to look for answers on their own.

Contextual learning is a method of learning that combines content with the daily experience of the individual, society, and the realm of work. This method provides concrete learning that involves hands-on and mind-on activities. In this strategy the pupil is able to apply the existing knowledge in different situations.

Project-based learning is a method of mastering knowledge, skills and values through learning experiences based on the assignment of long-term activities between disciplines, student-centered and integrating current issues and practices. This method emphasizes intellectual tasks to explore complex issues. This method promotes the understanding of pupils in which pupils can explore in search of information, make interpretations, make decisions or conclusions.

Inquiry-based learning is an approach to finding answers to the questions raised. It involves investigating, exploring, collecting data, drawing conclusions to solve problems, making reflections on the methods used and communicating to share findings about the problem.

Future studies that create awareness and stimulate pupils to think about the issues, problems and opportunities that will be faced. This will enable them to look to the future with confidence and optimism such as making predictions about *trends* and changes that will occur based on existing knowledge and information, anticipating the impact or consequences of a phenomenon, *trend*, or future change, and using various resources to control, address and handle changes in order to be of maximum benefit (BPK KPM, 2014).

However, in the context of preschool, there are some additions of special approaches specified in the 2017 revision KSPK. This approach to the teaching and learning strategy is compatible with the age of preschoolers. It includes pupil-centered learning, learning through play, inquiry-based learning, integrated approach, themed approach, project-based learning, master's learning, contextual learning, and learning based on diversity of intelligence.

Pupil-centered learning means the active involvement of pupils in a learning activity and they are given responsibility for their own learning. Under this pupil-centered learning, pupils play an important role in the learning process as learning is driven on the interests, impulses and needs of the pupils. Pupils are also given the freedom to choose the type of activity, material, and time during learning. Teachers are facilitators or mentors who guide students to carry out learning activities.

Learning through play is a well-planned and structured approach to give students the opportunity to learn in a free, safe, joyful, and meaningful environment. This approach is emphasized in preschool education as play is the nature or natural behavior of the child. Through the process of playing, they will make exploration, discovery, and construction of the experience directly and naturally. Through this approach, the physical, social, cognitive and language development aspects as well as the child's potential can be increased to the maximum level.

A blended approach is an approach that combines two or more skills that students need to master at one time. This approach will be able to help students to understand the nature of real life. In real life things are interconnected between each other rather than something separate. Apart from that, teachers should use students' daily experiences in the teaching and learning process. Learning is carried out in a comprehensive and integrated manner and does not separate learning into different disciplines. Apart from the integration between disciplines, this approach also involves the integration between several skills, skills and values, the integration between supports, the integration between activities as well as various methods and techniques. Learning through a blended approach can meet the needs of students who differ in terms of development, interests and abilities as well as differences in terms of background.

The themed approach is the management of curriculum and learning through one theme or topic chosen in accordance with the time, place, interests, background, and stage of development of students. The themed teaching approach involves matters such as, the use of one common theme in the field of learning, the selection of themes based on the suitability of the student stage, certain situations, or current events, interrelated with existing experiences and new experiences obtained in a structured and systematic manner. The theme approach is the extension and validation of knowledge and competence and ranking from easy to difficult and from general to more specific.

Master's learning is an approach to ensure that all students master the desired learning objectives in a learning before moving on to the next learning. In other words, this approach focuses on the student's mastery of the matter being learned. Through Master's Learning, students are given the opportunity to progress according to their own learning abilities and rates as well as to enhance their level of learning mastery. This approach adheres to the principle that every pupil is able to learn if given the opportunity. This approach requires adequate time allocation as well as a quality teaching and learning process.

Thinking Tools

The use of thinking tools can help students think more organized, systematically, and focused. Examples of thinking tools are such as thinking maps, graph compilers, questions, and highlighting, mind maps, *CoRT* and 6 Thinking Hats.

Discussion

The National Preschool Standard Curriculum (KSPK revision 2017) has clearly emphasized KBAT in preschool education. However, past studies have found that some teachers including preschool teachers are still unclear in implementing HOTs especially in Malay writing skills. Activities carried out in the teaching of writing skills were found to be less encouraging to pupils' thinking skills. This is because the teacher is not clear in implementing it from planning the teaching and learning strategies based on HOTs.

In this regard, in order to achieve the implementation of HOTs in the Malaysian education system, MOE has provided reference materials as a guide to make it easier for teachers to refer before implementing HOTs in the classroom. This reference material has explained in detail how teachers can apply HOTs in teaching and learning activities ranging from the planning and implementation of HOTs in pedagogy to the teaching and learning strategies of HOTs. The description of the importance of the implementation of HOTs and the clearly described HOTs theory can also help teachers in understanding and fully appreciating the goals of HOTs by MOE so that teachers can apply the elements of HOTs in teaching and learning at the maximum level. Therefore, teachers need to take the opportunities of the reference materials provided by MOE to understand more clearly how to apply HOTs in teaching and learning more effectively.

Conclusion

Through the program in PPPM (2013-2025) implemented by MOE, preschool teachers should immediately prepare themselves with all new knowledge, especially ideas about the implementation of HOTs recommended by MOE. Preschool teachers should be aware of the current development of the world of education and constantly update themselves with each of the latest knowledge materials. The result of the efforts of preschool teachers in realizing the MOE's aspiration through PPPM (2013-2025) to implement HOTs in teaching and learning Malay Language writing skills in preschool, it is hoped that it will produce students who are able to think creatively and critically for the initial preparation of education. When HOTs is cultured from the early stages of education, it can indirectly produce high-minded and quality scientific groups who are able to raise an issue well for scientific activities, sort ideas and choose the appropriate words according to the needs at any time in the future.

Scientific Ethics Declaration

The authors declare that the scientific ethical and legal responsibility of this article published in EPESS journal belongs to the authors.

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Modern Information and Communication Technologies - as an Aspect of Improving the Quality of Teaching Biological Sciences: An Example of Teaching Human Anatomy and Physiology

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Abstract: The actual problems of modern pedagogy are the use of information and computer technology in the learning process in the classroom on "Human Anatomy and Physiology", are considered in the work. Today, the Republic of Uzbekistan pays special attention to the use of information and communication technologies in education. Uzbekistan is dynamically integrating into the global information space. Particular attention is paid to providing higher educational institutions with modern ICT tools and computer equipment, in particular, the phased acquisition of computers, servers, wireless network equipment, projectors and other multimedia equipment. The article discusses the features of teaching "Human Anatomy and Physiology" in pedagogical higher educational institutions using information and communication technologies, traditional and didactic lectures, problem-based learning and multimedia teaching aids.

Keywords: Information and communication technologies, Competence, Multimedia teaching aids, Pedagogical higher educational institutions

Introduction

Modern society sets the task to the pedagogy of developing personality-relevant qualities of students, and not just transferring knowledge. Humanization of education implies a value attitude to various personal manifestations of students. Knowledge does not act as a goal, but as a means of personal development. The richest possibilities for this are provided by modern information computer technologies. Biological sciences are an important direction in the field of education. "Human Anatomy and Physiology" is considered one of the fundamental disciplines of biology in the education system. The purpose of studying the subject "Human Anatomy and Physiology" in pedagogical higher educational institutions is to study the structure of the human body and formation of such concepts as the relationship between nature and man on the example of the functioning of organs. It should be noted that the subject of Human Anatomy and Physiology is both a science and an art. Human Anatomy and Physiology as an art is a pedagogical skill of the teacher. Pedagogical excellence is a special state. Pedagogical skill is a high level of pedagogical activity; it is possession of pedagogical technique, personality of the teacher, his experience. The main life purpose of a teacher is to become a master of his craft. Pedagogical skill is impossible not to be associated with a professional competence of the teacher. It is competence and skill that can improve the quality of education, which is required from the teacher of the discipline "Human Anatomy and Physiology". However, despite the widespread use of information and communication technologies in practice, one of the main reasons hindering the process of informatization of education is a lack of personnel who own new technologies and are able to include them in their professional activities. Of course, the teacher must possess certain qualities, such as:

- striving for the development and formation of personal creative qualities;
- being able to find, evaluate, select information;
- being able to choose and use multimedia learning tools (websites, presentations, electronic textbooks).

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Literature Review

If we do a comparative analysis of the introduction of information and communication technologies into educational process, we can illustrate several examples. For example, in Israel, modern teacher training forces them to adapt through exploring the means by which teachers are exposed to ITC and multimedia implementation processes. In the process of introducing ICT, in particular multimedia, teachers play a significant role; the reason for this is that teachers can influence knowledge, skills and professional abilities of their students, as well as their beliefs, views and perceptions (Ungar & Baruch 2016). Since 2004, Indonesia has a progressive development of information and communication technologies. On this basis, a new curriculum was created on a new subject of "Informational and communication technologies". To achieve the best result, the government has tried to equip all educational institutions with multimedia (Mahdum et al., 2019). As part of the state program for the development of education of the Republic of Kazakhstan in 2011 - 2020, educational organizations must be equipped with new computers, digital educational resources, necessary hardware and software. All of these initiatives are based on many scientific studies that have shown various benefits of using ICT, in particular multimedia, in education. An example of this is increasing motivation of students, contributing to clearer thinking. In addition, according to researchers, ICT is a tool for better teaching of natural sciences, which once again proves the relevance of the development of multimedia competence of teachers of biology (Suleimen N. 2019). In the Republic of Uzbekistan, educational films and TV shows were considered the first prerequisites for the development of multimedia, created based on visual and laboratory work. These TV shows and educational films were broadcast for students in grades 9-11, and originated from 1995 (Abdurakhmanov & Beknazarova 2011). Today, in the modern sphere of education, within training process of future specialists, it is important to ensure conditions for mastering multimedia technologies. Along with other important areas of education, computerization of education is one of the large-scale innovations that have come in recent decades (Alimkulov & Rustamov 2020).

Methodology

The methodology for applying information and communication technologies should first of all be aimed at the best assimilation of educational material. Psychologists have proven that when conducting classes using information and communication technologies, the right hemisphere of the brain is activated, which is responsible for associative thinking, the birth of new ideas, intuition, psycho-emotional state of the student improves, and his positive emotions are activated (Starikov, 2017). The lesson built on the basis of the application of information and communication technologies is aimed at:

- improving the quality of education;
- improvement of the educational process;
- achievement of a wide range of educational goals;
- solves an urgent problem such as an issue of training highly qualified personnel;(Khamdamova, 2021)

The use of information and communication technologies in the educational process occurs in several directions. One of these areas is multimedia. Today, a modern lesson cannot be imagined without multimedia teaching aids. The use of multimedia tools allows learners to remember firmly the material being studied through involvement of the following senses: seeing, hearing, and remembering. Along with visual teaching aids, multimedia teaching aids make it possible to provide educational material in its entirety. Multimedia teaching aids contribute to the transformation of a traditional lesson into a multimedia lesson (Starikov, 2017). The use of multimedia in education allows educators to:

- solve the problems of humanization of education;
- improve the efficiency of the educational process;
- develop personal qualities, communicative and social abilities of trainees;
- identify the learner as an active subject of cognition;
- take into account subjective experience of the student, his individual characteristics;
- carry out independent educational activities; (Gustyaxina & Popova 2018)

Until today, we are accustomed to classify multimedia teaching aids in a rather simple way as a sound card, word processors, acoustic systems (speakers), a special computer video camera, presentation programs, a microphone, an organizer and others. The listed tools are not difficult to use, their purpose is quite clear, and they do not require special training. But we must not forget that the 21st century is the century of information technology (Starikov, 2017). It should be noted that while improving methods of teaching the subject "Human

Anatomy and Physiology" on the basis of modern information and communication technologies, it is advisable to combine individual, group and frontal work with the use of technical teaching aids. Taking into account the above suggestions, we have developed criteria for evaluating the effectiveness of improving methods of teaching the subject "Human Anatomy and Physiology" based on modern information and communication technologies (Table 1).

Table 1. Criteria for evaluating the effectiveness of the use of modern ICT

<i>Reproductive</i>	the student has poorly mastered the educational material, has no idea about the structure of the body and its functions; does not highlight the main points of view; in the answers he makes significant errors that distort the meaning of the material being studied; the student does not have the ability to work independently and the ability to give self-assessment of knowledge; he does not know how to apply knowledge in practice.
<i>Productive</i>	the student's answer indicates that he knows the main provisions of the educational material, but does not know how to explain them; the student has the ability to work independently; he knows how to apply knowledge in practice; allows minor errors in the content and format of the answer.
<i>Research</i>	the student understands the meaning of the main terms of the subject, the contribution of the scientists of Uzbekistan to the development of Anatomy and Physiology; knows how to use self-assessment technologies; justifies his knowledge; student's answer is correct, but there are minor errors in the content and formatting the answer.
<i>Creative</i>	the student knows the history and methods of the subject; fully owns the program material and independently explains provisions under study; capable of independent work and able to give self-assessment of the knowledge; can apply control technologies; the student's answer is correct in terms of content and design.

Results and Discussion

In order to determine the effectiveness of the use of modern information and communication technologies that ensure the improvement of teaching methods for the subject "Human Anatomy and Physiology", students of four pedagogical higher educational institutions were selected: 1) Tashkent State Pedagogical University named after Nizami; 2) Tashkent Regional Chirchik State Pedagogical Institute; 3) Kokand State Pedagogical Institute; 4) Navoi State Pedagogical Institute. As part of the study, we conducted testing and questioning among 387 students of "Biology" specialty (Table 2).

Table 2. Results of testing students at universities to determine the level of knowledge

University	Group	Number of students	before the experiment				after experiment			
			5 high level	4 middle level	3 low level	2 the lowest level	5 high level	4 middle level	3 low level	2 the lowest level
1 NSPI	control	42	1	13	23	5	3	14	23	2
	experimental	40	4	12	20	4	5	15	20	0
2 ChSPI	control	46	2	15	23	6	2	15	26	3
	experimental	47	2	14	25	6	5	19	23	0
3 KSPI	control	48	2	9	34	3	4	6	34	4
	experimental	43	2	13	23	5	8	26	8	1
4 TSPU	control	57	9	6	41	1	7	9	40	1
	experimental	64	6	6	50	2	13	37	14	0
5 Total	control	193	14	43	121	15	16	44	123	10
	experimental	194	14	45	118	17	31	97	65	1

The results of testing students at universities obtained on the basis of the developed assessment criteria are reflected in the following figure (Figure 1).

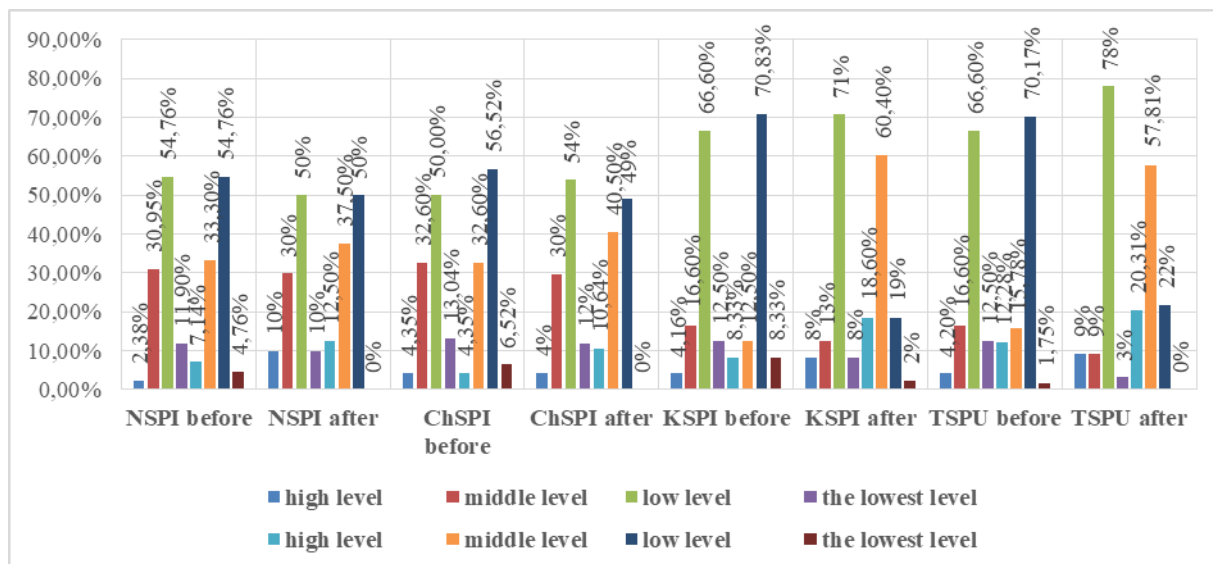


Figure 1. The results of testing students in universities to determine the level of knowledge (in percentage)

Recommendations and Conclusion

Based on the results of the study, methodological recommendations were developed to improve the methods of teaching the subject "Human Anatomy and Physiology" based on information and communication technologies. Recommendations are as following:

- to improve the quality of education and the interest of future biologists constantly improving teaching methods for the subject "Human Anatomy and Physiology" based on the widespread use of modern, innovative, information and communication technologies;
- for the successful assimilation of the subject "Human Anatomy and Physiology" in practical work, actively use methods of multimedia technologies in the process of traditional and distance learning;
- in order to improve the quality of education, there is a necessity for creating a single interactive portal of electronic resources and systematic monitoring of its use by teachers, since at present, biology teachers in higher educational institutions have limited access to electronic resources for various social reasons.

Scientific Ethics Declaration

The author declares that the scientific ethical and legal responsibility of this article published in EPSS journal belongs to the author.

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Competency Development through the Implementation of Professional Learning Community among Accounting Teachers

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Abstract: The selection of Professional Learning Community (PLC) as one of the mediums to improve practice is based on the trend and development of practice in developing countries. In PLC, teachers work with a sense of openness, share their experiences, ideas and expertise, and engage in a continuous assessment process that can foster deep team learning and critical reflection. The aim of this study is to investigate the implementation of PLC in improving the competencies of Accounting teachers. A total of seven Accounting teachers teaching Grades 4 and 5 in seven schools in southern Malaysia were selected as participants using purposive sampling. The aim of this study is to investigate the competencies building through the implementation of PLC among Accounting teachers. To achieve this purpose, a qualitative design was used as the guiding framework. Therefore, three data collection techniques were used to obtain rich data, namely semi-structured interview techniques, document analysis and also audio and visual materials analysis. The validity and reliability of the findings of this study were ensured through triangulation, member checks, peer review, audit trail and prolonged engagement. The findings of the study are categorised into 9 themes, namely mastering subject matter, instructional planning, instructional delivery, instructional evaluation, technology application, classroom management, facilitate student, motivate student, and student career development.

Keywords: Professional Learning Community, Teachers, School, Competency

Introduction

Malaysia has evolved in the economic, social, cultural and educational spheres. This means that the education system in Malaysia has also changed and taken on challenges related to the country's potential for progress. Moreover, at a time when Covid 19 cases are on the rise in Malaysia in 2020, the government has issued Movement Control Orders (MCO) across the country. This is causing schools and universities to be closed (Nurfadilla et al., 2020). In an effort to curb the spread of the pandemic, the Malaysian Ministry of Education (MOE) has therefore decided to replace face-to-face teaching and learning with home-based teaching and learning (PdPR) or online teaching and learning. Therefore, all stakeholders, including teachers, need to ensure that teaching and assessment is resumed and learning objectives are maintained.

One of the major issues in Malaysian education today is technical and vocational education or better known as TVET (Mohamed Nazul, 2019). In order to open up the same important technical pathways as the academic pathways at the tertiary level of education, there is a need to increase opportunities, student recruitment and

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quality improvement of the TVET curriculum. This is because TVET offers equivalent career prospects to academic education and is a flexible general education option, as is the case in most developed countries (Mohd Jalil et al., 2015). Vocational education is not only increasing in terms of skills, but also encourages the community to venture into vocational education and plays an important role in equipping students with the skills needed in the labour market and economic globalisation (Nur Iwani & Mohammad Hisyam, 2012). Therefore, the problem of school dropout can be reduced by introducing vocational education.

One of the subjects in TVET is Accounting. In Malaysia, the history of accounting education began in 1935 at the Day School of Commerce in Penang. At that time, accounting was one of the components of the commerce subject offered at the institution. Entrepreneurship education, including accounting as a subject, has also been included in the technical and vocational education curriculum at the secondary level to meet the growing demand for skilled manpower (Asnul Dahar et al., 2013).

In line with the curriculum changes, Accounting subject aims to produce individuals who possess accounting skills, critical and reflective thinking, responsibility, good communication skills through a meaningful learning approach, ethical work culture, knowledge of technological information, cultivation of lifelong learning and integration of accounting theory and practise expressed through learning objectives (Bahagian Pendidikan Guru, 2011).

Accounting is one of the elective subjects in the Sijil Pelajaran Malaysia (SPM) for fourth and fifth grade literature students (Lim & Goh, 2018). The accounting syllabus is based on aspects of accounting theory and practise and is divided into 15 learning topics. However, statistics show that students' performance in the SPM accounting subject examination in 2019 has declined in terms of the subject's average mark and pass percentage (Lembaga Peperiksaan Malaysia, 2019). According to Tuan Noormahanisa & Norasmah (2020), apart from the students' background, the teacher's teaching approach is also a factor in the decline of unsatisfactory performance in the accounting subject.

Moreover, according to Losius Goliong et al., (2016), the quality of education and the authority of teachers in schools are still questioned by the society. This is because teachers fail to effectively improve academic performance and apply relevant values to produce students who demonstrate leadership, mature thinking, pure behaviour, creative skills and communication skills. In addition, teachers also lack competence in implementing High Order Thinking Skills (HOTS) in students (Norfariza & Nur Fadhillah, 2018).

Professional Learning Community (PLC) is a teacher-led culture of partnership that critically engages with practical testing to improve student outcomes (Aydin et al., 2015). PLC is a promising strategy in school improvement efforts (Harris & Jones, 2010). PLC is seen as a way to drive teachers towards professional development, thereby supporting student improvement (Meijlof, 2018). According to DuFour et al., (2016), the PLC process is not a programme and cannot be implemented by anyone except the staff of an institution itself. The PLC process also cannot be bought and this process is ongoing and has a profound impact on the professional aspect. According to Mindich & Lieberman (2012), successful PLCs consist of teachers who have the autonomy to choose their own learning outcomes and have undergone training in collaboration. PLC is one of the school improvement practises that involves supporting all communities inside and outside the school to overcome challenges in improving student achievement (Chong et al., 2016). PLC is created through the adoption of cultural competencies by each and every member of an institution. Learning culture has a great impact on the community because it can make comparisons in the methods of instruction and mastery, management and leadership (Zuraidah & Muhammad Faizal, 2014).

In Malaysia, the implementation of the PLC programme was initiated by the Department of Teacher Education, Ministry of Education in 2011 by implementing strategic lesson plans in 289 low-performing schools. This effort was then continued in 2012 and implemented in 107 schools (Bahagian Pendidikan Guru, 2014). Implementation now includes all schools nationwide. To support the implementation of PLC, the Malaysian Ministry of Education (2015) approved PLC in the Malaysian Education Development Action Plan 2013-2025 as an instructional reform to promote collaboration among educators to improve concern and practise (Saad et al., 2017).

Literature Review

Professional Learning Community (PLC)

Professional Learning Community (PLC) refers to teachers who work together with great commitment to achieve better results, especially in action research and collective enquiry activities (DuFour, 2016). Therefore, it can be explained that the PLC is a community that forms a culture that shows that all school members learn and become students. The formation of this knowledge culture shows the PLC as a community of school members who practise lifelong learning. The presence of this culture can develop an internal culture that aims to encourage teachers to become experts in their respective fields.

A professional learning community should have and practice a number of specific criteria, each of these criteria supporting and connecting the community. This is because each KPP model has its own criteria. There are many KPP criteria presented by researchers to be implemented in schools and most of them are adapted from the five disciplines of learning organization introduced by Senge, (1990).

Since 1990 to 2004, various PLC models have been developed. Many educational practitioners, researchers and western scholars have developed their own models for PLC to be implemented in selected schools. They include Peter Senge (1990), Kruse et al., (1995), Hord (1997), Lambert (1998), Thiessen & Anderson (1999), DuFour (2004) and others. Although the models of PLC by Senge (1990), Hord (1997) and DuFour (2004) are often used as basic principles for the formation of professional learning communities, the models of professional learning communities presented by other researchers cannot be ignored.

While there are differences in the use of terminology, elements and dimensions, in principle these scholars have the same goal, which is to create a learning organisation and encourage its members to continue learning in order to enhance the development of personal professionalism and thus realise the goals of the organisation.

PLC Model by Kruse, Louis & Bryk (1995)

The PLC model of Kruse et al., (1995) was selected because the PLC module presented by the Teacher Education Department of the Malaysian Ministry of Education uses this model as the basis for implementing PLC in Malaysian schools. Kruse et al (1995) outlined five PLC criteria: Reflective Dialogue, De-Privatization of Practice, Collective Focus on Student Learning, Collaboration and Shared Norms and Values.

Reflective dialogue occurs when people talk about specific situations and challenges they face. They then collectively develop a set of norms, beliefs and values that form the basis for their actions. Community members can use these discussions to critique themselves and the institutions they work for. Through this critique, they can focus on the subject and how they teach it to students. For example, they focus on general teaching strategies, student learning and the development of that learning, and then on the state of the school environment, including issues of equity and justice.

In addition to reflective dialogue, the next PLC criterion is de-privatization of practice (Kruse et al., 1995). By de-privatization of practice, teachers share, observe and study each other's teaching methods and philosophies. For example, methods such as collegial consultation between teachers or career counsellors are used. By sharing the practise of personalisation, teachers can become closer as they learn new ways to study the activities they do together.

According to Kruse et al. (1995), a collective focus on student learning is also a PLC criterion. This means that teachers focus on student learning. Teachers believe that students have the potential to achieve optimal learning outcomes despite the many obstacles they may face outside of school. In a strong professional community, the focus on student learning is implemented based on the sense of responsibility of the teachers themselves, not on instructions from the school administration.

Another PLC criterion is collaborative practise. A professional community that encourages teachers to collaboratively develop materials and activities that improve instruction, curriculum and assessment for students, the development of a shared understanding of students, curriculum and instructional guidelines, and the development of new and different approaches to the development of teachers themselves.

Finally, shared norms and values are the foundation of the PLC, as Kruse et al. (1995) put it. Teachers participate in PLC through their words and actions, affirming the values of beliefs built around critical educational issues and supporting their collective focus on student learning. These values can guide children and their capacity to learn, using time and space in a school environment appropriate to the role of parents, teachers and administrators. For example, teachers ask students who are not attending class for tutoring after school

hours. This shows that teachers value the potential of their students and take responsibility for providing extra help to students who are failing by creating school policies to manage the system around this extra work time. Based on this PLC Model by Kruse et al., (1995) the Teacher Education Division has detailed it in the PLC Module as below:

Table 1. Strategies for developing PLC

	Critical Elements of PLC	PLC Strategies
1	Reflective Dialogue	Using Discussion Protocols Book Clubs Study Groups Video Critiques of Teaching Moments
2	De-Privatization of Practice	Learning Walks Peer Coaching/ Instructional Coaches Lesson Study Teacher Sharing Sessions
3	Collective Focus on Student Learning	Data Analysis Curriculum Mapping Common Assessments Critical Friends Groups
4	Collaboration	Horizontal and Vertical Teams Teacher Induction / Mentoring Interdisciplinary Units and Projects Problem Solving Groups
5	Shared Norms and Values	Vision Activity Guiding Principles Value Activities Common Rituals and Strategies

TVET Teacher Professional Competency Framework

According to the article by Dayangku et al., (2020) who developed a framework for TVET teachers' professional competence in Industry 4.0, technical skills, non-technical skills, personal attributes, motives and and also mental and physical fitness are the five constructs that TVET teachers need in Industry 4.0. This study focuses on technical skills, which include mastering subject matter, instructional planning, instructional delivery, instructional evaluation, technology application, classroom management, facilitate student, motivate student, and student career development.

TVET teachers need to prove to their pupils that they are knowledgeable and skilled. TVET teachers must comprehend the rapidly evolving technologies employed in the sector and update the curriculum and syllabus used in their individual institutions to satisfy the needs of business. To support and facilitate students at different stages of the learning process, TVET teachers must keep up with the latest developments in theory, practise, and industry.

Before choosing the best learning resources and tools, TVET teachers should be able to evaluate the technology resources that are already available. In order to maximise learning, they must arrange their curriculum materials, plan their lesson plans, and build their curriculum accordingly. However, pupils today use smart devices from a young age, which presents challenges for teachers. Therefore, it is crucial that TVET teachers organise and get them ready with effective teaching techniques.

To address the educational needs of this age, TVET teachers must also use e-learning to incorporate digital instructional content into the classroom and personalise learning for each student. TVET teachers must carry out their lesson plans to offer students information and practical skills in the era of industry 4.0. To interest students in the learning process, TVET teachers need to possess strong presentation abilities. To maximise learning and foster the development of advanced knowledge and skills in the age of industry 4.0, TVET teachers must utilise the proper pedagogy approach to correspond with the available technology and employ various learning techniques for various instructional contexts.

In order to connect student performance to learning outcomes, TVET teachers must also be able to organise, implement, and select assessment procedures. They should be able to conduct virtual evaluations and use e-

portfolio technology as a tool for evaluation in this digital era. To create an environment that is conducive to learning, TVET teachers should be able to arrange and manage their classrooms. In order to plan curriculum and learning activities for efficient teaching and learning processes, they also need interpersonal and time management abilities.

Additionally, one of the sub-constructs of technical competence explored in this study includes the application of technology. The ability of instructors to utilise the use of new technologies in the educational process is highly crucial in the growth of this digital era. TVET teachers must be proficient with digital tools and software programmes for education technology in order to properly design, carry out, and assess their lessons.

In order to give students the kind of feedback, they need and use technology for supplementary learning activities, TVET teachers must also be aware of their students' qualities. Teachers today must engage pupils to learn independently by inspiring them to use the tools for learning that are available in imaginative and inventive ways. The effectiveness of learning is determined by how TVET teachers run their lessons, assist, and inspire their pupils.

Finally, teachers of TVET must also help their students comprehend their options and offer career guidance. The goal of vocational education is to create skilled, competitive workers for the workplace. In order to make the transition from school to the job easier, TVET teachers are supposed to provide their pupils with appropriate industry expertise.

Problem Statement

The Ministry of Education Malaysia aims to create a culture of professional excellence exemplified by colleagues, namely teachers encourage, guide each other, ensure that colleagues are responsible for meeting professional standards and sharing best practices. However, the implementation of PLC in schools is considered something that is difficult for teachers because they are burdened with existing tasks especially managing classes and students, in fact, instructions from administrators on an ad hoc basis (Chong et al., 2018). This is in line with the study of Saad et al., (2017) who showed that teachers' acceptance of PLC is still in doubt due to time constraints to implement the new concept of PLC in schools. In fact, PLC is also said to be carried out only in core subjects such as Mathematics, Science, English and History (Dima Mazlina, 2015).

Due to the lack of understanding and appreciation among school people related to PLC due to the constraints stated, it is feared that this PLC strategy does not reach the targeted level (Fullan, 2006). In fact, schools place less emphasis on this initiative because of the perception that PLC is just a new innovation like other innovations that do not need to be implemented if other new innovations emerge.

Research Purpose

There is a purpose of this study to be achieved which is to explore the implementation of the PLC among teachers of Accounting. Based on the purpose of the study to be achieved, there are research questions that will be answered through the implementation of this study which is how does PLC help improve the competence of Accounting teachers?

Method

This section also describes the procedure used by the researcher to carry out this study. This section will describe aspects of research methods that include research design, data collection and sampling. This is given attention to answer the questions of how does PLC help improve the competence of Accounting teachers?

Research Design

The philosophical worldview of a research usually determines the methodology used in that research. The philosophical worldview conceptualizes how knowledge is produced and created, which is epistemology, influencing the approach used in understanding the world and how one understands it. Therefore, in this

research the researcher has adopted the world view of constructivism. Constructivism is seen as a theory of learning or meaning that provides justification about the characteristics of cognitive content and the process of how individuals learn. Real purpose is only created based on the individual's previous experience and basic knowledge. Individuals develop their own new goals through interactions based on their belief systems, cognitive, situational, and life tasks they face (Ultanir, 2012). In other words, the purpose of acquiring this knowledge focuses on the internal cognitive process of the individual. Therefore, constructivist researchers conduct their studies in the "field" where the participants live and work in order to gain an understanding of what the participants are saying (Creswell, 2018).

After examining the research questions based on the literature highlights, the researcher has chosen to use qualitative research methods based on phenomenology as a research method. This chosen method is very suitable for literature review and research questions because the main purpose of the study is to subjectively deepen PLC activities to show the extent to which learning takes place in PLC can contribute to meaningful professional and personal growth among Accounting teachers.

Through the phenomenological approach used, the researcher was able to dig into the depth of the findings and enrich the study information from the experience of accounting teachers. Based on the discussion related to qualitative research and phenomenology approach, the researcher determined the exploratory study of learning practices in PLC implementation among accounting teachers by using qualitative case study research. According to Creswell (2018), a phenomenological study describes the shared significance of numerous people's individual lived interpretations of a term or reality.

Data Collection

In this study, the items studied are the approaches, methods and processes of PLC implementation used among Accounting teachers and the effect of PLC towards Accounting teachers' competency. To obtain in-depth data on the PLC process among these Accounting teachers, the data collection technique used was semi-structured interviews with participants and also document, audio and visual material analysis. Analysis of these data allows an in-depth description and overview of the implementation of PLC among Accounting teachers.

Selection of Participants

A total of 7 Accounting teachers will provide the rich data needed by the researcher in the researcher's effort to complete the study. All participants were involved on a voluntary basis after consultation with the administrator and the study participants themselves. Through interview transcripts and analysis of documents such as lesson plans and PLC reports, all participants will be identified their educational background and services. All participants were also ensured to have teaching experience of not less than 3 years of experience as an educator.

Reliability and Validity

According to reliability and validity aspect, this article will look in more detail at the unique components of qualitative research in relation to qualitative rigor. These are: truth-value (credibility); applicability (transferability); consistency (dependability); and neutrality (confirmability).

In an article written by Thomas & Magilvy (2011), to prove credibility, researchers need to study individual transcripts by looking for similarities among participants or vice versa. This allows others to identify the experiences found in the study through the interpretation of the participants' experiences. A study is considered reliable when presenting an interpretation of the experience that can be understood by the participants. In this study, the strategies used by the researcher to build credibility are peer review, member checks, and research diary.

Transferability refers to the ability to transfer research results or methods from one group to another and this element is external validity (Thomas & Magilvy, 2011). One way to establish transferability is to provide a solid picture of the population being studied by describing the demographics and geographic boundaries of the study. The ways in which transferability aspects can be applied by researchers is by using the same data collection method with different demographic groups or geographic locations as well as the use of research diaries.

Additionally, dependability occurs when other researchers can follow the trail of results used by the researcher. This track will be achieved by describing the purpose of the study, discussing the justification of the participants selected for this study, describing the technique and period of data collection, explaining how the data was formed for analysis, discussing the interpretation and presentation of the findings and finally explaining the techniques used to determine the credibility of the data. Strategies used by researchers to establish reliability include research diary.

Confirmability occurs after credibility, transferability and reliability have been determined (Thomas & Magilvy, 2011). Qualitative research must be reflective and maintain awareness and openness to the research process and research findings. The researcher needs a critical attitude towards the researcher by considering how the researcher's perception affects the research. Techniques used by the researcher to achieve a level of validation include preparing a research diary. The researcher will make notes about feelings, biases and personal views immediately after the interview. In addition, the researcher followed the flow of the interview naturally by not determining the direction of the interview. The researcher will ask for clarification when necessary.

Results

This section describes the results of the study that have been obtained through the data collection process. This study aims to understand the implementation of PLC in the aspect of competency development among accounting teachers. To answer the question of this study, a total of 7 teachers of Accounting were selected and they agreed to volunteer to help the researcher obtain information for the purpose of completing this study. In this case, the researcher is responsible for protecting the security of the personal information of the participants by using non-real names.

Technical competencies listed in this study are explicitly related to TVET teacher roles in the instructional and learning process in industry 4.0 era (Dayangku Suraya et al., 2020). The sub-constructs for technical competencies are in the aspect of mastering the subject matter, instructional planning, instructional delivery, instructional evaluation, classroom management, motivating and facilitating student, student career development, and technology application.

Mastering Subject Matter

Through the PLC activities conducted, all teachers gave their views to improve the level of knowledge of their subject content. Among the PLC strategies that help teachers in improving their knowledge related to the subject of Accounting are Teacher Sharing Sessions and Peer Coaching.

"That's how it is. We use certain acronyms to make an interesting story. Then the application students. Then they can remember the format for the financial statements. That's also the PLC sharing from friends."

(Forth participant)

Furthermore, the sixth participant also had the same views as follows.

"It's positive. Because PLC really wants to help. Collaborative help each other. Like me, a young teacher..that's it..that's it..sometimes this young teacher too..experience..he's direct from university and continues to be a teacher, right? So, like me, I used to work. So I'm easier..the content is a bit strong for me. Insya Allah. That thing is very positive. That's good"

(Sixth participant)

Instructional Planning

PLC activities assist Accounting teachers in lesson planning through the sharing between teachers of relevant information on the types of teaching materials to be used in the classroom. In fact, there are some teachers who share the use of such materials.

"It helps. Sometimes the reason may be in terms of material. Ok. In terms of materials. Sometimes we don't know when we want to use something like that. What kind of example that day, like ... I don't remember. How do

we use mahjong paper? If it is not suitable, we use manila card. Like that. That way we can share. Actually, if this material is not suitable, we can use this material.”

(Second participant)

In addition, through teacher sharing activities sessions and lesson study, teachers plan together the activities that will be carried out in their classes as stated by the informant below:

“We do each chapter together. To me that thing helps too. At least we get an idea of what activities we want to do every time we teach, what other activities we want to do every time we have to think. So, when we want to make it together, we did it through a PLC with account teachers from other schools.”

(Seventh participant)

Instructional Delivery

In teaching delivery, especially in this time of pandemic, all teachers agree that PLC are very important in improving their competencies in ensuring their effective delivery to students as stated by the informants below:

“Yes, again now in this pandemic, we need various methods. Need various partnerships between teachers to improve. We can't just use the same momentum. So now aaa.. I see that last week there was aaa.. sharing about what aaa ICT uses.”

(First participant)

“But there was one method after PLC, we all agreed to use the method at that time.”

(Fifth participant)

Instructional Evaluation

Through the learning walk which is one of the PLC strategies can help teachers, especially Accounting teachers to re-evaluate their effectiveness in teaching as stated by the informants below:

“That is getting better now. The teachers I once watched. They are getting better. They know how to evaluate student correctly. And then they also know about how to evaluate themselves.”

(Sixth participant)

This was also agreed to by seventh participant.

“This assessment can also be done in terms of monitoring. Monitoring from administrators. Indeed, we will do the monitoring ... see what SKPMG has. Ever heard of it? SKPMG is standard 4. Where we will enter we will see that we have a way of teaching.”

(Seventh participant)

Technology Application

Competence in terms of technology application is most helped by the implementation of PLC as the use of technology is very much needed in teaching nowadays. This was agreed by the informants below:

“The media teacher who gave such an example earlier, I said please give us guidance on what to do with Google, Google Meet. How to do Zoom. Lots of methods right. How to ask a question about Google Form? All sorts of things. Many applications he guided us. So from there, the teacher's competence will increase.”

(Forth participant)

Classroom Management

In PLC there is a strategy that is very helpful for teachers in managing their students which is data analysis. Through data analysis, teachers can categorize their students so that they can be given guidance according to the appropriate level of their performance. This is as stated by the informants below:

“Indeed, we always do. After all, now we practice 21st Century Learning (PAK21) where children are placed in groups in the classroom. Although The Ministry wants PAK21 to mean that all children are equal, but we still practice. But it doesn't feel so bad that we're worse, no.”

(Third participant)

“Several committees, namely the Accounting Committee, Agriculture Committee, SRT Committee and Business Committee implement a reward system for students that are consistent and committed in PDPR. Students receive gifts in the form of food, ‘top up’ as motivation and encouragement. This program is called ‘real reward’.”

(PLC Report)

Facilitating Student

Through data analysis as mentioned earlier, this PLC activity assists teachers in guiding their students, as stated by the informants below:

“Here, we're doing item analysis. For instance many students cannot answer question number 1. Why? At least we can know what it means like an incomplete record. He or she is a weak student. Incomplete records are no longer proficient. So we will do more revision for such incomplete records.”

(Second participant)

Motivating Student

In motivating students, most of the teachers interviewed agreed that PLC helped them indirectly in motivating their students, as stated by the informants below:

“It means if we make a PLC, we are more confident right. Oh, apparently I want to teach you like this. We will use the method. So the meaning of the students is not the same as what we mean, sometimes the teacher has to be sure. Sure. So, the students are confident with us.”

(First participant)

“Because PLC is among our teachers. Collaborative among teachers. So, it is not direct to us..from PLC direct to the students. Motivating the student earlier, right? It does not motivate students directly. But with us talk about being a quality teacher.”

(Sixth participant)

Student Career Development

Like the practice of motivating students, guiding students in choosing their work in the future can also be helped by PLC activities indirectly, for example Accounting Principles teachers can collaborate with counselor in disclosing work to students. This is as stated by the informant below:

“From the beginning of the time he or she in Form 4, we have already given the exposure.”

(Seventh participant)

Discussion

In the education profession, teacher competence is an important foundation (Abdul Razif et al., 2020). Therefore, the level of teacher competence determines the effectiveness of teaching and learning in the classroom. Referring to the article by Dayangku Suraya et al. (2020) this study focuses on technical competence which consists of mastering subject matter, instructional planning, instructional delivery, instructional evaluation, technology application, classroom management, facilitate student, motivate student, and student career development.

In this study, teachers constantly update their knowledge through teacher sharing sessions, there are teachers who, before they became teachers, worked in non-educational sectors such as the banking sector and accounting offices. Their work experience can be applied in their teaching in addition to theoretical sciences.

The Accounting teachers also need to evaluate existing technology resources before choosing appropriate learning tools during the teaching planning process. Teachers need to implement their lesson plans effectively in conveying knowledge to students. In this study, the PLC strategy that can help teachers in planning teaching and learning is learning to use Daily Lesson Plans and learning walk.

In addition, teachers need presentation skills during the learning process. Accounting teachers need to use appropriate pedagogy to match available technology and use different learning strategies for different learning situations to maximize the effectiveness of learning in line with the era of industry 4.0. In this study, the PLC strategy that can help improve teaching delivery competence is the learning trail.

TVET teachers should also be able to manage and organize their classrooms to create conducive learning. TVET teachers also need to understand the characteristics of their students in order to provide appropriate feedback to meet the needs of students and be able to utilize technology for additional learning activities. The findings of this study found that through PLC activities which are teacher sharing sessions and problem-solving groups, Accounting teachers become more creative in managing students. They put their students in special groups and guidance is given according to the suitability of those groups.

In this digital era, TVET teachers, especially Accounting teachers should be able to conduct virtual assessments by using technology such as e-portfolio as an assessment instrument. In this study, Accounting teachers always share their information and knowledge related to how they evaluate themselves and their students through PLC strategies such as learning walk, data analysis and teacher sharing sessions.

The application of technology is also considered as one of the important elements in the competencies discussed in this study. In the development of the digital era, the ability of teachers to take advantage of the use of new technology in the teaching process is very important. TVET teachers are required to be digitally literate and able to use educational technology tools and software such as applications that help them plan, deliver and evaluate their teaching process effectively. As found in this study, through the PLC strategy which is teacher sharing sessions, Accounting teachers get a lot of sharing either among themselves or from teachers of other subjects or teachers of other schools related to technology applications related to Accounting Principles subject. This sharing became more frequent when the Covid 19 pandemic hit the country.

To motivate students to learn independently, teachers need to encourage students to be creative and innovative with learning resources which is in line with current technological developments. Through the way TVET teachers manage classes, teachers will facilitate and motivate their students to determine the success of student learning. This matter was agreed by the Accounting teachers in this study, which is that they think that if the teachers know how to teach in a way that attracts interest and supports their students to be creative, their students will be motivated.

Finally, they also need to provide understanding and career advice for students. Vocational education aims to produce skilled and competitive workers for the industrial environment. Therefore, TVET teachers need to equip their students with relevant industry knowledge to ease the transition from school to the workplace. In this study, Accounting teachers collaborated with school counselor and external agencies to hold programs that reveal career opportunities to Accounting students.

Conclusion

PLC is a good way to enhance the self-quality of teachers by gathering a group of them together for collaboration. Many local and international scholars have concluded that there is a correlation between PLC and academic achievement. Some authors have stated that where there is a good teaching and learning process, there will be a successful PLC. Nonetheless, PLC's success is heavily reliant on the support of a variety of parties, particularly school leaders and other colleagues. Without their participation in PLC practise, the PLC would fail. PLC in a school could not be sustained over time and would be a seasonal practise. Nonetheless, PLC's success is heavily reliant on the support of a variety of parties, particularly school leaders and other colleagues. Without their participation in PLC practise, the PLC would fail. PLC in a school could not be sustained over time and

would be a seasonal practise. As a result, for academic excellence and school success, school leaders and teachers should collaborate equally in implementing PLC in the classroom.

Recommendations

Future studies need to emphasize the use of various PLC strategies as an effort to improve teachers' competency in teaching Accounting. In this study, the participants only used a few strategies from the entire PLC strategy as a vehicle to guide teachers to learn how to teach effectively. Future studies should also examine other strategies that help teachers gain knowledge and improve teaching methods such as reflective dialogue, shared norms and values and so on. Since this study is still new in the implementation of PLC to improve the teaching skills of Accounting teachers, future studies should be more thorough by examining the variety of strategies used for more in-depth reference.

Scientific Ethics Declaration

The authors declare that the scientific ethical and legal responsibility of this article published in EPESS journal belongs to the authors.

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Abstract: The aim of this research is to investigate the effect of teaching the Circle and Circular Region subject in the secondary school 7th grade curriculum by applying Realistic Mathematics Education activities on the development of students' life skills. The sample of this study consists of 46 students studying in the 7th grade of a secondary school in the Aegean Region. In this experimental research, a quasi-experimental design with pretest-posttest control group was used. In the study, it is planned to teach the lessons according to the teaching method in the curriculum in the classroom that constitutes the experimental group, by applying the Realistic Mathematics Education activities on the subject of Circle and Circular Region. As a data collection tool, real life skills scale was applied to both groups as pre-test and post-test. The obtained data were analyzed with non-parametric test techniques. According to the findings obtained as a result of the analysis, it was determined that mathematics teaching with the Realistic Mathematics Education approach was more effective in the development of life skills than the traditional approach and mathematics teaching.

Keywords: Realistic Mathematics Education, Teaching Mathematics, Life Skills

Introduction

Today, with the globalization of the world, developments in science and technology affect all societies. It has become necessary for societies to raise individuals with the qualifications required by the conditions in order to adapt to the rapidly developing and changing world. This requirement has included the concept of 21st century skills into our lives. 21st century skills; different institutions such as Assessment and Teaching of 21st Century Skills (ATCS), Partnership for 21st Century Learning (P21), Organization for Economic Co-operation and Development (OECD), European Union (EU), International Society for Technology in Education (ISTE) classified in different ways. Common skills such as creative thinking, problem solving, communication and creative thinking included in the education system overlap with P21 skills. P21 skills, learning and renewal skills; life and career skills; information, media and technology skills are examined in three sub-dimensions.

Life skills are defined by WHO (The World Health Organization [WHO], 1997) as adaptive, positive behavioral abilities that enable individuals to meet their daily needs and overcome the difficulties they face. WHO has established ten basic skill sets that will form the basis of many cultures and should be found in every healthy individual. These skills are; decision making skills, problem solving skills, empathy skills, self-awareness skills, coping skills, communication skills, coping with stress skills, creative thinking skills and critical thinking skills. These life skills are again classified by WHO as five basic life skills: decision making and problem solving, creative and critical thinking, communication and interpersonal communication, self-awareness and empathy, and coping with stress and emotions. Gulhane (2014) states that these skills are the skills that individuals apply to cope with the problems they frequently encounter in their daily life and gain through teaching.

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Raising individuals suitable for the changing, developing and globalizing world order in the 21st century is undoubtedly possible by adapting the education system to this. Accordingly, in recent years, traditional methods in education have been abandoned and new approaches have begun to be adopted. These approaches adopt the realization of learning through experiences rather than direct acquisition of knowledge. New approaches have affected mathematics education as well as many educational disciplines. Now, memorizing the rules and formulas for mathematics education in the classrooms has been put aside, and activities that develop the individual's reasoning, problem solving, communication, cooperation, etc. skills and which are based on associating mathematics with real life have begun to be adopted. All these have taken place in the education system with the approach of Realistic Mathematics Education.

Realistic Mathematics Education (GME) is a mathematics teaching approach that was put forward by Hans Freudenthal, a mathematician and educator in the Netherlands, and developed by the Freudenthal Institute (Akyüz, 2010). According to the Realistic Mathematics Education (RME) approach, mathematics is expressed as a human activity (Freudenthal, 1977; cited by Van den Heuvel –Panhuizen). In this approach, with the presentation of mathematics to the student in relation to daily life, the student takes an active part in this process. According to Freudenthal, mathematics started with real life problems throughout history and he claimed that these real life problems took the form of mathematics and reached formal mathematics. He called this process “mathematization”. There are two aspects that make the mathematization process important. First, mathematics is not just the job of mathematicians; it is the job of every individual. The second aspect is the idea of rediscovery. In this approach, the student must reach the information himself throughout the process, and the last step he reaches should be formal mathematics (Altun, 2006; Treffers, 1987). Freudenthal divided the mathematization process into horizontal mathematization and vertical mathematization. Horizontal mathematization is the first step. In this step, there is a transition from an environmental problem situation to symbols. The student uses this process to solve a real-life problem and can convey the real-life problem as a known mathematical problem. Vertical mathematization is a step forward and reorganization within the mathematical system. In this process, there is access to formulas from symbols. The student can explain the relationships between symbols, improve models, use different models, and obtain a mathematical formula (Zulkardi, 2002).

Learning mathematics is important in terms of gaining basic concepts and skills, as well as the necessity of using it in real life. The importance of understanding mathematics and using it in appropriate situations in our daily lives is increasing rapidly (MEB, 2009). Realistic Mathematics Education activities draw attention in terms of gaining life skills in terms of accessing information based on real life situations. In this context, it is thought that the implementation of Realistic Mathematics Education activities in mathematics teaching is important for the individual to gain life skills.

Innovations provided by the development of science and technology have accelerated the globalization of our world. Globalization affects countries in every field. One of these areas is education. Our living conditions, which are in constant development and change, require the education system to be shaped accordingly. It is seen that the students who grow up with the education system in which traditional methods are used are lacking in terms of life skills in preparing for life. The age we live in requires a system in which the student takes an active role in the education system and accesses information through their own experiences. However, an individual who grows up in this system is expected to be prepared for society by gaining life skills. Individuals who are brought to the society by gaining life skills in the education system constitute the future of that society. Today, individuals who lead the development of science and technology have an important place in determining the future of both their societies and the world.

Ensuring developments in the fields of science and technology is directly related to mathematics, which is one of the basic disciplines of education. Therefore, the importance of teaching mathematics has increased for societies that want to advance in these areas. Koçak (2011), states that social developments depend on mathematical knowledge. Altın and Memnun (2008) state that with the increasing importance given to mathematics in Turkey and many countries in recent years, some reforms have been made in education systems and the individual has to solve a problem by producing his own solution. This situation shows that Realistic Mathematics Education, which is put forward with the view that mathematics is a human life activity, has an important place in mathematics teaching in many countries.

Our country's success level is low in the results of internationally applied exams such as TIMSS and PISA, in which knowledge and skills are measured based on real-life situations. These results show that we do not give enough place to teaching on the basis of real life problems in our education system. Realistic Mathematics

Education takes its place as an approach that we need to focus on in our education system in terms of providing the individual to reach information by solving real life problems by the individual.

In today's world, where information and technology are developing rapidly, the ability of societies to adapt to the age depends on raising their individuals with education suitable for development. Information and technology are developing intertwined with mathematics. Providing mathematics education to individuals in accordance with the requirements of the age provides convenience in the adaptation of societies to the global order in the age of rapidly changing information and technology. Alsina (2002), states that in today's globalizing world, mathematics teaching should also be looked at from a global perspective and that mathematics teaching in schools should be associated with problems from daily life more.

With the renewal of our education system, one of the primary goals has been to solve the problems that the individual may encounter throughout his life on his own. Therefore, the individual needs to understand the problem himself, to collect data for the solution, to develop different solutions and to interpret the appropriateness of the results he finds correctly (MEB, 2016a). Providing mathematics teaching by associating it with real life is important in terms of providing a more meaningful learning for the student. In addition to learning, it is also important for the individual to gain life skills. Realistic Mathematics Education activities are one of the most preferred methods for concretizing mathematics teaching with real life situations. During the implementation of Realistic Mathematics Education activities, it is expected that the student's active participation in the process of solving the problems associated with his daily life will positively affect the student's life skills.

Teaching environments in which students are actively involved contribute to the life skills of individuals. According to studies conducted in the USA and England, it is seen that methods used other than traditional teaching are effective in the development of life skills (İşmen et al., 2015). Realistic Mathematics Education is a teaching method that actively involves students in the process and deals with real-life situations. Therefore, our study is important in terms of seeing the effectiveness of this teaching method on real life skills.

When the international literature on Realistic Mathematics Education is examined, it is seen that realistic mathematics education aims to improve students' mathematical communication (Trisnawati et al., 2018) skills (Hirza et al., 2014) and mathematical literacy (Sumirattana et al., 2017) and critical thinking skills (Cahyaningsih & Nahdi, 2021) are noteworthy. Considering the national literature on Realistic Mathematics Education, fractions, symmetry, equations, inequalities, logic, multiplication and division in integers, ratio-proportionality, surface dimensions, It is seen that there are studies investigating the effects of student success in many fields such as probability and statistics, integral, angle, coordinate system and line equation, measuring fluids and lengths, measuring time (Akkaya, 2010; Akyüz, 2010; Altaylı, 2012; Bildircin, 2012; Bintaş et al., 2003; Can, 2012; Çakır, 2011; Çakır, 2013; Demirdöğen, 2007; Gelibolu, 2008; Özdemir, 2008; Sezgin-Memnun, 2011; Tunalı, 2010; Ünal, 2008; Üzel, 2007). No study has been found regarding the use of Realistic Mathematics education activities in the teaching of Circle and Circular Region. In addition, a study examining the effect of Realistic Mathematics Education in terms of life skills variable could not be reached. Therefore, it was deemed necessary to conduct this research in order to eliminate the deficiency of the study on this subject and the field it affects in the literature.

When the literature is examined, since there are no studies in which the Realistic Mathematics Education activities used in mathematics teaching are applied in the teaching of Circle and Circular Region and in terms of the areas affected by Realistic Mathematics Education, the effects on student success, mathematics anxiety, mathematics self-efficacy perception, visual mathematics literacy, problem solving attitudes, strategy use, permanence of learning studies have been carried out in terms of its effect on reflective thinking skills and student motivation. However, there is no study yet on its effect on life skills. This study is also important in terms of contributing to the literature.

Yenilmez and Demirhan (2013) state that students have some difficulties in learning about the Circle and Circular Region subject in the 7th grade curriculum. Evirgen and İkiardeş (2009), in their study to determine the subjects that seventh grade students have difficulty in mathematics lesson, "angles in circle or circular region", "the length of the circle and circle segment", "circular region and the areas of the circle slice" are among the subjects that students have difficulty in learning is located. Bray and Tangnay (2015) concluded in their study that the Realistic Mathematics Education approach increased students' motivation and was effective in learning. Similarly, Laurens et al., (2017) found that the Realistic Mathematics Education approach was effective in students' cognitive achievement. This shows the necessity of Realistic Mathematics Education activities in the teaching of this subject, since students have difficulties in learning the subject of Circle and

Circular Region. It is thought that realistic mathematics education activities will have an impact on the development of students' life skills, since they are applied based on real life problems during the application phase. Therefore, in this study, it is aimed to examine the effect of realistic mathematics education activities applied in secondary school 7th grade mathematics teaching on the development of life skills. In line with this general purpose, answers to the following questions were sought.

1. Is there a statistically significant difference between the pre-test and post-test scores of the students in the experimental group (EG) in terms of the development of life skills?
2. Is there a statistically significant difference between the pre-test and post-test scores of the students in the control group (CG) in terms of developing life skills?
3. Is there a statistically significant difference between the pre-test and post-test scores of the students in EG and CG in terms of developing life skills?

Method

Research Model

A quasi-experimental design with pre-test and post-test control groups was used in this study, in which the effect of mathematics teaching with Realistic Mathematics Education on the real-life skills of 7th grade students was investigated. Cohen et al., (2007), state that the quasi-experimental method is preferred in experimental studies when it is not possible to randomly assign subjects to the experimental and control groups. Generally, quasi-experimental method is preferred in educational research (Karataş, 2008). In educational research, it is not possible to assign randomly, since classes are predetermined by school administrators. However, one of the predetermined classes can be randomly assigned as the experimental group and the other as the control group (Özmen, 2015). In our study, the groups were determined by random assignment on a class basis and mathematics teaching was carried out in accordance with the Realistic Mathematics Education in the experimental group and in the control group in accordance with the traditional method. Measurements were made by applying the life skills scale before and after the application.

Table 1. Experimental design of the research

Groups	Pretest	Method applied	Posttest
Experimental group	Life skills scale	Realistic mathematic education	Life skills scale
Control group	Life skills scale	Traditional method	Life skills scale

Research Group

The sample of the study consists of 46 students studying in the 7th grade of a secondary school in the Aegean Region in the second term of the academic year 2021/2022. In the experimental group, 23 students, 11 female students and 12 male students; in the control group, there are 23 students, including 6 female students and 17 male students. The sample for the research was determined according to the easily accessible sampling method, which is one of the purposive sampling methods. The reason for using this method is that it is the school where the researcher works, the sample is easily accessible and the participants who make up the sample participate voluntarily.

Data Collection Tools

In this study, the Life Skills Scale developed by Bolat and Balaman (2017) was used. The scale consists of 5 sub-dimensions and 30 items. These sub-dimensions are "Decision Making and Problem Solving", "Creative Thinking and Critical Thinking", "Communication Interpersonal Relationship", "Empathy and Self-Awareness", "Coping with Emotions and Stress". The sub-dimensions of "Coping with Emotions and Stress", "Empathy and Self-Awareness Skills", "Decision Making and Problem Solving Skills" consist of 7 items; "Creative Thinking and Critical Thinking" sub-dimension consists of 5 items; The "Communication Interpersonal Skills" sub-dimension consists of 4 items. When the Cronbach Alpha reliability coefficients of the items in the five sub-dimensions are examined for each sub-dimension, the reliability coefficient of the items belonging to the "Coping with Emotions and Stress" sub-dimension is 0.82; The reliability coefficient of the items belonging to the "Empathy and Self-Awareness Skills" sub-dimension was 0.77; The reliability coefficient of the items belonging to the "Decision Making and Problem Solving Skills" sub-dimension was 0.72; The reliability

coefficient of the items belonging to the "Creative Thinking and Critical Thinking Skills" sub-dimension was 0.73; It was observed that the reliability coefficient of the items belonging to the "Communication Interpersonal Relationship Skills" sub-dimension was calculated as 0.66. The Cronbach Alpha reliability coefficient value of the Life Skills Scale, which consists of 30 items, was calculated as 0.90. In this study, the Cronbach Alpha reliability coefficient value obtained from the Life Skills Scale consisting of 30 items was calculated as 0.87. According to Tavşancıl (2006), for a scale to be considered reliable, the coefficient is expected to be above 0.70. According to the obtained values, it is understood that the whole scale and its sub-factors are reliable. In this scale, students' level of agreement with the items is as follows: "strongly disagree", "disagree", "undecided", "agree", "strongly agree". The answers given by the students to the scale items were scored with a 1-5 rating scale.

Application Process

Our research was carried out with two branches consisting of 46 students, who constitute the 7th grade of a secondary school in the Aegean Region, in accordance with its purpose. Branches were randomly determined as experimental and control groups. Before the application, the life skills scale was applied as a pre-test to the students in the experimental and control groups. Before the application, the experimental group was informed about Realistic Mathematics Education. In the teaching of the Circle and Circular Region, the lessons will be taught in accordance with this approach and the stages of the lesson process in accordance with the approach were explained to the students. In the experimental group, activities suitable for the acquisition of the subject were carried out, taking into account the readiness of the students during the application. The activities were created by the researcher using sample questions suitable for Realistic Mathematics Education. The questions used in the activities were directed to the experimental group students in relation to daily life. The Circle and Circular Region topic is included in the current curriculum, covering 10 lesson hours. In accordance with the achievements in the curriculum, the application process was completed with the experimental group students with eight-hour in-class activities and two-hour out-of-class activities. A total of eight activities were applied to the students in the experimental group. An activity was applied in the classroom in order to distinguish the circle and the circular region for the subject of Circle and Circular Region by the students. An activity aimed at the acquisition of "Center angles in a circle determine the relationships between arcs and angle measures" of the Circle and Circular Region topic was applied in the classroom. Two activities were applied in class in accordance with the outcome of "Calculates the length of the circle and the circle segment". Three activities were applied in the classroom in accordance with the outcome of "Calculates the area of the circle and circle slice". An activity outside the classroom was used to calculate the circle length and the area of the circle by the students. While creating the activities, visuals that students can connect with real life were used. In accordance with the activities implemented in the classroom, the students participated individually or in groups. During the activities, students were given a certain amount of time to think. In the activities carried out in groups, it was ensured that the students communicate with each other and work in cooperation. It was paid attention that the questions included in the activities were created from situations that students may encounter in daily life in accordance with the principles of the Realistic Mathematics Education approach. Lessons were taught with the control group students according to the method and process in the current curriculum. After the application, the life skills scale was applied to the students in both groups. Evaluation was made according to the pretest and posttest scores obtained from the applied scales.

Data Analysis

SPSS package program was used in the analysis of the quantitative data obtained in the research. The Life Skills Scale is a 5-point Likert type scale. While obtaining the results of the analysis, 1 point was given to the "strongly disagree" option, 2 points to the "disagree" option, 3 points to the "undecided" option, 4 points to the "agree strongly" option, and 5 points to the "strongly disagree" option. In our study, there were 23 students in the experimental group and 23 students in the control group. Shapiro Wilk normality analysis was applied to determine whether the obtained data showed normal distribution. Considering the sample size for the assumption of normality, if the sample size is less than 50, it is appropriate to use the Shapiro Wilk test (Büyükoztürk, 2013).

Table.2 Normality test results of pretest and posttest scores of the experimental and control groups

Groups	Shapiro-Wilk	df	p
Experimental group			
Pretest	.958	23	.424

Posttest	.957	23	.407
Control group			
Pretest	.971	23	.705
Posttest	.939	23	.167

When Table 2 is examined, the Shapiro-Wilk test scores of the data obtained from the participants in the experimental and control groups show a normal distribution. While analyzing the data, Wilcoxon Signed Rank Test and Mann Whitney U test, which are non-parametric test techniques, were used instead of the dependent groups t test and independent groups t test, which are parametric test techniques in the SPSS statistical package program, since the study groups were less than 30 and the population with normal distribution could not be represented.

Results and Discussion

Findings

In this part of the research, the findings obtained as a result of the statistical analysis of the data collected by the methods used in accordance with the purpose of the research and the comments on these findings are included. In the first subproblem of the study, “Is there a statistically significant difference between the pretest and posttest scores of the students in the experimental group (EG) in terms of the development of life skills?” is in the form. Accordingly, it was aimed to determine whether there is a statistically significant difference between the pretest and posttest scores of the experimental group, in which the Realistic Mathematics Education approach was used in the 7th grade mathematics teaching, in the development of life skills.

As seen in Table 2, the pretest and posttest scores of the experimental group were tested to be normally distributed by applying the Shapiro Wilk test. However, nonparametric statistical tests were used because the study group was less than 30 and could not represent the population. The pretest and posttest scores of the experimental group's Life Skills Scale were analyzed by applying the Wilcoxon Signed Rank Test in the statistical package program. Table 3 shows the Wilcoxon Signed Rank Test analysis results of the scores according to the Life Skills Scale of the experimental group.

Table 3. Comparison of pre-test-post-test scores of the experimental group with Wilcoxon test

	N	Rank mean	Sum of ranks	z	P
Negative rank	7	9.36	65.50	-1.983	0.047
Positive rank	15	12.5	187.50		
Equal	1				

Note: The result is based on negative ranks. * $p < 0.05$

When the Wilcoxon Signed Rank Test analysis given in Table 3 was examined, it was determined that there was a statistically significant difference between the pretest and posttest scores of the experimental group students from the Life Skills Scale ($z = -1.983$; $p < 0.05$). It is seen that this difference is in favor of posttest scores. According to the findings obtained as a result of the analysis, it can be said that mathematics teaching with the Realistic Mathematics Education approach is effective in developing life skills.

The second subproblem of the study was “Is there a statistically significant difference between the pretest and posttest scores of the students in the control group (CG) in terms of the development of life skills?” is in the form. In the control group, mathematics teaching was carried out with the traditional method. It is aimed to determine whether there is a statistically significant difference between the pretest and posttest scores applied before and after the determined subject.

As seen in Table 2, the pretest and posttest scores of the control group obtained by applying the Shapiro Wilk normality test show normal distribution. However, in the analysis of the data, since the number of control group was less than 30, it could not fully represent the population with normal distribution, instead of parametric tests, the test techniques corresponding to nonparametric tests were used. In accordance with our second sub-purpose, the pretest and posttest scores of the Life Skills Scale were analyzed by applying the Wilcoxon Signed Rank Test, one of the statistical analysis techniques, in the statistical package program. The analysis results of the pretest and posttest scores of the control group are given in Table 4.

Table 4. Comparison of the pretest-posttest scores of the control group with the Wilcoxon test

	N	Rank mean	Sum of ranks	z	P
Negative rank	10	12.30	123.00	-0.457	0.648
Positive rank	13	11.77	153.00		
Equal	0				

Note: The result is based on negative ranks. * $p < 0.05$

When the Wilcoxon Signed Rank Test analysis given in Table 4 was examined, it was determined that there was no statistically significant difference between the pretest and posttest scores of the control group students from the Life Skills Scale ($z = -0.457$; $p > 0.05$). As a result of the analysis, it can be said that the traditional method of mathematics teaching is not effective in the development of life skills.

The third subproblem of the study was “Is there a statistically significant difference between the pre-test and post-test scores of the students in the experimental group and the control group in terms of the development of life skills?” is in the form. It is aimed to determine whether there is a statistically significant difference between the Life Skills Scale pre-test scores obtained before the application and the post-test scores obtained after the application of the experimental group, in which mathematics teaching is provided by applying activities suitable for the Realistic Mathematics Education approach, and the control group, which is taught mathematics with the traditional approach.

As can be seen in Table 2, the pretest and posttest scores of the experimental and control groups show normal distribution by applying the Shapiro Wilk normality test. However, in the analysis process of the data, since the number of data belonging to the experimental and control groups was less than 30 and could not fully represent the normally distributed universe, nonparametric tests were used instead of parametric tests. In accordance with our third subproblem, the experimental group pretest scores obtained by applying the Life Skills Scale and the control group pretest scores, and the experimental group and control group post-test scores were analyzed by applying the Mann Whitney U test, one of the statistical analysis techniques. The analysis results obtained by applying the Mann Whitney U test are given in Table 5.

Table 5. Findings regarding the pretest-posttest scores of the experimental and control groups

	Groups	N	Rank mean	Sum of ranks	U	P
Pretest	Experimental	23	25.89	595.50	209.500	0.226
	Control	23	21.11	485.50		
Posttest	Experimental	23	28.28	650.50	154.500	0.016
	Control	23	18.72	430.30		

* $p < 0.05$

As can be seen in Table 5, the mean rank in the pre-test in the experimental group that was taught mathematics with Realistic Mathematics Education was 25.89; the mean rank was found to be 21.11 in the control group, which was taught mathematics with the traditional method. Accordingly, it was determined that the difference between the pre-test scores of the experimental and control groups was not statistically significant ($U = 209.500$, $p = 0.226 > 0.05$).

As a result of the posttest applied to the experimental group, who was taught mathematics with Realistic Mathematics Education, the average rank was 28.28; As a result of the posttest performed in the control group, which was taught mathematics with the traditional method, the mean rank was found to be 18.72. Accordingly, it was determined that the difference between the posttest scores of the experimental and control groups was statistically significant ($U = 154.500$; $p = 0.016 < 0.05$).

In accordance with the results obtained in the research, the use of Realistic Mathematics Education approach in the teaching of the 7th grade "Circle and Circular Region" topic was more effective in the development of life skills compared to the traditional method. As a result, it can be said that mathematics teaching provided with the Realistic Mathematics Education approach is more effective than the traditional method of mathematics teaching in the development of life skills.

Conclusion

Pretest and posttest were applied to the experimental and control groups in order to measure the effect of Realistic Mathematics education and mathematics teaching on the real-life skills development of students. As a result of the statistical analysis of the pretest scores of the experimental and control groups before the application, it was determined that there was no significant difference between the two groups. However, it was determined that the statistical analysis results for the posttest scores applied to the experimental and control groups after the application showed a significant difference in favor of the experimental group. The posttest analysis results applied to both groups showed that the Realistic Mathematics Education approach was more effective. This result, in the study conducted by Cansız (2015) in which the effect of Realistic Mathematics Education approach on students' success and creative thinking skills was examined, it was seen that the Realistic Mathematics Education approach positively affected students' creative thinking skills. This result supports the results of the research. In the study conducted by Cahyaningsih and Nahdi (2021), in which the effects of Realistic Mathematics Education on students' critical thinking skills were examined, it was found that Realistic Mathematics Education positively affected students' critical thinking skills. This finding is similar to the results of the research conducted.

When the differences between the posttest and pretest scores of the experimental and control groups were compared, it was determined that there was a significant difference in favor of the experimental group. According to this result, it has been shown that the Realistic Mathematics Education approach is effective in the development of life skills. This situation is similar to the result of Realistic Mathematics Education made by Üzel (2007), that realistic mathematics education and mathematics teaching have an effect on student success. Similarly, the study conducted by Çilingir and Artut (2016), which concluded that realistic mathematics education positively affects student achievement, visual mathematics literacy, self-efficacy perceptions and problem solving skills, supports this study. At the same time, the results of this study are similar to the results of the study conducted by Zakaria and Syamaun (2017) on the positive effects of realistic mathematics education on student achievement and mathematics attitude.

Recommendations

This research, which examines the effect of Realistic Mathematics Education on the development of life skills, was carried out with a study group consisting of 46 people. Accordingly, it is recommended to apply on larger groups for future studies. The research was limited to the application of "Circle and Circular Region" in 10 lesson hours. Different studies can be done within the scope of more subjects and in a longer time period. With the use of Realistic Mathematics Education approach in teaching the subject of Circle and Circular Region, academic success, permanence, attitude, motivation, visual studies can be carried out to ensure that its effect is seen in terms of variables such as literacy. Realistic Mathematics Education is an approach that requires preliminary preparation for teachers. The lack of sufficient activities seems to be not common for teachers. Therefore, in service training can be given to encourage teachers to apply this approach. Different subjects and Activity studies for Realistic Mathematics education for learning groups can be diversified and increased.

Scientific Ethics Declaration

The authors declare that the scientific ethical and legal responsibility of this article published in EPESS journal belongs to the authors.

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Compliance with the Covid-19 Protocol for the Overseas Madurese Community in Terms of the Direct and Indirect Effects of Locus of Control, Belief in the Covid Conspiracy Theory, and Anti-Vaccine Attitudes

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Abstract: Statistically, Indonesia was recorded as having the highest number of active COVID-19 cases in Asia in 2021. Several clusters of activities and crowds increased confirmed cases in several areas, including Madura, where the number of cases continues to rise. One of the reasons for the increasing number of Covid-19 cases in Madura is a lack of discipline in health protocols, such as wearing masks, keeping a safe distance, and washing hands. The increase in Covid-19 cases in Bangkalan, Madura, was also due to poor health protocol adherence (prokes). The government has issued several policies in response to the COVID-19 pandemic, including a vaccination policy. The vaccination policy is inextricably linked to community debates over efficacy, halal certification, independent vaccines, and red and white vaccines. The vaccination debate has resulted in a societal anti-vaccination attitude. The Madurese community has a distinct collective culture that includes hard, religious, and high conformity. Even when traveling abroad, this rich cultural value does not fade. Even though, in a pandemic situation, various joint activities lead to behavior that violates health protocols, changing collective behavior is extremely difficult. Aside from the strong and distinct cultural background in obedient behavior to health protocols, the value of religiosity psychologically encourages the Madurese community to form a locus of control in dealing with pandemic situations. The purpose of this study is to put the Covid-19 protocol compliance model to the test using locus of control and anti-vaccine attitudes. Based on a study of 245 people with characteristics of an overseas Madurese community. The study's findings indicate that the theoretical model of Covid protocol compliance for the overseas Madurese community was built through direct and indirect influences between the beliefs of the Covid conspiracy theory, locus of control, and anti-vaccine attitudes.

Keywords: Anti-vaccine attitudes, Compliance with the covid-19 protocol, Belief in the covid conspiracy theory, Locus of control.

Introduction

Covid cases increased sharply in Indonesia in mid-2021, with Madura being one of them. After random tests were performed on 6,742 people who went on vacation in June 2021, the number of new positive cases of Covid-19 increased by 4,123 (Pranita, 2021). Despite the fact that the number of cases has significantly

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increased, Madurese residents continue to go about their daily lives, ignoring the covid protocol. Even though Madura has been designated as a zone with 3rd level restrictions on community activities, community activities continue to take place as usual. The implementation of Community Activity Restrictions (called PPKM) 3rd level has a variety of social consequences, including work done from home (WFH), restrictions on public areas, economic activity restrictions, and others (Bhayangkara, 2022). However, the restrictions imposed by the government to slow the rate of increase in Covid cases in Madura were also rejected by residents, who continued to participate in joint activities such as tahlilan celebrations, which invited large numbers of people despite the Covid protocol, and even members of the regional government were urged not to announce the news of death to the public (Azmi, 2021). Furthermore, the Madurese people refuse to call it Covid and instead choose to replace it with (Ifansasti, 2021). This increase in cases was caused by residents' disobedience to the covid protocol (Pranita, 2021). Disobeying the covid protocol is not limited to the Madurese who live in their homeland. Adherence to the Covid Health protocol is also shared by Madurese who are living abroad.

The Madurese community is well-known as a nomadic community, and it is almost evenly distributed throughout Indonesia. Religious, tenacious, and communal characteristics are inherent, despite the fact that they have been absent for a long time (Aldo, 2019; Sholik et al, 2016). The Madurese community has a distinct collective culture that includes hard, religious, and high conformity (Salsabiela, 2021). Even when traveling abroad, the thickness of this cultural value does not fade. Even though, in a pandemic situation, various joint activities lead to behavior that violates health protocols, changing collective behavior is extremely difficult. Aside from the strong and distinct cultural background in obedient behavior to health protocols, the value of religiosity psychologically encourages the Madurese community to form a locus of control in dealing with pandemic situations. A person's belief in a pandemic and adherence to health protocols are based on individual differences, which include a locus of control component (Devereux et al., 2021). This is consistent with the findings of Lo Prasti et al's study, which demonstrated a person's proclivity to move outside the home during a national lockdown using individual endogenous variables related to a person's personality trait, locus of control, and moral disposition (Lo Presti et al., 2021).

The researcher conducted a preliminary study by interviewing three overseas Madurese residents of Malang's Madura village. According to the preliminary study findings, even though the covid was hitting, the overseas Madura community continued to hold joint activities such as recitation, takziah, tahlilan, and other joint activities that invited a large number of people without regard for the covid protocol. It is intriguing to examine internal factors such as the Madurese community's locus of control. The locus of control is a component of a person's self-evaluation in the face of an event. Rotter (Patten, 2005) defines locus of control as a person's perspective on an event, regardless of whether that person can or cannot control the events that occur to him. This viewpoint will encourage people to make decisions when confronted with situations such as the covid pandemic. According to Francis (2014), there are two types of locus of control: internal and external. Individual decisions and actions based on self-decision are referred to as internal locus of control, whereas external locus of control refers to the perception that all events originate from outside of oneself, such as luck, other people, or the environment. In the case of covid, the public has a different assessment in responding to the surge in covid to determine whether or not to follow the covid protocol.

In addition to locus of control, many studies believe that the covid conspiracy belief has an impact on compliance with the covid protocol. According to the study (Biddlestone et al, 2020), cultural and psychological factors are related to intentions to reduce the spread of COVID-19. Vertical individualism is found to be a negative predictor of intention to engage in social distancing, both directly and indirectly through belief in COVID-19 conspiracy theories and feelings of powerlessness. Vertical collectivism predicts social distancing intentions positively. Horizontal collectivism, through feelings of helplessness, indirectly predicts social distancing intentions.

Finally, horizontal collectivism both directly and indirectly predicts hygiene-related intentions by lowering feelings of helplessness. These findings imply that promoting collectivism may be an effective way to increase participation in efforts to reduce the spread of COVID-19. They also emphasize the significance of investigating the interactions between culture and personal feelings (helplessness) as well as information consumption (conspiracy theories) during times of crisis.

Despite widespread belief in the existence of a covid conspiracy in Indonesian society in general and the Madurese community in particular, the government is attempting to increase covid vaccination absorption in the community. The pros and cons of the covid vaccination program occur in the community, strengthening the belief that there is a covid conspiracy. The Madurese do not believe in the existence of covid (Al-Mansury, 2021). According to research (Talib et al., 2021), the most effective way to communicate about vaccines to the

public is through social media rather than traditional media, and this study discovered that there are still many people who have not been vaccinated. The community's anti-vaccination attitudes are an impediment, because many people are influenced by fake news and believe that the vaccination program is harmful. Based on the observed phenomena, this study aims to test the Covid-19 protocol compliance model for the overseas Madurese community using the covid conspiracy belief, locus of control, and anti-vaccine attitudes.

Procedure

The research is conducted online by distributing questionnaires created with Google Forms to the general public or individuals who meet the criteria for being used as research subjects. However, due to technological stuttering in the research respondents, data collection was also done offline after a while.

Techniques of Analysis

Using structural equation modeling to test research hypotheses (SEM) Structural equation modeling (SEM) is a cross-sectional, linear, and general statistical modeling technique. According to another definition, structural equation modeling (SEM) is a common and extremely useful multivariate analysis technique that includes special versions of a number of other analytical methods as special cases. Structural equation modeling (SEM) is a statistical technique for developing and testing statistical models, most commonly causal models. SEM is actually a hybrid technique that includes confirmatory aspects of factor analysis, path analysis, and regression as special cases. One advantage of SEM is the ability to model constructs as latent variables, or variables that are not directly measured but are estimated in the model of the measured variables and are assumed to have a relationship with these variables - the latent variables. Researchers can create models using SEM by testing the dimensions of a variable as well as testing between variables. In order to achieve goodness of fit, SEM can eliminate covariant error.

Method

This research employs a quantitative methodology. Quantitative research yields numbers in the analysis results, which are then processed statistically (Azwar, 2012). This study incorporates applied research or applied research. Applied research is concerned with applying theory to real-world conditions and problems, so that the results can be used to solve practical problems (Kumar, 2011). The four independent variables (x) are Covid conspiracy beliefs, Anti-Vaccine Attitudes, and Locus of Control, and the one dependent variable (y) is Compliance with Health Protocols. The purpose of this research is to develop a theoretical model of compliance with health protocols using the variables Covid Conspiracy Belief, Anti-Vaccine Attitude, and Locus of Control.

Participant

The population is the entire research subject that has been determined to be studied and investigated in research due to its unique characteristics and qualities. This study's population consists of all Madurese Overseas residents who are at least 18 years old. This study had a total of 245 participants. This study employs a non-probability sampling sample selection method, which means that not all elements or elements of the population have the same chance of becoming samples (Darmawan, 2014). Purposive sampling was used to retrieve data for this study. The purposeful sampling technique is used because the sample is determined based on certain characteristics or criteria that the researcher has set so that it is in accordance with this study. The use of this technique was chosen based on the special characteristics possessed by members of the population who are able to provide information as needed in this study, the characteristics needed are Madurese people who are overseas (outside of the island of Madura), at least 18 years old, and affected by the COVID-19 pandemic.

Measurement

A Likert scale was used to collect data for this study. The Likert scale is a scale with several alternative answers ranging from very positive to very negative, with a score assigned to each answer choice. Respondents were asked to select the value that was closest to them from the alternative values or answers available in each statement, which ranged from strongly agree to strongly disagree.

Compliance with Covid Protocols Scale

This study's scale for measuring the health protocol The compliance variable employs a proprietary scale (Plohl & Musil, 2021) with four answer options ranging from not at all (value 1) to always (value 4). Several health protocol compliance scale items include: (1) clean hands regularly and thoroughly with a hand sanitizer containing health alcohol; and (2) when coughing or sneezing, cover mouth and nose with bent elbow or tissue.

Vaccine Attitude Scale

The Vaccine Examination (VAX) was developed to assess vaccine attitudes (Martin & Petrie, 2017). This scale has four dimensions: mistrust of vaccine benefits, concerns about unforeseen future effects, commercial profiteering, and preference for natural immunity, with 12 items answered on a 6-point Likert scale ranging from strongly agree to strongly disagree. Cronbach's alpha was 0.94 in the study of the anti-attitude scale toward vaccines.

Items in Attitude Toward Vaccine include: (1) I worry about the unknown effects of vaccines in the future, and (2) Vaccination programs are a big con.

Locus of Control Scale

The researcher in this study used a multidimensional locus of control developed by Levenson, which was later translated by Liestiorini. (1) Although I might have good ability, I will not be given leadership responsibility without appealing to those in positions of power, and (2) In order to have my plans work, I make sure that they fit in with the desires of people who have power over me.

Covid Conspiracy Belief Scale

Egorova et al. developed the Covid conspiracy belief scale (2020). The Covid conspiracy belief scale has four items. All of the items are positive. An example of a product on this scale is The hysteria surrounding the coronavirus is being fueled to distract attention from other national problems.

Table 1. Composite reliability and alpha cronbach

Variable	Composite Reliability	Cronbachs Alpha
Compliance to Covid Protocol	0.888556	0.861686
Covid Conspiracy Belief	0.919849	0.885579
Locus of Control	0.888624	0.858466
Vaccine Attitude	0.875312	0.835039

Table 1 shows that the composite reliability value is greater than 0.7 and the Cronbach's alpha value is greater than 0.6, indicating that composite reliability and Cronbach's alpha are met, and all research instrument items are declared reliable for further testing.

Results and Discussion

Based on the research demographic data, the majority of the research respondents were male with a percentage of 59.6%. Most of them are aged 25-34 years with a percentage of 32.25%, this can be seen from the income of less than 1 million by 72.65% of respondents. Research respondents are overseas Madurese communities, with the largest distribution of cities where respondents live in East Java at 96.31% and the largest length of domicile is more than 10 years with a percentage of 70.61% and the largest from overseas is Pamekasan with a percentage of 54.29%. Research respondents have a special reason to migrate from Madura, the majority (55.51%) have reasons to work overseas.

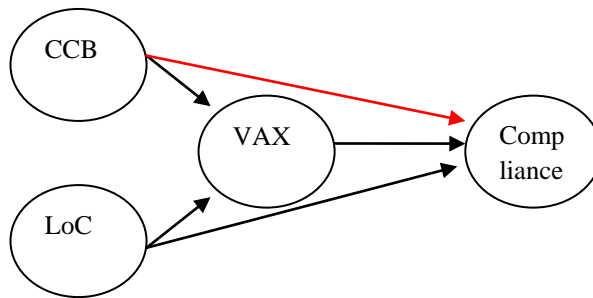
Based on the objectives and specifications of the research, testing is carried out in stages (iterations) using the SmartPLS software, to obtain fit test results. The SEM Model Factor Analysis shows the test results in Table 1

show that all outer loading construct indicators have a loading value > 0.5, so it can be concluded that this measurement meets convergent validity. The discriminant validity results show that the root square of average variance extracted (AVE) value is greater than 0.5. The results of the reliability test showed reliable results because the value of composite reliability (ρ_c) was above 0.7. For the inner Q-Square model greater than 0, it can be interpreted that the predictor is latent so that it can be said that the model is feasible to estimate.

Tabel 2. Evaluation of structural model conformity index criteria

Criterion	Result			Critical Value	Model Evaluation
<i>Outer Model</i>					
<i>Discriminant validity (Average Variance Extracted (AVE))</i>		AVE	Root square AVE	≥ 0,5	Good
	Compliance to Covid Protocol	0,446	0,668		
	Covid Conspiracy Belief	0,742	0,862		
	Locus of Control	0,473	0,688		
<i>Composite Reliability (ρ_c)</i>	Compliance to Covid Protocol	0,889		≥ 0,7	Good
	Covid Conspiracy Belief	0,920			
	Locus of Control	0,889			
	Vaccine attitude	0,875			
<i>Inner Model</i>					
<i>Q-Square</i>	Compliance to Covid Protocol	0,015		≥ 0	Good
	Vaccine attitude	0,146			

The results of the analysis on the influence test between these constructs are as described by paying attention to the path diagram of the results of the PLS analysis, so that the relationship between these constructs can be described in a simple way, as shown in the Figure below.



The interpretation of the results of the hypothesis testing proposed in this study is explained as follows:

Tabel 3. Result from hypothesis test

H	Role		Koef Path	T value	Note
H1	Covid Conspiracy Belief	→ Vaccine attitude	0,268	02,49***	Significant
H2	Covid Conspiracy Belief	→ Compliance to Covid protocol	-0,105	0,847	Not Significant
H3	Vaccine attitude	→ Compliance to Covid protocol	0,180	1,050	Significant
H4	locus of control	→ Vaccine attitude	0,531	4,910***	Significant
H4a	locus of control internal	→ Vaccine attitude	0,399	2,573***	Significant
H5	locus of control	→ Compliance to Covid protocol	-0,096	0,633	Significant

Source: Primary data (2021)

*, **, *** signifikan in level 10%, 5%, 1% value t Table in level 10%= 1, 645, 5%= 1,960, 1%= 2,326.

Table 4. Demographic data of research respondents

Data	Category	Ammount	%
Sex	Man	146	59.6%
	Woman	99	40.4%
Age	17 – 24 years old	53	21.63%

	25 – 34 years old	79	32.25%
	35 – 44 years old	73	29.80%
	45 – 54 years old	32	13.06%
	More than 55 years old	8	3.26%
Wandering City	East Java	236	96.31%
	Central Java	2	0.82%
	Jakarta	2	0.82%
	Bali, Sulawesi South, Sumatera		1.23%
	North	3	
	Yogyakarta	2	0.82%
Domicile Length	Less than 1 year	17	6.94%
	1 - 5 year	14	5.71%
	5 - 10 year	41	16.74%
	More than 10 year	173	70.61%
Origin	Bangkalan	74	30.20%
	Sumenep	17	6.94%
	Pamekasan	133	54.29%
	Sampang	21	8.57%
Reasons to wander	Married	58	23.67%
	Work	136	55.51%
	Others	51	20.82%

Table 5. Demographic data of research respondents: income, last education, and occupation

Demographic data	Category	Ammount	%
Monthly Income	Less than Rp. 1.000.000,-	178	72.65%
	Rp. 1.000.001,- s/d Rp. 5.000.000,-	58	23.68%
	Rp. 5.000.001,- s/d Rp. 10.000.000,-	5	2.04%
	More than Rp. 10.000.000,-	4	1.63%
Last education	Elementary School	30	12.25%
	Junior high school	146	59.59%
	High School	21	8.57%
	Associate degree	10	4.08%
	Bachelor Degree	30	12.24%
	Master Degree	8	3.27%
Occupation	Self-employed	131	53.47%
	Businessman	41	16.74%
	civil servant	9	3.67%
	Housewife	30	12.24%
	Student	28	11.43%
	Teacher	3	1.22%
	Student	1	0.41%
	Doesn't work	2	0.82%

Based on demographic data, it is clear that male workers or male migrants outnumber female workers or female migrants. This is because men are the head of the family, so their desire to migrate outside the region to make a decent living is much greater. in comparison to women who are housewives Demographic data also shows that the average immigrant is of productive age, which is between the ages of 25 and 40. This is because at that age, an individual's desire to improve a more decent standard of living is much greater than the age of non-productive people, such as children and the elderly, and the reason they migrate is obvious: to work, because the Madurese have cultural traits that are associated with migrants and hard workers (Ismi, 2021).

From a regional standpoint, we can see that Pamekasan contributed a greater number of Madura immigrants than several other regions, namely Bangkalan and Sumenep. According to demographic data, these Madurese migrants live on average in East Java, which is an industrial and population center with a high economic level, so their opportunities to trade and earn a decent living will be much greater. Because of these Madura immigrants, East Java is considered a more promising location when compared to other locations such as DKI

Jakarta to Jogjakarta, Central Java, West Java, and others, because the distance is not too great and the economic potential is quite large.

The demographic data studied show that the majority of the population from Madura who migrated to Java is economically less stable. The number of immigrants with a monthly income of less than one million is greater than the number of immigrants with an income above the average UMR. The data on these migrants' monthly income is positively correlated with their most recent education, with the majority of them being junior high school graduates or the equivalent. Education is generally positively correlated with a person's income; if he has a low education, his monthly income will tend to be low because of the potential to have a business or work opportunity or have an economic business that is less hampered due to lack of education or lack of experience in the business or work involved, and it is not surprising that the majority of these migrants are entrepreneurs, namely those who start their own businesses and are mostly traders where they migrate from Madura to work in the hope of having a more decent income outside the island of Madura.

The implementation of strict covid protocols is the main key to reducing the number of covid cases; compliance is required in carrying out the covid protocol through several behaviors such as maintaining distance, using masks, maintaining personal hygiene, and others. The study's findings indicate that the covid conspiracy belief, anti-vaccine attitude, and locus of control form the theoretical model of compliance with the covid protocol for the overseas Madurese community. This study demonstrates how crucial the vaccine's attitude is to adherence to the covid protocol. In encouraging compliance with the covid protocol, the vaccine's attitude can act as an intermediary variable for the covid conspiracy belief and locus of control.

The Madurese community will face the pros and cons of the covid vaccination program in 2021, with even less trust and an attempt to reject the existence of covid, which causes various restrictions for the community. The study's findings indicate that anti-vaccine attitudes play a role in covid protocol compliance. Similarly, Latkin et al., (2021) discovered a link between COVID-19 prevention behavior (wearing masks and keeping a safe distance) and vaccination attitudes. According to Lazarus et al. (2020), some countries have low rates of covid-19 vaccination due to societal characteristics and trust in the government. Madura is known for having a high religiosity character and a high adherence to religious leaders (Ismi, 2021). The government compliance survey is less relevant in terms of attitudes toward covid-19 vaccination, especially since the issue of halal certification is highly debated in a society with a strong religious component. Previous research has demonstrated the impact of vaccine attitudes on health protocol adherence (Hornsey et al, 2018; Kwok et al, 2021; Talib et al, 2021, Akhrani et al, 2022). The barrier to vaccine attitudes in the Madurese community is a lack of sufficient understanding and literacy about the risk of covid, which results in a reluctance to vaccinate or implement health protocols. Moreover, the number of hoax news received by the Madurese community related to Covid which is reinforced by the fact that the level of public education is still low, making it difficult for people to distinguish factual news and hoax news. Regarding belief in the covid conspiracy theory, the results of this study show that there is no direct role in the Covid protocol compliance variable. However, the belief that there is a covid conspiracy can play a role in compliance with the covid protocol if it is through an anti-vaccine attitude. In contrast to the results of the research by Jolley & Douglas (2014), the individual's belief in the anti-vaccine theory is directly related to a decrease in the individual's desire to get the vaccine. In this study, to produce compliance with the covid protocol, the covid conspiracy belief must go through an anti-vaccine attitude. The results of this study are the same as those conducted by Goldberg & Richey (2020) where anti-vaccine attitudes are explained as a result of an individual's psychological predisposition to conspiracy theories. The form of anti-vaccine belief in the conspiracy theory is that any information that comes from the government will be considered as something that deserves to be suspected. The government is considered to have made too many blunders and mistakes in the eyes of the people. So with these mistakes and shortcomings, people's trust in the government erodes (Ismi, 2021; Akhrani et al, 2022). For the Madurese, there is no such thing as a corona virus and rejecting the covid disease as a trending illness. Most of them are middle to lower class people in terms of economy. Traders in the market to street vendors also refused to be disciplined by officers because they felt that they were disadvantaged if they obeyed and believed in the issue of the pandemic. Conspiracy COVID-19 beliefs (among them, conspiracy beliefs about chloroquine), as well as conspiracy mentalities (i.e., propensity to believe in conspiracy theories) negatively predicted participants' intention to be vaccinated against COVID-19 in the future. Lastly, conspiracy beliefs predict support for chloroquine as a treatment for COVID-19. Interestingly, there is no conspiracy belief that points to the dangers of vaccines. The implications for the pandemic and potential responses are discussed (Bertin et al, 2020).

The locus of control, interestingly exhibits direct or indirect influence. Locus of control cannot have a direct effect on health protocol compliance, but it can have an effect if it is produced through the intermediary variables of vaccine attitudes. According to Aharon et al. (2018), the interaction between internal and external

HLOC (Health Locus of Control) can be a predictor of vaccination attitude. Similarly, the findings of Rapisarda et al. (2021) explain the relationship between Locus of Control and vaccine attitudes. According to the findings of Szczerbiska et al. (2017), there are drawbacks to the association of internal locus of control with anti-vaccine attitudes. According to the findings of this study, the PA (positive attitude) subscale of the Attitudes Towards Vaccinations Scale is positively related to the internal locus of health control. In terms of adherence to the covid protocol, the findings of this study are supported by research conducted by Joo-Hyun et al., (2011) who found that respondents who rated hand washing as important for influenza prevention also rated it highly in terms of internal locus of control. In the context of kidney disease research, locus of control has a significant relationship with adherence to therapy and medication use (Suryani et al, 2021; Ansyar et al, 2020). The Madurese have a distinct culture of obstinacy, autonomy, and religion. This personality can be seen in the community's reaction to the pandemic. On the one hand, firm belief reinforces anti-vaccine attitudes and leads to adherence to the covid protocol. However, when confronted with religious leaders, the Madurese community's harsh attitude softens. The religious nature of the Madurese community strengthens the community's behavior, including in dealing with the pandemic. Given the local wisdom that underpins every decision made by the Madurese community, a cultural approach is required to encourage people to follow the covid protocol during the pandemic. Religious leaders' involvement will be more effective in educating the public than a structural political approach, such as the government's current approach. When the government imposes restrictions on community activities and is accompanied by pandemic policies that change on a regular basis, trust in the government suffers significantly.

Conclusion

Vaccine attitudes are an important variable in explaining covid protocol compliance. The vaccine's attitude is an intermediate variable in explaining the role of the covid conspiracy belief and locus of control on covid protocol compliance. The Covid conspiracy belief cannot explain Covid protocol compliance directly, whereas the locus of control can explain Covid protocol compliance directly or indirectly through the vaccine attitude.

Recommendations

Given the strong cultural identity of the Madurese community, even when they are living abroad, the involvement of religious leaders is regarded as an important value that must exist in educating the Madurese community to comply with the covid protocol.

Scientific Ethics Declaration

The authors declare that the scientific ethical and legal responsibility of this article published in EPESS journal belongs to the authors.

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Development of a Design Thinking Pedagogical Model for Secondary Schools Science Teachers in Malaysia: A Needs Analysis

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Abstract: In line with UNESCO's goal of enhancing quality and innovation through various enhancements to Science, Technology, Engineering, and Mathematics (STEM) education, the Malaysian Ministry of Education also places a premium on information enhancement through STEM education and the Malaysia Education Blueprint (MEB) 2013-2025. Design thinking is an essential component of STEM education in modern schooling. The significance of design thinking, particularly in STEM education, fosters creativity and innovation in problem-solving among students. The needs analysis research is the early phase of Design and Development Research (DDR). This study aims to determine the requirements for developing a Design Thinking Pedagogical Model for secondary school science teachers in Malaysia. The interview method was used to perform the qualitative research. Thus, semi-structured interviews with three science teachers were conducted to explore teachers' perspectives on the need to develop a Design Thinking Pedagogical Model. Purposive sampling was used to choose these experts, and they all matched the criterion. Thematic techniques such as verbatim transcription, coding, and themes were used to examine the interview data. The findings of this study indicate that researchers need to develop a Design Thinking Pedagogical Model of Science by a panel of expert teachers in teaching sciences in secondary schools. As such, the development of this Design Thinking Pedagogical Model will serve as a practical guide for teachers in terms of training and utilizing design in students and practicing the skills necessary for the 21st century through learning and facilitation.

Keywords: Design thinking, STEM Education, Pedagogical model, Need analysis, Design and development research (DDR)

Introduction

Education is evolving in response to the rapid spread of information and communication technology during Industrial Revolution 4.0. IR 4.0 is a technological revolution that radically alters human thought, the global economy, and social roles (World Economic Forum, 2018). Due to IR 4.0, the economic, social, and political systems are changing, and so is the educational system. The 21st-century learning environment is transitioning from a teacher-centered to a learner-centered orientation. The Malaysian Ministry of Education (MOE) has developed the Malaysian Education Blueprint 2013 - 2025 (MEB) in order to educate students for the educational challenges of the 21st century so that they can compete internationally. It is aligned with MEB 2013-2025, which aims to prepare individuals to enter the workforce following labor market demands.

Design Thinking is an original, creative, and human-centered strategy and mindset that incorporates interdisciplinary teamwork to create user-focused products, services, and experiences (Lor, 2017). As a dynamic and non-linear framework (Scheer et al., 2011), Design Thinking employs a five-step iterative process: (1)

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Empathy, (2) Definition, (3) Ideation, (4) Prototype, and (5) Testing. It has been proposed that design thinking might assist teachers by giving them with accessible and adaptive frameworks that can improve their creativity and contribute in the solution of real-world problems. In addition, a design thinking approach was shown to be an effective technique for enhancing the teaching or learning process, particularly when developing 21st-century skills among students (Razali et al., 2022). Numerous scholars and researchers in the field of education have investigated the prospect of design thinking enhancing curricula and teaching strategies (Abidin et al., 2022; Balakrishnan et al., 2021; Noh & Karim, 2021). In this context, "design thinking" refers to a more general way of thinking that incorporates the designer's approach to a real-world problem or difficulty. Therefore, the study of the development of this model is significant for integrating design thinking to solve a real-world problem related to education. As a result, science teachers will be better prepared to help their students meet the challenges of globalization on both the academic and personal fronts.

Design Thinking and STEM Education

Research has shown the significance and reciprocal advantages of design thinking and integrated STEM knowledge. Integration of STEM pedagogical approaches has been cited in the literature as a means by which students can learn and develop design thinking (English, 2019; Fan & Yu, 2017). Experimental research was conducted by Fan and Yu (2017), who compared the performance of high school students in STEM technology courses. Students' talents were examined over 10 weeks while the course material and other crucial factors were strictly monitored. Students majoring in STEM fields in engineering outperformed those majoring in a technology education module in terms of conceived knowledge base, high-order design thinking, and project activities for engineering designs. Additional research and analysis highlighted the most salient distinctions between the two modules' design-thinking methods (Fan & Yu, 2017). The following research featured and described the beneficial and practical consequences of teaching STEM subjects together in high school. The research conducted by English provided a concise explanation of the positive outcomes associated with STEM education that was integrated into the curriculum and the teaching methods. Further, Fan and Yu devised an engineering design experiment to compare teaching modules across different groups of students. Critical thinking skills were observed to be utilized by gifted and talented students in integrated STEM activities based on the EDP in the following situations: providing explanations, making associations, questioning information, providing justifications, solving problems, thinking creatively, making generalizations, and attempting to persuade others (Sen et al., 2021). Similar benefits in students to learn and improve design thinking were revealed in the previous study (English, 2019).

Methodology

This research employs the Design and Development Research (DDR) methodology described by Richey and Klein (2007). It is divided into three stages: Need Analysis (Phase I), Design and Development (Phase II), and Evaluation (Phase III). This study will solely discuss Phase I. The needs of the informants (Science teachers) were assessed using a needs analysis to develop Design-Thinking pedagogical model. McKillip (1987) described those needs are a value judgment that a particular group has a problem that must be solved. In this study, researchers employed the purposive sampling approach to identify informants with certain characteristics to obtain specific information from them (Palys, 2008).

Needs analysis is crucial to determine the primary research issue before developing a model (Saedah et al., al., 2013). In addition, needs analysis seeks to explore current problems and evaluate the necessity of designing a model (Mohd Ridhuan & Nurul Rabihah, 2020). The McKillip Discrepancy Model (1987) is used to assess the contrast between the actual condition and the desired situation. According to Mckillip (1987), the needs analysis phase entails the phase of identifying and analyzing the subject's needs, which will determine the results obtained. Identifying and analyzing needs is also known as identifying and offering solutions to existing problems. Face-to-face interviews, telephone interviews, and questionnaires are the three methods typically utilized in needs analysis (McKillip, 1987). This paradigm places emphasis on normative norms and professional judgement. It is also a model that has been widely adapted to several circumstances involving needs analysis, a model that is highly transparent and widely utilized, particularly in the field of education.

In this study, the needs analysis is the first phase in DDR. The researcher uses a qualitative technique with three experts' science teacher. An experts' science teacher needs analysis was done to determine the need for a Design-Thinking pedagogical model. Based on the literature study, an interview protocol was created. Before the interview, the protocol was validated for language, content, and quality. Face-to-face interviews allow the

researcher to dominate the discussion and get the informant's view (Cohen et al., 2018; Cresswell & Creswell, 2018). Experts are science educators with more than five years of experience (Berliner, 2004). Sampling informants to meet institution-set criteria: Consenting informants were interviewed and verbatim transcribed. All informants verified transcriptions before analysis, classification, and coding (Cohen et al., 2018).

Results and Discussion

Based on the verbatim analysis of the transcriptions, all informants agreed that a design thinking pedagogical model for secondary school science teachers need to be developed.

Table 1. Demography of informants

Aspects	Category	Count
Experience in education fields	5-10 years	0
	11-15 years	2
	>20 years	1
Level taught	Form 1	1
	Form 2	1
	Form 3	1
Gender	Male	1
	Female	2
Workplace	Kuala Lumpur	2
	Selangor	1

According to Table 1, all of the informants chosen for this study are considered experts because they have more than 11 years of experience in the field. They come from a variety of workplaces, including Kuala Lumpur and Selangor. In addition, all the chosen informants have expertise in the required fields, including Science Education; thus, they are from science teachers of different levels thought in secondary schools.

All informants agreed that a design thinking educational model should be developed for secondary schools, as evidenced by an analysis of the interview transcripts. In addition, informants indicated why the design thinking pedagogical model need to be developed.

The Needs to Develop a Design Thinking Pedagogical Model for Secondary Science Teachers in Malaysia

The needs analysis results indicated that a design thinking pedagogical model for secondary school science teachers was needed. This was supported even more by Informant 1's experience in the STEM and science fields. Based on their experience in the field science, Informants 2 and 3 had the same viewpoint:

"...I'm trying to figure out how to implement a method or approach in my classroom that will enable Project-Based Learning (PBL), ensure that the learning objectives of the activities being carried out are accomplished, and allow me to evaluate and assess student progress in a way that appears fair and objective."

".....Yes, we need a teaching guideline that science teachers may refer to make sure implementing Project Based-Learning (PBL) appear more beneficial to teachers and students." (Informant_1)

This viewpoint is also confirmed by informant 2, who claimed that it is critical to develop a pedagogical model that facilitates more innovative and effective teaching by teachers, as shown below:

".....I have attended design thinking training, but I could not use project-based learning effectively because there was no particular guide on how to implement it. If there is a model or guideline for teachers to follow, I will be able to execute science teaching and learning with creative solutions."

“.....In addition, I discovered that I could create a more engaging learning environment through design thinking and project-based learning. I feel that students will be motivated to finish assigned activities if they enjoy learning. In reality, students would be able to recall smoothly all taught knowledge.” (Informant_2)

In addition, it was determined that Informant 3's perceptions aligned with the purpose of this study and were rather direct as follows:

“....Time constraints exist because teachers do not have sufficient time to implement project-based learning while teaching in the classroom. In addition, limits on student attendance due to the covid-19 pandemic and inadequate and limited ICT equipment restrict teachers' teaching ability.”

“.....Project-based learning and design thinking is a great way to get students interested in learning since they can get their hands dirty while doing something genuinely enjoyable. By making something creative, students can exercise their higher-order thinking skills. This is a place where students can incorporate their original ideas. Also, just by making one product, it fosters all the talents needed in the modern workplace.”

“.....Yes, a model that teachers may use as a guide is needed since teachers do not know how to implement teaching and learning design thinking in project-based learning. (Informant_3)

As indicated in the verbatim analysis of the interviews, all informants agreed that it was essential to develop a design thinking pedagogical model for secondary school science teachers as a flexible educational guideline to incorporate 21st-century abilities into the teaching and learning of sciences. Through this interview's findings, it is possible to conclude that all informants have reached a consensus about developing a design-thinking pedagogical model for secondary school science teachers. Their statements were supported by their expertise in their respective professions, science teacher. The conclusions of the performed needs analysis are consistent with those of prior research, in which the construction of a model was considered crucial since it provides a guide for teachers to integrate STEM into their classroom instruction (Dare et al., 2019; Muhammad Nasiru et al., 2018). The inputs of the first phase will contribute to the model development that will be applied during the study.

Conclusion

Based on the research obtained, it can be determined that the needs analysis phase should be implemented as the initial stage of the Design and Development Research (DDR). Through needs analysis, most informants agreed that a Design-Thinking pedagogical model should be developed in secondary schools as a guide for science teachers to apply Design-Thinking to enhance the delivery of successful teaching and learning processes consistent with a student-centered 21st-century learning environment. Therefore, the development of this Design-Thinking pedagogical model can be included in the education system of Malaysia's 4.0 Industrial Revolution period to face the challenges of globalization.

Recommendations

In conclusion, the findings of this study contribute to the body of knowledge and research on Design-Thinking in science education by providing the Ministry of Education, educators and instructors, parents, and science students with a better understanding of the possibilities. This study focuses solely on the need for Design-Thinking learning model for secondary science teachers. Therefore, the researcher recommends conducting more research to produce a design thinking pedagogical model in schools for disciplines other than science so that teachers have more options for implementing Design-Thinking based learning in schools. Future studies are suggested to concentrate on Design-Thinking in additional elementary and secondary school subjects other than science.

Scientific Ethics Declaration

The authors declare that the scientific ethical and legal responsibility of this article published in EPESS journal belongs to the authors.

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Impact of Glass Ceiling Effect on Women Career Success with the Mediating Role of Work Family Conflict and Moderating Role of Perceived Organizational Support in Pakistan

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Abstract: Women make up half of the world's population, but they continue to face significant barriers to success including the glass ceiling. It refers to the invisible professional hurdles that women confront in the workplace. Women encounter challenges in practically every field of business today, including positive successes such as promotions and awards, which jeopardize their status and role in the workplace. Although the glass ceiling has piqued the interest of researchers, some authors have noted that theoretical models have made little effort to develop an understanding of the phenomenon and its implications. The main objective of the research was to find out the impact of glass barriers on women's career advancement in academia, as well as to analyze the mediating role of work-family conflict the mediating linkage between the glass ceiling and women's career success and perceived organizational support as moderating to reduce the negativity between conflict and women careers. The data was gathered using an adopted questionnaire with a sample size of 325. The included hypothesis under this research is being tested using sampling criteria. According to the results of the study, all hypotheses were accepted. Theoretical and managerial implications were also discussed along with future recommendations and limitations.

Keywords: Glass-ceiling effect, Women career advancement, Work family conflict and perceived organizational support

Introduction

Increased female labour force participation is crucial for poverty reduction, economic growth, and women empowerment around the world. Over the last 20 years, female labour force participation has climbed to 63.5 percent, which is still below the national average (Kalaitzi et al., 2017). Women have evolved to contribute half of the human capital in a competitive economy (Fathy & Youssif, 2020). Gender parity is nearly impossible to achieve in this competitive market, indeed company's most valuable resource is its personnel, either male or female. Women all over the world are gradually building a global gender-equality movement to achieve equal rights and opportunities based on talent rather than gender discrimination (Ganiyu et al., 2018). Unfortunately, developing countries like Pakistan continue to face similar barriers to women's job advancement. There are numerous factors that impede advancement and higher positions at work, and the glass ceiling is one of them. It's an impenetrable barrier that prevents women from progressing up the academic ladder, regardless of their qualifications or achievements (Glass Ceiling Commission, 1995). Glass ceiling is a more intangible barrier to career advancement than other internal and external factors (Pothuraju & Alekhya, 2021). Similarly, there are number of societal, organisational, and cultural factors that contribute to these invisible glass barriers, all of which have a negative impact on women's career advancement (Sharma & Kaur, 2019). Women face obstacles in almost every field of life, including academia that is one of the most valuable sectors in any community,

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women in this sector having difficulty achieving top-level positions. These consequences have been discussed extensively in management science literature (Babic & Hansez, 2021), but women's career advancement has received little attention.

Pakistan is currently among the worst countries in terms of gender parity, only ahead of Iraq, Yemen, and Afghanistan. Pakistan has failed to improve its gender parity score in the last sixteen years, according to the "Global Gender Gap Report 2021" (the gender parity score was 0.553 in 2006 and is 0.556 in 2021). The glass ceiling in women's careers persists at the national and international levels, and it differs by country (Lakmali et al., 2020). Previous empirical evidence showed that women's endeavors are strongly discouraged in Asian countries such as Pakistan (Lathabhavan & Balasubramanian, 2017). Invisible barriers such as gendered leadership construction and cognitive bias, accordingly both position and evaluate women less favorably than men, many women experience difficulties in advancing in their careers. (Hussin et al., 2021).

Many women pursuing a professional career in management face job promotion discrimination (Perales, Pérez-Ledo & Chordà, 2021). Indeed, establishing a fair merit-based promotion system is one of the most common issues that organizations face around the world; despite enormous efforts in this regard, promotion systems in many organizations appear to be skewed. Because of these flaws in the system, women have fewer opportunities to advance in their careers (Eghlidi, F. Karimi, 2019). A number of studies have found that women are less concentrated in universities than men in lower ranks, that more women work in temporary positions, and that they earn less than men with comparable qualifications (Lieberman et al., 2018). It refers to the invisible and insurmountable barrier that prevents women from advancing to upper management, decision-making, or high academic positions, regardless of their achievements and competencies in career advancement (Ozturk & Simsek, 2019). Today, many women balance parenthood and family life with full-time paid job. Although having various roles might benefit both genders' overall well-being, competing obligations can also lead to role conflict and undesirable psychological repercussions. When one role's performance impairs one's capacity to function well in another, there is inter-role conflict. This dispute is known as work-family conflict when it occurs predominantly at home. This is the proportion to which a person is subjected to work-related pressures that are incompatible with family obligations. (Babic, & Hansez, 2021).

Although some researches have shown that the glass ceiling have a negative impact on several concepts, such as employee intention to quit, Stewart et al., (2011) the organization. These barriers and ambiguities in role of women at work-home is increasing day by day. Indeed, rare previous studies Tran, (2014), to the best of our knowledge, has explored the impression of work-to-family conflict (WFC) and glass-ceiling barriers in one's career success. To fill out this gap, this study considered work-family conflict as a mediator in the relationship between glass ceiling effects and career success. Existing research has shown that there is a misconception about women managers that causes their superiors to overlook them as non-potential candidates for top management jobs. Among these views are the incompatibility of the responsibilities of mother, wife, and manager, as well as the fact that becoming a manager necessitates an excessive amount of investment, flexibility, and travel. In keeping with this notion, multiple previous studies have revealed that managers believe that work-life conflict is stronger for women than for males. However, this assumption has consequences because it reduces the organization's perception of women's competency in the workplace, lowering the likelihood of female promotion (Son, Sohn & Chung, 2018).

The conservation of resources theory is one possibility for explaining this connection (COR theory, Hobfoll, 1989, 2011). This idea holds that the prospective or actual loss of resources, which they highly value, poses a threat to both people and groups. People are thus impelled to absorb, acquire, retain, conserve, defend, foster, and expand valuable resources in order to meet anticipated future demands (Hobfoll, 1989). People do, in fact, "use important resources in order to undertake the regulation of the self, their operation of social contacts, and how they organise, behave, and fit in to the wider framework of organisations and culture itself," as stated by Hobfoll (2011, p. 117). It's also feasible that female managers make resources investments in an effort to overcome glass ceiling-related barriers but that these investments prove ineffective. It is unpleasant to spend resources to deal with a scenario when resources are lost because doing so may reduce a person's supply of resources (Hobfoll, 1989). Poor physical and/or mental health is a result of this spiral. The perception of WFC rises as a result of these detrimental effects, which include negative emotions, diminished psychological wellbeing, and eventually diminished mental and physical health (Taylor, Huml, & Dixon, 2019). Therefore, based on the above, authors postulate that work-family conflict mediates in the relationship between glass-ceiling effect and women's career advancement in Pakistan academia.

Furthermore, according to the organisational support theory (Eisenberger, Huntington, Hutchison, & Sowa, 1986), employees develop a broad understanding of how much the organisation values their contributions and

cares about their well-being, which is related to perceived organisational support–POS. Employees who perceive organisational support as dispositional increased their level of confidence and interest in their work (N. Kurtessis, 2015). Employees believe support from the business, that someone is there to help them by providing helpful comments or being available to talk about specific workplace issues, which motivates them to push their professional boundaries and maintain their family and work balance (Chenga& Yi, 2018). According to previous study, POS is important in altering organisational links, which is supported by this citation (Cheng et al., 2016; Han et al., 2016).

Social exchange theory (Blau, 1964), on the other hand, demonstrated that positive signals between employees and relationship exchange help them meet their challenging tasks (Dany, 2014). Employees rely on two types of social support that are distinct but related to help them perform well at work and in their careers. The first is work-related support, which is measured by perceived organisational support (POS). We believe that POS can supplement valuable aspects of one's work and family balance and compensate for individuals' lack of other career-related competencies (Hobfoll, 2011). Through POS, individuals can gain competencies and skills, increasing their adaptability (Savickas & Porfeli, 2012). It refers to the extent to which POS addition assists employees in managing job-related challenges, whether female or male, and high (self-esteem), as a result of which women become strong enough to overcome any bias during jobs, increasing their chances of career success (Ocampo et al., 2018). Similarly, employee empowerment in organizations is still a hot topic in management. Despite the fact that there are numerous studies in the current literature focusing on enhancing thriving behaviors, there are still gaps in understanding the nature of these behaviors and identifying how perceived organizational support reduces the negative relationship between work family conflict and career success of women in Pakistan's educational sector.

Employees feel confident in their organisations and make advantage of the support they have in today's competitive environment, which helps them to increase their level of satisfaction and capability to handle disagreements at work, such as work and family conflict (Akgunduz, Alkan, & Gök, 2018). High perceived organisational support lowers the likelihood of a task being incompatible with someone's life, according to numerous studies in the literature (such as Ibrahim et al., 2016). Joo, Hahn & Peterson (2015) revealed that employees will continue to work in their organisations as long as their organisations care about their well-being and assign them essential operational tasks. Employees that receive organisational support become competent of doing duties at work. This study adds to previous research by filling many gaps in the literature on perceived organisational support as a moderating factor in the association between work-family conflict and women's career success.

Literature Review

Glass Ceiling Effect and Women Career Advancement

The term "glass ceiling" became well-known and popularized in 1986. The Working Woman Report," which examined the status of female employees in corporations (Sorkin, 2018). For many years, the glass ceiling has been a hot topic in almost every country. Females and other minorities were found in lower-level positions with low pay and no room for advancement, according to the Labor Force Survey (Pakistan Bureau of Statistics, 2017). The glass ceiling effect hinders women's career advancement. Women in Pakistan, in particular, continue to face invisible barriers to career advancement at the middle and upper levels, and women continue to be underrepresented in top-level positions. The glass ceiling has a significant impact on women's professional development satisfaction and shapes their perceptions of it. A lack of social relationships and social capital will limit women's career success. Career advancement is a dynamic variable and indicator that changes over time; as a result, negative attitudes toward career advancement are common (Masood, Nawab & Shafi, 2021). Career advancement entails climbing the corporate ladder and increasing one's earnings and income.

Women all over the world face insurmountable challenges in achieving top-level positions while meeting all of the requirements associated with unequal professional advancement (Jauhar & Lau, 2018). According to previous research, glass/invisible walls at work jeopardize women's careers, and workplace gender disparities persist. They can no longer obtain executive positions at work (Ngaage et al., 2020). As a result of the preceding discussion, it is expected that the more severe the obstacles, the more likely women will be rejected at the top of the hierarchy. As a result, we devised the following hypothesis.

H1: The glass ceiling effect has a negative impact on women's job advancement in Pakistan's education sector and the state of Azad Kashmir(AJK).

Work-Family Conflict as a Mediator

Work family conflict is characterized as "a type of inter role conflict in which the role pressures of the work and family domains are mutually incompatible in some way" (Greenhaus & Beutell, 1985, p. 77). Individuals are often compelled to choose between prioritizing family (work influencing family or WFC) and work (family affecting work or FWC), sacrificing one position in order to achieve self-acceptance with their role in each environment (Greenhaus & Powell, 2006). Women tend to experience higher levels of conflict than men. Due to high level of conflict women become unable to take advancement opportunity and the inability to change employment. There are numerous factors that generate higher level of WFC, some invisible barriers at work also become the cause of work family conflict. Scholars have also identified that women and men are thought to be equal all over the world, but the reality is quite different; previous studies found that women are trapped in the inferior gender. It also reveals employees who already face incompatibility issues at work and are heavily influenced by these intangible barriers and face numerous challenges (Soumya & Sathiyaseelan, 2021). Many organizations are built on employee-to-employee trust. When a person has doubts about himself, the goal is hampered. No objective or solution can be achieved if there is no trust in their abilities, which can lead to negative psychological consequences like stress, WFC and job burnout (R.r& Sathiyaseelan, 2019). Women who frequently face disagreements find themselves in an unbalanced position. In such situations, they tend to think low of themselves and lose faith in their own worth. At workplace glass barriers increase the chances of conflicts in their jobs (Williams, 2017). Hidden barriers and disputes between family and job decrease meeting career goals (Branden, 2021). In fact, recent studies in management science literature showed that disputes between job and family, reduces employees level of esteem that ultimately reduce the chances of career success and gaining a competitive advantage (Hirschi et al., 2018; Hobfoll et al., 2018). Research has supported that employees who have work family conflict badly affected by glass ceiling barriers at that time supervisors perceives that subordinate perform below average and the subordinates ultimately received fewer promotions—a new way of understanding the glass ceiling. Empirical evidence is mounting that the boundaries between work life and family life are now blurred. Conflict in workers family and work life reduce the chances of promotion at workplace (Hoobler, Hu& Wilson, 2010). Conflicts faced by women at work and family unable them to break through invisible barriers and are unconcerned about their professional development and achievement (Lin et al., 2018). The current study hypothesized that work-family conflict faced by women as a mediator between the glass ceiling and career success.

H2. Women's work family conflict mediates between the glass ceiling effect and women's job advancement.

POS as a Moderator

One of the most often used concepts in psychology research is organisational support. The popularity of organisational support is due to its crucial theoretical function as a way to lessen stress and enhance health and wellbeing (Cohen & Liari, 2009). Work-family conflict is one such strain, which happens when obligations to one's job or family make it challenging to meet obligations in a different capacity (Greenhaus & Beutell, 1985). When employees are unable to deal with issues and barriers that exacerbate their deficiencies, diminish their true personality, their perception of support from organisation is a significant factor in dealing with all (Zu & Yang, 2018). Employees develop a perception of how much their organisation helps them to maintain their values in various aspects such as reward, recognition, and promotion, as well as to meet socioemotional needs (Kurtessis et al., 2017). In literature, perceived organisational support defined as companies taking initiatives to support their employees in exchange for relationships and meeting their needs at work (Cropanzano et al., 2017), and with this support, employees reduce incompatibilities between tasks. A positive relationship between the organisation and its employees fosters a sense of worth in the employees, and they seek out challenges. Previous literature and theories support employees' positive perceptions and support from organisations. Positive links between organisations and their workforce are associated with positive behaviors and attitudes. This study contends that positive organisational support reduce conflict, allowing them to overcome invisible barriers and seize opportunities for career advancement.

Within the work domain, researchers have traditionally distinguished organization-level support, such as supportive organizational perceptions, from support received from specific individuals in the work context, such as supervisors and coworkers. these studies revealed that sources of support significantly linked with work family conflict (French et al., 2018) Thus positive support from organization reduce level of work- family conflict. If a person believes/perceives that he or she is a valuable member of the organisation (Hobfoll et al., 2016) might handle arguments in both domains.

Organizations are regarded as significant, and thus serve as a valuable resource for developing one's self-assessment. Employee psychological well-being is thought to be moderated by perceived organisational support. Previous studies focused on perceived social support with little consideration for POS as a moderating factor. This gap is highlighted in the current study, which considers perceived organisational support as a novel contribution between work-family conflict and career advancement due to glass barriers, particularly in the academic sector. We hypothesized as follows, considering all of the preceding discussion from previous theories and empirical studies.

H3: Perceived organizational support moderates the relationship between work-family conflict and women's career advancement.

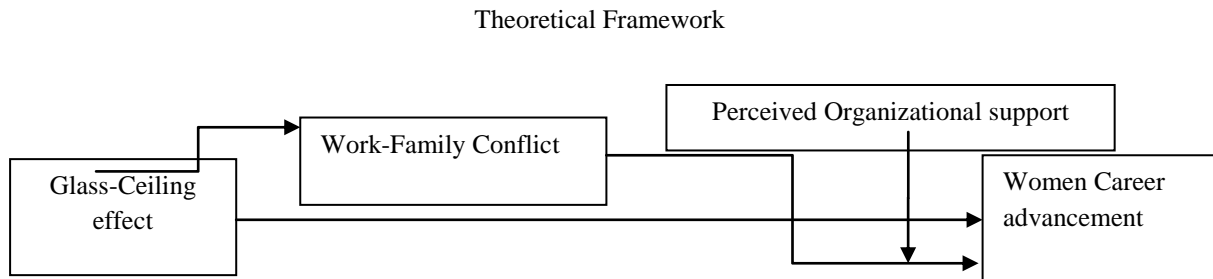


Figure 1. Theoretical Framework

Methods & Material

The current study used acceptable research methodologies and techniques that were consistent with the research topic to obtain the best results on the given hypothesis. Using quantitative research techniques, the importance of women's career advancement in Pakistan's academic sector, including the state of Azad Kashmir, was investigated. According to Neuman & Kreuger (2003), quantitative research is the most acceptable research technique for identifying difficulties through deductive reasoning, and this study follows suit. Furthermore, the data for this study was gathered through a time lag research method. To avoid reverse causality, data was collected over a three-week period with three-time lags.

Data Collection Procedure

We gathered information from professional women in middle-level positions in Pakistan's educational sector in order to solve the problem and achieve the desired outcome. To achieve better results, consider hiring female employees instead of male employees. The research survey was carried out using a previous researcher's questionnaire. Prior to conducting research, we obtain permission from the head of the relevant institute and an approval letter in order to maintain the ethics of excellent research and to assure them that the responses of each respondent should be kept confidential with an attached cover letter. With these criteria, acquiescence and social desirability biases are less likely (Spector 2006). Furthermore, rather than leaders and executives, female employees are the unit of analysis for data collection.

Academics are taken into account in the current research paper. The self-administered questionnaires are distributed using convenience and purposive sampling methods. A convenience / Purposive non-probability sampling design was used to recruit participants. The goal of these sampling designs is to reduce costs and time while producing better results for the current research study. It may be necessary to obtain information from specific target groups in order to obtain information from those who are most readily or conveniently available. The sampling in this case is limited to certain types of people who can provide the desired information, either because they are the only ones who have it or because they meet certain criteria. As a result, data was collected from female employees about their hidden barriers that harmed their careers, and the best and most appropriate sampling design for the current study was convenience / purposeful. In Pakistan, there are still stereotypes and taboos regarding female workers, which is why we collected unbiased data through this. The first time lag data was collected on demographic variables such as age, gender, qualification, marital status, and tenure on specific organizations, glass ceiling effect, and gender discrimination of women in educational sector from Rawalpindi, Islamabad, and the state of AJ&K, and the same time interval data was assessed for women career advancement. Before distributing the questionnaires, each one was coded individually so that data could be obtained from the same respondents at each time interval after the initial time lag. Because some respondents completed the first

and third time lags, it was preferred to reject half-finished questionnaires rather than half-completed questionnaires, and the authors kept 350 completed questionnaires for statistical analysis.

Measurements:

In this study, each variable of interest was measured using a previously designed scale. When collecting data, women employees were given a medium amount of consideration. The scales were created using a 5-point Likert scale, which is routinely used in social science research. It was separated into two sections, A and B, each dealing with demographics and study variables.

Glass Ceiling Effect

The glass ceiling effect questionnaire is adapted from Luzzo and Mc Whirter's final section (2001) and employs a 5-point Likert scale ranging from strongly disagrees to agrees.

Work- Family Conflict

Work-to-family conflict was assessed using the appropriate SWING subscale (Geurts et al., 2005). This nine-item subscale evaluates the negative impact of the professional situation on family life (e.g., "I'm irritable at home because my work is demanding"). People responded on a 5-point Likert-type scale (0: never to 4: always). Cronbach's alpha was 0.87.

Perceived Organizational Support

Eisenberger et al. measured the POS scale as an 8-item scale (1986). The scale's alpha reliability was 0.93.

Women Career Advancement

The WAMS instrument addresses attitudes toward women's career advancement. The Turkish version of WAMS is made up of 20 items developed by (Peters, 1974), 10 of which are related to gender stereotypes and the other 5 are related to women's career advancement.

Variables Controlled

Age (1=20-30yrs, 2=31-40yrs, 3=41-50yrs, 4=over50yrs) was one of five control factors in the current study. Gender (1=male, 2=female), education (1=bachelor, 2=Masters, 3=M-phill, 4=PhD), marital status (1=unmarried, 2=married), and tenure (1=1-5yrs, 2=6-10yrs, 3=11-20yrs, 4=over 20 yrs) are all factors to consider.

Findings & Results of the Study

This study primarily collected data and analyzed the results using quantitative research methods and techniques. Does the glass-ceiling effect impede women's job advancement in order to accomplish the study's goal and answer the desired question? Statistical analysis was also used to see if work-family conflict plays a role in the causal relationship between glass barriers and women's advancement. Furthermore, the authors interpret the findings by identifying POS as a moderator in the association between poor WFC and women's professional success. Furthermore, with a sample size of 350, data was obtained for these Pakistani twin cities and the state of Azad Kashmir. Before testing the hypothesis, we evaluated the normality of the data and discovered that it is normally distributed with a bell-shaped curve and meets the normality assumptions. Then, using a reliability test, examine the consistency of the data and all study variables. Alpha values indicate that all observed and latent variables are consistent. Glass ceiling effect had a Cronbach's alpha value of .93 on a 9-item scale ranging from strongly disagree to strongly agree, self-esteem had a value of .88 on a 10-item scale, perceived

organizational support had an alpha value of .85 on an 8-item scale, and career advancement had an alpha value of .90 on a 20-item scale.

Authors also examined the validity of selected instruments after assessing the internal consistency of data using a self-administrative questionnaire. Confirmatory factor analysis has been used to examine the structure and validity of the data factor analysis (CFA). Few items have low loadings and do not load on their own variables during CFA. Progression in your career Due to a shortage of loading on its own factor, three items, Q18, Q14, and Q9, had to be removed. The two items measuring perceived organizational support, Q6 and Q7, were not loaded, which could indicate that they examined different features or that the respondent did not comprehend these things correctly. Root mean square error of approximation (RMSEA), incremental fit index (IFI), Tucker-Lewis coefficient (TLI), and comparative fit index have all been used to assess the model's fitness (CFI). The current study included four research variables: one independent, one dependent, one mediator, and one moderating variable.

Table 1. Confirmatory factor analysis results

	ChiSquare	df	CMIN/Df	RMSEA	IFI	TLI	CFI
Initial model	3661.787	1665	1.677	0.050	0.912	0.884	0.901
Modified model	3455.554	1660	1.599	0.047	0.881	0.899	0.876

The table above shows several values of the initial model based on criteria such as RMSEA.050, IFI.912, TLI.884, and CFI.901. Although several alterations were made to obtain the goodness of model fit, there were only a few chances to obtain new values. All of the adjusted values satisfy the threshold condition, enhancing the model's validity for hypothesis testing (Hair, Ringle&Sarstedt, 2013). After running the model, the RMSEA =.047, which is less than .05, identified the model's fitness, and the IFI=.881, TLI=.89, and CFI=.8 all met the threshold values that determined the model's fitness for hypothesis testing.

Correlation Analysis

The correlation coefficients (r) between variables have been shown in the given table by considering the Pearson that identified the association between two or more than two variables.

Table 2. Correlation Co-efficient (r)

Sr#	Variables	GCE	WFC	POS	WCA
1	GCE	1			
1	WFC	.259**	1		
3	POS	-.663**	-.344*	1	
4	WCA	-.045*	-.470*	.754**	1

Note: *means $p < 0.05$; **means $p < 0.01$

The above table determined the significant correlation between glass ceiling effect and WFC ($r=.259$, $p < .01$). There was a significant negative correlation between glass ceiling and POS ($r=-.663$, $p < .01$). Current data identified the negative but significant correlation between glass ceiling effect and women career advancement ($r=-.045$, $p < .05$). Work-family conflict and perceived organizational support was negatively as well as significantly correlated with each other ($r=-.344$, $p < .05$) same correlated with women career ($r=-.470$, $r < .01$). Thus, result showed positive and significant correlation between POS and women career advancement ($r=.754$, $p < .05$).

Hypothesis Testing

H1: Glass ceiling effect is negatively related with women career advancement

Table 3. Un-standardized co-efficient for Structural Path

Structural Path	β	S.E	P-Value
GCE \longrightarrow WCA	-.452	.087	.001

*** = $p < .001$, $\beta =$ (Un-standardizedBeta), SE= standard error

The above table exemplified that glass ceiling effect is significantly and positively related with women career advancement ($\beta = -.45$, $p = .001$). The statistical results showed that greater the women employees in public and private academic sector face glass ceiling the less will be their chances of growth in their career thus the hypothesis 1 has been accepted.

Mediation Analysis

H2: Work-family conflict mediates in the relationship between glass-ceiling effect and women career advancement.

Table 2. Regression results for H2

H2	Direct path	B	P-value		
	GCE → WCA	-.452	.001		
	Specific Indirect effect				
	GCE → WFC → WCA	-.314	.023		
	Total Effect			<u>UL</u>	<u>LL</u>
	GCE → WCA	-.839	.000	-.011	-.234

The above mentioned table statistical values of direct effect of glass ceiling on women career advancement with regression coefficient ($B = -.452$ & $P < .05$) which was reduced from total effect due to mediation it means work and family conflict of women mediates and H2 accepted

H3: Perceived organizational support moderates the relationship between women work/family conflict and women career. The greater the POS the lower negativity between WFC and women career advancement.

Table 3. Correlation results for H3

Structural path	Co-efficient	P-value
WFC → WCA	.39	$P < .001$
POS → WCA	-.33	$P < .001$
Itrm_Term1 (POSX WFC)	.42	$P < .05$

Existing theories and literature examined that high organizational support build and boost the confidence and WFC that they maintain their career, take opportunities, and continue for career growth. The interaction term results ($\beta = .42$, $p = .05$) showed that POS highly positive impact in the relationship between WFC and women careers, as a result H3, is accepted.

Discussion of the Study

This study was conducted in Pakistan's educational sector, with data collected from major cities and the state of Azad Jammu and Kashmir to determine whether or not these women believe they are in the minority in the educational sector. Education, as we all know, is one of our community's most prestigious fields. Half of community development is accounted for by education and literacy rates. With the passage of time, women's taboos are no longer the pinnacle of our culture. They contribute far more than men, but there are still some invisible barriers in place, such as glass ceilings, in a number of industries that prevent them from obtaining and advancing to top-level positions. The authors develop a theoretical framework using existing HR literature and theoretical support to highlight the negative consequences of these barriers. Following the examination and interpretation of the research hypothesis, some final results that attempted to close the gap were obtained. The findings show that the glass ceiling has a significant negative impact on women's job advancement. The findings back up a previous study by Pothuraju and Alekhya (2021), which discovered that these are intangible barriers to professional advancement that are difficult to overcome.

Furthermore, women continue to hold a small proportion of decision-making positions, and vertical inequality in the workplace is most commonly manifested as glass ceilings. Women face challenges in almost every field, including academia. Unfortunately, the glass ceiling in women's careers continues to exist at both the national and international levels, and it varies by country (Lakmali et al., 2020). All of these other researchers' ideas support the current findings. This study looked at several underlying aspects that previous studies had not fully described, such as the true interlinking mechanism that links glass-ceiling restrictions with low career success chances. Besides which, this study uncovered a number of gaps that serve as a link between the independent

glass ceiling effect and women's professional advancement. As a result of the current study, employees with incompatibilities between work and family life face higher glass ceilings in terms of gender discrimination and job advancement. According to previous research, employees who are a part of glass ceiling occurrences may experience sadness, low self-esteem, low morale, and a lack of drive to perform better in their careers (Soumya & Sathiyaseelan, 2020). Although previous research (Velez et al., 2018) discovered that arguments between tasks employees encounter and inhale glass walls that prevent them from advancing to top-level positions, current statistics are consistent with Rahim et al., (2018) study, which discovered that women's disparate career objectives and glass-effects impede their job success. Numerous studies support our findings that employees with low self-esteem, self-worth, and even low regard at work are more likely to face open discrimination and make little progress in their careers.

As a result, this research paper contributes to the literature by taking into account certain external factors that may reduce the negativity and glass barriers that women face on their path to success. Although several studies on the glass ceiling have been conducted, this aspect is rarely considered as a moderating influence. The relationship between WFC and women's career advancement was found to be moderated by perceived organisational support. The statistical findings supported the hypothesis that employees who perceive more support from their employers will become more confident and strive to take advantage of opportunities at work. When working women feel more supported by their employers, they gain confidence and increase their chances of achieving their desired position (N. Kurtessis, 2015). According to Chenga & Yi, (2018) employees perceive support from the organisation, that someone is there by providing helpful feedback or being available to discuss specific workplace difficulties, which encourages employees to redefine their job boundaries and maintain their level of esteem. The findings also show that POS add-ons help employees, whether female or male, manage job-related obstacles and have low chances of conflicts, because of which women become strong enough to overcome any bias in the workplace, increasing their chances of career success (Ocampo et al., 2018). According to recent findings, increased employee perceptions of organisational support moderate and mitigate the negative relationship between low self-esteem and women's career advancement. As a result, women in academia may benefit as well.

Conclusion

The current research study discussed the factors that reduce the ratio of women's career success. Working women in Pakistan's academic sector have conducted research into why they face challenges and barriers to achieving top-level positions. There have been numerous previous studies in management science about career adaptability and growth, but there has been little focus on factors that prevent employees, particularly women, from reaching top-level positions. Underdeveloped countries face these issues and attempt to manage female workforce participation in organizations. The glass ceiling remains an invisible barrier that has a negative impact on women's career success, as examined in this study. Furthermore, the study supports the notion that women face high level of conflict between job and family life are unable to seize opportunities. The invisible glass ceiling that prevents women from achieving career success is obscured by women's incompatibilities between job and family. In this study, women's WFC acts as a bridge between glass ceilings and job advancement.

As a result, having a bad attitude at work is no longer necessary. There are several things that can help women maintain their conflicts and reduce negativity. According to this study, female workers believe they will receive a positive response from their organization and leaders, so they strive to maintain and reduce these conflicts. Low WFC and perceived organizational support increase the likelihood of job advancement. This study was carried out in academia in order to obtain a better result and understand how much glass barriers reduce the chances of career advancement. With the help of statistical tools, data was collected from middle-level employees, including administrative and non-administrative staff, to understand where and how much they face these challenges. The findings revealed that invisible barriers harm women's careers and prevent them from advancing to top hierarchical positions.

Implications of the Study

The study's findings are important for Pakistani policymakers, organizations, human resource employees, researchers, administrators, academia, and other stakeholders interested in increasing women's career opportunities. To retain employees and maintain productivity, organizations must understand their habits and attitudes. Based on the findings of this study, try to develop new strategic methods for treating women and men

equally. This research assists the company in realizing that treating female employees requires a unique strategy. They, too, deserve to be promoted, and their full potential should not be squandered.

If this issue is resolved, their organizational commitment and job satisfaction will improve, benefiting the company's profitability and growth. Furthermore, a successful career and increased professional advancement increase self-esteem, which leads to happiness. Women who are happier are better able to raise their children to be better, more effective adults and to provide a positive home environment. As a result, such reforms may provide women with greater bargaining power in the commercial and governmental sectors, as well as the ability to work as second-income earners, resulting in family support for a woman's career.

Scientific Ethics Declaration

The authors declare that the scientific ethical and legal responsibility of this article published in EPESS journal belongs to the authors.

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Balancing Sustainability Factors Affecting the Implementation of Digital Libraries of Malay Manuscript: A Proposed Framework

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Abstract: The aim of this study is to explore and understand the factors that will affect the implementation of Digital Libraries of Malay manuscripts in libraries. The paper discusses the issues related to the risk management of digital resources in Malaysian documentary heritage institutions. The study will have employed a descriptive-qualitative approach to explore how the DLMM is operated in five selected information institutions in Malaysia. Three types of data collection techniques were used: interviews, observation, and document analysis. The semi-structured interview was used as the main data collection technique. The paper's findings and discovery are significant in highlighting the crucial elements which need to be addressed to ensure the sustainability and successful implementation of digitization projects. The paper's findings and discovery are significant in highlighting the crucial elements which need to be addressed to ensure the sustainability and successful implementation of any digitization project. The findings of this paper contribute toward the dissemination of new knowledge specifically in the management of digital preservation of documentary heritage available in Malaysia.

Keywords: Digital library; Digital preservation; Risk management; Documentary heritage; Malay manuscript

Introduction

One of the most significant current discussions in the information management context is digital library especially with the advent of pandemic COVID-19 and the closing of libraries around the world. A considerable amount of literature has been published on Digital Library (DL). However, far too little attention has been paid to the Digital Library of Malay manuscript (Zahidah, 2011; Ding, 2014; Awang, 2020). Malay manuscript is defined as hand-written document in Jawi script from early 14th century till early 20th century. Study on the development of the DLMM in many senses is vital for digitization professionals, digitization managers, and librarians who would like to pursue digitization and digital preservation projects, especially those agencies that have the collection of Malay manuscript namely the National Library of Malaysia, National Archive of Malaysia, UM library, UKM library, USIM library, IIUM Library, UNISZA library, DBP, Terengganu Museum and Islamic museum particularly to get themselves acquainted with the challenges.

While research on the digital library has been greatly reported in the literature, gaps still exist in a number of areas. However, there has been little discussion about the challenges for the implementation of DL focused on Malay manuscript collection in developing countries from the perspective of practitioners. The research to date has tended to focus on digital library of book, journal and thesis collection (Ghamouh, 2015; Agosti, 2018; Singeh, 2020).

Studying the factors that affect the implementation of DLMM has become an important issue in determining the value of digitization. There have been a limited number of studies that have been conducted to analyse the

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economic, social, cultural, technological and organizational factors that affected the implementation of DLMM in libraries or digitization of documentary heritage (Voutssas, 2011; Masenya, 2020). The digitization professionals, digitization managers and librarians should have proper knowledge about the factors that affect the implementation of DLMM before they decide to implement DLMM in their institution to reduce unnecessary cost.

Based on the previous research on DL, it was seen that there have been conceptualized and proposed several frameworks for the design, development, evaluation and interaction of digital libraries (Levy and Marshal, 1995; Moen, and McClure, 1997; Marchionini and Fox, 1999; Saracevic, and Covi, 2000; Fuhr, 2001, Blandford et al, 2004). However, it is not comprehensively including the economic, social, cultural, technological and organizational aspects in their framework. As stated by Manaf (2010) although there is a Department Digitisation Policy developed by the National Library of Malaysia in the year 2000, this policy is not comprehensive enough to serve as a guideline by cultural institutions. It does not include the selection criteria, the principles guidelines and the most important elements, the standard and protocol to be used by the institutions in their digitisation projects.

Literature Review

Documentary heritage represents a large proportion of the world's cultural heritage. Many of these resources have lasting value and significance, and therefore constitute a heritage that should be protected and preserved for current and future generations. UNESCO (2010) defines documentary heritage as items that are moveable; made up of signs, codes, sounds and images; capable of preservation; reproducible; and they are products of deliberate documentation process. A further definition is given by Edmondson (2015) who describes documentary heritage as comprises those single documents – or groups of documents – of significant and enduring value to a community, a culture, a country or to humanity generally, and whose deterioration or loss would be a harmful impoverishment. The significance of a document may become clear only with the passage of time. For each state, its documentary heritage reflects its memory and identity, and thus contributes to determining its place in the global community. This definition is close to that of Robert (2016) who defines heritage as “our legacy from the past, what we live with today and what we pass on to future generations”.

Manuscript can be categorised as one of valuable asset and historical documentary heritage. Malay manuscript is defined as a handwritten document in the Jawi script which surfaced in the beginning of the sixteenth century and ended in early twentieth century with the coming of the west and the introduction of printing machines. Siti Munirah (2018) has defined MM as “all kinds of hand written materials in any of the Malay languages using the jawi script concerning the Malays and their civilization that are at least a hundred years old”. According Chambert-Loir (2011), Malay manuscript tradition comes from the tradition of Arab and Indo-Persian. Manuscripts generally refer to unpublished original sources and have the characteristic of being unique. Unlike books, journals and other resources typically collected by libraries, manuscripts typically do not exist in multiple copies (Hilmi, 2007). Most of the Malay manuscripts were written in Jawi scripts. Historically, Jawi scripts are taken from Arabic language and Persian and it had been added five new letters that made it suitable for Malay to use. In earlier times, Malay manuscripts were usually written by royal and religious people (Zahidah, 2013; Samsu, 2021). According to the historians, when British came to Malaysia, the Malay manuscripts had been spread all over the world. The number of collections that had been found had developed from time to time. Prof Dato’ Ismail Hussin, an expertise in Malay manuscript stated that it was about 2000 of manuscripts that had been taken by Raffles, Farquhar, Maxwell, Klinkert and Voorhoeve on the 19th century.

For writing material, the Malays used pen or kalam derived stem of plants of which the most commonly used were kalam resam and kalam kabong (Mariani, 2001). Kalam resam was made from the stem of fern resam (*gleichenia linearis*) and the kalam kabong was made of a black hard bristle from various palmae plants namely enau or kabong (*arenga pinnata*) and gomuti palm (*borassus gomuti*). As for the ink, it was locally manufactured from the ingenuity of the Malays. It was largely made from oily or torch lamp black or burnt charcoal mixed with gum and honey. Another source of ink was from a local fruit called majakani. Coloured ink was extracted from certain plants such as water hyacinth for purple ink, the fruit rind of mangosteen for brown ink and safflower for red. The luxuriant colours from the fauna enhanced the beauty of illuminated manuscript.

The writing activity is believed to start from a string of writing on a stone. Like the stone inscriptions in Terengganu. Its influence has had an impact on the writing of this manuscript. In addition, foreign traders also influenced the writing of this manuscript. The paper used was brought from Arab countries, China, India and Europe while the ink was brought from China (National Library, 1997). As for the Arab traders, in addition to

trading, they were also active in spreading religious knowledge so that the space was open for the locals to record by composing whatever they learned.

Reflected by the ability of the traditional society at that time, highly skilled and capable of producing so many manuscripts. It should be noted that the manuscript is not just a diary, but the knowledge contained in it is very broad (Awang, 2020). It covers all aspects of daily life. Its content is comprehensive and extensive covering all fields such as law, administration, constitution, religion, prophecy, medicine, beliefs, storytelling as well as the history of the origin of the state, religion and descent. The authors of this script could be said as knowledgeable and educated person. They are considered as the expert in their subject.

Malay manuscripts are scattered and kept by the respective institutions and individuals in Malaysia, Brunei, Indonesia, Britain, Germany, France and South Africa. Several institutions that have Malay manuscripts in Malaysia such as the National Library of Malaysia, National Archive and Malaysian Institute for Language and Literature (Dewan Bahasa dan Pustaka) have published series of catalogs of Malay manuscripts as reference documents for users. The distribution of Malay manuscripts is shown in Figure 1.

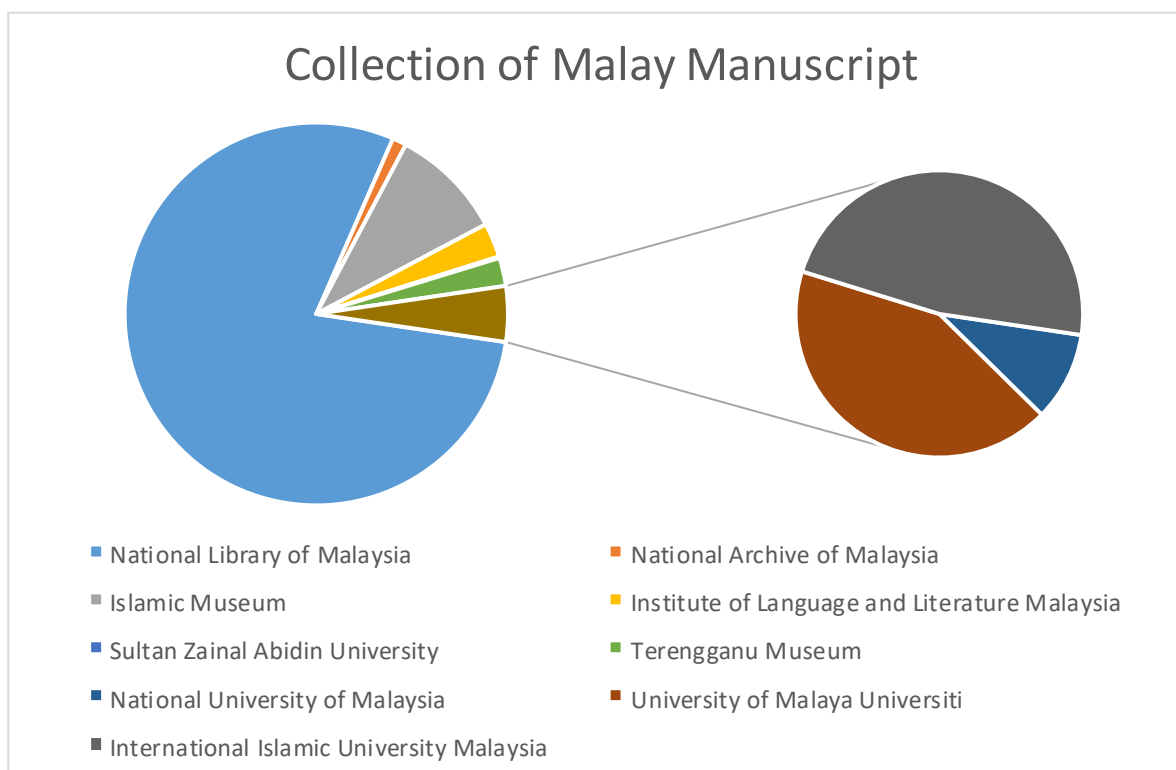


Figure 1. Collection of Malay manuscript in institution in Malaysia.

It is of great importance to make cultural heritage available to people, particularly those who participate in disseminating the cultural heritage, notably the written cultural heritage, such as scholars, researchers, students, and so forth. For many years, libraries, museums and archive centers have played a significant role in preserving, organizing, and disseminating mankind's cultural heritage. Malay civilization, particularly in its golden age, which lasted for around fourteen centuries, has contributed much to subsequent civilizations, and some of its rich cultural heritage remains. Malay manuscripts are one of the remaining legacies of Malay civilization. This heritage has lasted until the present day because it is part of mankind's heritage, and many scientific fields still rely on this heritage as a fundamental source of knowledge.

In respect of the preservation of manuscripts, the Memory of the World Programme launched by UNESCO in 1992 is formed aimed at focusing world attention on the need to safeguard endangered and unique library and archives collection, to make it available for future generations and to improve its accessibility globally. It also aims to stimulate a responsible approach to the sources from which our historical consciousness grows and to contribute to the general availability of information about our history and culture. The Programme also seeks to develop products based on this documentary heritage and make them available for wide distribution, while ensuring that the originals are maintained in the best possible conditions of conservation and security. It

establishes and maintains a World Register identifying documentary heritage of international, regional and national standards. As of December 2018, 381 documentary heritages had been inscribed in the Register, with 274 of these from Europe and North America and 116 from Asia and the Pacific as displayed in Figure 2.

MEMORY OF THE WORLD

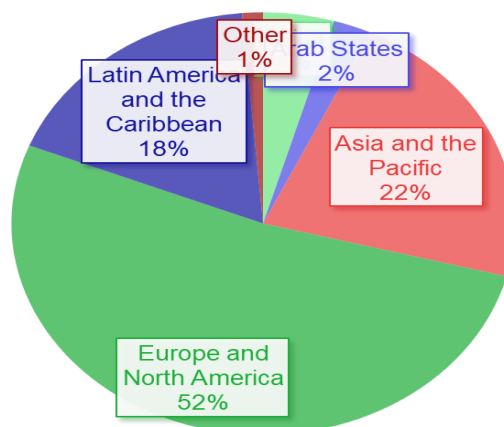


Figure 2. Documentary heritage in MOW

Malay civilisation, particularly in its golden age, which lasted for around fourteen centuries, has contributed much to subsequent civilisations, and some of its rich cultural heritage remains. Malay manuscripts are one of the remaining legacies of Malay civilisation. This heritage has lasted until the present day because it is part of mankind's heritage, and many scientific fields still rely on this heritage as a fundamental source of knowledge.

Malay civilization such as the Malacca, Pattani and Aceh which is scattered in the south eastern part of the Asian continent has its own unique heritage treasures (Amer, 2017). Although these treasures were once not so valuable because they are not envisaged commercial value, but its aesthetic value that stores a variety of tips and 'story' ancient ancestors of the Malays should guarantee the security of these treasures in the hands of the Malays. But the delay in understanding this fact can cause a large amount of money to be spent later to collect it back after the passage of time. It is not merely a theoretical predictable-bit or dire predictions are exaggerated, but a fact that has happened and bitter lesson that already had swallowed up by the Malays as a precious treasure, including manuscripts and historical documents, was taken home by Dutch after their arrival in the archipelago in 1596.

This incident is the most obvious example, and transfer the treasures of the Malay heritage to some other European countries such as Germany, France, Britain has led it to today 'buried' in them and be their property. As a result, these valuable treasures cannot be taken or collected back except by paying a very high price. Hassan Omar said in a report in *The Straits Times* (11 July 2006) has proved this when he quoted the words of the Minister of Culture, Arts and Heritage Minister Datuk Seri Dr Rais Yatim when delivering his opening speech at the International Seminar on Malay Manuscript in 2006 in Kuala Lumpur said, "We try to bring it (the Malay Manuscript) return but the price offered direct mediator does not make sense. So we don't buy it" (Amer, 2017).

Malay manuscripts serve as an important source of understanding the intellectual and literary heritage of the Malays. Some of these works were later re-published in printed format when printing was introduced first in Java then Penang, Malacca and Singapore in the 19th century, before the existence of a writing system, using only traditional Malay oral tradition to develop a story for them. However, this oral tradition is seen as not trying to be a legacy that is present in tangible form, instead it appears to be a 'little tradition'.

Since libraries have been close temporarily (some are partially open) since the outbreak of pandemic COVID 19 as could be seen in Figure 3, most libraries offer their services via digital as it is advised for society to practice social distancing and to avoid libraries from being too crowded (Rahimi & Rosman,2020; Bhati,2020). Other than sharing the information and awareness via the social media and official websites, most of the libraries in the world are focusing on their campaign to encourage their users to use the digital services. For example, the National Library of Spain is promoting its digital content that can be used to support education. On the other hand, the New York Public Library gives the initiative for users to use a mobile application to borrow research databases and access a multitude of online resources. The library provides a wide collection of digital offerings,

including e-books for borrowing on their Simply E application, research databases, and access to a multitude of online resources.

	Cases	Deaths
Malaysia	362,173	1,333
Brunei	219	3
Indonesia	1,571,824	42,656
Singapore	60,692	30
Thailand	34,575	97
Philippines	884,783	15,286
Myanmar	142,596	3,206
Cambodia	4,696	33
Timor-Leste	1,046	1
Laos	52	0
Vietnam	2,707	35

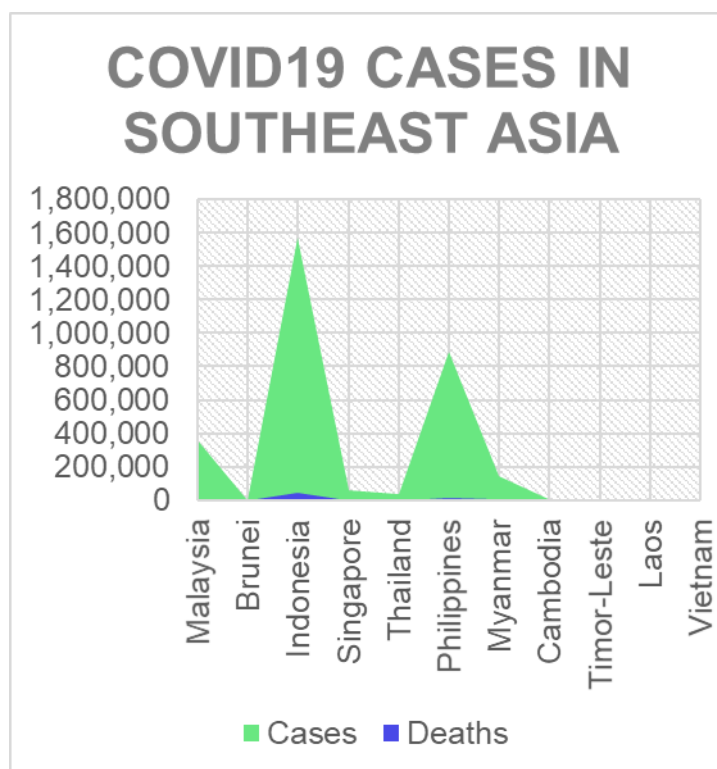


Figure 3. COVID19 cases and deaths in Southeast Asia updated 13 April 2021

Over the last decade, the social facilities integrated to traditional digital libraries have been seen. Users not only can access information by basic features but also they would need more advanced services from digital libraries (Gaona-García et al. 2017). As Pérez (2017) pointed out digital libraries will extend various services in order to support for knowledge sharing between users. An extended definition of a digital library from a workshop based on the social aspects is given by (Islam, 2014) “1. Digital libraries are a set of electronic resources and associated technical capabilities for creating, searching and using information 2. Digital libraries are constructed, collected and organized by (and for) a community of users, and their functional capabilities support the information needs and uses of that community.”

With rapid development of information communication and technology, manuscripts can now be preserved electronically through digitization for future keep, simultaneously making it accessible globally (Suleiman, 2013). Many libraries are venturing into digitization project which is new and costly. Rapid changes in computer technology offers a multitude of application devices for digitization. It is crucial to study and select the appropriate technology suitable for the needs of manuscript as the manuscripts are fragile and may endanger its physical condition. The most important thing is to define the formal rules which would be worldwide acceptable. Furthermore, this format must fit with the necessary standards for dissemination of data via Internet (Zahidah, 2013; Tatjana, 2017).

Manaf (2010) emphasizes that the use of hardware and software to capture an item and convert them into bits and bytes, matches by a quickly developing set of practices for describing and retrieving digital objects, is giving form to the talk of a “library without walls”. The main reasons to digitise are to enhance access and improve preservation (Isa, 2018). By digitising their collections, cultural institutions can make information accessible. It also allows users to search collections rapidly and comprehensively from anywhere at any time. Digitisation can also help preserve precious materials. Making high-quality digital images available electronically can reduce wear and tear of fragile items (Anau, 2019). Hence, the main objective of digitisation initiatives is to enhance and improve access to information. Indirectly, it can also ensure preservation of the information using the most appropriate technology. Both the preservation and increase in accessibility complement one another as access incites protection and preservation ensures access (Baomah, 2017).

Ding (2014) pointed out that, an increasing number of Malay manuscripts in libraries especially those in private collections, are disintegrating. This problem has been with the Malay World since the very beginning. Deterioration may be due to acid embrittlement of the paper, unsuitable storage environment, biological attacks or human negligence and mishandling (Hilmi, 2007). A number of these manuscripts are already brittle to a point of being unusable. As mentioned by Van Lit (2019), flooding, terrorism, bomb threats, explosions, transportation accidents, earthquakes, fire and war also prove dangerous threats to the written cultural heritage. It has been well publicized how much effort has been expended in order to restore the losses experienced by Bosnian and Kosovan libraries. The artefacts in Baghdad National Museum and Baghdad National Library are no longer available for the benefit of future generations and humanity as a whole. The world cultural heritage is continually at risk because of natural and unnatural disasters.

Many digital library initiatives focus on preserving various cultural heritages. Often, the initiatives comprise of various materials such as pictures, maps and paintings, and manuscripts are one of the materials included. Shafi (2004) listed some Western and Indian digital library of manuscripts initiatives; among others MASTER (Manuscript Access Standards for Electronic Records), The Digital Scriptorium (<http://sunsite.berkeley.edu/SCRIPTORIUM/>), Oxford University Manuscripts, (<http://image.ox.ac.uk>), Medieval Manuscripts of Syracuse University (<http://libwww.syr.edu/digital/collections/m/Medieval>), The Bibliotheque National De France (<http://www.bnf.fr/en/luminures/>), “Medical Manuscripts in NLM”, “European Manuscript Server Initiative” (EMSI), and “Unesco Memory of World”. Those projects have used photographic and digital methods to develop a full or partial archival copy of the manuscripts available on-line using different software with JPEG format for image processing in association with different metadata initiatives. Shafi (2004) argues that these attempts could be very useful in evolving a common strategy for digitization of vast manuscripts resources.

The proliferation of electronic information; the dwindling budget for acquisition of library stocks; the desire to access materials in remote locations; the quest for collaboration, partnerships and resource sharing; and the ever increasing cost of preserving analogue materials, and so on, are some of the forces that prompted digitization of archives and records (Anundhra, 2017; Pandey, 2014). The aim of digitizing library materials is for preservation and easy access by any user or researcher. Digitization improves access to library resources. By digitizing library collections, information will be accessible to all instead of a group of researchers. Digital projects allow users to search for collections rapidly and comprehensively from anywhere at any time. Digitization makes the invisible to be visible. Several users can access the same material the same time without hindrance. It also removes the problem of distance, as users do not have to travel to libraries that possess the hard copies of library materials before they can access and use such materials (Ukwoma, 2019).

Issues and Challenges in Implementing Digital Library of Malay Manuscript

A considerable amount of literature has been published on the challenges and barriers in implementing DL in libraries. These studies including the management of digital assets presents new challenges to the library community in terms of administering complex hardware and software, but mass digitization has not changed the fundamentals of library services (Pandey & Kumar, 2020). The ephemeral nature of digital items will require more expense and staff attention in meeting preservation commitments, but the relationship of user needs to item selection and organization remains essential. The complexities involved in supervising intricate information systems optimized to meet specialized user needs requires a strategic approach to management that takes into account the role of digitized collections within the larger context of the library and parent organization (Joselt, 2019). Guiding users to the items most suited to their information needs becomes a very different task as service points become more remote, but the digital environment brings with it increased possibilities to meet the traditional goal of providing personalized services to every user (Anuradha, 2017).

Furthermore, digitization of library resources poses a great deal of challenge to the major stakeholders, that is, the library management, employees and library users. Despite everything that digitization can accomplish, there are some good reasons librarians and archivists in developing countries may regret embarking on such project. Not everything in the collection is worthy of digitizing because the idea of an entire archives or library being digitized is a long way process. Successful digital project are the result of careful planning and evaluation of collections and the digitization of only those items that will provide the greatest benefits to the users.

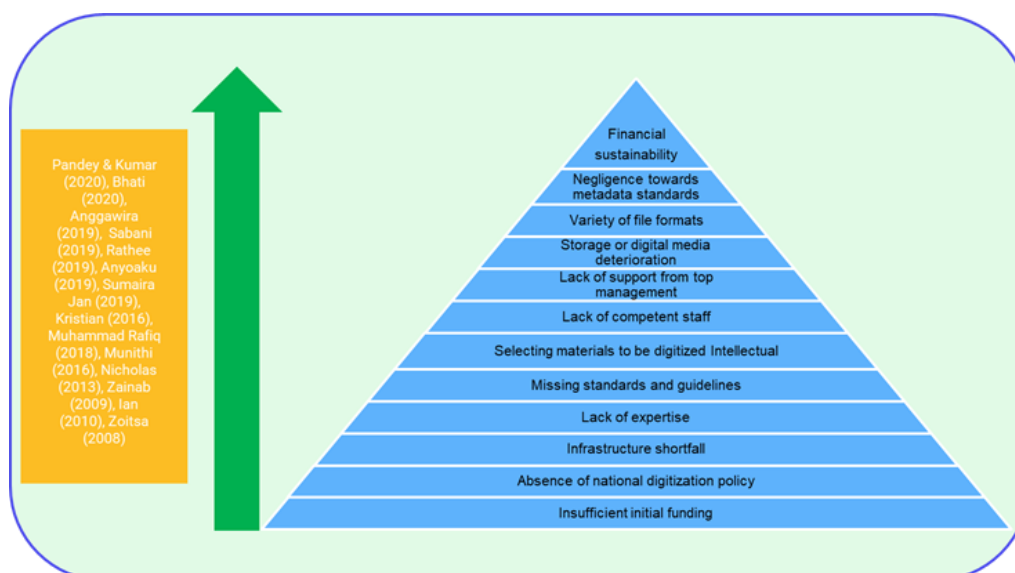


Figure 4. The mapping of barriers to digitization or digital library

1. Insufficient initial funding

A primary reason why libraries and archives fail in digitization projects is a lack of funding or working capital (Pandey, 2020; Khan, Shafi and Ahangar; Rafiq, Ammen, and Jabeen, 2018). Pandey (2020) states that initial funding was including the cost of digitization in-house that is, with its own employees, equipment and within its facilities or to hire a provider specialized in these services. Similarly, a study by Khan et al (2018) found that inadequate funding for the library is one constraint against practical digitization of library materials.

2. Absence of national digitization policy

There is a significant need for standard policy or national-level policy, rules, and methods to bring uniformity. In the absence of policy, professionals feel confused, eventually leading to a loss of consistency in their work. Mesui, Andrade, and Waizenegger (2019) emphasised that despite awareness of Information Communication Technologies, there is a lack of ICT policy in heritage institutions in Tonga. Similarly, Rafiq, Ammen and Jabeen (2018) explored that lack of established digitization plan, policies and procedures in Pakistan as one of the most important barriers in implementing DL.

3. Infrastructure shortfall

As infrastructure is the backbone of any countries progress, in the same way, the success of any project in the libraries cannot be imagined without proper infrastructure. Asogwa, Ali and Ezeani (2021) showed that only 12.5% of libraries in Nigeria have enough infrastructure for digitization and rest 82.5% do have not enough infrastructure. In the same context, Rafiq, Ammen and Jabeen (2018) in their study found that insufficient technological infrastructure as third major barriers to digitization initiative in Pakistan.

4. Lack of expertise

Lack of expertise is a crucial reason for the failure of any project or organization. Especially in the field of digitization and digital library, the lack of IT experts will lead to the unsatisfactory output of the project. Rachman (2018) found lack of expertise or limited technical knowledge was one of the key challenges in digitization especially in Indonesian's libraries. Likewise, lack of technical expertise was the fourth in the list of the obstacles in digital heritage preservation in the study done by Pandey (2020). According Anuradha (2017), inadequate technical expertise is prevalent in many developing countries. There is shortage of personnel/human capital. Few librarians with computer science qualifications (computer engineers) work in libraries, hence the consequent frequent break down of ICT facilities and disruption of services in digitized libraries.

5. Missing standards and guidelines

In any organization, standards and guidelines are the protocols for professionals. Like business organizations, libraries also require standards and guidelines for keeping up uniformity in their administrations and practices. In this context, previous studies reported severe negligence in the implementation of standards and guidelines and termed it as one of the hindrances in the success of digitization projects. The survey conducted by Masenya (2019) in Africa analysed the responses of libraries with respect to the availability of standards on preservation

and revealed that only 14.3% of libraries follow de facto standards while 85.7% do not support any standard. A few of them were even not aware of any standards.

6. Selecting materials to be digitized

One of the significant tasks in the process of digitization and digital preservation is selection of materials to be digitized and is usually finalized at the managerial level. However, managers often face difficulty in selecting material to be digitized or preserved. Rafiq and Ameen (2019) describe the top three selection criteria for digitization, namely, academic importance, increasing access to the documents, and reducing damage to the original. In another study by Liljeström (2018) in Sweden emphasized that selection of the analogue material to be digitized by the respondent libraries is steered first and foremost by high-level values of the primary criteria of significance, e.g. historic, scientific or research potential.

7. Lack of competent staff

A competent workforce is one of the crucial forces for the completion of a project. Without sufficient and skilled staff, no project can be imagined. According to Jan (2019), lack of staff was another problem that contributed to challenges in the implementation of digitization policy in mostly university libraries in India. Likewise, Anyouka (2020) reported that 52.2% of the university libraries in Africa have lack of competent staff. This is a problem for many digitization projects in Africa, as studies in libraries in general and university libraries in particular have consistently reported inadequate level of information and communication technology skills as one of the major problems facing libraries in Africa.

8. Lack of support from top management

The administration is the backbone of an organization. The primary role of the administrator is to make connections among different sections and employees of the institution. Management is responsible for policymaking, decision making, and taking positions on current issues the organization is facing. A study conducted by Ogenga (2015) in Kenya analyzed lack of awareness and support from top management as a challenge in digital preservation. His study used structured questionnaires and interview schedule to collect data from 150 graduate students, 25 academic staff and 25 library staff. Findings from his study revealed that the management has not put up policies with regards to access and use of the repository resources. It shows that lack of support from top management has huge impact to the failure of DL project.

9. Storage or digital media deterioration

Deterioration of digital media is responsible for the disappearance of, or inaccessibility of digital information in the long run. This is because media deteriorates or decays within few years after digitization. Another challenge is that digital media get lost during disaster or virus attacks. Anuradha (2017) analysed the reason why re-digitization is inevitable is the likelihood that electronic resources created in previous years using older technologies may not be accessible or compatible with the new technologies. Furthermore, Toyo (2017) found that deterioration of content is a big concern in the conservation of manuscripts. In his study he sample size was forty-seven (47) library staff (professional and para-professional) from John Harris Library. The finding was that 97.9% of the respondents agree that deterioration of digital media as the major challenges in DL project.

Undoubtedly, digital archives should be transcribed every ten to twenty years to ensure that they will not become technologically obsolete (Joselt, 2019). The continuous changes in computer hardware and software cause technological obsolescence which is a threat to digitization and digital preservation. It causes the loss of the means to access to information in digital form. Technological obsolescence is caused by continuous upgrade of operating system, programming language application and storage media.

10. Variety of file formats

Computer files are used to store digitised data on storage devices, and the format of a file dictates its future readability. It is strongly advised that the digitization project manager should adopt open file formats or at least those file formats whose backward compatibility can be assured. Studies have reported a high level of variation in the storage file formats in different heritage organizations for the same type of documents. Liu and Yang (2007) delineated that for storage of pictures in Chinese libraries out of 21 libraries only 9.3% employ a single picture storage format, while 23.8% libraries use two picture storage formats, 28.6% libraries use three picture storage formats, and 38.1% libraries support more than three picture storage file formats.

11. Negligence towards metadata standards

The discoverability of digital resources is greatly aided by metadata. In the current situation, digitization and preservation of data are insufficient; it is critical to organise and interoperate that data. Gkoumas (2018) analysed that one of the challenges in digitization in Greece is negligence towards metadata standard. In his study, he found that the lack of systematic documentation of scientific material and metadata in digital libraries

has reduced the distribution and stewardship of research output. Similarly, Mannheimer (2017) stated that de-contextualization due to insufficient description or metadata is one of the factors that threaten digital materials in USA.

12. Financial sustainability

Digitization and digital preservation activity require a high level of investment from a financial point of view as the processes involve hiring outsourced human resources and procurement of equipment such as scanners and servers. In the reviewed literature, insufficient funds was reported as a significant constraint globally (Masenya, 2020; Anuradha, 2017; Peter, 2019; Rahman & Islam, 2020). Anyoku (2019) found that funding of projects like building IRs and sustaining the project is a major challenge universities face in Nigeria. Out of the 23 respondents, 56.5% indicated that there is no long-term funding in their digitization project. In the same context, a study done by Rafiq and Ameen (2018) identified major barriers as financial sustainability. In his study, two-thirds of the interviewees mentioned finances as the most important barrier in digitization activities.

Matrix for research objectives/research question					
RQ2: What are the challenges that libraries face as they relate to the implementation and development of DLMM?					
	Masenya T. (2020)	Akoiki-Owoyele (2020)	Rahman (2020)	Gkoumas (2018)	Khan (2017)
Purpose	To investigate the factors that can inform the implementation of sustainable digital preservation	To examine protection of Africa's cultural heritage through digital preservation	To build a model for Digital Content Management (DCM) in agricultural university libraries in Bangladesh	To analyze the challenges and obstacles of developing a digital archive of scientific publications	To explore the essential digital competencies for developing and managing digital libraries
Country	South Africa	Africa	Bangladesh	Greece	Pakistan
Theory (Principle)	Open Archival Information System (OAIS) reference model	N	N	N	N
Research design	A quantitative	A mixed method	A mixed method	A quantitative approach	A quantitative research
Strategy / research method	Online survey questionnaires	Survey and interview	Online survey questionnaires	Survey	Questionnaires
Sample	Twenty-seven academic libraries	66 staff and seven heads of various institutions who were either Directors, Deputy Directors or Heads of Departments	70 teachers and 175 students filled	636	132 university librarians
Finding	The findings show that academic libraries in South Africa are significantly affected by the changes in the digital environment	Cultural institutions in Nigeria are yet to make serious effort towards digital preservation of cultural heritage	The findings reveal some hindrances to the establishment of DCM, such as lack of constant power supply, limited bandwidth speed, some users have lacking fundamental IT knowledge and shortage of digital resources, in addition to some suggestions for improving DCM in these libraries.	The findings of this inquiry indicate that financial and human resources insufficiency, inadequate time frame and lack of promotion, have hindered the success of the project.	The findings of the study showed that digital competencies for developing and managing digital libraries fall into three main categories: digital competencies for developing digital libraries; digital competencies for managing digital libraries; and digital competencies to protect digital contents. The
Suggestion	Proposes a conceptual model for preservation of digital resources in academic libraries	The need for cultural institutions in Nigeria to be more focused on digital preservation of cultural heritage.	DCM model for agricultural university libraries of Bangladesh has been proposed and	A possible solution to cover the operational and management expenses, while offering quality digital services, is to charge subscribers with a small fee for using digital content	Joint efforts are required by library schools, library associations and different training groups to develop digital skills of university librarians.

Factors Affecting the Implementation of Digital Library Malay Manuscript

We need to know about the factors that affected the implementation of DL of documentary heritage. According to Voutssas (2011), the factors that affect the preservation of long-term digital documentary can be categorized as economic, social, cultural, technological and organizational factors. The first type of factor that affects the preservation of digital documents is made up of the cultural factor. The main elements in this factor are the lack of sensitivity and understanding of the problem. Many of us tend to think that the dark ages are long gone, and that in particular our contemporary age, called by many the "information society" or "knowledge society" is far from that situation, and that today more than ever we are aware of the value of information. A lot of information is produced, distributed and consumed every day. Today many companies and millions of people live from the information. But, like many other resources, it is one thing to consume and another to preserve. In this society, we consume our natural resources disproportionately, but we preserve little of them.

The second type of factor that affects the implementation of DLMM is economic. The first cost to establish during these processes is the cost of digitizing. This is the cost of converting a document that is in a traditional medium to a document in digital form. In some libraries, the cost of producing a digital material is also considered within these costs, which does not necessarily come from a "traditional" original. When digitizing documents, the library always has two paths: one, to digitize intramural that is, with its personnel, equipment

and within its facilities. The second option is to hire a provider specialized in these services. The decision must always be made under the best economic criteria that satisfies a pre-established quality criterion for that digitization. This is very important: a digitization project should not be decided simply based on the greater economy; a quality criterion must also be included. Ignoring this principle is the best way to get the institution a collection of poor quality digital material, which most likely will not serve as planned or which will have to be digitized again in a certain period of time.

Once the librarian has determined the cost of digitizing, he must move on to the second cost involved: the cost of editing. This cost is established based on leaving the documents as a useful digital object, according to his specifications. Once the librarian or digitization manager has determined the cost of editing, it is necessary to go on to establish the cost of registering; that is, the cost of preparing a formal record, catalogued graphically speaking, for each document. Obviously, there would be no point in creating our digital collection - large and important as it may be - if it cannot be located when required or if it should invest a lot of time in decanting information not relevant for our purpose. The next cost to be determined for the collection to be digitized is to store. It is about establishing how much it will cost the institution to have the collection stored on technological media, once it is digitized. To do this, it is necessary to first reflect on the fact that there are two main storage mechanisms, and that they directly affect the price: online storage and offline storage.

The last of the costs to consider is the upgrade. Although this cost is never present when creating a new digital collection, it is inevitable that it will appear from time to time in our preservation costs, and will affect our annual budget from time to time, therefore we must keep it in mind to include it in future years when relevant. The third type of factor that affects the preservation of digital documents is made up of the cultural factor. The main elements in this factor are the lack of sensitivity and understanding of the problem. Many of the librarians tend to think that the dark ages are long gone, and that in particular our contemporary age, called by many the "information society" or "knowledge society" is far from that situation, and that today more than ever they are aware of the value of information (Mingers, 2018). But are they really? Many might be tempted to say yes, since according to current statistics – a lot of information is produced, distributed and consumed, every day more. Today many companies and millions of people live from information. But, like many other resources, it is one thing to consume and another to preserve. In this society, we consume our natural resources disproportionately, but we preserve little of them. Does the same happen with documentary resources?

In reality, globally, as a global society we have neglected the preservation of our information (Rahaman, 2018), especially, regarding the digital information that we have been producing in the past decades. In general, there is a lot of ignorance about digital preservation. At the corporate level, the librarians or digitization managers are only just beginning to generate projects and initiatives to organize the preservation of these documents, long after the problem has been created and when many documents disappear every day (Warren & Matthews, 2019). Furthermore, notable preservation projects are being developed only in the most prosperous and developed societies, which are therefore from a few countries and regions. In the rest of the world they practically do not see this type of project at the level of decision-makers and covering large sectors of society. They generally exist at the level of some academic or cultural organizations and that in an incipient and little coordinated way. This phenomenon between countries and regions further deepens the previously mentioned "digital divide" between these more developed countries and those that are not so developed, and between people with greater educational and economic capacities than those who do not have them (Mingers, 2018).

Even at the level of those responsible for collections, very few are actually aware of the problem and who have the knowledge and resources to deal with it (Rahman, 2020; Warren & Matthews, 2019). To compound the situation, most people think that it is an exclusively technology problem, which is seriously misleading, it is not actually the main problem. To illustrate this, in the case of the "US National Endowment for the Humanities" - US National Endowment for the Humanities or NEH-, in 2003, this fund provided the Cornell University Library with resources to develop a management training program for preservation. Prior to the training workshops, the attendees, people from 110 institutions, participated in a study for this purpose. In a question related to the degree of preparedness that they observed in their institutions regarding digital preservation projects, the majority pointed out as the main threat to digital materials the lack of policies and plans to preserve them. As a second cause, the lack of resources for that purpose, as a third threat, insufficient support from the intermediate command levels; only up to the fourth place was technological obsolescence mentioned as a threat and in the fifth place the lack of knowledge and experience in this regard appeared as a threat (Anyaku, 2018).

Technological factors have to do with the rapid and constant change of devices and technological aspects related to electronic information. These are the factors related to the environment of that digital information, such as the equipment and programs that are required to reproduce them. Special mention should be made of the operating

systems and multiple formats that have been created for the representation of various digital documents in all their types: text, audio, static and moving images, etc., and that appear and disappear with increasing rapidity. Whereas, social factor affected the implementation of DL as Colin Webb has stated that digital documents must be understood on four levels: as a physical phenomenon, as logical codes, as conceptual objects with meaning for human beings, and as a set of essential elements that must be preserved to offer future access to the essence of each of those objects. It can be clearly seen that the last two levels that he mentions have eminently social components.

Organizational factors have to do with the top management support, IT expert and staffing. At a more local or meso level, the size of the organization, infra-structure, organizational readiness and culture, capabilities and beliefs of the workforce were also identified as important when considering the application of the identified factors (Fennelly et al., 2020).

The Research Objectives

The research objectives are as follows:

- To explore the development of digital library of documentary heritage in libraries.
- To explore the factors affecting the implementation of DLMM in libraries.
- To develop a framework of Digital Library of Malay manuscript for libraries in Malaysia.

Proposed Research Framework

This research seeks to explore the development of digital library of documentary heritage. This research is significant to the library management discipline, addressing the gap between Malay manuscript management and its challenges in the implementation aspect. It will specifically tackle the economic, social, cultural, technological and organizational factors that will affect the implementation of digital library of Malay manuscript.

The main purpose of the study is to analyse the factors that affect the implementation of digital library of Malay manuscript. To accomplish this, it is important to explore the issue of the implementation of digital library of Malay manuscript from various angles to gain a holistic picture. Accordingly, the research aims to explore the current development of DLMM in local, South East Asia and international countries.

It sets the foundation for the research framework illustrated in figure 5, which demonstrates the factors that affecting the implementation of Digital library of Malay manuscript in libraries.

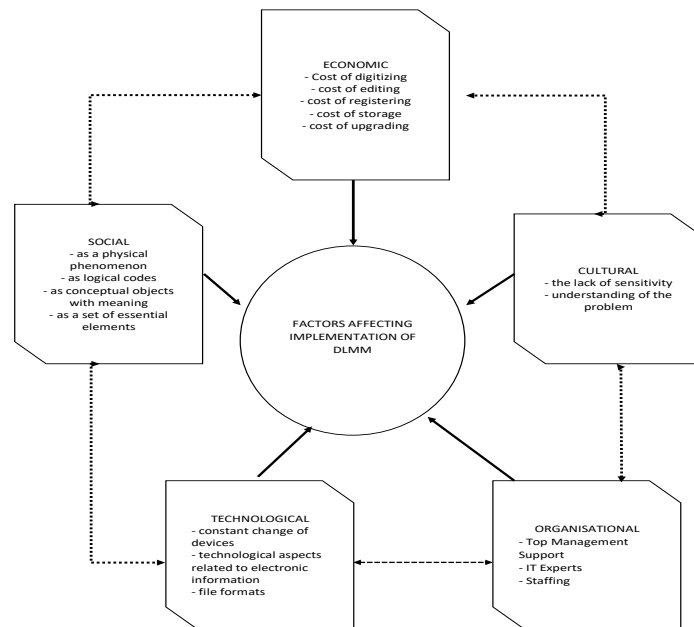


Figure 5. Proposed framework for DLMM implementation

Conclusion

Through this study, it is obvious that the digital library field is a heterogeneous domain. The paper's findings and discovery are significant in highlighting the crucial elements which need to be addressed to ensure the sustainability and successful implementation of any digitisation project. The findings of this paper contribute towards the dissemination of the new knowledge specifically in the management of digital preservation of documentary heritage available in Malaysia. Moreover, this study is very significant to professionals who are involved in archiving the digital documentary heritage as it can be a guide for managing risks in preserving the valuable digital resources. The result of this study can be a practical tool of managing risks not only for digital documentary heritage but also to all documents in digital format. In the context of community, this study will also attempt to foreshadow the needs of community who are now conducting digital-based research that requires full-text analysis or large aggregations of "big data" (IFLA Rare Book and Special Collections Section, 2014).

Scientific Ethics Declaration

The authors declare that the scientific ethical and legal responsibility of this article published in EPESS journal belongs to the authors.

Acknowledgements or Notes

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Components and Predictors of Psychological Wellbeing in Young Adults

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Abstract: Psychological wellbeing, which refers to the overall healthy functioning of a person, is a crucial asset. It is a combination of effective functioning and feeling good of one's surroundings. To achieve and maintain psychological wellbeing is very important for any stages of life, especially for young adults. Young adults go through multiple significant transitions in life. The main aim of the current study was to discover the components and predictors of psychological wellbeing of young adults and develop an effective intervention program to enhance their psychological wellbeing. The study was carried out in three different stages. A mixed-method design was implemented to conduct the study. The 42 items Ryff's Psychological Wellbeing Scale was chosen in the first stage for its optimal usability to measure psychological wellbeing. It needed to be adapted for the Bangladeshi population before conducting the study using this tool. So, in the first stage the adaptation took place. The English and Bangla Psychological Wellbeing Scale had a significant positive correlation. In the second stage Bangla Psychological Wellbeing Scale was administered to a 301-representative sample of young adults. The goal of the second stage was to identify the factors related with psychological wellbeing. In the third stage of the current study aimed to create an effective intervention program to improve the psychological wellbeing of the young adults. This study reinforces the six-factor model of psychological well-being by Ryff (1989) in the design of psychological wellbeing program of young adults.

Key words: Psychological wellbeing, Young adults, Psychological wellbeing scale

Introduction

Psychological wellbeing or mental health has been acknowledged as equal footing with physical health for a holistic wellbeing. In recent years, the positive aspects of mental health have been focused on PWB rather than treating or preventing mental health concerns. A new goal in mental healthcare is the promotion of wellbeing (Keyes, 2007; Seligman & Csikszentmihalyi, 2001; World Health Organization, 2011). However, there are currently many definitions of well-being (Dodge, 2010) with the two main concepts being subjective and psychological. Subjective wellbeing (SWB) depends on a hedonic framework where positive experiences situated in the center. It's showed that the satisfaction of life is combination of balancing positive and negative emotions (Biswas-Diener, Kashdan, & King, 2009). The standards that use to judge the SWB of the people were not theorized in this framework. Therefore, Carol Ryff introduced the concept of PWB with the intention to develop theory-based indicators of positive human functioning which consistent with a eudemonic perspective of happiness (Ryff & Singer, 1996).

Psychological Wellbeing

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PWB has been described as the cornerstone of mental health. According to the World Health Organization (2011), mental health is “a state of wellbeing in which every individual realizes his or her own potential, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to her or his community”. While traditionally, PWB has been defined by a lack of symptom distress (i.e., lack of depression, anxiety, and other symptoms of mental disorders); over time, the term has taken on a more positive definition (Magyar & Keyes, 2019). PWB has been recognized as more than just an absence of distressful symptoms. Recent models of PWB have been designed the basic aspects of positive functioning. Major components of PWB include empowerment; recovery-oriented elements such as hope, self-initiation, purpose in life, individual, environmental and systems-based sources. Subjectively, perceived dimensions of positive functioning are autonomy, environmental mastery, self-acceptance, etc. Recently, researchers have focused increasingly on PWB (Fernandes, Vasconcelos-Raposo, & Teixeira, 2010; Schmitt, Postmes, Branscombe, & Garcia, 2014; Springer, Pudrovska, & Hauser, 2011). Generally speaking, PWB represents the state of individuals whose lives are going well. It represents a combination of feeling good and functioning effectively. PWB is compromised by extreme or enduring negative emotions which interfere with everyday functioning (Huppert, 2009).

Components of Psychological Wellbeing

The basic components of PWB are based on three models: hedonic wellbeing (the pleasant life), eudaimonic wellbeing (the meaningful life), and social wellbeing. Researchers have recently begun to question the potential costs of this distinction between the hedonic and eudaimonic aspects of wellbeing (Biswas-Diener et al., 2009) and have begun to observe the integrating of the theories and components of hedonic and eudaimonic wellbeing into a comprehensive model of flourishing mental health (Keyes, 2005).

Based on these major components, Ryff (1989) reviewed work from developmental, humanistic and clinical psychology. She presented a model of psychological (eudaimonic) wellbeing that is made up of six components: autonomy, environmental mastery, personal growth, positive relations with others, purpose in life, and self-acceptance. This model of eudaimonic wellbeing is developed on the assumption that any individuals take action to function fully and realize their unique talents. These six dimensions of eudaimonic wellbeing includes positive evaluation of self and individual's past life, a sense of continued self growth and development as a person, the belief of one's life is purposeful and meaningful, the possession of quality relations with others, the capacity to effectively manage one's life and surrounding world, and a sense of self-determination (Ryff & Keyes, 1995).

According to Waterman (1984) and Ryff (1989), the word "eudemonia" was mistranslated as "happiness." Carol Ryff's (1989) research shifted the focus away from a subjective to an objective understanding of PWB. Ryff's work is theoretically and conceptually based on a variety of theories, including Jung's (1933) formulation of individuation, Bühler's (1935) basic life fulfillment tendencies, Erikson's (1959) psychosocial stage model, Jahoda's (1959) six criteria of positive psychological and mental health, Rogers' (1961) view of the fully functioning person, Allport's (1966) conception of maturity, Maslow's (1968) concept of self-actualization, and Neugarten's (1973) descriptions of personality change in different ages like adulthood and old age, and as well as other more significant implications of the word 'eudemonia,' such as attaining one's full potential through some sort of hardship. The research of Ryff (1989) led to the development of a new objective PWB measurement (Conway & MacLeod, 2002) that included different components of wellbeing. These components are autonomy, personal growth, environmental mastery, life purpose, positive relationships with others and self-acceptance. This is the scale that has been hailed as the most accurate objective indicator of psychological wellbeing (Conway & Macleod, 2002).

For the purposes of explanation and clarification, the PWB of Ryff's aims are listed individually below. The psychological skill components and Ryff's PWB components have a connection. PWB components are linked to psychological skills components in a number of ways, for example, a range of methods, such as deep breathing and self-talk, are used to enhance both psychological skills and PWB (Stelter, 2009).

Autonomy means the ability to manage one's own behavior through an internal locus of control (Ryff, 1989; Ryff & Keyes, 1995). A fully functioning person has a high level of internal evaluation, assessing himself or herself primarily on own standards and successes rather than on the standards of others. They are less influenced by the views of others and do not seek acceptance from others (Ryff, 1989). Higher level of autonomy means independence, whereas low autonomy means self-consciousness (Ryff, 1989). They are less influenced by other

people's opinions and more focused on their own convictions. Internal locus of control is a fundamental component of motivation (Weinberg & Forlenza, 2020), and it requires autonomy, greater understanding, self-confidence, and belief, just as it does for athletes. Autonomy is also connected to self-determined motivation in sports engagement in order to achieve this.

Personal growth means develop and extend oneself. Becoming a fully functional person with the capacity of self-actualizing and achieving goals are referred as personal growth (Ryff, 1989; Ryff & Keyes, 1995). To attain optimum psychological functioning, one must continue to evolve as a person in different aspects of life (Ryff, 1989). In the process of personal growth people must continue to grow and solve issues by exploring their horizons. As a result, persons with a high degree of personal growth are linked to ongoing progress, while those with a low level are linked to stagnation. Sportspeople with a development mentality understand that hard work pays off (Dweck, 2005). A development mentality requires an openness to new and diverse experiences. Athletes that are modest yet confident are always aiming for personal improvement and holistic development (Weinberg & Gould, 2010); this people typically use good and bad performances, as well as goals attained attitude to improve their personal growth. Therefore, personal development is one of the closet PWB dimension of eudemonia (Ryff, 1989).

Environmental mastery is well defined as the ability to choose and control present situation through physical and mental activities (Ryff, 1989; Ryff & Keyes, 1995). A high degree of environmental mastery indicates control over own environment, whereas a low level indicates an incapacity of surroundings (Ryff, 1989). A mature person can typically engage and relate to a wide range of individuals in a variety of settings, as well as adapt to different environments on demand. Controlling physiological and cognitive arousal may help athletes gain more grasp and knowledge of their environment, it's also enhanced their interactions with others and it leads to increased self-awareness as well as a better comprehension of the situation and surroundings (Weinberg & Gould, 2007). Environmental mastery is being able to regulate and grab opportunities in complicated environmental and life conditions (Ryff, 1989). The capacity to venture outside of one's "comfort zone" aids in the pursuit of peak athletic performance.

Purpose in life means one's perception of the value of one's existence, and it entails creating and achieving objectives that add to one's appreciation of life (Ryff, 1989; Ryff & Keyes, 1995). Psychological wellness refers that one has a larger purpose and aim in life (Ryff, 1989). Goals are an important component of achieving success and provide direction in life (Miller, 2003). Having a firm sense of purpose is a sign of maturity. Having a clear sense of purpose is a sign of maturity (Ryff, 1989). When athletes strive for a higher goal for themselves, they hold their focus, attention, concentration to achieve realistic and holistic objectives. Goal setting and achievement may be both inspirational and motivating (Weinberg & Gould, 2007).

Having positive relations with others mean interpersonal interactions, as well as belonging to a network of communication and support and these are key components in the formation of trustworthy and long-lasting partnerships (Ryff, 1989; Ryff & Keyes, 1995). Maturity is defined as a calm and serene attitude that reflects and leads to improved relationships and concern of others. As a consequence, excellent relationships lead to an understanding of people, whereas bad relationships can lead to frustration (Ryff, 1989). One of the most important aspects of mental health is the ability to have healthy interpersonal relationships, and illness is frequently marked by impairment in social functioning. The importance of communication in team relationships cannot be overstated (Miller, 1997). Positive interpersonal relationships frequently lead to enhanced knowledge, empowerment, and improved athletic performance in group/team contexts.

Self-acceptance is the most fundamental part of mental health and an essential component of optimum functioning (Ryff, 1989; Ryff & Keyes, 1995). Self-acceptance at a healthy level leads to a positive attitude and increased life happiness (Ryff, 1989). Moderate levels of self-assurance lead to higher accomplishment and acceptability (Weinberg & Gould, 2007), with good feedback from others playing a key role in maintaining self-assurance and belief. Self-acceptance is essential for self-actualization, improved psychological functioning, and growth (Ryff, 1989). As a result, it evolves by accepting the past and present while still keeping a sense of direction for the future.

Predictors of Psychological Wellbeing

There is a study which explored potential relationship of PWB with gender. 185 men and 215 women within an age range of 17 to 50 years were drawn from various colleges and university of Khyber Phutun. Ryff (1989) PWBS (middle version consisting of 54 items) was used as a collecting tool for relevant information. According

to the results, gender is a significant variation in PWB. Men outperformed women on four of six dimensions of psychological well-being like; environmental mastery, personal growth, autonomy, and purpose in life (Maroof & Khan, 2016). In another study it showed birth order was not associated with psychological distress or having a mental health issue at midlife. Basic predictors of PWB, such as employment status, years of education and partnership status in adulthood attenuated the relationship between birth order and mental wellbeing (Stannard, Berrington, & Alwan, 2019).

Khumalo, Temane, and Wissing (2011) investigated the relationship between socio-demographic variables in an African context using two models: the General Psychological Wellbeing model (GPW) and the Mental Health Continuum model, both of which conceptualize and measure well-being as a holistic, integrated, and complex construct (MHC). The research was carried out on an African sample in South Africa's North West Province. A total of 459 Setswana-speaking people from rural and urban regions completed the GPW and MHC questionnaires. The researchers ran descriptive statistics, correlations, cross-tabulations, and regression analyses. The findings suggest that socio-demographic factors have a role in defining comprehensive PWB in a Setswana-speaking population in South Africa. Higher PWB was linked to urban life, employment, education, and marriage. The highest difference in PWB measures was accounted for by the environmental context (rural or urban), followed by job status. Age and gender were not shown to be significant predictors of happiness.

The study of Oskrochi, Bani-Mustafa, and Oskrochi (2018) was used to create a unified data set of two nationally representative surveys, the British Household Panel Survey (BHPS) and the Understanding Society Survey (USS), which used the 12-item General Health Questionnaire to measure PWB and associated factors (GHQ-12). The dependent variable was the GHQ-12 score for the head of the household, and its connection with numerous independent demographic and financial status factors was studied. Following the evaluation of growth curve features using linear, curvilinear, and higher-order polynomial models, a variety of variance-covariance structures were examined to determine the error covariance structure of the longitudinal data. Natural splines and B-splines were used to enhance the fit of some variables, and the random intercept and random slope were permitted to vary among individuals. The final model revealed that the perception and anticipation of future financial condition, as assessed by GHQ-12, were the most relevant factors impacting self-reported PWB, as well as issues meeting household spending. Gender, age, marital status, number of children living at home, highest qualification, and employment position all had a role. However, unlike prior studies, it did not find that income size was important. These findings add to the growing body of evidence that financial worries have an influence. These results show further indepth evidence of the impact that financial concerns have on self-reported measures of PWB.

Young Adults and Psychological Wellbeing

Young adulthood (YA) is a stage between adolescence and adulthood. Transition may be described as a qualitative restructuring of one's inner life and conduct on the outside (Elias & Noordin, 2010). For many young people, the move from secondary school to university is a big life shift that will be difficult, especially if it means leaving home and taking on new responsibilities (Robotham & Julian, 2006). This is compounded by the increased workload and time strain that new university students encounter as a result of having to adjust to changes in a variety of life domains, such as dealing with a new social milieu (student stress will be linked to social issues). Increased stress may be attributed in part to the lack of a person's typical support network of friends and family (Robotham & Julian, 2006), which may explain why the transition from high school to university necessitates substantial life changes in numerous areas (Robotham & Julian, 2006). As a result, the idea of adaptability to transition was applied in this research.

It may be difficult for graduate students to adjust to new social and educational situations, which can be stressful. Life in graduate school may be considerably more stressful due to the extra pressure of coping with various cultural values, language, and high self-expectations, in addition to academic obligations and a lack of social support systems (Constantine, Okazaki, & Utsey, 2004). As a result, graduate students are more likely to have adjustment issues, bodily ailments, and psychological discomfort (Constantine et al., 2004). Apart from academic pressures, graduate students may face difficulties as a result of numerous roles, different patterns of advising relationships, insufficient social support, or financial limitations as a result of their transitions (Goplerud, 1980).

Psychological well-being is a critical resource for overcoming obstacles and efficiently navigating through life (Ryff, Keyes & Hughes, 2003). PWB's abilities and views are essential for effectively participating in relationships with others, managing one's environment, and self-actualization (Ryff, 1989). PWB has a

favorable relationship with physical health indicators (Ryff & Singer, 2006). PWB is thus critical for people of all ages, particularly students making the move to university (Bowman, 2010).

PWB is critical for university students in order to adjust to university life successfully (Bowman, 2010). The fundamental structure of happiness has virtually always centered on the balance of good and negative effect, as well as life satisfaction (Bradburn, 1969). Short-term happiness has been stressed in PWB discussions rather than the ability to face life's obstacles, such as having a sense of purpose and direction, creating meaningful relationships, and reaching self-realization (Ryff & Keyes, 1995).

In Bangladesh, youth is the most viable and potential human resource and frustration is an identified problem of youth in Bangladesh. Different studies show that frustration is one of the leading causes of drug addiction (Chowdhury & Sarker, 2002). Therefore, the large population of YAs in Bangladesh requires ensuring PWB for their better and prosperous future. So, therefore the aim of this study was to develop an intervention program specifically for addressing the PWB of YAs in Bangladesh.

The construct of PWB depends on various aspects. Ryff and Keyes (1995) found considerably strong positive correlations between the variables "purpose in life" and several indicators of PWB, as well as negative correlations with indicators of psychological distress, in a sample of 1108 adults. Zika and Chamberlain (1992) obtained similar results amongst 194 young women. So therefore, Ryff six-factor model was also used in this study to investigate the predictors of PWB.

Method

The main purpose of the present study is to find out the components and predictors of PWB in YAs of Bangladesh. For this multipurpose nature, the study was divided into three stages: I) Adapting an instrument of measuring PWB, II) Identifying the factors related to PWB, and III) Piloting an intervention tool. The procedures involved in these three distinct stages related to study purpose are outlined in the layout of the research design.

Research Design

This research has been conducted using a three stages mixed-method design. In the first stage, the Ryff's PWBS-42 was chosen as it was found to be the best measure for PWB of YAs (Conway & MacLeod, 2002). Using the 18-item PWBS or others PWBS, researchers discovered that daily discrimination is associated with lower wellbeing. On the other hand, adults have better wellbeing when they recall having supportive and affectionate relationships with their parents as children (An & Cooney, 2006). Furthermore, multiple studies have found that education is related to better wellbeing (Ryff et al., 2003). So therefore, 42-item scale (van Dierendonck, Díaz, Rodríguez-Carvajal, Blanco, & Moreno-Jiménez, 2008) is statistically sounder than other PWBS measurements.

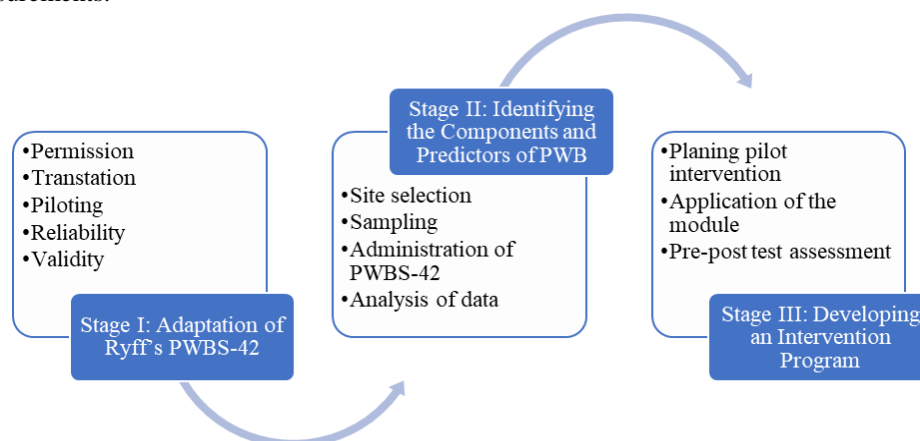


Figure 1. Three staged research design of the study

There are several versions Ryff's PWBS: 84 items (14 per dimension), 54 items (9 per dimension), 42 items (7 per dimension), 24 items (4 per dimension) and 18 items (3 per dimension). The 42-item version was chosen for

its comprehensiveness, as it was neither too long nor too short. It was adapted and validated into Bangla and its psychometric properties were assessed. The second stage involved administration of the Bangla Psychological Wellbeing Scale (BPWBS) to a representative sample of YAs for identifying the components and predictors of their PWB. Finally, in third stage a pilot intervention program was developed and assessed for its efficacy. At every stage distinct methodology was followed to reach the specific goal of the stages.

Adaptation of Ryff's PWBS-42 into Bangla

The adaptation process comprised of several steps starting from permission of the author as depicted in Figure 1: starting from seeking permission from Dr. Carol Ryff, the author of the PWBS through translation process to examining psychometric properties.

Description of Ryff's PWBS-42

The Ryff's PWBS-42 is a modified version of the original instrument, which had 120 items (20 per dimension) and was designed by psychologist Carol D. Ryff on the basis of his six-factor model of wellbeing. The original wellbeing scale now has five shorter versions: 84 things (14 items per element), 54 items (9 items per element), 42 items (7 items per element), 24 items (4 items per element), and 18 items (3 items per element). The 42-item PWBS assesses six subscales with seven items each to assess the six dimensions of wellbeing: autonomy, environmental mastery, personal growth, positive connections with others, purpose in life, and self-acceptance, as do various shorter versions.

The Autonomy sub-scale looks at a person's sense of autonomy and independence from rules. "I am affected by folks who have strong ideas," for example. The Environment Mastery subscale assesses one's confidence in one's ability to cope with life's challenges. "In general, I feel in control of the situation in which I live," for example. Personal Growth is a sub-scale that assesses a person's willingness to try new things and progress. "Life has been a continual process of learning, changing, and growing for me," for example. The Purpose in Life subscale looks at one's sense of meaning and purpose in life. "I like developing future ideas and trying to make them a reality," for example. The sub-scale Positive Connections with Others looks at how satisfied you are with your relationships with others. "I sometimes feel lonely since I have few close friends with whom to discuss my worries," for example. Self-acceptance is a sub-scale that looks at how one feels about oneself. "For the most part, I am proud of who I am and the life I lead," for example. All 42 questions featured a six-category response structure, ranging from "strongly disagree" to "strongly agree." There were 42 articles in all, with 20 PWB items carrying good content and 22 PWB items including negative content. Prior to analysis, items with negative content were reverse-scored, with higher scores indicating better wellbeing.

Reliability and Validity of Ryff's PWBS-42

Ryff's PWBS began with 120 items and has subsequently grown to include 84, 54, 42, 24, and 18 items, all of which are organized around the same six components of eudaimonic wellbeing: self-acceptance, good interpersonal relationships, autonomy, environmental mastery, life purpose, and personal development. The PWBS's reliability and validity are hampered by the fact that different countries utilize different combinations of the original 120 items, as well as sociodemographic variance.

Longer scales offer stronger internal consistency, while shorter scales have higher factorial validity, according to Meeks, Vandenbroucke, and Shryock (2018). There is no agreement on the best version of the PWBS to use or which populations to use it on. In a multigenerational sample from a research of wellbeing linked to theatre audience engagement (N=581), the 42-item version of the measure was evaluated for reliability and factor loadings. The participants' demographic characteristics were comparable to those of the Ryff development sample. The study revealed that older and middle-aged groups had similar internal consistency (α), with the youngest (and smallest) group having somewhat poorer dependability; average alphas for the three groups were 0.71, 0.78, and 0.77, respectively. The scales performed quite well in the 6-factor model, albeit not optimally; NFI=.777, CFI=.836, RMSE=.063, PClose=.000, CMIN/DF= 3.089. Using a single component hierarchical model did not enhance fit. The findings show that the Ryff scales are consistent across age groups, but that there may be factor solutions that go beyond Ryff's initial six factors (Meeks et al., 2018).

In a Japanese study, the internal consistency, structural validity, and convergent/known-group validity of the 42-item (PWBS-42) were studied (Sakuraya et al., 2020). The PWBS-42 is made up of six 7-item subscales that measure autonomy, environmental mastery, personal growth, good interpersonal connections, life purpose, and self-acceptance in eudaimonic PWB. In 2008, 2102 community residents in Tokyo aged 30 and above were given a questionnaire as part of the Midlife in Japan (MIDJA) research. Internal consistency dependability was measured using Cronbach's alpha. The structural validity of the study was investigated using exploratory factor analysis (EFA). To assess convergent validity, the Japanese PWBS-42 subscales were linked with measures of life satisfaction, negative affect, negative adjectives, positive affect, positive adjectives, self-esteem, and perceived stress. The responses of 1027 people (505 men and 522 women) were examined (valid response rate = 56.2%). Cronbach's scores ranged from 0.70 to 0.78 for five of the subscales, while the one for life purpose had a lower value.

EFA came up with a five-factor model. The first two variables were made up of negative and positive items from the environmental mastery, purpose in life, and self-acceptance subscales. Items from the subscales of positive interpersonal connections, autonomy, and personal progress make comprised the third, fourth, and fifth components, respectively. As expected, life satisfaction, negative and positive affect/adjectives, self-esteem, and perceived stress were significantly related with all subscales of the Japanese PWBS-42. The subscales of the Japanese version of the PWBS-42 exhibited adequate levels of reliability and support for convergent validity in the Japanese population. Items from three subscales (environmental mastery, life purpose, and self-acceptance) loaded on two factors together, differing somewhat from the theoretical 6-factor model. This information may be interpreted in light of Japan's interdependent self-concept, which implies that these three aspects are connected.

Abbott, Ploubidis, Huppert, Kuh, and Croudace (2009) investigated Ryff's PWBS's effective measurement range. It uses a restricted information estimate technique to apply normal item response theory (IRT) methodology for ordinal data utilizing factor analysis processes. The information was gathered from 1,179 women who took part in a midlife follow-up of a national birth cohort study in the United Kingdom. Six aspects are included in the PWBS: autonomy, good interpersonal relationships, environmental mastery, personal growth, life purpose, and self-acceptance. Standard errors of measurement for estimated scores on each dimension were determined using scale information functions. The addition of method variables from item wording distinguished construct variance from method variance (positive versus negative). According to the IRT analysis, the PWB reliably assesses wellbeing in the center of the score distribution, i.e., for women with average wellbeing. At increasing levels of wellbeing, score precision decreased, and poor wellbeing was detected more consistently than high wellbeing. A second-order wellbeing factor that was loaded with four of the characteristics had better measurement precision and scoring accuracy across a wider range than any single dimension. Items that may distinguish at high levels of wellbeing should be included in future developments of wellbeing measures.

Seeking Permission from Dr. Carol D. Ryff

In order to seek permission Dr. Carol D. Ryff, the director of the Institute on Aging, University of Wisconsin-Madison, Madison, United States was contacted through email and permission to adapt her PWBS to Bangla was obtained. In the process of translation creating comparable instruments in more than one language includes not just translation of the test items and test materials but other different changes are also very important. For example, changes in the items format and testing techniques can have an impact the interpretation. Different issues relating to test translation should be considered to have instruments that are suitable for comparisons between more than two cultures. As indicated by (Ercikan, 1998) a decent translation should reflect the importance of the original item, yet attempt to keep up a similar pertinence, natural interest, and commonality of the item content. Otherwise, what the item measures might get changed. The current scale was translated in the Bangla language utilizing the strategy of forward and back translation (Brislin, 1980)

Translation Procedure

The 2nd step of adaptation included the forward translation of the items of the main scale into Bangla followed by consultation with 5-member expert panel for viability, back translation by another panel of 3 experts and piloting of the final Bangla version of Ryff's PWBS-42. With the consultation of the 5 expert panel an edited Bangla version was developed and this edited Bangla version was given to another three experts for back

translations (Bangla to English). After compiling all the feedbacks from both expert panels, a pilot study of the final draft was implemented to see the correlation between the English and Bangla version.

Forward Translation

After getting the permission from Dr. Carol Ryff, an initial translation of the scale from English to Bangla was done from the researcher. All the 42 items of 6 subscales from the original English scale were translated into Bangla. In the process of translation, instead of literal translation, more focus was giving on preserving the meaning of the original item.

Viability of Forward Translation by the Expert Panel

In order to verify the appropriateness of the primary translation of the scale, a panel of five specialists was formed and items were modified according to true sense and the culture difference. The expert panel of the intended process included three therapists holding Ph.D. in psychology and two experts with MPhil in Educational Psychology. Every one of them was local people and was informed about the construct estimated in the test and furthermore with the standards of adaptation. In a research test translation is just one of the means in the advancement of test adaptation. With a forward translation plan, a solitary translator, or ideally, a group of interpreters translate the test from the source language to the objective language (Hambleton & Li, 2005). For this reason, the solitary translated measure was given to five qualified and experienced interpreters who substantiate the primary translation of the Ryffs' PWBS-42 from English into Bangla by showing their agreement in a three-point scale (3 appropriate, 2 need modification and 1 not appropriate). All expertise had 98-100% agreement on the primary translation with necessary feedbacks for modifications indicating face validity of the Bangla scale. Consequently, adequate comments were identified and incorporated accordingly for the 1st draft Bangla rendition. At that point, this draft form of BPWBS was considered to be ready for back translation.

Back Translation by Bilingual Experts' Panel

In backward translation, after adapting a test from the source language to the target language, different translators take the adapted test (in the target language) and translated back to the source language (Hambleton & Li, 2005). In this step three bilingual experts, who had not previously seen the original version of the measure, back translated the translated version of the measure again into English language. The backward translation expert panel consisted of three expertise. Among them two expertise hold masters in Psychology and one expertise hold masters in English Literature. All of the experts had sound command in both English and Bengali dialects. Based on their feedbacks few items were modified and rephrased to retain the fundamental substance of the original scale. This 2nd draft Bangla version was cross-checked with the original English version and reviewed by the both panel of expert for the translation inaccuracies. Then a final draft of BPWBS was prepared for pilot testing. All the 42 items of 6 subscales were included in the BPWBS.

Pilot Testing

The final draft of BPWBS was piloted for usability, ease of administration and English vs Bangla correlation of the scale on a small group of sample. A total number of 27 participants (15 females and 12 males, mean age 22.11 years) were selected conveniently from student population. First Bangla questionnaire was given to the participants using standard instruction. After completion of their responses, researcher examined the results independently and checked the difficulty level of the items, the clarity, exactness, and contents of the questionnaire. With a gap of seven days English version of the scale was given to the same participants. In this step the English-Bangla correlation was looked to see whether the translation was viable and have content validity (see Table 3 in Result section). A significant correlation between the English version and the Bengali version was found. Other feedbacks and suggestions which were given with respect to the wording and concept of the scale have been taken into account. After making consensus by the experts the single and final adaptation of the BPWBS was completed.

Time Frame of Scale Adaptation

This portion of the research started in January 2020. The final BPWBS-42 was finished by the end of February 2020.

Determining the Psychometric Properties

The BPWBS was ultimately administered on a larger sample to determine the psychometric properties of the adapted scale. Item-total correlation, alpha value for subscales and factor analysis were analyzed to determine the statistical value of the scale.

Data Analysis

Statistical Package for Social Sciences (SPSS) version 20 was used for data analysis for the psychometric properties that include test-retest reliability, internal consistency, item-total consistency, subscale consistency, congruent validity, and construct validity were carried out.

Identifying the Components and Predictors of PWB

The BPWBS was administered on a large representative sample of YA to identify the factors related with PWB. Survey method was used to collect data. The BPWBS was distributed along with a demographic questionnaire among the participants to get their responses.

Study Sample

The survey of the second part of the study comprised 301 YA, 149 males and 152 females, ranging in age from 18 to 25 years. Generally, students enrolled in undergraduate and graduate programs from 9 different educational institution of Dhaka city were the target population for data collection. Because Dhaka is the capital of Bangladesh and has more educational options, students from all over the country come to study at various educational institutions in Dhaka city, and are thus thought to represent young people from all over the country. Two secondary colleges, five-degree colleges under National University, and two universities were conveniently selected.

Table 1. Gender distribution and age range of the sample

Institution	Male	Female	Age range
College (59)	56	3	18-24
DU (27)	13	14	23-25
JNU (60)	47	13	18-25
National University (155)	33	122	18-25
Total (N=301)	149	152	18-25

Among respondents 59 (19.6%) were from two colleges, 155 (51.5%) were from five-degree colleges under the National University, and rest of the 87 (28.9%) were from two public universities. There were 11 (3.6%) upper middle class participants, 217 (72.1%) medium socioeconomic level participants, 66 (21.9%) lower middle class participants, and 7 (2.4%) lower class people among the 301 total participants.

Sampling Technique

Purposive sampling technique was used for this study. Inclusion criteria of the sample was participants only from educational institutions (students), only YA (age limit 18 to 25years)

Instruments Used

Basically, two measures were used to collect intended data. One being the demographic questionnaire for identifying related components of PWBS and the other is the BPWBS. These two instruments were compiled in a single set of questionnaires and provided to the participants with appropriate instructions and consent form.

Demographic Questionnaire

A questionnaire was structured to survey demographic factors, including age, sexual orientation, level of education, establishment, conjugal status, birth order, living status, socio-economic status, physical and mental health. Selected demographic questionnaire was used to determine the predictors of PWB.

BPWBS

The BPWBS involved six subscales with seven items each to quantify the six components. Descriptions of the sub scales are given in introduction section (see page 4). Examples of items for each sub scales are given below.

1) Autonomy: "I am not afraid to express my opinions, even if they differ from the great majority of people's opinions." 2) Environmental mastery: "I feel I am accountable for the situation in which I live in general." 3) Personal development: "I believe that fresh experiences that challenge how I think about myself and the world are essential." 4) Positive interpersonal relationships: "Most people regard me as loving and warm." 5) Life's purpose: "I have a sense of direction and a cause to live every day." 6) Self-acceptance: "In general, I am confident and pleased with myself."

The response categories for these topics are on a six-point scale, ranging from 1 ("Strongly disagree") to 6 ("Strongly agree") ("Strongly agree"). Averages were calculated for the six subscales; higher values imply more evident PWB. The reliability coefficient for each of the six subscales, as well as the entire instrument, was more than 0.70. (Ryff & Keyes, 1995).

There was a significant positive correlation ($r = 0.6, p < 0.05$) between English and Bangla PWBS-42 which indicated high parallel form reliability. Also in case of item-total consistency Cronbach's alpha was 0.939 suggesting highly consistent with BPWBS score. Finally, Cronbach's alpha of all the subscales were above 0.70. According to the expert agreement over content of the adapted version and the result of factor analytic procedure ensure the content and construct validity. So therefore, BPWBS-42 is highly reliable and valid tools for measure PWB. For details see the result section (page 43-56).

Data Collection Procedure

After conveniently selecting the above mentioned nine educational institutions from all around Dhaka City, two research assistants along with the researcher were involved for the data collection procedure. The research assistants were given 3 days training on the research purpose, ethics and how to conduct the data collection process. These research assistants were psychology graduates' students and had prior knowledge of Ryff's scale. During training sessions, they practice the administration process several times under the supervision of the researcher. After completing the training, researcher and two research assistants went to selected institutes and asked permission from the relevant authority for permission to conduct the research. The participants were approached graciously with an invitation for participation in the study. Those who agreed were included for data collection process. In order to take information consent at the beginning, each respondent was briefed about the general purpose of the study and were requested to cooperate with the researcher. After initial briefing, questionnaires were delivered to them. It took around 15 minutes to fill up the questionnaire. Research assistants were present in the room while the participants were filling up the questionnaire. If any of the participants needed any help, the research assistants provided that. The whole process of data collection took around three months. Once the target numbers of responses were completed, data collection was ended. None withdrew themselves nor refused to response.

Time Frame of the Survey

Data collection procedure started in March 2020 and by the end of May 2020 targeted number of 300 respondents was reached from the entire selected study site.

Data Analysis of Survey

The collected data were cleaned, coded and entered into the computer software. The Statistical Package for Social Sciences (SPSS) version 20 was used for data analysis. Demographic statistics were used to see the distribution of respondents of survey part of the study. One-way ANOVA and t-test were also applied to find out the factors related to PWB.

Developing an Intervention Program

Finally, the current research had an intention to develop an effective intervention program to enhance the PWB of YA. A pre and post-test study was designed and carried out to fulfill the purpose. A personal information form and BPWBS were provided to the participants of the intervention program to measure any change in their state of PWB. No psycho-education or other knowledge related to PWB was provided before the intervention took place. Due to unprecedented pandemic lock down virtual intervention strategy was opted as an alternative to in-person workshop.

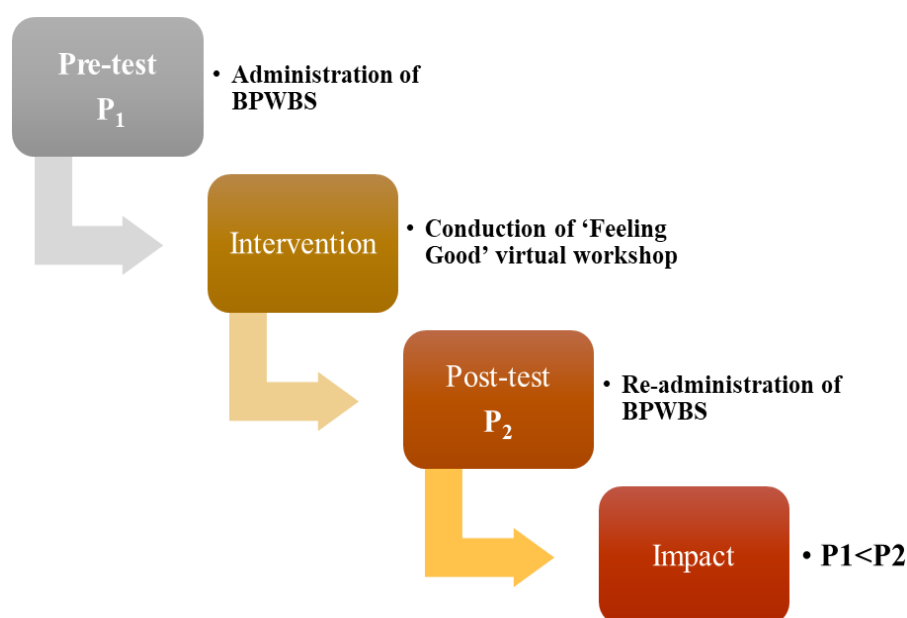


Figure 2. Measureing the efficacy of the intervention program

Participants for Intervention Workshop

Participants were selected on a convenient basis from different educational institutions all around Bangladesh. The small number of participants (16) comprised from different public college and university. The age range of these participants was 18 to 25 years old and 5 of them were male and 11 participants were female. By the time this point of the research was reached, Bangladesh was under lockdown due to Covid-19. So, some changes had to be made in planning. There were no opportunities to physically move from places to places in order to carry out the research. To overcome this hurdle, the researcher utilized the online platforms for accessibility. Facebook advertisements were used for promoting the workshop. Interested students messaged or called the researcher to attend this free workshop. The sampling was done completely on a convenient basis due to the sudden limitation of a global pandemic.

The Intervention Program- "Feeling Good"

The intervention module named "Feeling Good" has been developed based on the six components of Ryff's PWBS to promote emotional health and overall functioning of YAs. This module was held in three sessions. Transformation of the group depended on experience, sharing and learning.

Workshop Method

The workshop sessions were conducted online and Zoom app was used to deliver the participatory workshop.

Workshop Time and Duration

The total duration of the program was three weeks in three sessions. Each session was consisted of three hours.

Objective of Intervention

The intervention program was designed to provide psycho-education and practice material for different aspects of PWB.

Expected Outcome of the Intervention

The expected outcome was that participants will improve their state of PWB.

Informed Consent

All the participants were given definite information about the nature, reason, and conceivable future usage of the study verbally over phone. The goal was that they could settle on an informed decision with respect to their interest in the research. A written form of informed consent was composed, likewise arranged, and given to the participants to sign through email. The second part of this intervention study comprised of participation in online sessions. Informed consent was taken for participation in the sessions of the intervention program and used for research purposes.

Procedural Outline of the Three Intervention Sessions

Objectives of the *1st session* was to increase self-acceptance. For excepting the multiple aspect of self, including good and bad qualities and to increase the feeling of continued development to realize his or her potential. In the first session facilitator greeted the participants and asked them what brought them in the session. Then the facilitator discussed about self-acceptance, personal growth and after the discussion facilitator took the participants through a procedure. Facilitators asked the participants to find a place where they would be comfortable and wouldn't be disturbed. Then facilitators told them to think of 5 characters that they regard unconditionally. These could be family members, friends, pets, childhood toys. As long as they were someone whose opinion they respect. After that the facilitator asked the participants to think about a situation of anxiety and step into that worry. Participants described it using all the senses and then came up with a totally honest description of how they feel: "I really feel worried about . . . it makes me feel shaky and sick." Then facilitator asked the percipients to think about the significant character of their life and will tell them to surround themselves with these characters. Afterwards, participants were asked to imagine the characters saying to them "Be kind to yourself, care for yourself, nurture yourself, be kind, nurture, care for." Facilitator repeated these words and asked the participants to accept those nurturing and compassionate thoughts. After finishing the task facilitator checked the participants' feelings and thoughts. To enhance the positive feelings of self as a personal growth facilitator asked the participants to think about any sign such as: touching nose, ear lobe, etc. Then facilitator asked the participants to revisit the exercise and while doing the exercise they would add their body sign as an anchoring. In this session participants experienced a way of self-acceptance and as a personal growth they practiced anchoring to make the skill more relevant.

Objectives of the *2nd session* were to increase the goals in life and identifying beliefs that give life purpose and to increase the sense of mastery and competence in managing the environment. In the second session facilitator greeted the participants and asked them any thoughts and learning from the previous session. Then the facilitator discussed about the meaning of purpose of life and environmental mastery. The facilitator asked the participants to pick one area/state that the participants want to work on such as, time management, daily exercise, eating healthy, etc. Then the facilitator asked the questions to the participant: What's your purpose to do the specific task? When you are doing the specific task that you are? What's important for you? How are you doing your

task? What do you do that help you to manage the task? Where do you like to start? With these logical level questions facilitator explored the purpose of a specific task of the participants' life. Then the participants did an open discussion on their environmental mastery, how they would make their specific task more effective with the use of surrounding opportunities

Objectives of the 3rd session were to increase self-determination and independent for resisting social pressures and to increase warm, satisfying, trusting relationships with others. In the third session facilitator greeted the participants and asked them any thoughts and learning from the previous sessions. Then the facilitator discussed about the meaning of autonomy and positive relationship with others. After that the facilitator went through a procedure with the participants. Facilitator asked the participants imaging the future before them as an ever-expanding straight line/triangle, full of color and possibilities.

They would spend few moments in future and they would think what they might achieve autonomously in their life. Then they looked back their present. They thought about what skills, opportunity do they had then. They saw it, felt it and heard it. From the present state they thought where they want to start. Then participants imagined themselves moving forward, overcoming any possible blocks that might get in their way, and picking up additional resources, until they meet and exceed their original outcome. Again, participants came back to the present and thought about a small step which they can take then. After that maintaining positive relationship among the group members, one participant gave positive feedback to another participant; another participant gave positive feedback to another new participant; like this it rolled. After that facilitator asked their feelings and discussed how this feedback activity can incorporate in maintaining positive relationship with others.

Piloting the Intervention Program

To determine the efficacy of the intervention program “Feeling Good” in bringing change in PWB of YAs, a pilot study was designed. Single pre-post-test measure was used following the design given in table 2.

Table 2. Measuring the efficacy of the intervention program

Pre test (P ₁)	Intervention (T ₁)	Post test (P ₂)	Effect
Administration of Bangla PWBS	Conducting ‘Feeling Good’ virtual workshop	Re-administering Bangla PWBS	P ₁ < P ₂

Procedure

In order to conduct the intervention program “Feeling Good” on line a WhatsApp group was created to do smooth communication with all the participants. Zoom platform was used to conduct the workshop. One week prior to the first session, the questionnaires BPWBS and personal information form were sent to each of the participants through email to measure their state of PWB before giving the intervention as a comparative baseline. Almost everyone returned their responses within a day or two.

The intervention module ‘Feel Good’ were conducted in group via Zoom meeting by researcher. A total of three sessions were conducted and a gap between each session was one week. Each session was of three hours long. The sessions were interactive. Group discussions, different activities and question-answer sessions were facilitated by the researcher. All the sessions were recorded after informing the participants and collect their informed consent.

In the post-test phase, once again BPWBS was provided to each of the participant through email. One week after the last session of intervention the post test was sent to respond and well received accordingly. No additional feedback or any other information was provided unless related to the research. As the intervention sessions were basically a part of a workshop or training which contributed to the knowledge and understanding of PWB. It was tried to provide as little information outside of the sessions.

Time Frame

This part of the research started in August 2020. By the mid-September 2020 the data collection procedure was completed.

Data Analysis

Paired t test has been conducted to see whether there is any significant difference between the pre and post scores of the participants. Significant difference means these six components are the predictors of PWB in YAs.

Ethical Considerations

This research was affirmed by the ethical advisory committee of the Department of Educational and Counseling Psychology, University of Dhaka. The accompanying area presents a portion of the significant issues mulled over in keeping up the moral principles of the current research.

Wellbeing of the Participants

The research was not involved in any sort of distressing subject matter. In spite of that, the chance of encountering trouble was plainly written in the consent form and depicted to the respondents prior to requesting their investment. Any type of emotional and psychological support was offered if the study caused any distress in the participants.

Right to Withdraw

The respondents' entitlement to pull out from the research was unmistakably expressed and kept up all throughout the research. In any case, they were made it clear that they could withdraw from the study at any given point in time while the data collection was taking place. They can further ask to withdraw their data or request to not use them in the study if they want.

Confidentiality and Privacy

As the assortment of touchy and individual data is one of the significant worries for any research, the confidentiality and privacy of the participants were given high importance. All conversations and data collection were led in a protected spot affirmed by the respondents. The collected data were kept in a safe online and offline space where only the researcher has access.

Results

The present study investigated the components and predictors of PWB in YAs. For that purpose, the research was divided into three stages and results are presented accordingly. In the first stage, psychometric properties of BPWBS would be presented. In the second section of the result will focus on components and predictors that have been identified for the PWB of YAs. Finally, in the third section the outcome of intervention program will be addressed.

Psychometric Properties of the BPWBS

In order to find out the psychometric properties of the BPWBS-42 parallel form reliability, Cronbach's alpha, internal consistency, subscale correlation and factor loading were calculated using the 20th version of the Statistical Package for the Social Sciences (SPSS) software. The obtained psychometric properties are presented in the following sections.

Reliability

Reliability refers to the attribute of the scale that confirms consistency (Bartko & Carpenter, 1976). If the scale delivers similar scores for a participant each time, the scale has good reliability. Initially, the English-Bengali correlation was looked to see whether the translation was reliable or not (Table 3). And a significant correlation between the English version and the Bengali version was found indicating high parallel form reliability.

Table 3. Correlation between Ryff's English and Bangla PWBS-42

Version	Mean	SD	r	Sig.
English	174.52	18.54	0.62	0.001
Bengali	176.33	19.91		

The next section presents the internal consistency as measured by item-total consistency and subscales consistency. Results are presented in table 4 through 6 subsequently. Cronbach's alpha for the total scale was 0.939. It indicates that all items are highly consistent with total the BPWBS score (Table 5). Deletion of none of the items would have increased the alpha value. Therefore, all items were retained as consistent to be reliable.

Table 4. Mean (SD), range and alpha value of the BPWBS

Mean	SD	Range	Alpha value
148.69	25.00	84-222	0.939

Table 5. Item-total statistics of the BPWBS

Items	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
1	145.11	583.942	.727	.934
2	145.23	586.675	.737	.934
3	145.24	604.741	.305	.937
4	145.08	598.411	.515	.935
5	145.23	586.675	.737	.934
6	145.13	597.322	.491	.936
7	145.12	604.156	.362	.937
8	145.20	597.902	.474	.936
9	145.25	602.448	.393	.936
10	145.11	585.005	.770	.934
11	145.23	596.417	.491	.936
12	145.04	592.998	.543	.935
13	145.10	604.987	.334	.937
14	145.20	605.618	.347	.937
15	144.97	597.313	.461	.936
16	145.11	583.942	.727	.934
17	145.23	586.675	.737	.934
18	145.24	604.741	.305	.937
19	145.10	613.627	.200	.938
20	145.20	605.618	.347	.937
21	145.15	620.763	.060	.939
22	145.11	583.942	.727	.934
23	145.23	586.675	.737	.934
24	145.24	604.741	.305	.937
25	145.07	588.115	.629	.934
26	145.23	586.675	.737	.934
27	145.21	607.168	.289	.937
28	145.10	604.987	.334	.937
29	145.20	605.618	.347	.937
30	144.97	597.313	.461	.936
31	145.11	585.005	.770	.934
32	145.23	596.417	.491	.936
33	145.04	592.998	.543	.935
34	145.12	604.156	.362	.937
35	145.20	597.902	.474	.936
36	145.25	602.448	.393	.936
37	145.08	598.411	.515	.935
38	145.23	586.675	.737	.934
39	145.13	597.322	.491	.936
40	145.07	588.115	.629	.934
41	145.23	586.675	.737	.934
42	145.21	607.168	.289	.937

Table 6 shows mean scores and Cronbach's alphas for the subscales. All the subscales have acceptable range above 0.70 (Cronbach, 1951).

Table 6. Mean, SD, range and Cronbach's alpha for the 6 subscales

Subscales	M	SD	Range	Cronbach's α
Autonomy	25.19	4.94	13-37	0.76
Environmental Mastery	24.36	5.40	15-40	0.84
Personal Growth	24.86	4.65	11-35	0.75
Positive Relations	25.18	5.66	12-38	0.85
Purpose of Life	24.33	5.91	12-40	0.79
Self-acceptance	24.78	5.06	10-36	0.72

Table 7. Item factor loadings on corresponding factors

Items	Autonomy	Environmental Mastery	Personal Growth	Positive Relations	Purpose of Life	Self-acceptance
1	.820	-.088	-.289	.309	-.188	-.046
2	.339	.779	-.005	-.526	-.036	.014
3	.220	.371	.764	-.006	.341	.145
4	-.590	-.336	.015	.646	-.026	-.151
5	.039	.079	-.005	-.526	.736	.014
6	.414	-.623	-.059	.047	-.174	.734
7	.507	-.571	.152	.195	-.052	-.008
8	-.591	.520	.312	-.022	.330	.213
9	.333	.077	.828	.366	-.641	.404
10	-.851	-.065	-.295	.550	-.068	-.042
11	-.636	-.535	.380	-.110	.830	.188
12	.014	.053	-.104	.285	-.540	.768
13	.815	.455	.572	.279	-.060	-.021
14	.187	.623	.328	.004	-.094	-.090
15	-.351	-.563	.829	.229	-.152	.493
16	.020	-.088	-.289	.709	-.188	-.046
17	-.839	.079	-.005	-.526	.836	.014
18	.220	.571	-.564	-.006	.341	.845
19	.812	.258	.361	.246	.005	-.175
20	.187	.623	.028	.004	-.094	-.090
21	-.088	.393	.697	.180	.077	.436
22	-.820	-.088	-.289	.709	-.188	-.046
23	-.239	.079	-.005	-.526	.836	.014
24	.220	.571	-.564	-.006	.341	.845
25	.648	.024	-.016	.226	.253	-.379
26	-.839	.779	-.005	-.526	-.036	.014
27	.210	.410	.820	.025	.498	-.662
28	.215	.455	.572	.779	-.060	-.021
29	.187	-.623	.228	.004	.694	-.090
30	.351	.563	.029	.229	-.152	.793
31	.851	-.065	-.295	.250	-.068	-.042
32	-.636	.635	.380	-.110	.230	.188
33	.314	.053	.710	.285	-.540	.000
34	.507	-.571	.152	.820	-.052	-.008
35	.591	-.520	.412	-.022	.833	.213
36	.333	.077	.028	.366	.641	.704
37	.590	-.336	.015	-.546	-.026	-.151
38	-.839	.679	-.005	-.526	-.036	.014
39	.414	-.623	.659	.047	-.174	-.034
40	.648	.024	-.016	.823	.253	-.379
41	.339	.079	-.005	-.526	.736	.014
42	.210	.410	.020	.025	.498	.662

Validity

Validity of a scale refers to its accuracy to measure something, which it has been created for (Messick, 1987). Our scale has been developed to measure psychological well-being. If it measures psychological wellbeing accurately it has validity. This section presents different types of validity for the adapted scale. Experts in the field were consulted for ensuring the content validity of the scale. The main question to determine the *content validity* is whether the questionnaires are fully representative of what it aims to measure. 98 to cent present agreement among the experts on the content of the adapted Bangla scale was found, which indicates that the content were valid. To test the *construct validity* factor analytic procedures were performed on the items of the Bangla scale. A principal component analysis with varimax rotation was implemented using all items. Table 7 depicts all items that loaded on the respective factors at or above 0.50. Six factors were extracted by this analysis, each with an eigenvalue greater than 1. It is apparent from the results that the structure is similar to the original English scale in terms of the number of factors composing the scale. Fair representation of all aspects of the construct it aims to measure the construct validity of the BPWBS.

Factor Analysis of BPWBS

Ryff's components of PWB (autonomy, environmental mastery, personal growth, positive relations, purpose of life, and self-acceptance) were tested in the context of Bangladesh. As the factor loadings depicted in Table 7 confirms the six components.

Identifying the Components and Predictors of PWB

Demographic Statistics of the Sample of the Study

Table 8. Selected demographic statistics of study sample

Demographic Variables	N=301
Age	
Mean, (SD); Range	21.89, (2.25); 18-25
Gender	
Male	149 (49.5%)
Female	152 (50.5%)
Level of Education	
Higher Secondary	59 (19.6%)
Honors	195 (64.8%)
Masters	47 (15.6%)
Marital Status	
Unmarried	283 (94%)
Married	18 (6%)
Birth Order	
Only	7 (2.3%)
Eldest	111 (36.9%)
Middle	89 (29.6%)
Youngest	94 (31.2%)
Living Status	
With Parents	50 (16.6%)
Hall/Mess/Flat	239 (79.4%)
With Spouse	7 (2.3%)
Alone	5 (1.7%)
Socioeconomic Status	
Lower Class	7 (2.3%)
Lower Middle Class	66 (21.9%)
Middle Class	217 (72.1%)
Upper Middle Class	11 (3.7%)
Illness	
Physical Illness	35 (11.6%)
Mental Illness	49 (16.3%)

Here Table 8 presents the selected demographic information of the participants. The observation of the selected demographic information (Table 8) of the participants indicates fair representation of YA of both the genders. Such as, the mean age was 21.89 years (SD = 2.25), ranging from 18 to 25 years old. The male to female ratio was 49.5% to 50.5% (152 female to 149 male). Maximum (64.8%) participants were doing their Honors, 19.6% were in Higher Secondary, and 15.6% completed or were in their Masters program. Birth order were almost equally distributed among elder (36.9%), middle (29.6%), and youngest (31.2%); only a tiny fraction (2.3%) was only child. Maximum (79.4%) respondents were living either in a residential hall or mess/flat. 16.6% lived with their parents, 2.3% with their spouse, and 1.7% were living alone. Representation from middle class was higher (72.1%) than lower middle class (21.9%), lower class (2.3%), and upper middle class (3.7%). A small fraction of the participants was suffering physical (116%) and mental (16.3%) illness.

Predictors of PWB for YAs

To identify the predictors related to PWB, answers of the following questions were investigated:

- i. Whether there is any significant gender difference in PWBS score?
- ii. Whether there is any significant difference of PWB between younger age group (18-21 years) and older age group (22-25)?
- iii. Whether there is any significant difference of PWB between two sets of birth order (either only child or eldest child and either middle child or youngest child)?
- iv. Whether there is any significant difference of PWB between two sets of socio-economic status (either lower or lower middle class and either middle or upper middle class)?
- v. Whether there is any significant difference of PWB between married and unmarried people?
- vi. Whether there is any significant difference of PWB between physically ill and fit people?
- vii. Whether there is any significant difference of PWB between mentally ill and fit people?
- viii. Whether there is any significant difference of PWB among different levels of education?
- ix. Whether there is any significant difference of PWB among students from different institutions?
- x. Whether there is any significant difference of PWB among students of different living conditions?

A t-test was applied to find out the answers of question i, ii, iii, iv, v, vi and vii. No statistically significant difference was found in terms of total scores. The corresponding table is presented below (9).

Table 9. t-scores of different measures

Measures		N	Mean	SD	t score	Degrees of Freedom	Sig.
Gender	Male	149	149.77	27.10	0.74	299	0.46
	Female	152	147.64	22.80			
Age	18-21	122	149.51	25.24	0.47	299	0.64
	22-25	179	148.14	29.90			
Birth Order	Either Only or Eldest	118	148.37	24.71	-0.18	299	0.86
	Either Middle or Youngest	183	148.90	25.26			
Economic Status	Either Lower or Lower Middle	73	150.23	25.11	0.60	299	0.55
	Either Middle or Upper Middle	228	148.20	25.01			
Marital Status	Unmarried	283	148.76	24.93	0.19	299	0.85
	Married	18	147.61	26.86			
Physical Illness	Yes	35	150.09	24.31	-0.35	299	0.73
	No	266	148.51	30.16			
Mental Illness	Yes	49	143.86	24.64	1.48	299	0.14
	No	252	149.63	25.01			

One-way ANOVA was applied to test the questions viii, ix and x. No statistically significant difference was found among different levels of education, students from different institutions, and living condition as well applying one-way ANOVA (Table 10). Yet there was an upward rise of score in terms of level of education.

Among the respondents 59 were HSC students (146.07 ± 25.10), 195 were Honors students (148.34 ± 24.63), and 47 were Masters students (153.47 ± 26.30).

Table 10. ANOVA scores of different measures

		Sum of Squares	Degrees of Freedom	Mean Square	F score	Sig.
Level of Education	Between Group	1502.79	2	751.39	1.20	0.30
	Within Group	186111.09	298	624.53		
Institution	Between Group	1075.24	3	358.41	.571	0.64
	Within Group	186538.64	297	628.08		
Living Status	Between Group	350.43	3	116.81	.185	0.91
	Within Group	187263.45	297	630.52		

So therefore, the findings indicates that gender, age, birth order, socio-economic status, marital status, and physical or mental health don't have any significant impact on PWB of young adults. Similarly, no significant impacts of different level of education or educational institution or living status were found on PWB of young adults.

Developing an Intervention Program

Demographic Statistics for the Intervention

Table 11 presents the selected demographic information of the participants of the second study focused on intervention module. The mean age was 22.56 years ($SD = 2.15$), ranging from 18 to 25 years old. The male to female ratio was 31.3% to 68.8% (11 female to 5 male). Maximum (43.8%) participants were doing their Honors and Masters. 12.5% were in Higher Secondary.

Table 11. Demographic statistics of study sample for intervention module

Demographic Variables	N =16 (%)
Age	
Mean, (SD); Range	22.56, 2.16; 18-25
Gender	
Male	5 (31.3%)
Female	11 (68.8%)
Level of Education	
Higher Secondary	2 (12.5%)
Honors	7 (43.8%)
Masters	7 (43.8%)
Marital Status	
Unmarried	13 (81.3%)
Married	3 (18.8%)
Birth Order	
Only	2 (12.5%)
Eldest	5 (31.3%)
Middle	4 (25.0%)
Youngest	5 (31.3%)
Living Status	
With Parents	11 (68.8%)
Hall/Mess/Flat	3 (18.8%)
Alone	2 (12.5%)
Socioeconomic Status	
Lower Middle	4 (25.0%)
Class	
Middle Class	9 (56.3%)
Upper Middle	3 (18.8%)
Class	

Birth order were almost equally distributed among eldest (31.3%), middle (25.0%), and youngest (31.3%); only a fraction (12.5%) was only child. Maximum (68.8%) participants were living with their parents. 18.8% lived in either hall or mess/flat and 12.5% were living alone. Representation from middle class was higher (56.3%) than lower middle class (25.0%) and upper middle class (18.8%). No one was suffering from any physical or mental disorder.

Impact of Psychological Intervention

A statistically significant difference in autonomy, personal growth, positive relations, and self-acceptance of the participants between pre and post intervention was found (see Table 12). All the measures mentioned increased in the post intervention phase which confirms the effectiveness and impact of the intervention. Table 12 shows the pre and post test scores.

Table 12. Mean, SD, range, and t-scores for pre and post test scores of the 6 subscales

Subscales	Mean (SD)		Degrees of Freedom	t score	Sig.
	Pre Test	Post Test			
Autonomy	28.44 (5.44)	31.06 (2.96)	15	-2.22	0.04*
Environmental Mastery	25.50 (4.35)	25.94 (3.53)	15	-0.45	0.67
Personal Growth	30.56 (6.09)	33.00 (5.73)	15	-2.42	0.03*
Positive Relations	31.06 (5.14)	35.75 (4.48)	15	-3.49	0.00*
Purpose of Life	29.81 (7.98)	32.44 (6.02)	15	-1.40	0.18
Self-acceptance	29.38 (6.39)	34.94 (6.23)	15	-4.14	0.00*

* $p < .05$

Discussion

In Bangladesh, youth are the greatest viable and prospective human resource, and youth frustration is a well-documented issue (Uddin, 2020). PWB is crucial in life transitions because it indicates the ability to overcome problems, adjust to new situations, maintain relationships, and grow (Uddin, 2020). Limited research could be linked to exploration of the components and determinants of PWB targeted to the young population who face multifaceted challenge of the emerging life. The current study focused at the components and predictors of PWB in YAs of Bangladesh. This study used a three-stage mixed-method design to achieve that goal. The psychometric properties of the BPWBS were provided in the first stage. The second portion of the report concentrated on the components and predictors of young people' PWB that have been found. Finally, the final section discussed the outcome of the intervention program. Each of them is discussed in chronological order.

Adaptation of Ryff's PWBS-42

The study of PWB is becoming increasingly important as human civilization undergoes substantial changes. These modifications may have various effects on PWB depending on the culture. However, other aspects of PWB, such as the desire for healthy interpersonal relationships, a meaning of purpose in life, and personal progress, may be cross-culturally resistive (Lent, 2004). According to confirmatory factor analysis, the BPWBS, like the original PWBS, has six major factors: autonomy, personal growth, environmental mastery, purpose in life, positive relationships with others, and self-acceptance.

The psychometric features of the BPWBS-42, including Cronbach alpha, internal consistency, subscale correlation, and factor loading cast potential evidence on its reliability and validity. There was a major positive correlation ($r = 0.6$, $p < 0.05$) between English and Bangla PSWS-42 which indicated high parallel form reliability. Also, in case of item-total consistency Cronbach's alpha was 0.939 suggesting highly consistent with BPWBS score. Finally, Cronbach's Alpha of all the subscales range above 0.70. This conclusion matched the findings of a number of earlier research, which revealed strong factor correlations between the three subscales in a variety of settings (Abbott et al., 2009; Kafka & Kozma, 2002). It is to be taken into consideration that the study was not conducted on a nationally representative sample while interpreting findings. Future research with Bangladeshi representative samples might give more relevant information on Ryff's PWBS factorial structure, and indirectly, about PWB as a subordinate factor of good relations, autonomy, environmental mastery, personal

growth, life purpose, and self-acceptance. According to the literature (Clarke, Marshall, Ryff, & Wheaton, 2001; Ryff & Keyes, 1995), structural models of wellbeing employing different modalities can generate significantly diverse results. Consequently, the results of self-administered scales are more reliable than those of pre-test telephone surveys. This also explains why there are seemingly contradictory findings in the literature. Self-administered questionnaires were employed in research that revealed lower factor correlations, whereas telephone or in-person interviews were utilized in studies that found less evidence for the multidimensionality of Ryff's PWB (Kafka & Kozma, 2002; van Dierendonck, 2004). In a study the six dimensions of PWB were judged differently enough to consider independent constructs, and confirmatory factor analysis of the underlying structure supported the supposed six factor model with a single component (Clarke et al., 2001). According to the expert agreement over content of the adapted version and the result of factor analytic procedure ensure the content and construct validity. Therefore, BPWBS-42 can be taken as highly reliable and valid tools for measure PWB of YAs of Bangladesh.

Identifying the Components and Predictors of PWB

Factor analysis from the priority gathered data shows that each of the 42 items of PWBS-42 has factor loading over 0.5 on at least one of the six component factors of autonomy, environmental mastery, personal growth, positive relations, purpose of life or self-acceptance which confirms all six of them as components of newly adapted BPWBS-42. Gender, age, birth order, socio-economic position, marital status, physical disease, and mental illness were all shown to be non-significant predictors of PWB in a comparative analysis of the current survey data (Table 9). The current findings confirmed prior findings that age and gender had no significant relationship with happiness (Khumalo et al., 2011). In line with Myers and Diener's (2016) claim that "knowing someone's age offers no indication to the person's average level of wellbeing," (p. 11), the current investigation discovered no significant differences in PWB between age groups. When Ryff (1995) looked at the potential of differences in PWB between age groups, he discovered a varied pattern of substantial age differences, but no clear trend. This absence of a clear age trend, as well as statistically negligible changes in the manifestation of happiness throughout a lifetime, can be attributed to a variety of variables, including personality traits and shared, unchanging living circumstances (Horley & Lavery, 1995). To find whether any difference lies in the different levels of education, students from different institutions, and living condition one-way ANOVA (see Table 8) was applied. The *F* score in each of the variable measured was not statistically significant corresponding to their degrees of freedom. These findings were differing from the previous studies where urban living, employment, education and marital status associated with higher PWB (Khumalo et al., 2011). In conclusion all of the following variables that gender, age, birth order, socio-economic status, institution, living status, level of education, marital status, and physical or mental health is not the predictors of PWB according to the result from the study. This finding is consistent with previous research findings that found that coping strategies (Freire et al., 2016), communication (Miller, 1997), having more positive relationships with family, significant other, and friends (Chow, 2007), optimism (Burriss et al., 2009), resilience and empathy (Vinayak & Judge, 2018) were more significant than demographic predictors of PWB (Harding, Lopez, & Klainin-Yobas, 2019).

Developing an Intervention Program

It is possible that by applying different types and level of intervention PWB score of participants can be enhanced. The researchers evaluated the relevant, existing literature on PWB, including the theoretical concepts, principles, and methodologies that were created by Ryff (1989), based on the 6-factor model PWB by Ryff (1989). (1989). All of the information gathered has aided researchers in developing the software, which is divided into six (6) sub-programs. All of these sub-programs, which are based on Ryff's PWB paradigm (1989). These findings would have a significant influence on the relevant body of knowledge linked to psychology in general and PWB in particular, both theoretically and practically. For such an influence to be more significant, the program's content authenticity must be validated before to implementation, otherwise the consequences will be fictitious. The "Feeling Good" intervention module was created with the goal of evaluating the efficiency of an intervention program based on the promotion of PWB in Yas. The findings of this study demonstrate that this intervention was successful in boosting PWB, particularly in terms of personal development. This is consistent with a preliminary assessment of the PWB program (Ruini, Belaise, & Caffo, 2006), which found that this method improved PWB significantly, indicating that the PWB program might have substantial therapeutic implications (Ginsburg, Riddle, & Mark, 2006; Muris, van der Pennen, Sigmond, & Mayer, 2008) According to the results of the assessment, there is a significant change between pre-test and post-test scores in the Autonomy

($p = 0.04$), Personal Growth ($p=0.03$), Positive Relationship ($p =0.00$), and Self-acceptance ($p =0.00$) subscales (table 10).

The current study has some limitations. The first limitations are there is no control group in this experiment. If there is a control group which will not get any intervention and the results show significance difference in improvement due to intervention between control groups and experimental, we can more strongly claim the effectiveness of intervention. There are strengths and limitations of psychological interventions. There exist different levels of interventions primary, secondary and tertiary. Effects of intervention of multiple levels on the current study sample remain a future possibility. The intervention process was done during the pandemic COVID-19. To avoid social contact zoom was chosen as the platform to go to conduct the process online. There are multiple drawbacks with online intervention programs. With all kinds of variables like the internet speed, environment of the student being intervened and the intervener are some of the important ones. These all must be strictly maintained to make sure of a standard intervention program. It opens further possibility to see what could be done better ensure all the surrounding matters in the future to have better result through intervention and also possible face to face encounter maintaining safety regulations.

This research backs up the concept of seeing young adults as a period of opportunity and good growth, allowing for the adoption of modern systemic theories of development that emphasize on the individual's relationship with their environment (Lerner, Li, Valdesolo, & Kassam, 2015). The focus on the organism-context as a unit of study (Overton & Ennis, 2006) is based on the idea that human development involves mutually influencing connections with the environment (Brandtstadter, 2006) that, when mutually advantageous, form adaptive development rules (Heckhausen, 1998).

Because of the flexibility that defines this period of human development, connections with our environment are of particular relevance in the study of well-being and good functioning among young people (Lerner et al., 2015). Promotion of well-being in young adults can aid in the achievement of positive outcomes while also functioning as a buffer against bad outcomes such as psychological illnesses (Park & Peterson, 2003). As a result, wellbeing not only serves as a key indicator of positive development, but it can also be used to ensure optimal mental health (Park & Peterson, 2003) and to identify beneficial adjustment pathways between adolescents and their environment, resulting in a higher likelihood of achieving positive changes during the transition to adulthood (Lerner et al., 2013). To validate the efficacy of PWB intervention in improving PWB and reducing YA distress, more study with bigger samples and longer follow-up is needed.

Conclusion

This research backs up the concept of seeing young adults as a period of opportunity and good growth, allowing for the adoption of modern systemic theories of development that emphasize on the individual's relationship with their environment (Lerner, Li, Valdesolo, & Kassam, 2015). The focus on the organism-context as a unit of study (Overton & Ennis, 2006) is based on the idea that human development involves mutually influencing connections with the environment (Brandtstadter, 2006) that, when mutually advantageous, form adaptive development rules (Heckhausen, 1998).

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Recommendations

To validate the efficacy of PWB intervention in improving PWB and reducing YA distress, more study with bigger samples and longer follow-up is needed.

Scientific Ethics Declaration

The authors declare that the scientific ethical and legal responsibility of this article published in EPESS journal belongs to the authors.

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Pleasure Reading: The Gains of Student Teachers of English Obtained from a Reading Journey

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Abstract: It is an undeniable fact that reading books is beneficial in many ways. However, a great number of potential benefits are likely to be observed when these readings are realized primarily for pleasure. This article reveals some of these benefits which were identified through a qualitative case study conducted with the voluntary participation of 37 pre-service English language teachers studying at a state university in Türkiye. The study aimed to investigate the pre-service teachers' language- and culture-related gains as well as the gains regarding personal growth from a pleasure reading experience. Qualitative data were collected through written reports that students filled out after reading the books they chose based on their individual preferences. The content analysis of the reported answers revealed that pleasure reading was most beneficial for vocabulary development regarding students' language-related gains. On the other hand, they stated that their biggest culture-related gain was obtaining the ability to understand people living in a specific time period. The students also noted that the most significant contribution of their reading experience to their personal growth was to give them a new perspective.

Keywords: Reading, Pleasure Reading, Literature, English Language Teaching, Student Teachers

Introduction

According to the definition made by the National Literacy Trust (2016), reading for pleasure is the reading we do with our own will in order to reach the satisfaction that the act of reading will bring. In addition, readings that are started at the request of someone else and continued only because we are interested are also referred to as "reading for pleasure" (Clark and Rumbold, National Literacy Trust, 2006). Krashen (2004) calls the same concept "free-voluntary reading (FVR)" and defines it as the readings that we do only because we want to, and there is no reading comprehension question at the end of the chapters.

So, when people are willing to devote their leisure time to reading, does this make it more beneficial? Clark and Rumbold (2006) state that when people actually choose to read (rather than being required to do so), then they read for pleasure. They explain that reading for pleasure means selecting texts that suit individuals' own interests.

There is strong evidence that people reading for pleasure in their spare time is significantly beneficial. Clark and Rumbold (2006), when people read voluntarily rather than out of obligation, they are reading for pleasure. These readers read wherever and whenever they want, depending on their individual preferences and interests. In addition, Clark and Rumbold (2006) drew attention to the social and personal benefits of such reading and stated that those who read for pleasure have more knowledge and language proficiency. In another study conducted by Ross (1999), it was revealed that reading for pleasure is a must for some people.

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Literature Review

A) Pleasure Reading and Language Learning

Many studies claim that children and adults should be encouraged to read because it can significantly impact their future. As a result of their review of the research literature, Clark and Rumbold (2006) listed the many benefits of reading for pleasure:

- It improves reading comprehension and writing skills;
- increases grammar knowledge;
- increases vocabulary;
- helps to develop a positive attitude towards reading;
- helps to become a more confident reader;
- provides enjoyment during lifelong reading experiences;
- provides general knowledge in different fields;
- provides a better understanding of different cultures;
- facilitates inclusion in society and
- presents information about human nature.

Krashen (2021) points out that one of the most effective tools for learners' language education and personal growth is self-selected reading for pleasure, stating:

“This is a win-win-win-win situation: It's pleasant, and it works for language, knowledge, developing empathy, and a healthy suspicion of simple solutions. In this case, however, the simple solution is correct” (Krashen, 2021: 2). Concurrently, Krashen (1982) points out that reading for pleasure provides comprehensible input, which includes adequate exposure to the language, a stress-free learning atmosphere, and engaging content that leads to language acquisition. In the same way, Grabe (1991) and Paran (1996) argue that reading for pleasure enhances learners' general language competence through practising the automaticity of the words and decoding the symbols. Besides, reading for pleasure helps learners to practice the words in an indirect setting and reinforces previously learned language. It promotes vocabulary growth that helps improvement in language production.

B) Pleasure Reading and Pleasure Reading & Cultural and Personal Development

Most studies investigating the possible benefits of pleasure reading have revealed a strong connection between emotional and personal development. Studies have shown that pleasure reading improves empathic skills, and readers are better able to understand others' identities as well as their own.

Billington (2015) conducted a study in which 4000 adult pleasure readers from the UK expressed their opinions through online surveys. Participants were asked about their general mood, well-being, and daily social interactions. The findings of the study showed that pleasure reading resulted in an enhanced sense of community, social inclusion, and willingness to participate in social activities in participants.

Mar et al. (2006) conducted a study to investigate the effects of reading on the social skills of 94 university students in Canada. The results revealed that reading was strongly associated with social competence and, in particular, empathy. The findings showed that empathizing with the characters in the stories helped them empathize with real-life people.

Wanting to delve deeper into the relationship between reading and empathy, Mar et al. (2009) conducted a more extensive study of 252 Canadian students, taking into account variables such as openness, fondness for reading, and gender. The authors determined a positive correlation between pleasure reading and empathy. They stated that these findings would destroy the belief that people who read a lot are socially awkward.

There is also strong evidence that pleasure reading has a positive effect on understanding one's own identity as well as the identities of others. In a study conducted by Moyer (2007) with the participation of 62 readers living in the US, the effects of pleasure reading were collected through questionnaires and semi-structured interviews. Benefits that the readers often cited were increased ability to understand oneself and others, recognition of different cultures and societies, and learning about other historical periods. In addition, participants stated that they had advanced skills in understanding the culture, perspectives, social class and ethnicity of others.

A study conducted by Vasquez (2005) on 18 university students who attended weekly literature classes revealed that reading helped students to understand the ethnic identities of others and to form their own identities. Moreover, findings showed that literary discussions in the classroom also increase students' cultural and ethnic awareness.

In the literature review prepared by the Reading Agency (2015), previous studies on the benefits of reading for pleasure are summarized. The graphic below shows the overall outcomes of reading for pleasure.

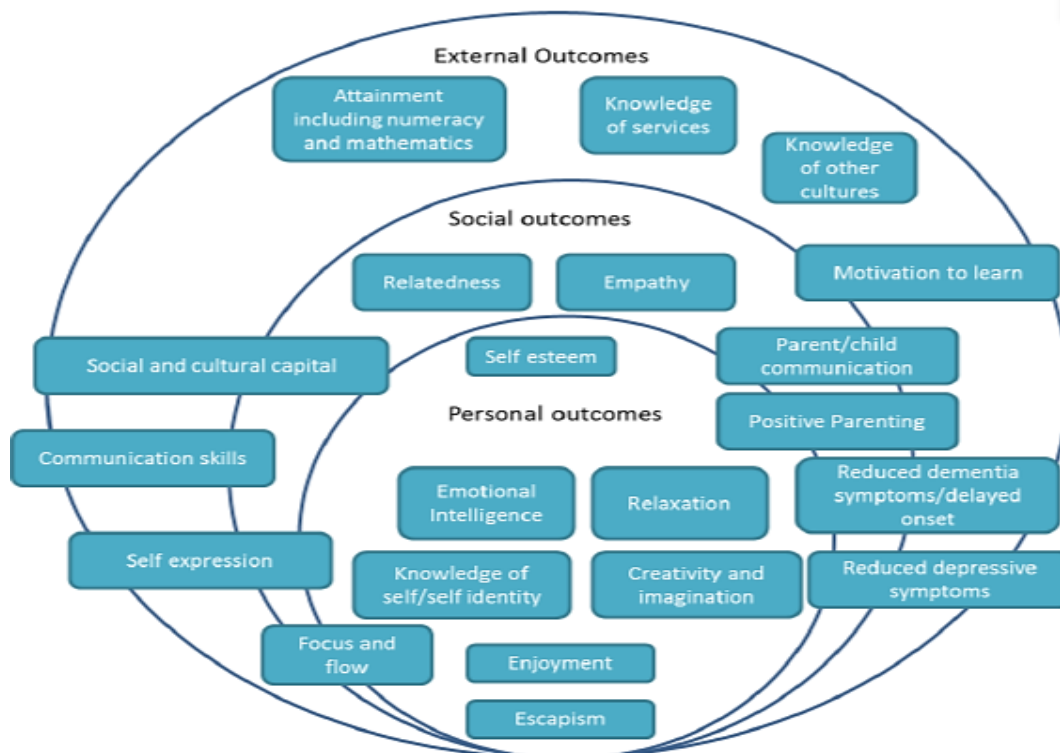


Figure 1. Overall outcomes map

Research Questions

The current study was conducted to find answers to the following research questions:

1. What potential gains, in terms of personal growth, were obtained by the ELT junior student teachers from pleasure reading experience?
2. What are the students' language-related gains?
3. What are the students' culture-related gains?

Please embed tables and figures in appropriate areas within the document and center them horizontally. Tables and figures should not exceed the given page margins. Provide captions (maximum length: 6 to 8 words) for each table or figure. Centre the caption above the table and below the figure. Please reference the table or figure in the text (Table1). Please do not use vertical lines in tables. For figures, GIF and JPEG (JPG) are the preferred formats.

Sampling and Procedure

This current case study was carried out with the participation of 37 volunteered student teachers of English (21 females and 16 males) enrolled in an English language teaching (ELT) department at a state university in Türkiye. The participants were recruited by using convenience sampling method. They were asked to choose an original English novel of their preference and read. What needs to be noted is that each participant must pick a different novel. In addition, the participants were asked to keep a vocabulary notebook and write down the words they did not know together with the sentences in which they were used and to construct original sentences

they would construct by using these words. Afterwards, they were asked to answer the questions in parallel with the research questions in the form of a written report.

Table 1. Number of participants

Gender	Number
Female	21
Male	16
Total	37

Research Instrument

After reading the book, students were asked to submit a written report in which they answered the following questions under three different headings:

1) Language and culture-related gains:

- a) Please write about your overall language-related gains from this reading experience.
- b) Please write what you have learned in terms of culture-related elements (cultural enrichment).

2) Personal growth:

- a) How did this reading experience affect your personal growth? Please explain your "before- and after-reading reflections" with regard to changes, if any, with respect to your perspectives, mindset and goals.

Data Analysis

Content-thematic analysis was used while analyzing the collected data. The codes used for data analysis were descriptive. During the coding process, some themes and categories related to the research questions were created based on the response patterns of the participants (Creswell, 2012). The students' written answers were examined several times before the coding process, and frequently repetitive words and expressions were identified. After the coding process was carried out, common themes were determined. The findings were presented under three headings in line with the research questions. In order to ensure anonymity when quoting students' writings, numbers were used instead of their names (Student 1, Student 2 etc.)

Results

The gains of students related to language, culture and their personal growth from their reading experiences are presented in Tables 2, 3 and 4, respectively. The number of references is shown in parentheses.

A) Language-related Gains of Students from their Reading Experiences

Table 2. Students' language-related gains (n=38)

Themes
Vocabulary development (22)
Recognition of new grammatical structures (15)
Familiarity with the actual use of the target language (12)
Improvement in reading skills (8)
Improvement in pronunciation skills (2)
Familiarity with the literary use of the target language (8)
Improvement in discourse competence (2)
Improvement in inferring skills (2)

When writing about language-related gains, the majority of students mentioned the positive effects of this particular reading experience on vocabulary development (22 references). In addition, 15 students argued that while reading, they recognized new grammatical structures. 12 students stated that while reading, they had the opportunity to be familiar with the real use of English. On the other hand, they also mentioned that reading

novels gave them a chance to see the literary use of L2 (8 references). Moreover, in many written reports, it has been stated that students' reading experiences contribute to the development of various language skills or areas. These are reading (8 references), pronunciation (2 references), discourse (2 references) and inferring (2 references).

Examples of excerpts on the language-related gains from the students' reading experiences:

I had the opportunity to learn words that I had never seen before. I also learned how these words are used in sentences. For example, I learned where and how to use the "whence" conjunction in a sentence. I also learned a lot of phrasal verbs in this reading adventure. (S17)

"The Catcher in the Rye" draws intense attention based on literary interest and linguistic importance. It shows the colloquial language that teenagers used at that time. I also learned numerous slang words and new different expressions. It enriched my vocabulary knowledge. (S37)

Starting to read this book has given me many benefits other than learning vocabulary from the book. I am a person who likes to read books in my native language. Thus, reading this English book was a good activity for me. As I read the book, I started to control how I should pronounce the words I did not know. I learned how different ways a language could be used in daily life and in a literary way, and I was exposed to natural language. I was also able to connect the culture and language (S4)

B) Culture-related Gains of Students from their Reading Experiences

When writing about culture-related gains, most students expressed that they had the opportunity to recognize people's perspectives in a specific time period (20 references). Thanks to this particular reading experience, they also learned about different cultures (12 references) and about different ideologies and philosophies (6 references). Last but not least, the students stated that they learned various historical facts regarding different societies (4 references).

Table 3. Students' culture-related gains (n=38)

Themes
Recognizing the perspectives of people living in a specific time period (20)
Building cross-cultural awareness (12)
Learning about different ideologies and philosophies (6)
Learned about historical facts regarding different societies (4)

Examples of excerpts on the culture-related gains from their reading experiences:

Before reading this book, I had no idea about the Victorian Era and its society at that time. Now, I also know how industrialization affected society at that time. On the other hand, I learned much about society's morals, beliefs, superstitions, world views, etc. Before reading the book, I did not know that there was a class system at that time in the UK. Every country has its class system, but at that time, it was brutal. After reading it, I learned about the class system in the UK. (S10)

Before I started the book, I looked at the pictures of the place where the events took place and read them as if they were re-enacting the events there. I compared the city in the 1900s with the present state of Oakland. While reading the literary work, I learned a lot about the period; I witnessed the struggle of the artists of the period more closely, and I saw the point of view of the bourgeois section of the people. As a result, it has been a great cultural gain for me. (S15)

In this book, I learned about the place of women in social and academic life as a cultural element of that period. I learned that a woman always starts life behind and must make extra efforts for similar conditions. [Virginia] Woolf, for example, explained this with the example of Judith Shakespeare. She emphasized that if Shakespeare had a sister as talented as himself, she would never have seen the same value. (S16)

C) Students' Gains regarding their Personal Growth

The majority of the students who listed the gains regarding their personal growth mentioned that their current perspectives towards a certain aspect of their lives have changed or that they have gained a brand-new perspective thanks to the books they read (19 references). In addition, 11 students mentioned how this reading experience has led them to self-reflect on their own lives and make new decisions to live better. 6 students stated that their reading motivation has increased and that they would read more in the future.

Table 4. Students' gains regarding their personal growth (n=38)

Themes
Gaining a new perspective (19)
Fostering self-reflection about one's own life (11)
Increase in reading motivation (6)
Improvement in empathetic skills (6)
Improvement in imagination (2)

Examples of excerpts on the students' gains regarding their personal growth:

Robinson Crusoe left a lot of impact on me in a way how I want to live my life. Even though I carry Robinson Crusoe's characteristics, I was also scared to get out of my way because I was afraid that I would hurt my loved one's feelings by making them feel like I did not respect their opinion. I was also a people pleaser. As I was reading this book, I realized that despite many obstacles, Robinson Crusoe was free, doing what he wanted, and exploring himself. I was amazed by that, and without realizing it, I started to come out of my shell and live my life how I wanted to live it. (S7)

"The Art of War" helped me become a planned and provident person. While reading, I learned to have a different view on matters and always consider a different perspective towards events around me. The book taught me what makes a great leader and the hardship of being a leader in dire situations. I realized what it meant to be a soldier and a civilian in that era when wars were being waged. This book showed me that a lot has happened on this earth and will be happening whether I realize it. Being aware of myself and my challenges will help me throughout my life. Adapting to situations, even if I am uncomfortable, will help me develop. (S9)

I did not have the habit of reading books in English. I had some prejudices about this situation. After this book, my prejudices were broken. I noticed that If I found a book that was suitable for me, it would be fun for me. (S12)

Discussion and Implications

This study explored the potential gains of ELT pre-service teachers' from a pleasure reading experience with an emphasis on their language and cultural development as well as their personal growth. As a pleasure reading activity, students were asked to read an original English novel of their choice and fill out a written report describing the mentioned gains from a reading experience. Although not generalizable, the findings of this study support the evidence in previous studies regarding the benefits of pleasure reading. Exploring the benefits of pleasure reading for students will contribute to the dissemination of at least a reevaluation of the importance of this concept by teachers and policymakers at all levels of education, from primary to university.

Regarding the first research question (what are the potential gains, in terms of personal growth, obtained by the ELT junior student teachers from this particular pleasure reading experience?), students stated that the experience of pleasure reading contributed to their personal growth in various ways. These benefits include gaining a new perspective, fostering self-reflection about their own life, increasing reading motivation, improvement in empathetic skills as well as imagination.

Concerning the second research question (what are the students' language-related gains?), students indicated that through this particular pleasure reading experience, they improved their vocabulary and learned new grammatical structures. Moreover, students stated that they became familiar with both the daily and literary use of English. They also noted that they had the opportunity to develop their discourse competence as well as many different language skills, namely reading, pronunciation, and inferencing.

Regarding the third research question (what are the students' culture-related gains?), the students stated that thanks to the novels they read, they got to know the perspectives of people living in a specific time period and gained intercultural awareness by comparing their own cultures with other cultures. In addition, students stated that they learned different ideologies and philosophies described in their books and learned some historical facts that are important for different societies.

Regarding the limitations of the study, due to the limited number of volunteer students participating in the study, it is difficult to obtain generalizable results. Another limitation of the study is that only descriptive analysis was made, and quantitative data were not collected. It is also recommended to use questionnaires and structured interviews in future studies.

Follow-up studies may also be carried out to determine the long-term benefits of pleasure reading. Students or teachers can establish reading clubs at schools to encourage reading more than one book, and it can be investigated whether the number of books read affects the results.

Scientific Ethics Declaration

The authors declare that the scientific ethical and legal responsibility of this article published in EPESS journal belongs to the authors.

Acknowledgements or Notes

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Exploring Challenges Faced by Managers Dealing with Multi-Generational Workforce

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Abstract: Hive Digital Media has a diverse employee workforce with employees from different generations. The management team is struggling to motivate the employees, instruct employees to perform tasks adequately and consistently and have seen an increase in employee turnover. This study aimed to explore the challenges managers facing when dealing with multi-generational workforce. Qualitative research was conducted among managers to understand how they manage multi-generational workforce. Purposive sampling technique was used to select the participants. One-on-one in-depth interview was conducted virtually, and open-ended questions were used to collect the data. The study found that managers should understand the different generations and their personalities as a base. Managers must then take the time to identify each employee as an individual person and what the need, wants and goals are of each employee. By managers upskilling themselves with knowledge on the different generations, they can equip themselves with the tools they need to solve the challenges successfully. Managers need to make a concerted effort to make time for communication and getting to know each individual employee. Using the information on the different generations as a base but gaining in-depth information on employees. It could be concluded that although it is important to understand the different generations, personalities need to be managed and categorising or stereotyping employees into generation groups needs to be avoided.

Keywords: Multigenerational workforce, Challenges, Personality, Communication

Introduction

Every business is different in the way they operate, but some similarities can be found across all businesses. A trending challenge that many businesses face currently is managing a multi-generational workforce. Each generation has its work values and beliefs. If a manager cannot address these differences adequately, it could harm the business.

Managers in the twenty first century workforce can find themselves managing up to five different generations explains Cushing (2019), adding value and diversity to their team, working together to achieve the workforce goals. Cushing (2019), adds that for these multi-generation teams to work together, it is the manager's responsibility to understand each generation, find common ground among the different generations, motivate, and inspire the team to work together to achieve the organisations goals, and create a successful work environment.

The current working generations are Baby Boomers (born between 1946 and 1964), Generation X (born between 1965 and 1980), Generation Y (Millennials) (born between 1981 and 1996), and Generation Z (born between 1997 and 2012). Differences exist in the work values and beliefs of employees from these different generations. Failure to address these differences can lead to conflict in the workplace, miscommunication, and

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lower employee productivity. This differentiation amongst the workforce is called workforce diversity. Handling such a complex diversity poses a challenge to Managers as they need to handle the employees who have different work ethics, ambitions, views, mindsets, and work styles (Adams, 2000). Therefore, the aim of this study was to explore the challenges experienced by management due to diverse workforce differences within Hive Digital Media.

Literature Review

Business Environment

Kemp (2016) explains that in the past employees had to adapt to an organisation to remain employed. Whereas in today's times, for an organisation to retain its employees, the organisation has to adapt to the employees' needs and wants. Authors, Heyns and Kerr (2018) advise that the change in workforce demographics is a concerning topic for managers and businesses. In a business, up to four different generational groups could exist.

Molefi (2018) adds to this stating that in the past businesses followed a hierarchy where senior positions were run by older employees and younger employees followed orders with no hesitation or questions asked. Molefi (2018) advises that currently, it is no longer about age but about the experience and performance of employees. This can create conflict with older employees un-accustomed to this way of business being run and taking orders from someone they see as a junior.

By gaining an understanding of the differences that exist between multigenerational employees, management and businesses can minimise workplace conflict, enhance business culture, and increase employee productivity, creating a pleasant and respectful workforce. Vugts (2016) conveys that insight into generational differences can help managers understand the needs of generations. This is backed by Kupperschmidt (2021) stating that managers who gain a thorough understanding of these generational differences can improve employee productivity by using the strengths of these generations to benefit the business and create a powerful workforce. Butler (2020) stresses that as there are policies against racism and sexism, policies should be put in place and supported by all employees, enforcing generations to work together. Butler (2020) further suggests that an organisation needs to work on a shift in culture to achieve a generational neutral workforce. Butler (2020) explains that employees need to work on their reactions when dealing with other generations. For example, an employee should avoid rolling their eye or a negative reaction when another employee admits to not knowing how to use a program like PowerPoint. The immediate response should be helping. This will create a two-way information-sharing environment and a stronger workforce. Butler (2020) advises that managers should build cross-generational mentoring programs and enforce the value that every employee is dependent on one another's success.

Schoeder (2019) shares the following tactics to improve generational communication: Managers should team up members with different strengths to complete a project. Approach challenges as the unbiased party and talk it out with the parties involved. Check-in with team members and teach them to check in with one another. Teach employees to approach situations with kindness and consideration.

Influence of External Factors

Creary et al. (2019) notes that generational categories can help managers understand employees, but managers need to make sure that this does not create biases and employees are seen for who they are as a person. External factors also take into consideration the productivity and behaviour of employees. A study by Beck and Harter (2021) reports that a manager influences employee engagement, turnover, and productivity in a business. Managers also play a vital role in positive business outcomes. There are several different management styles, each with its positives and negatives. Companies need to ensure that they hire a manager with a style that fits the needs and values of the business.

Papa (2017) reports that family life can affect an employee's behaviour. There is a big gap in the literature when it comes to external factors that influence employee performance and behaviour. The literature in this study confirms that understanding the different generations in the workplace is important as they can affect the workplace if not managed correctly. Just how family life can affect an employee's behaviour, factors like living

standards, physical health, mental health, personal priorities, and marital status can affect and impact an employee.

The most recent external factor affecting organisations is the outbreak of COVID-19. An article written by Mirza (2021) discusses the effect this pandemic has had on organisations and how the quality of leadership needs to be enhanced to deal with it. Mirza (2021) explains that tough decisions are being made to keep organisations from going into liquidation and these decisions have a great chance of affecting the workforce negatively. Mirza (2021) provides the following examples of challenges managers are currently facing in the workplace, ensuring that the workforce is motivated to achieve the organisational goals, stimulating multigenerational workforces engagement levels, continuously upskilling the workforce to keep up with the evolving nature of the industry, making sure new employees receive a productive and meaningful orientation and the increasing priority of managing employees' health and wellbeing.

Mirza (2021) notes that health and wellbeing issues are caused by the following examples: “fatigue resulting from excessive screen time, fear of losing the job compounded by feelings of inadequacy, career derailment, suppressing the rumour mill (gossiping), disciplinary issues, organisational politics, family pressures, separation anxiety for expats from their loved ones, and too much time to oneself”.

Research Methodology

Research Philosophy

Interpretivism is described by Maree (2016) as an approach that focuses on understanding humans from their perceptions of the world, observing the world of the participant from the inside. The aim is “to offer a perspective of a situation and analyse the situation under a study to provide insight into the way in which a particular group of people make sense of their situation or phenomena they encounter” (Maree, 2016). Since the study is focused on the views of the management team and gaining insight into the managers' world, interpretivism was used.

Population, Sample, and Sampling Strategy

A target population is defined by Saunders et al. (2019) as a “complete set of cases or group members that is the actual focus of the research inquiry, and from which a sample may be drawn”. The study target population is managers and comprised of Hive digital media Management employees. There are nine managers at Hive Digital Media. Eight managers were purposefully selected for this study who had more than five years of managerial experiences.

Data Collection

A semi-structured interview was used in this study. Data were collected using a one-on-one interview. The individual interview was audio recorded to note the groups' responses. Due to the COVID-19 pandemic and restrictions hosting a virtual interview was the most effective way to perform the interview. The email invitation was accompanied by a consent form for participants to read, sign and send back, along with a separate document with top-line information on the different generations and leadership styles. All invited participants accepted and took part in the interview over skype. An interview schedule was utilised.

The interview questions were formulated with the research objective in mind. The interviews were scheduled for an hour and all the interviews remained in that time frame. The participants were made aware that the interview would be recorded in the consent form (that was attached in the email invitation) and at the start of the interview. The instrument was made up of open-ended questions that were used to direct the conversation to achieve the research objective. The participants were asked the same questions in the same order, following the interview schedule. The interview began with a welcome and brief on the study. This transitioned into discussing general demographic information. The next topic of discussion was challenges managers experienced due to diverse workforce differences within Hive Digital Media.

Data Analysis

After all the interviews were conducted, the researcher listened through all the audio again and transcribed the answers using Microsoft word. Thematic analysis was used to analyse the qualitative data. The participant's answers in word format were then coded according to the research questions and common themes. The data was prepared for analysis by being coded and organised, grouping it into different categories, using NVivo (an online computer software program that assists researchers analyse qualitative data) and Microsoft excel. The answers received from the participants were checked for common themes. Common views, patterns, or themes that reflect repeatedly in the received data. Graue (2015) explains that coded data is analysed and assists in drawing conclusions which are then used to present the findings.

Ethical Considerations

Ethical approval for the study was obtained from the MANCOSA ethics committee. Permission letter was also obtained from the organisation before collecting the data. Participation in the study was voluntary and they could withdraw from the study any time they wished to without any penalty. Confidentiality and anonymity was maintained at all times.

Findings and Discussion

The interview results confirmed that managing a multigenerational workforce is challenging. The increase in diversity in the workplace is beneficial for an organisation but it can also present challenges, as the generational divide among employees create differences. Most of the participants responded that they found managing a multigenerational workforce challenging.



Figure 1. How participants find managing a multigenerational workforce

Figure 1 displays the other feelings the participants have around managing a multigenerational workforce. Two participants find managing a multigenerational workforce interesting. A participant explains how they find it challenging, unpredictable, and ever-changing.

Participant three: *“Challenging, unpredictable, not easy, and ever-changing. You are managing people from different backgrounds and age groups. As a manager, you must adapt and be malleable and keep up with the trends of different management skills and needs of particular individuals so that they all feel heard and included.”*

Goins (2021) suggests that managers who manage a multigenerational workforce should minimise generational stereotyping, improve their communication, and work on innovative training plans, to see results. All generations want to feel respected and appreciated, and if managers are successful in making their workforce feel this way productivity will improve and increase (Goins, 2021). One participant responded that they have no problems with their multigenerational team as they feel it comes down to personality.

Participant two: *“Finds it fine and has no issues. Personality has an impact on a person’s work ethic.”*



Figure 2. Challenges faced by the managers

Figure 3 gives a visual display of the different challenges managers face managing a multigenerational workforce. Four themes were discovered from the interview results: differences, communication, work tasks and external influences.

Theme One: Generational Differences

The results provided many differences between generations. As presented in figure 3, the differences in generations were reflected as younger versus older.



Figure 3. Generational differences

Sub Theme: Young Versus Older Generation

Subramanian (2017) explains the differences among the different generations. The traditionalist generation is largely disengaged with technology, prefers to communicate through the form of a letter or face to face and have the attitude of working at a job for life. Baby boomers are early technology adopters, prefer to communicate through the form of a telephonic conversation or face to face and have the attitude that employers define their careers. Generation X, known as digital immigrants, prefer to communicate through the form of email, text messaging or telephonic conversation and have the attitude of being loyal to the profession and not the employer. Generation Y, known as digital natives, prefer to communicate through the form of text messaging or social media and have the attitude of wanting to work with companies and not for them, making them digital entrepreneurs. Generation Z, known as being highly dependent on technology, prefer to communicate through the form of new technology and are often found moving from one company or job to the next.

Older employees are thought to be more diligent, on time, follow professional conduct, have respect, are loyal, follow processes easier, struggle with technology, set in their way and disciplined. The younger generation is thought to be almost the opposite of the older generation. With respondents labelling the younger generation as being better affray with technology, implementing tasks easier, don't have a sense of urgency, needing constant support and reminding, not much respect, and not set in a routine and can work from anywhere. For example, a participant expressed that:

Participant eight: *“Older employees are more disciplined than younger employees. Younger employees are more free-spirited (casual, easy-going about things). Get more innovation from younger employees. Younger employees tend to question decisions more. You can give an older employee instruction and they just follow it; they don't ask questions they just get it done.”*

Kemp (2016) advises that millennials have been stereotyped as being lazy, entitled, having poor communication skills, and lacking in commitment and loyalty. He suggests that managers should rather get to know the employees than allow stereotypes to affect their decisions. Kemp (2016) goes on to explain that managers may find that millennials may be asking questions to gain a better understanding and not trying to be disrespectful. And what may seem to be lazy is just the efficacy that comes with millennials being *technologically* savvy.

The information that came out of the difference between the generations also reflects in the results from the challenges faced when managing the different generations. Meaning that the differences between the older and young generation are a challenge as managers must spend time trying to get the two generations to understand, respect and learn from each other.

Sub Theme: Character and Level of Maturity

Creary, et al. (2019) argues that the generational differences are not because generations change but because as employees get older, they forget how it was when they entered the workforce. One participant responded that the younger generation does need more handholding, but finds that it is based more on personality and maturity: Participant seven: *“It is a personality difference as well, as they're different maturity levels. For example, a generation Y employee can display the same maturity level as a generation Z employee and needs more handholding.”*

Theme: Communication

Graystone (2019) states that managers need to practice effective leadership by understanding and utilising the different types of communications for each generation. Good communication is the key to a successful workforce. The theme of communication was revealed in many different forms. In one form communication is a challenge where the younger generation do not know how to communicate in a business environment and therefore, they come across as disrespectful and aggressive. Another form is that the younger generation talks in a different language (using different terminology) and therefore things can get lost in translation. Participants feel that more time needs to be invested in communication.

Participant one: *“The younger generation not knowing how to communicate in a business environment can come across as aggressive, whereas the older generation knows how to communicate in a business environment.”*

Participant two: *“The older generation is more functional whereas the younger generation is more conceptual. The way they communicate can get lost in translation or need to invest more time in communication.”*

Even though this form of communication was not flagged by the respondents as a major challenge, it is still a challenge that is faced. One participant reported that the younger generation is extroverted were the older generation prefer to work in silos which slows tasks down.

Participant seven: *“There is not a massive challenge between the different generations. They work in very different styles and so the younger generation has a far more extroverted, talk a lot, collaborative way of working, were as the older generation work a lot in silos which can hinder communication. Different work styles and communication.”*

Communication in the form of technology versus face to face was also presented as a challenge. An employee's preferred form of communication is influenced significantly by generation reports Philip and Netra (2021) stating that Generation X, Y and Z were raised in the technology-driven world and are accustomed to using laptops and cell phones as a form of communication and therefore prefer to receive communication this way. Even though traditionalists and baby boomers are picking up on technology, they were not raised in a technology-driven world and therefore prefer to communicate in a formal and direct form. Where the younger generation is used to virtual meetings and communicating through chat platforms like slack and WhatsApp. The older generation prefers communicating through email, over the phone or face to face. This communication barrier causes a challenge as the younger generation feel that waiting for an email slows things down, whereas a quick WhatsApp message can be answered faster.

Participant five: *"The younger generation is very comfortable jumping between communications. Whereas the older generations are very set in using emails and documents. It causes delays in tasks and getting things approved when you need to wait for an email rather than just chatting on slack."*

Face to face communication is a big challenge for the sales team as the sales team needs to go out and see clients. The results reflect that the sales team is made up of the younger generation who prefer to communicate with clients through chat platforms or virtual meetings. The big challenge the managers are facing is motivating the sales team to go out and have face to face meetings with clients.

Participant one: *"The millennial team started in 2019 just before Covid19 and have not really had face to face interaction with clients and are now not comfortable with meeting clients face to face. They prefer meeting on Zoom, so it is a challenge to get them out there and meet clients face to face."*

Lack of respect between generations is a big challenge that was revealed from the results. Molefi (2018) advises that currently, it is no longer about age but about the experience and performance of employees and this can create conflict with older employees un-acustomed to this way of business being run and taking orders from someone they see as a junior. Baby boomer employees are put off by abruptness, disinterest, people feeling superior to them, and political incorrectness. Employees must work on their reactions when dealing with other generations, suggests Butler (2020). For example, an employee should avoid rolling their eye or a negative reaction when another employee admits to not knowing how to use a program like PowerPoint and the immediate response should be helping. Three participants explained experiences they had where they had to try to mitigate between an older and younger employee due to the older employee feeling that the younger employee was being disrespectful.

Participant six: *"Lack of respect between employees. A younger employee spoke disrespectfully to an older employee. The younger generation feels very entitled and see everyone on the same benchmark and doesn't understand that they come across as disrespectful."*

With all the different forms of communication, in the bigger picture communication between generations is a big challenge in a multigenerational workforce.

Theme: Work Tasks

The interview results display interesting cases where work tasks are affected by different generations. The participants found that the younger generation does not see the value or necessity in using some of the data capturing platforms the company use as they see them as a waste of time. It was also found that the older generation is more task-driven and completes tasks faster whereas the younger generation gets distracted easily and don't see the task to completion.

Participant two: *"Some of the admin staff, who are the oldest, are some of the fastest on the team. They are very hard working. Older staff are single task-driven were as the younger generation get distracted and don't take the task through to completion."*

Three participants report their experience with the younger generation not taking deadlines seriously and lacking urgency. This was a common theme that came up in the interview answers.

Participant three: *“Millennials and more relaxed in tasks and in an emergency operation mode they lack the sense of urgency.”*

One participant reported the total opposite responding that even though the task is not done well, the younger generation can multitask better and finish tasks faster.

Participant six: *“Some of the admin staff, who are the oldest, are some of the fastest on the team. They are very hard working. Older staff are single task-driven were as the younger generation get distracted and don't take the task through to completion.”*

The interview results show that the older generation is very set in their ways and find it difficult to adapt to the modern corporate world.

Participant four: *“On the older generation side, a lot of the staff have been with the company for over 15 years and like to look back at what they used to do, which does not work with this current time that we are in. The challenge is to get the older generation to think out of the box and not continue to do what they have always done. The younger generation is keen on new ideas and forward-thinking.”*

A challenge is presented with the idea (that stems from the older generation) that if you are not at the office working from eight in the morning till five in the afternoon, then you are not working. A participant shares an example of this:

Participant eight: *“For example in the development team, the younger employees like to work at night and sleep during the day. It's challenging to adapt to that way of thinking and working as the older generation want to work during the day and sleep at night. You need to think out of the box and can't stick to the traditional work mentality (8-5 workday in an office). There is a perception that if an employee is not in the office they are not working, and that is not the case. Some employees prefer to work from home and do a good job.”*

A participant also expressed how professionalism among the younger generation is a challenge:

Participant six: *“The younger generation needs to understand that there is a certain amount of professionalism and etiquette and reliability with the fact that work is work and we take it seriously and must stick to certain routines and procedures even if we are off-site. They don't stick to professionalism and start to feel like they are being micromanaged and do not like it.”*

Theme: External Influences

The results presented several challenges that managers face due to generations. As well as participants reported that the challenges are not based on generation but personality. The interview results also provided thirteen external influences that affect employees and cause challenges in the workforce. Anxiety is a challenge across all generations and affects employees' productivity.

Participant four: *“The stress levels are taking a toll and the team are tired and trying to get through the day-to-day.”*

Health issues also present a challenge with employees choosing not to be vaccinated or needing to take time off work, do not function at their full potential or are distracted. A participant explains how they have found that employees are using COVID symptoms to avoid going into the office.

Participant seven: *“On a lot of occasions where employees are displaying COVID19 symptoms and cannot come into the office, some people use it as an ongoing excuse not to come into the office, taking advantage of the situation and avoiding the extra supervision that they should get because of their work style.”*

Personal issues and spousal issues also present a challenge where employees are not focused or need time off work. Papa (2017) reports that family life can affect an employee's behaviour. This challenge seems to be heightened by the COVID19 pandemic, as one participant mentions how there was never so many employees needing time away from work. The most recent external factor affecting organisations is the outbreak of COVID-19. Mirza (2021) discusses the effect this pandemic has had on organisations and how the quality of leadership needs to be enhanced to deal with it.

Participant five: *“With Covid19 people and family getting sick affects people emotionally. Where the person is working on tasks, they need to step away to deal with personal problems. Before there was not so many people or time that people have needed to take off to deal with personal problems, like family losing jobs, having to move and being ill.”*

New parents and single parents are also big external challenges that have become even more challenging due to the COVID pandemic. Participants describe how they have challenges with employees who are single parents and are battling financially and emotionally. As well as new parents who are needing time off for scans (male and female) and that they cannot come back to work as they have no one to look after their children, and while working from home are distracted by their children.

Participant two: *“Staff with new babies, there is a struggle to come back to work, not working at full capacity because it is easy to get distracted with a baby.”*

Two-way communication can become effected and difficult, explains Ramlan, et al. (2018) when there is a language barrier. A participant explained their personal experience with challenges they face due to language. Where they have not been taken seriously because they are not fluent in a certain language. They even had to take lessons to improve their language so that they can try and solve the challenge.

Participant eight: *“The language barrier makes it difficult to communicate. People think that if you cannot express yourself in a certain language, you don't know about a certain topic.”*

Living far from work and travelling is another external challenge that is faced by employees. Office time is wasted by employees being stuck in traffic. Fuel becomes a costly expense for employees having to travel a distance to work. As well as employees that work remotely, don't have the office support that the employees have that can go into an office.

Participant three: *“Travelling, live far from the office so the cost of travelling became exorbitant.”*

Office structure is a challenge that a few participants felt very strongly about. Mentioning that all the offices have an open plan office structure which is very distracting. Participants explain how certain employees are not as productive in an open plan office as they get easily distracted. Another participant explains how an open-plan office creates a challenge with noise levels.

Participant three: *“It is an open office structure and there are more animated in their energy, communication, and conversations, neglecting the fact that it is an open office, and you need to be professional and cognisant that you are sharing a space with other people. So when you talk you need to be mindful of that. The noise level is a challenge.”*

Participants found that some of their employees were a lot more productive working from home, were on the other hand other employees were the complete opposite. When the team had to work shifts of half on and half off, it was very disruptive, and employees could not get into a routine.

Participant seven: *“Working half in the office and half at home there is a difference in productivity in people. Some people respond well to working in the office and it brings out the best in them. Whereas some people cannot handle the level of distraction that is in an office.”*

Loadshedding and the internet were found in the results as external influences. The constant loadshedding is disruptive and can cause employees to lose hours of work time or fall behind on work, causing tasks to take longer to complete.

Participant six: *“Load shedding stops people from being online and disrupts the workday.”*

Participants explained how data became a challenge with all the employees working from home and needing to use the internet through a dongle as they could not get access to the supplied office internet. As well as how employees have bad internet signal where they live and battle with connection issues.

Participant two: *“Connectivity issues, where staff have to work at the office due to blaming incomplete work on connectivity issues.”*

Only one participant out of the eight felt that the workplace challenges are not caused by external influences but by generational differences.

Participant one: *“External influences do not affect the team. One member with family issues but not a big impact. Challenges come from generational differences.”*

Papa (2017) reports that family life can affect an employee's behaviour. There is a big gap in the literature when it comes to external factors that influence employee performance and behaviour. Results from the participants give a clear indication that external influences play a role in the performance of employees, across all generations. The literature in this study confirms that understanding the different generations in the workplace is important as they can affect the workplace if not managed correctly. Just how family life can affect an employee's behaviour, factors like living standards, physical health, mental health, personal priorities, and marital status can affect and impact an employee.

Conclusion

Even though the managers at Hive Digital Media face challenges in their teams, they will have better leverage and success rate if they work on gaining knowledge on their team as individuals, understanding what makes these individuals want to continue working at the company and the best way to lead them.

Recommendations

It will be beneficial for Hive Digital media re-evaluate their monthly team meetings and structure them around being 50% informative and 50% team building. In this way, the team is being informed of important company information, information is being shared that keeps the team feeling involved and valued, and the managers are learning about their team through the team building activities. It is the important details that Hive Digital Media managers need to learn about their employees.

To improve the Hive Digital Media workforce and make the team even more successful, employee evaluations need to be conducted and managers need to develop strategies around the results of the evaluations. The company can look at employing a human resource employee to assist the managers with the time-consuming task of finding out important employee information. In addition, assist with building and implementing employee engagement strategies.

Scientific Ethics Declaration

The authors declare that the scientific ethical and legal responsibility of this article published in EPESS journal belongs to the authors.

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Psychological Assessment of the Wellbeing and Economic Related Issues of the Albanian Population Living in the Pandemics

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Abstract: As Covid19 pandemic exposed all people to be living in the pandemic, psychological concern was raised referring to vulnerable populations who could be developing psychological concerns. Therefore, during November 2022 an assessment survey was launched online aiming to screen and assess the psychological wellbeing of Albanian adults referring to their level of education and economic relatedness. Objectives of the study consist in (i) assessing the socio-demographic and economic data referring to the perceived financial expectancies and hopefulness; (ii) screen the psychological concerns related to mental health and wellbeing in relation with their economy; (iii) assess comfortability when meeting others with levels of education. Data was processed through SPSS and was analyzed using non-parametric Chi square tests and crosstabulation. Results showed that economic problems are relevant to the level of personal revenues. Sensitivity towards mental health problems is detected with the rise of the level of education. People's capacities to resuming life just like before the pandemic has no relationship with personal revenues. Still, people report that meeting the others does not make them feel better and calmer, and makes people feel happier only in minor cases. Conclusions show that social distance could have taught people that being physically distant from others, has their own benefits.

Keywords: Psychological wellbeing, Mental health, Education level, Revenues level, Economy.

Introduction

The technical committee of experts for the Covid19 outbreak launched the Reopening strategy which started in May 2020 considering that 90% of the business and activities would open except public transportation and gathering of more than 10 people. The opening happened progressively where all activities including universities and working in person was accompanied by an inclusive vaccination campaign. In October 2022 the decision of the committee of experts decided that "even though there has been a raise in infection rate, restrictions will remain the same" referring to the curfew from 23.00-6.00 am, holding masks, and other conditions of vaccination issues. The spike of the pandemic was worldwide and engaged many research in different countries to investigate wellbeing. Therefore, a COVID-19 Psychological Well-being study was conducted in UK during March 2020 and many other studies in China (Alamsyah & Zhu, 2022). where authors intended to assess how "information overload predicts anxiety and satisfaction" in life. Studies were conducted to assess whether researchers were able to move during the as a result of training, from the "fear zone to the knowledge zone and then to growth zone (Kunar et al., 2020). Where was discussed even the level of productivity in time of stress and anxiety. Youth and their mental health are seen in a "great danger during the pandemic (Branquinho et al., 2022) etc. Research refers to levels of education, specifically university students who report a higher number of negative effects including: Relationships, sleeping eating. (Branquinho et al., 2022). etc.

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After conducting an international study in 2020 by a group of authors (Glotser et.al.,2020), referring to wellbeing (including psychological flexibility and social support as the largest predictors on wellbeing), it was reported that higher educational levels are associated with higher levels of wellbeing. Research shows that levels of education may alter the level of worries in people since they build up their own protection regarding anxiety and stress; a study in Lebanon showed that “a lower level of education was found to be associated with higher health worries” (Bou Hamad et al., 2021). A study in Denmark focusing on wellbeing before and during the pandemic report a decreased level of well-being observed among both genders and age groups: interestingly the decrease of wellbeing was reported higher in low education level groups (Thygesen et.al.,2021). A Study in Spain reports that during Covid19 pandemic, the most vulnerable populations were women, youths, people with basic or medium level of education, students and single or reduced number of children people (Gonzalos et al., 2020). In many cases, the pandemic highlighted the difference between social classes (Buheji et.al.,2020) and economic impact of the pandemic (Rodríguez Rey R et al., 2020).

Objectives of the study are presented as below:

- Assess the socio demographic and economic data of the respondents referring to the perceived financial expectancies and hopefulness when living in the pandemic
- Screen the psychological concern related to mental health and wellbeing while living in pandemics in association with levels of education
- Assess the pandemic individual social-functioning in terms of worry and social comfortability when meeting others in person

Hypothesis:

1. Ho: The perception of economic problems is not associated with levels of revenues
H1: The perception of economic problems is associated with levels of revenues
2. Ho: The perception about the rise of psychological and mental health problems is not associated with levels of education
H1: The perception about the rise of psychological and mental health problems is associated with levels of education
3. Ho: Perceptions of worry and comfortability from social contact is not associated with levels of education
H1: Perceptions of worry and comfortability from social contact is associated with levels of education

Methods

Research Design

A cross-sectional research design was used for the study where Albanian adults completed an online questionnaire via Google form launched in different social online media channels. The period of data collection was from November 14th to November 29th. During this time of pandemic, restrictions were limited only in the curfew but all working places and universities were opened associated with a raise in infection rate, while living in the pandemic.

The sample consisted in Albanian adults starting from 18+. Data was collected anonymously in 217 respondents. Participants were given information about the nature of the survey and provided consent for the data collection.

Researchers reviewed and launched for the second time the questionnaire which had been used during the first lockdown in 2020. The questionnaire was self-administered and declarations ranged in a Likert Scale (ranging from 1-5: Strongly disagree = 1, to strongly agree = 5) referring to a high level of agreement of each item. The instrument was piloted in 30 respondents, to further adapt with the requirements of the study for this period of time. Data analysis was processed vis SPSS, where researchers compiled descriptive and crosstabulation data.

For the purpose of this paper, we extracted cardinal questions related to economy, mental health issues and social contacts during the pandemic. Below there is a presentation of some socio-demographic data of the respondents in this study.

Table 1. Socio-demographic and economic data of the respondents (N=217)

Table 1.1.1. Gender					
		Frequency	Percent	Valid Percent	CumulativePercent
Valid	Female	160	73.7	73.7	73.7
	Male	57	26.3	26.3	100.0
	Total	217	100.0	100.0	

Table 1.1.2 Age					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	18-24	116	53.5	53.5	53.5
	25-34	50	23.0	23.0	76.5
	35-44	30	13.8	13.8	90.3
	45-54	11	5.1	5.1	95.4
	55-64	7	3.2	3.2	98.6
	65-70	3	1.4	1.4	100.0
	Total	217	100.0	100.0	

Table 1.1.3 Educational level					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	High school level	32	14.7	14.7	14.7
	Post-university level	50	23.0	23.0	37.8
	Basic level	3	1.4	1.4	39.2
	University level	132	60.8	60.8	100.0
	Total	217	100.0	100.0	

Table 1.1.4. Revenue' level (approximately)					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	30.000-40.000 lek	24	11.1	11.1	11.1
	40.100-50.000 lek	34	15.7	15.7	26.7
	50.100-60.000 lek	25	11.5	11.5	38.2
	60.100-95.000 lek	35	16.1	16.1	54.4
	95.000-120.000 lek	12	5.5	5.5	59.9
	Less than 30.000 lek	69	31.8	31.8	91.7
	over 120.000 lek	16	7.4	7.4	99.1
	Retired	2	.9	.9	100.0
	Total	217	100.0	100.0	

The first part of the survey included questions related to gender, age, educational level and personal revenues. Most of our respondents 73.7% are female and 26.3% are male. The majority of respondents are from 18-24 years old (53.5%); 23% are from 25-34 years old; 13.8% belong to the group age from 35-44; 5.1% are from 45-54 years old and 4.6% belong to the age group between 55-70 years old. Referring to the educational level, only a few participants representing 1.4% of the sample have a basic level of education. 14.7% have a high school level and the majority of the participants have a university (60.8%) and post university level (23%). From the sample, 31.8% of respondents have less than 30.000 lek per month (the minimum wage allowed in Albania from January 2022, it was not such during the data collection). 11.1% declare personal revenues in the revenue level between 30.000-40.000 lek. 11.5% represent individuals who have 50.100-60.000 lek/month; 16.1% of the sample represents 60100-95.000 revenue category and 7.4% declare to have more than 95.000 lek/month as personal revenue. Only a few respondents represent retired population (0.9%).

Other parts of the questionnaire include:

- Information referring to the economic situation expected in the upcoming 12 months, questions comparing this period of time with the last two years etc. aiming to screen the economic expectations and then hopefulness that respondents have to make savings in the upcoming months.
- Information regarding individuals' perception referring to the economic situation, power to resume life and perceptions about the presence of psychological and mental health problems in relationship with levels of education and grouped revenues.
- Information regarding perceptions of the social contact in person and its effect on people's relaxation, happiness and comfortability.

Results

1. Perceived Financial Expectancies and Hope during the Pandemic

Respondents' financial situation and expectations for the upcoming 12 months were asked. The principal questions have been presented in the descriptive tables (1.1.5; 1.1.6; 1.1.7; 1.1.8) as attached, reporting that for the majority of the respondents (47.9%) report there is no difference regarding their family financial situation in the last 12 months (referring to the timeline between November 2020-November 2021). For 34.5% of the cases, the situation has become worse and for 18.9% of the cases the financial situation has improved. However, 38% of the cases report that the situation is expected to get worse. 35.9% of respondents are quite optimistic that the financial situation will improve and 25.3 remain without a distinctive answer. Albanian adults assert that in the coming 12 months they plan not to purchase furniture or electric supplies for the house in the majority of the cases (56% of the cases), only 24.4% report they will purchase these goods in the same level as before and 7.4% remain uncertain. 43.8% of our respondents declare they will not have the possibility to make savings in the upcoming 12 months. 41.9% of respondents declare it will be possible and 14.3 % are not certain about this. In order to further investigate this moment in terms of grouped revenues and levels of education, crosstabulation and chi-square tests have been utilized.

Association between Financial Situation and Level of Revenues

Aiming to see whether there is any association between the financial family situation in the upcoming months and the level of revenues show that the financial situation has been getting worse for the range between 40.000-60.000 lek/month in 47.5% of the cases, representing the most sensitive revenue group. For families under 40.000 lek, the situation has become worse in 37.8% of the cases. With the increase of the revenues, it is noticed that there is not a higher level of optimism, however they have a lower perception about the financial situation in the upcoming months. In conclusion, the financial situation is dependant from the level of revenues. People's perception about the change of the financial situation during the last 12 months is dependant from their level of revenues.

Table 2. Change of the financial situation over the last months and grouped revenues Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	34.366 ^a	15	.003
Likelihood Ratio	34.250	15	.003
Linear-by-Linear Association	4.754	1	.029
N of Valid Cases	212		

a. 13 cells (54.2%) have expected count less than 5. The minimum expected count is .53.

Perceptions about the likelihood of making savings in the upcoming 12 months is positive in the group of respondents having the highest level of revenues. Savings are dependent from the level of revenues.

Table 3. Likelihood to make savings in the upcoming 12 months and grouped revenues Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	34.170 ^a	12	.001
Likelihood Ratio	34.239	12	.001
N of Valid Cases	212		

a. 7 cells (35.0%) have expected count less than 5. The minimum expected count is 1.98.

Table 4. Perception about economic problems of today, in comparison with two years ago, with levels of education. Chi-Square tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	3.406 ^a	8	.906
Likelihood Ratio	3.246	8	.918
N of Valid Cases	206		

a. 7 cells (46.7%) have expected count less than 5. The minimum expected count is .84.

In the meantime, referring to the question "economic problems perceived today in comparison with two years ago with levels of education" data shows that despite their levels of education, respondents report that this period of time reflects more economic problems in comparison with two years ago.

2. Psychological Wellbeing and Mental Health in Association with Education and Revenue Level

In the study, respondents were asked about their perception regarding more economic and mental health problems during this time, in comparison with two year ago. Respondents perceive in 77.2% of the cases that there are more economic problems, since this is evident in their family pockets. Regarding the presence of mental health problems, respondents are aware in 75.3% of the cases that there is a rise in mental health problems. Mental health problems have been reflected more during the Covid19 pandemic in comparison with two years ago, as reported from all respondents. Mental health problems are easily detected with the rise of the level of education. Referring to our example, respondents with a high school level of education, report 58.6% sensitivity to the concerns of mental health; university and post-university level respondents report in 75- 79.1% of the cases.

Table 5. Psychological wellbeing in association with levels of education Chi-Square tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	10.173 ^a	8	.253
Likelihood Ratio	9.593	8	.295
N of Valid Cases	207		

a. 6 cells (40.0%) have expected count less than 5. The minimum expected count is .98.

Levels of Education and Perceptions about the Economic Situation

Chi square tests shows that the educational level is not an indicator showing people who perceive the power to successfully resume life as before the pandemic. Crosstabulation shows that the power perceived to resume life is seen in 25-30% of the cases maximum despite their level of education.

Table 6. Perceptions about this period of time, in comparison with two years ago, and resuming life Chi-Square tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	2.892 ^a	8	.941
Likelihood Ratio	2.947	8	.938
N of Valid Cases	203		

a. 3 cells (20.0%) have expected count less than 5. The minimum expected count is 1.52.

Revenue Level and Perceptions about the Economic Situation

Economic problems have arisen during the pandemic, in 70- 80% of respondents. Economic problems are relevant to the level of personal revenues. We observe that for 78.6 % in people's revenues until 40.000 economic problems are quite evident. 80.7% of the revenue group from 40.000-60.000 consider the same pattern; 73.3% from 60.000-95.000 and 69.2% in the revenue group over 95.000 lek. Perceptions about the economic situation are associated with the revenue level.

Table 7 Revenue level and perceptions about the economic situation Chi-Square tests

	Value	df	Asymptotic significance (2-sided)
Pearson Chi-Square	11.012 ^a	12	.528
Likelihood Ratio	12.407	12	.414
Linear-by-Linear Association	2.184	1	.139
N of Valid Cases	206		

a. 9 cells (45.0%) have expected count less than 5. The minimum expected count is .76.

Mental Health Problems and Revenue Level

The presence of psychological and mental health issues is more sensitive (70% of the cases) to the grouped revenues until 40.000 lek. With the rise of the revenue level, there is a decrease of perception 42.9% is seen in 40.000-60.000 lek, and it gets lower by 24.9% individuals earning 60.000-95.000; 21% is the level of perception in the highest revenue level. As a conclusion, we might say that referring to our example Perceptions about problems related to psychological and mental health problems is strongly related to levels of revenues. The higher the revenue level, the lower the perception about the presence of these issues.

Table 8. Perception about risen psychological and mental problems with grouped revenues Chi-Square tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	14.475 ^a	12	.271
Likelihood Ratio	16.356	12	.175
Linear-by-Linear Association	2.748	1	.097
N of Valid Cases	207		

a. 9 cells (45.0%) have expected count less than 5. The minimum expected count is .95.

Perceptions about Resuming Life and Revenue Level

Pessimism is reported in 41.2% of grouped revenues until 40.000 lek, representing the low level of revenues. By the increase of the level of revenues, however, there is not a more optimistic view about the power people perceive to resume life after the pandemic. Grouped revenues with higher level of revenues, do not perceive the situation as more optimistic neither.

Table 9. In your perception, in this period, in comparison with two years ago, you have the power to resume life (there is no difference, life is the same) Chi-Square tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	12.956 ^a	12	.372
Likelihood Ratio	12.082	12	.439
Linear-by-Linear Association	.005	1	.944
N of Valid Cases	203		

a. 5 cells (25.0%) have expected count less than 5. The minimum expected count is 1.35.

3. In Person Contact and Social Worry and Comfortability

Still, people report that meeting others, during the pandemic, does not particularly make them feel comfortable in 27% of the cases; in 27.5% they feel comfortable and 18% of the respondents do not provide a clear answer about this statement (18%). On the contrary in 21.4% of the cases it makes people feel worried; meanwhile in 40% of the cases, they report they do not feel worried. This question was made because during the lockdown people reported not to feel good because they were not meeting others. Social distance could have taught people that being physically distant from others, has their own benefits.

Respondents do not feel worried when meeting others while living in Pandemic, however they do not feel relaxed due to the contact neither (aprox.30% in post-university level). It is interesting how the post-university level is more opened to reporting their perceptions about feelings related to worry, relaxation and happiness in a clear way. This level remains the more sensitive about meeting people in person during the pandemic and the more enthusiastic too. During the pandemic, meeting others makes people happier only in minor cases and the happiness in meeting people in person during the pandemic is evident in 35 % of the cases only for the post-university level. 51.3% of the respondents do not have a clear approach of their own regarding social contacts referring they do not know. Only 18% of the cases refer that they do not feel happy when meeting others. Should this be a dilemma regarding social connections vulnerability or avoidance of the others, remains an issue to be detected with further analysis.

Table 10. During this period, I feel worried when I meet others Chi-Square tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	11.484 ^a	8	.176
Likelihood Ratio	11.832	8	.159
N of Valid Cases	205		

a. 3 cells (20.0%) have expected count less than 5. The minimum expected count is .96.

Table 11. During this period, when I meet others, I feel relaxed with levels of education Chi-Square tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	9.228 ^a	8	.323
Likelihood Ratio	12.392	8	.135
N of Valid Cases	200		

a. 4 cells (26.7%) have expected count less than 5. The minimum expected count is 1.26.

Table 12. During this period, when I meet others, I feel happy with Levels of education Chi-Square

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	7.903 ^a	8	.443
Likelihood Ratio	8.011	8	.432
N of Valid Cases	199		

a. 7 cells (46.7%) have expected count less than 5. The minimum expected count is .81.

Conclusions

This paper represents some findings of a survey study conducted during the Pandemic in Albania to a population of adults who with their own consent filled in an online anonymous survey launched via social channels. Aiming to make an assessment of the economic situation and perceptions, mental health issues and perceptions in association with revenue levels and educational levels and assess the comfortability and worry from social contacts while living in the pandemics, referring to our example, results of the study are as the following:

The financial situation is dependent on the level of revenues reflected in diverse perceptions people have on the situation of the pandemic. Respondents perceive there are more economic problems in comparison with two years ago, despite their level of education. Economic problems have arisen during the pandemic, in (70- 80%) of respondents and they are relevant to the level of personal revenues.

There is a distinctive perception regarding the arise of the mental health problems in comparison with two years ago, as referred from all respondents in the study. Sensitivity towards mental health problems is detected with the rise of the level of education. Referring to our example, respondents with a high school level of education, report 58.6% sensitivity to the concerns of mental health; university and post-university level respondents report in 75- 79.1% of the cases.

The grouped revenue is not an indicator showing people who have the power and hope to resume life as before the pandemic. Mental health concerns are more present in comparison with two years ago to all respondents (in approx. 70% of the cases). Mental health problems are not dependent from the level of revenues people have. People's capacities to resuming life just like before the pandemic has no relationship with personal revenues. Social contacts in person do not make people feel calmer or even comfortable in their contacts. Referring to our example, 30% of the people feel happier when meeting others.

Future Research and Limitations of the Study

The study was conducted online, even though we cannot generalize the results, they represent a trend. The online survey remains the safest data collection technique during the pandemic times however. The sample is not very large and there is a low representation of retirees and old adults, and a major representation of women respondents, hence researchers tried to treat and discuss results with attention. Considering the pandemic changes in our life over the months, the emergence of different viruses and its implication; the insecurities risen because of other huge events in Europe challenging psychological wellbeing, connections and economy, authors of this paper consider important the longitudinal prospective research in this area of study.

Scientific Ethics Declaration

The authors declare that the scientific ethical and legal responsibility of this article published in EPESS journal belongs to the authors.

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Digital Transformation in the MICE Industry (Powered by Zoho Backstage)

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Abstract: Business challenges happen to operating MICE events nowadays due to the pandemics and the globalization. The management of event planner company needs to improve the performance of the organization by implementing innovations and technologies to survive the business during this situation. ZOHO Backstage is one of the options that event business can apply to operate a digital event with many features related. The objectives of this study are to study the features of ZOHO Backstage, and to provide the knowledge and technological awareness. This web-based event application features are including registration, event stakeholder management (event planning team members, speakers, attendees, sponsorships, and exhibitors), marketing tools, and data analytics. The finding of this study showed that participants who attended the workshop were agree that ZOHO Backstage is one option to use for the MICE event business related to the features together with its characteristics in security and privacy, application performance, and ease of implementation due to the advantages of cloud-based system. Practically the finding of this study will also help event planning company and related organization to improve the knowledge and skills in event application, and able to support the business in the future. This application will be one of the options for them to have competitive advantages for MICE industry.

Keywords: MICE application, Web-based application, ZOHO backstage, MICE industry

Introduction

Challenges in business operation are spreading around the globe. Many companies need to make change during unstable situation such as shutting the offices and requiring most of employees to work remotely at home in the situation of covid 19 pandemic. Business travelers did not have a chance to travel across the boundary to meet the clients. The participants can not join the professional conference. Exhibitors were not able to show their products and business showcases in the trade fair. During this crisis, event professionals were freezing and trying to find the options to do the business. Digital transformation is helping industries to improve the way they do businesses. Opportunities and challenges during this information era, transformation and upgrading in technologies related are urgency for the MICE industry.

Implementing Technology to MICE Industry

MICE industry is investing in the use of technology, from applications to various channels, in organizing and implementing their events. Right event management tools can empower organizers to push boundaries in delivering events and boost customer experience. To resume the business, virtual event became a great deal for MICE industry. To operate the business during the pandemic and strengthen the technological platform in the business, Thailand Convention and Exhibition Bureau (TCEB) launched the Virtual Meeting Space (VMS) to support organizers to stage their meetings via webinar and hold exhibitions on O2O (Offline to Online) platform. Furthermore, TCEB has set up the TCEB COVID-19 Center and portal to provide real-time and up-to-

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date information for both domestic and international target groups. (Corporate Image and Communication Department & Thailand Convention and Exhibition Bureau, 2020).

Trend in MICE industry is not only focusing on technological implementation and sustainable event management, but also the perspective in the concept of Personalization (One to One Marketing). This strategy implements from the stage of registration to engage attendees which match to their preferences. Refer to the implementation of "Attendee Journey Mapping" which is the personalization concept in Reed Exhibition (Professional Exhibition Organization), this strategy can fulfil attendees and participants needs by understanding target, collecting related data, and merge related data to the target. The other concept to adjust attendees' experiences is Festivalization which focusing on the identity to make memorable experiences that need to match with personalization concept. (Thailand Convention and Exhibition Bureau, 2020). Technology transformation can be the strategy to improve event experiences through appropriate technology by using the web-based application to merge data from various channels to promote the business to attendees in the future. This innovation will operate as well as manage MICE business in the global trend.

Digital Event

Digital Event has its specific elements that need to focus on the knowledge (content), networking and community engagement (by using the interactive components), marketplace experience (commerce and tradeshow that most closely to a face-to-face exhibition). (International Association of Exhibitions and Events, 2021) Event planner need to keep in mind that who the attendees are to create an inclusive experience fosters belonging for all. These features in each element such as registration, dealing with speakers, streaming, voting, chat and meeting function, matchmarking must be concerned to developing the application.

Today, employees as well as customers expect and demand to be able to use a web-based application due to the accessibility and work sharing in terms of obtaining information and performing transactions anywhere at any time. These make application service providers need to design and develop web-based application, mobile application, information systems based on the advantages of web technology in this era.

Zoho, trusted by over 75 million users globally such as Philips, Daimler, and Hyatt, is one of the unique and powerful suites of application running the business. This cloud-based application is the trend for companies to shift more of their information technology infrastructures especially storage and processing. Startups and small companies with limited IT resources and budgets will find public cloud services especially helpful. (Laudon & Laudon, 2022). Zoho provide business application solutions covering sales and marketing, customer services, finance and accounting, human resources, office automations, business intelligence and analytics, and related information technology infrastructures.

Zoho Backstage is an event management software that empowers event organizers to plan and run conferences, meetups, and product launches with greater efficiency and impact. (Zoho Corporation Private Limited, 2022). This web-based application will help MICE event professionals to operate and create events especially for online, and hybrid event. Application features can be shown in the event step starting from creating an event by adding up its details, agendas, sessions, team members, sponsorship, exhibitors. Then designing the microsite which will be a tool to engage the attendees, and related event stakeholders. Microsite does not only provide information related to the event, but also assists prospects to the registration platform that link to the automated payment systems. In terms of sales and marketing, they can use this site to promote event by sharing on social media, banner ads, scheduling email communication and advertising with affiliate link. (Zoho Corporation Private Limited, 2022). During the event, event organizers can implement this application by its own live broadcasting platform to live broadcast the sessions, run presentations, share handout related to webinar, interact with attendees and participants. Managing the event, attendee check-in monitor, ticket sold, progress tracker, integrating to Zoho SalesIQ.

One of the success stories in implementing Zoho Backstage to MICE event business is the LeBros (Agency in Vietnam). This application makes business convenient, advance, and smart. Mr. Quốc Vinh, Group Chairman and CEO, mentioned that Backstage engage their attendees and keep them updated on the latest news by discussion forums and announcements. It enabled audiences to connect virtually with the speakers in real time. They were now able to ask questions and see them answered right away. Backstage also helped them create a tailor-made event website which is the microsite that mentioned above. This website is not only served as a marketing vehicle and avenue to sell tickets, but also engaged speakers and managed sessions to help draw a bigger audience. (Zoho Corporation Private Limited, 2022).

Digital Transformation in the MICE Industry Workshop

Refer to the information mentioned above, providing the workshop was an alternative to demonstrate the characteristics and performance of the application. Zoho Backstage was used as an application to conduct this workshop. The arrangement for program session is illustrated in Table 1. The selected workshop's speakers were from the application service provider and the lecturer in technology and innovation in MICE industry. They have been the expertise with knowledge, skills, and experiences in business process implementation and its product.

Table 1. Program agenda

Date/Time	Topic Session	Speakers
May 7 th , 2022		
09.30-10.00	Opening and Introduction	Ekkaphot Chudet (Marketing Consultant)
10.00-11.00	Digital transformation in the MICE industry (Powered by Zoho Backstage)	Khoo Chia Ching (Regional Marketing Manager)
11.00-11.45	Equipping Event Organizers with Zoho Backstage	Chelsy Nepomuceno (Marketing Consultant)
13.00-15.30	Backstage Workshop	Krishna Kumar (Regional Sales Manager), and Prathik Bathija (Product Marketing Manager)
May 8 th , 2022		
09.00-12.00	Workshop Session: BackStage for Real Events	Ekkaphot Chudet (Marketing Consultant)
13.00-15.00	Review & Evaluation	Passakorn Chumpoonta (Technology in MICE Instructor)

Implementing Information System in Business

Information technology implementation in the business often remains a persistent and troubling gap between the inherent value of the technology now a day. This challenge should be closed by developing the applications that closed to the nature of business, and its ability to put into work effectively. To select the application in the firm, the management as a change maker need to concern for user satisfaction which related to business result. The factors that make users satisfied are data authenticity, reliability, security, reactivity, processing time, integrity, and system flexibility. These factors can be grouped to usefulness, security, responsiveness, and agility. (Wen & Kim, 2021). The selecting criteria is not focusing only users, but also functional features, technical (information technology infrastructure), quality (capability of managing information at different levels of interactions) and cost. (Cricelli et. al., 2019) The application with these characteristics mentioned will be the option for business to invest and implement in the organization to gain the competitive advantages.

Method

Research Objective

The objectives of this research are (1) to study the features of ZOHOO Backstage that can be implement to MICE industry, and (2) to provide the knowledge and technological awareness by using web based event application for MICE industry.

Research Methodology

This study focuses on reviewing the features of Zoho Backstage that can implement to MICE industry. Data use in this research is not only retrieving the information related, but also collecting from questionnaire, pre-test and post-test of the participants. 32 participants in this workshop included professional event organizers, instructors, and students in the major field of MICE industry. Online workshop "Digital Transformation in the MICE Industry (Powered by Zoho Backstage)" took place on May 7th - 8th, 2022. Data analysis in comparison of learning achievement from the tests was using statistical computation of averages and standard deviations. So that t-tests can be conducted on testing of an assumption applicable to a population in terms of degrees of freedom to determine the statistical significance.

Furthermore, performance and features of application as well as workshop satisfaction were using the descriptive statistics from questionnaires after the workshop. Suggestions were from the interview of the different types of participants.

Results and Discussion

Participants of this workshop were 17 students (53.10%), 7 instructors and educational support staffs (21.90%), and 8 event professional (25.00%), totally 32 participants. The results are demonstrated in 3 parts: learning achievement (from pre-test and post-test), application capacity and satisfaction (from questionnaires and interview). Details are illustrated as following.

Learning Achievement

Learning achievement of this workshop was concerned in knowledge which can be divided into 3 parts: digital transformation in MICE industry (score of 3), equipping event organizer with Backstage (score of 2), and Zoho Backstage workshop (score of 5). T-test analysis in each pre-test and post-test scores is illustrated as table 2. The result shows that participants achieved the knowledge learned at statistically significant (0.00).

Table 2. t-test analysis comparison of pre-test and post-test score.

	Pre-test		Post-test		t	p	Mean difference	SE difference
	Mean	SD	Mean	SD				
Part I: Digital Transformation in MICE Industry	0.75	0.62	2.34	0.48	11.9	<0.001	1.59	0.134
Part II: Equipping event organizer with Backstage	0.44	0.50	1.78	0.42	12.6	<0.001	1.34	0.106
Part III: Zoho Backstage workshop	1.56	0.88	4.69	0.47	18.8	<0.001	3.13	0.166

This result shows that participants had the knowledge for the concept of digital transformation and how Zoho Backstage support them to operate the digital event or virtual event. Furthermore, participants had a chance to practice by using the case study to generate digital event. The workshop did not only make all participants understand application features, but also technological skills in information technology together with digital web-based event application.

Application Capacity

Participants rated the scores for Zoho Backstage in each capacity. They agreed that this application has highly effective capacity in all features related, mostly in security and privacy, application performance, and easy to implementation. Details are illustrated as Table 3.

Table 3. Score rating for Zoho Backstage capability

Application Capacity	Mean	SD	Result
1) Relevant to event business	4.59	0.62	Very high
2) Covering tasks in event business	4.22	0.79	High
3) Supporting to event business process	4.50	0.71	Very high
4) User interface design	4.47	0.76	High
5) Application performance	4.72	0.63	Very high
6) Application responsiveness	4.41	0.91	High
7) Compatibility to other systems	4.19	0.93	High
8) Ease of implementation	4.66	0.65	Very high
9) Ease of maintenance	4.28	0.81	High
10) Security and privacy	4.78	0.55	Very high

Regarding to the result illustrated, the highest rank in system capacity was in the top 3 which were security and privacy, application performance, and easy to implementation. These are the characteristics of cloud-based application. Cloud computing environments provide advantages in the form of security, administration of

resources, and its execution. Task scheduling in cloud systems is resource management which aims to enhance execution of assignments and usage of resources in cloud systems. (Sharma & Rashid, 2020)

“It is easy to use, just only drag and drop” was the comment from students in technology and innovation in MICE course who attend this workshop. It also has features to create the conference due to the registration module and web casting and documents sharing regarding to the lesson learn. In the view of expertise and event professional, this application is user friendly and can assist team to monitor the attendees’ registration through the revenue management. During executing the event, the web streaming can run smoothly from both the wireless network and mobile hotspot sharing.

Participants of this workshop had their own account to create the event with assigned case study. Furthermore, they had another one-time event for each account for free of charge. Feedbacks from users were similar to the findings that mention above. The additional suggestions were speakers and the sponsorship management. In speaker management module, it can help event organizer to contact speaker automatically, update speaker profile, store speaker information to the centralized database, and queue the speaker during the event. In term of sponsorship management, this application could make the sponsorship engagement. It allows event professional team to classify the sponsors, provide the appropriate package, and manage their requests. Due to the database platform, the management can summarize and allocate sponsorship in the highest satisfaction level. This snapshot of current and past events and their management were the archiving of information which can be time consuming to operate the next future event. (O’Toole, 2022).

In addition to the information in Table 3 and interviewing from the related parties, participants suggested that this application contains the features which relevant to event business and support tasks in MICE event operating. The capability was created nearly every function of event management such as registration, polling and real-time feedback surveys, ticketing and access control, marketing and advertising of events and sub events. These are many benefits for event professional. Exhibitors can track the lead retrieval through the virtual exhibition booths. Attendees expected the availability of speedy, useful, and navigate application while at the event due to the environmentally friendly of the application. (Ball et. al., 2019).

Utilising online data from the system gains deeper understanding towards event attendees, sponsors, and related stakeholders. Apply data science concept can offer valuable insights. (Celuch, 2021). For instance, analysis of data stored in the system can not only predict trends and provide recommendations to event participants, it also uncovers the right target audience for organisers to streamline management, optimise networking, and personalise experiences. They could obtain the benefits of data analysis from event stakeholder management module including event planning team members, speakers, attendees, sponsorships, and exhibitors.

Due to the characteristics for the speed to production and reduced costs, environmental issues and revenue generation, the management can have the competitive advantages through these features and characteristics. They will analyze data to track each attendee’s journey and set strategy for each target. Event planners have tools and technology to assist them to work smoothly and serve attendees with highest satisfaction.

Workshop Satisfaction

Satisfaction rating are highly score in all items. Participants were satisfying most in knowledge transferring, language using, and understanding the content from speakers, follow by the readiness of internet signal, and content related. Details are illustrated as Table 4.

Table 4. Satisfaction

Satisfaction	Mean	SD	Result
1) Knowledge transferring, language using, and understanding	4.72	0.45	Very high
2) Relevant and appropriate content	4.41	0.62	High
3) Answering questions from trainer	4.25	0.76	High
4) Technical readiness: Visual signal	4.22	0.56	High
5) Technical readiness: Sound signal	4.34	0.75	High
6) Technical readiness: Internet signal	4.47	0.71	High
7) Public relations of the workshop	4.16	0.92	High
8) Knowledge utilization	4.34	0.87	High

Participants satisfied the content more when comparing with technical readiness and the operating for this workshop. They had satisfied in knowledge that they obtain. Knowledge transferring and language using from speakers made participants understanding. They also had aware in the technological issues during digitalized era from expertise. The appropriate speaker management from application in speaker management module did not only matched the expertise to the session, but also speaker information providing. Selected speakers were professional in each topic session.

The content was relevant and appropriate for participants. Content provided in this workshop was separated to the session. Beginning with providing information followed by step by step demonstrating as well as practicing from the case study. Learning by doing is the best way to make learners clearly understand. This method was the advantages for them and could make them keep in touch with the application. Content design was the reason why they can utilize their knowledge and skills to apply in their daily life especially in event operation and MICE business.

The lowest satisfaction was public relation for this workshop. The information was announced 2 weeks before launching through Facebook (Hospitality Technology Innovation SUT), curriculum website, and the Line application group. This issue needs to be improved when operating workshops or trainings in the future.

Conclusion

Zoho Backstage is web-based application which using the cloud-based system for event business. It has the features related to the event operation and management. Beginning with event planning, event planner can create the event by adding event and related stakeholders' information to the system. Next step is generating revenue by providing microsite to promote event and the online registration. During the event execution, live steaming and virtual exhibition booths fulfil the virtual event nearly the on-site event. Finally, event professionals can evaluate the event by surveys and all information tracking provided by this application. This event web-based application can be a choice for MICE professionals to implement virtual event.

To make sure that Zoho Backstage has features required for MICE professional, providing application capacity information to target group is needed. Workshop session launched for the participants for students who study MICE technology, instructors, and MICE professional can be the suitable solution. They knew all features and practiced during the workshop. Since they familiarized with it, they suggested that this application has good performance and security cause of characteristic in cloud-based system. In addition, Zoho Backstage's features cover tasks and activities in MICE event operation and management.

Participants had high level of satisfaction especially in knowledge gained from expertise. Speaker management can be a tool to use when operating event for high satisfaction. The content from this workshop can be applied for MICE industry. However, public relation and event executing should be improved for future events.

Recommendations

This study was focused about features and capability of Zoho Backstage for MICE industry. There are another applications and technologies sub-branched to study more about their features and capabilities. Future studies should encourage more participants from various part which related to MICE industry to join the workshop. More number of participants will have more suggestions and ideas.

Scientific Ethics Declaration

The author declares that the scientific ethical and legal responsibility of this article published in EPESS journal belongs to the author.

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