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Measuring Cognitive Level using Informative Map among Secondary Students: A Quasi-experimental Approach

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ABSTRACT

Spatial thinking is essential because it encourages the human mind to visualise, thus stimulating cognitive thinking which leads to improving higher thinking order (HOTS). Unfortunately, it is found that the geography syllabus taught in secondary school is lacking this vital element. Hence, this study aims to assess the student cognitive level using an informative map module among secondary students in Geography subject. This study was underpinned by the Social Cognitive Theory (SCT). The cognitive level was measured using Bloom Taxonomy cognitive domain from low to high order thinking skills, namely knowledge, comprehension, application and analysis. Data were collected using a one-group pretest-posttest quasi-experimental design. The informative map module has been used as an intervention for the study. Pre-test and post-test questions were distributed before and after the intervention. 31 students of Sekolah Menengah Kebangsaan Arau participated in this study. Data were analysed using a t-test paired analysis. The result reveals the significant difference between cognitive domains among students. The informative map module increases their knowledge, comprehension, application and analysis among students. This study contributes to the empirical evidence of SCT's literature in the context of spatial thinking studies among secondary students in selected geography topics.

Keywords: *Spatial Thinking, GIS maps, Quasi-Experimental, Geography, Secondary School*

1.0 Introduction

1.1 Spatial Thinking

Spatial thinking is an approach in assessing the cognitive level, and it has been focused by several studies (Ghaffari, Jo & Currit, 2018; Utami & Zain, 2018; Verma & Estaville, 2018; Wise, 2018) due to the current advanced geospatial technologies. Bednarz & Lee (2011) suggested that several elements need to be considered in developing spatial thinking, such as direction and position information, map layers and patterns, spatial relationship, three-dimensional (3D) visualisation and map production. All these elements are integrated into geography study through maps, graphs, images, diagrams, models, and visualisations (Bednarz & Bednarz, 2008). There are three elements, such as space, representation tools, and reasoning process are the keys to spatial thinking. Space represents the spatial distance (NRC, 2006). All elements involved in the geography subject can train a student to think spatially, leading to higher-order thinking that state in government policies.

1.2 Geography and Spatial Thinking

Geography is a study of a physical characteristic of the earth, human activity, population distribution, resource, political and economic activities (Webster, 2015). Geography and spatial thinking are interrelated to ensure students understand the spatial patterns and processes in teaching and learning (Bednarz & Bednarz, 2008). In recent years, Geographical Information System (GIS) platforms are used to enhance the student's spatial thinking in both formal and informal education as well as incorporate the geospatial thinking into teacher preparation programs (Chun, 2010; Lateh & Muniandy, 2011; Lee and Bednarz, 2009; Mayalagu, Jaafar & Choy, 2018; Mustapa et al., 2014; Webster, 2015). It can also increase exciting learning in the curriculum using the valuable GIS tool (Webster, 2015). Therefore, higher-order thinking skills (HOTS), as stated in bloom's taxonomy in different levels of human cognition, such as synthesising, examining, interpreting, and assessing knowledge, should be evaluated to test the enhancement of skills through geospatial technologies. It is essential for geographers when dealing with a complex issue and critical analysis (Rankin, 2016).

1.3 Cognitive Level Assessment through Spatial Thinking Skill

Although it is vital to improving the spatial thinking skill by evaluating the HOTS, unfortunately, assessing the spatial thinking skill in different aspects

such as spatial perception, orientation, visualisation, and mental rotation is not easy (Charcharos, Tomai & Kokla, 2015). Charcharos, Tomai & Kokla (2015) declared that spatial thinking among young people had been neglected and the various test has been applied to evaluate the spatial thinking, and unfortunately, it is unsuccessful. Furthermore, most of the students' secondary level only studies on map production and lack of skill in determining location around the worlds (Kaya, 2018; Mustapa et al., 2014). Then, Collins (2018) suggested that geospatial technologies can be applied to convert the traditional maps into digital to develop spatial thinking skills. The question asked in this research is what types of elements should be added in conventional maps to be more attractive and improve spatial thinking among students.

Therefore, this study focused on lower secondary students on the current geography learning assessment using an informative map. The informative map made using the GIS technique that includes spatial thinking elements. Furthermore, the student's cognitive level was determined by using the informative map, namely, cognitive, comprehension, application, and analysis. HOTS was known to be achieved if students can acquire the analysis level in the cognitive level. This study is essential to develop higher-order thinking students based on their human cognitive levels. Also, this approach can help the student to solve a problem or give spatial reasoning

2.0 Methodology

2.1 Underpinning Theory

This study is underpinned by Social Cognitive Theory (SCT) by Albert Bandura (Bandura, 2001). SCT explains the interactions of human factors based on personal factors, environment and continuous behaviour in a learning setting. In other words, SCT claims that people learn based on their experiences, the observation of others, as well as the results of those actions. For this study, SCT explains students used their own experience to use the traditional map and interaction maps in their learning. The informative maps offer a different view of presenting the content, hence giving them a new experience.

2.2 Context of the Study

This study aims to assess whether the use of the informative map increases the cognitive level among geography students. The cognitive level was tested using test scores based on pre-test and post-test questions. The cognitive levels are classified as knowledge, comprehension, application, and analysis developed

based on the standard school level as approved by the geography teacher in the respected school. The test score was compared at the end of the sessions.

2.3 Participants of this study

The selection of study area is Sekolah Menengah Kebangsaan Arau, placed at Jalan Besar Arau, Perlis. The area was chosen due to the easy access that closes to the Universiti Teknologi MARA, Perlis branch. Furthermore, the geography teacher of SMK Arau can give full commitment to assist the test among the students. The sample size of respondents consists of 31 students.

2.4 Development of Informative Map

The informative map was enhanced from the existing geography textbook was developed using the Geographical Information System (GIS) technique. The GIS platform is used to integrate all spatial layers such as rainfall, country boundary, temperature and climate, and finally, the map was generated as output in WGS84. All the spatial elements, such as symbol, colour, density, and pattern, were adopted in the proposed informative map. The spatial element used to create the map was taken from a study by NRC (2006), where it is the concept of space that makes a distinctive form of thinking of spatial thinking.

The topic chosen for knowledge assessment is climate diversity and its influence on Asia's human activities. The topic selection is due to the suitability of the content, which is related to geography elements in developing spatial thinking skills such as comparison, pattern and distribution aspects.

2.5 Design and Validity

This study employed a quasi-experimental, non-randomised, two groups with pre-test and post-test design. Firstly, students attended geography learning using traditional maps. The cognitive levels were controlled using the test specification table. The validity issues have been carefully observed and employed based on a suggestion made by Creswell & Guetterman (2019) on participation, procedure and treatment.

2.6 Methods of data analysis

The informative map was given to the student for them to identify the diversity of climate in Asia (knowledge domain). Then, the student must explain

the characteristic of climate based on zones of climate (comprehension domain). Finally, the student's understanding of how to differentiate the climates influenced human activity (analysis domain) was also assessed. All the student's understanding was assessed and analysed using Statistical Package for the Social Sciences (SPSS) using a paired t-test.

3.0 Result

3.1 Informative Geography Maps with Spatial Elements

The informative maps were developed with elements of spatial that includes symbol, colour and pattern. The content used in developing the informative maps is based on form two geography textbook with the selected topic of climate diversity and its influence on Asia's human activities. The map was produced by adding an element of cartography mapping. Only use a colour element to differentiate the types of climate. In the textbook, the existing maps show a climate presented by different colours and lack of information (Figure 1).

Civil Engineering Design project is a studio orientated course where students are guided in performing design of structural elements of a reinforced concrete building and a steel structure, by integrating the knowledge gained from previous courses. This course requires students to pass two courses i.e. structure analysis and concrete and steel design in lower semester. Students will be given 1-hour lecture and 4 hours studio within a week in order to complete a task. The maximum number of students in a group is 4 persons and the assessment is based on individual progress work.

At the beginning of the semester, students will be briefed on the lesson plan for 14 week activities together with the tasks that should be completed within the time frame. For the first ten (10) weeks, students need to complete all tasks relating to reinforced concrete structure, consisting of analysis of loading, and preparing design calculation for slab, beam, column, footing, and staircase. All work checking must be performed using Eurocode 2 and design work is validated using software known as ESTEEM. Meanwhile, the remaining 4 weeks is to prepare design for steel structure that covers beam, column, and connections. Design checking should be done according to Eurocode 3. The assessment will be monitored on weekly basis depending on the tasks that have been assigned in each week.

Figure 1: Climate Map (MOE, 2017)

Therefore, to develop student critical thinking on geography and interact student interest on learning related to position and direction spatially, rainfall distribution map was converted into more informative by using different colour tones and specific legends on the temperature and rainfall volume for world map as shown in Figures 2a. The elements of colours will help students' memories and stimulate their critical thinking skills by identifying the area which receiving high and low rainfall volume and climate of Asia. The colour also is representing the range of Asian temperature. Figure 2b presents the rainfall density using diamond shape in different size scale.

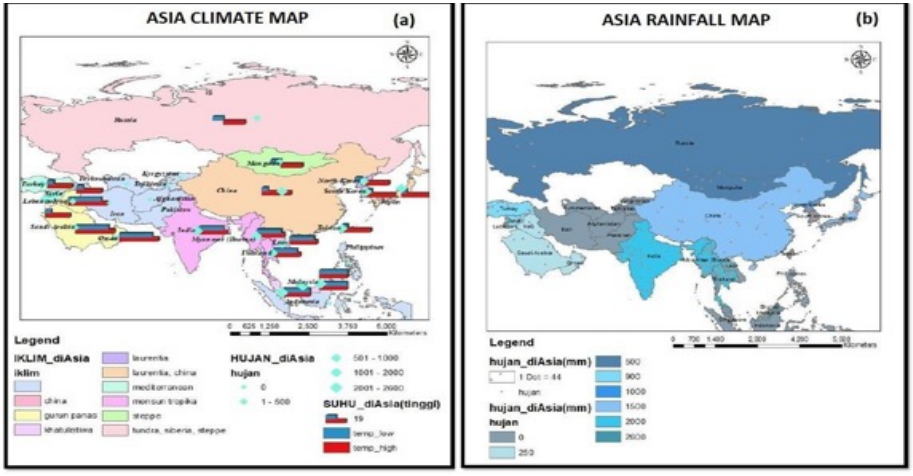

Figure 2: Map of Asia (a) Climate and (b) Rainfall Distribution

3.2 Cognitive Level Assessment

We analysed the effect of an informative map on the cognitive levels using paired t-test. The same level of difficulty questions was given to students before introducing the interaction map sessions and after the exposure to the informative map session. The result indicates a significant difference between pre-test and post-test for the overall assessment ($t = 2.879$, $p < 0.05$), where the mean value for post-test results is higher than the mean value for pre-test results. The result confirms that teaching geography through the spatial approach using an informative map allows students to understand the content better as compared to the traditional technique.

Moreover, the results about the differences between cognitive level among students also show a significant difference for knowledge ($t = 7.448$, $p < 0.001$) and analysis ($t = 3.950$, $p < 0.001$) cognitive level among students where the mean value for post-test are higher as compared to the mean value for the pre-test. However, this study does not provide enough evidence to support the significant difference between pre-test and post-test for comprehension and application level.
Previous scholars highlighted that most of the students' secondary level only studies on map production, hence influences the cognitive levels of their learning outcomes for the related subject such as geography (Kaya, 2018; Mustapa et al., 2014). For this study, there is a difference in cognitive level for knowledge and analysis among students, where the results show a difference of knowledge and analysis of the cognitive level with the exposure of the informative map in their learning for geography subject. Students understand the spatial layers such as rainfall, country boundary, temperature and climate based on the country a lot better as compared to the traditional map. The spatial elements such as symbol, color, density, and pattern help to enhance their visual learning.

Similarly, when students understand the map, it is easier for them to achieve the analysis level of the cognitive because their understanding of the spatial layers help them to think at the analysis level, such as to suggest the economic activities suitable based on the information of the spatial layers like rainfall, country boundary, temperature and climate. For example, agriculture activities are suitable in the rainfall area; however, not all crops are suitable for this area. Hence, this study confirms the suggestion by Collins (2018) that geospatial technologies and traditional maps should be implemented to develop spatial thinking skills. Moreover, the spatial elements like symbol, colour, density, and pattern elements added in the informative maps are attractive and improve students' spatial thinking.

4.0 Conclusions

This study explains the theory of SCT by using spatial thinking through the informative map in the geography subject among lower secondary students. Students learned through their own experience with the informative map. From there, students interacted with the instructors, who facilitated them to use the map. At the same time, students discussed among their friends in class to improve their understanding. The informative map's learning experience triggered the interactions with students as individuals, the different learning environment, and the learning continues with the discussion with their peers.

This study suggested that spatial elements in the interaction map-able help promote students' cognitive levels. The significant difference in overall results and the cognitive knowledge level shows that this map improves students' learning ability. Moreover, a significant difference reported for the analysis level, indicating that students achieve the HOTS through the map. The insignificant results for comprehension and application suggested the improvement need to be made when designing the assessments. For future studies, we recommend that the questions used a test specifications table to control the development of the assessments, but the similarity of the questions needs to be reviewed. Overall, we can conclude that spatial thinking can improve the cognitive level among students in the context of geography in secondary schools. More studies need to be conducted to explore how this informative map is better used to support the relevant topics in the subject.

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Distance Learning for Design Student: An Analysis of Student Performance in Independent Landscape Design Studio

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ABSTRACT

Independent Landscape Design (LDA350) is the final semester course that required a full landscape design process. This design-based syllabus is more acquainted with face to face or physical teaching-learning process. However, to pursuit the IR 4.0 education, this course has adopted MOOCLAA350 to engage and equip these design students with significant understanding, graphic presentation skills as well as technical aspect related to design developments and constructions. The teaching and learning environment has subsequently expanded. With the outbreak of the Covid-19 pandemic that started early this year, therefore this course is easily adaptable to this educational change with ODL (Open Distance Learning) being the new strategy that was put forth for teaching and learning. This paper analyses student performance in adopting MOOC and ODL during the Covid-19 outbreak. An online survey supported with a comparative analysis between semesters was conducted to evaluate the student's readiness, challenges and performance throughout the semester. Some tools and techniques to ensure the continuity of learning during the current pandemic are described. The findings revealed factors contributing to student performance and the reality behind the success of this new teaching strategy.

Keywords: *distance learning, design student, student performance*

1.0 Introduction

Distance learning in education has significantly witnesses growth in changing the pedagogical conventional learning environment. According to Schneider (2020), distance or open learning has become a new norm and will continue to embrace the teaching strategy. However, the delivery methods and effectiveness of distance learning for the design-based student has always been doubtful and remains irrelevant. Therefore, when the Covid-19 pandemic struck and disconnecting people physically, the open learning methods was the only solution to keep people connected and continue working in distance (Adnan M., & Anwar K. (2020) and Agarwal S., & Kaushik J. S. (2020)). Adnan (2020) added that educational institutions have to adapt, design appropriate and effective content, arrange an effective delivery system and provide digital literacy training to pursuit the current situation and achieve better learning outcomes. The prompt changes in the learning environment due to the outbreak of the Covid-19 pandemic has uplifted the open distance learning (ODL) method to another level (Montebello (2017)). This further seeing the transformation of conventional learning through face to face being a significant challenge for landscape architecture design-based courses applied by University Teknologi MARA, Malaysia (UiTM). From April to August 2020, this unique semester has further demonstrated the challenges faced by both academics and students in making sure that the online learning is deliverable especially for the Independent Landscape Design course, a compulsory course offered for the final year student of Diploma in Landscape Architecture, UiTM Perak Branch.

2.0 Distance Learning for Design student

In line with this ODL application, an online survey was carried out in March 2020 to understand the student readiness and their challenges for ODL implementation. A total of 102 students registered for the Independent Landscape Design course are the respondents for this survey. They are final year students in semester 6 that involved fully in ODL during the Covid pandemic semester from February to July 2020. Within the comfort of their home, the majority of the students with 84.3% informed that they owned laptop while 82.4% note having smartphones that able them to well participate in the ODL process (see Figure 1). Equip with personal electronic devices, these findings further denote that students are ready to enter the fully online learning procedure from home.

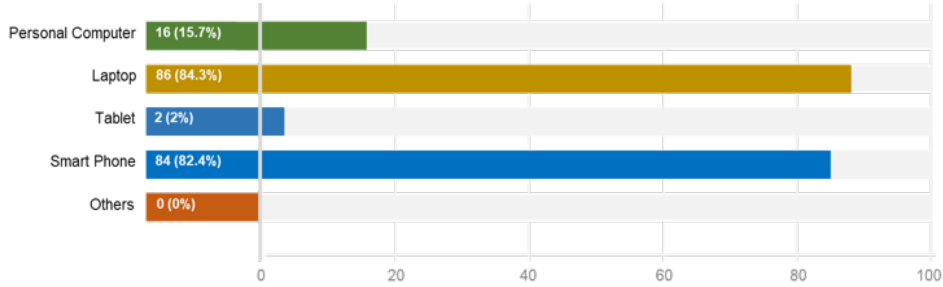

Figure 1 Electronic devices own by students

Since this online survey was focus on the Independent Landscape Design online application, the students were required to highlight the online platform preferences that aid them in their learning process. As the respondents were allowed to select multiple choice answers, the result in Figure 2 illustrates that the majority of the respondents with 86.3% prefer WhatsApp application as their main platform. This WhatsApp application is the most accessible, affordable and allow quick responses which align with Cook and Dupras (2004) and Gewin (2020) research that acknowledged the most effective online platforms is the one enabled learners to interact with the material, pursuing the information at their speed and engage in the course through feedback and commentaries. The preferences result further followed with ZOOM application (61.8%), Telegram (54.9%), i-Learn V3 UiTM (52.9%), MOOC Open Learning platform (51%) and Google Classroom (46.1%). These findings further aid the academics in setting up the right learning platform in line with the student's preferences in making sure that the online delivery is successful and at the same time able to attain the course learning outcome as stated in the syllabus. Due to student familiarity with these online platforms, it is hoped that the ODL application is able to uplift the student's learning experience and boost the student's result for this semester.

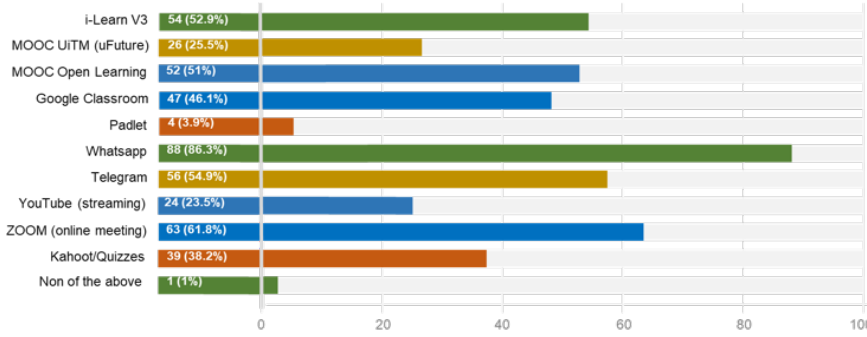

Figure 2 Selected online platform

3. Analysis of Student Performance during ODL

According to Paul (2019), to measure the effectiveness in conducting ODL during the Covid-19 pandemic, a study could analyse the student performance based on the results by several semesters. Therefore, this study analyses the student performance within the three recent semesters (refer to Figure 3). This survey sample size is based on the registered students for each semester. The performance is based on final grades achieved by the students. Students are evaluated by their ability in performing landscape design proposal consisting of design solution, ideas, technical requirement and final documentation. This study conducted a comparative analysis between the semester to measure the differences and trends of how the grades perform. Based on the analysis, it is surprising to discover that result for this semester depicted an incensement of students getting Grade A for this course (see Figure 3). Despite the challenges faced by both academics and students throughout this ODL implementation, the student's results for this semester is satisfactory. The delivery process even to the academics is quite challenging for this semester knowing the subjective demand of landscape design and at the same time to making sure that all 102 students able to grasp the critical knowledge related to design development and processes, construction drawings and documentation as well as a technical report. As the proverb says, all hard work pays off, comparative results for three semesters depicted in Figure 3 demonstrated that regardless of limitation throughout the ODL implementation, the results for this (Covid 19) semester have to surpass the percentage of a student getting grade A cluster (grade A+, grade A and grade A-) with an increase of 11%.

This Independent Landscape Design requires students to venture into different project scope and demand (with various design strands that include waterfront landscape design, urban landscape, parks and community design, institutional landscape design, cultural landscape, urban heritage and landscape, etc.), therefore considering this complexity and to attain to each project aim, hence this result reveals the successful implementation of the online learning for the landscape architecture program. The increased percentage of grade A cluster has also evidence in the decrease of the percentage of a student getting grade B (11%) and grade C (1%) as compare to the previous semester March 2019-August 2019 result.

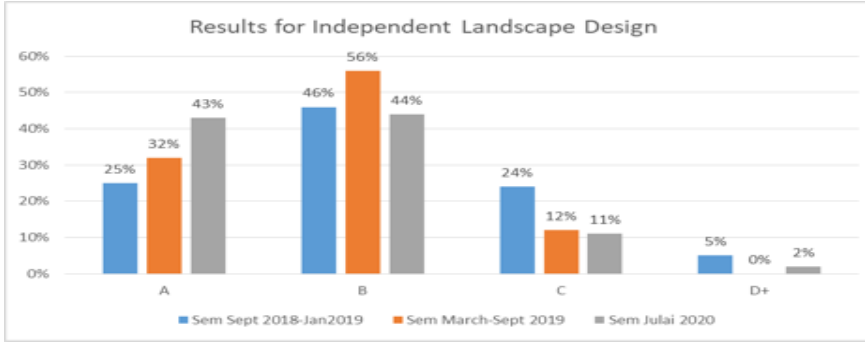

Figure 3 Result by percentage for Three Semester for Independent Landscape Design course

Through student preferences of the online learning platform based on the survey conducted in March 2020 (see Figure 2), it is, therefore, evidence that i-Learn v3 and MOOC Open Learning platform have sufficiently aided the students undertaking Independent Landscape Design. Given WhatsApp, ZOOM and Telegram as the intermediate platform that sufficiently stands as the communication platform between students and academics, MOOC Independent Landscape Design serves as the core reference platform that aided students with four development modules - Module 1 (Introduction of Independent Study); Module 2 (Site Planning & Design Development); Module 3 (Construction & Documentation); and Module 4 (Portfolio and Design Samples). Through consistent online critique session via Google Classroom, Padlet, together with sufficient references uploaded through i_Learn v3 and updated samples in MOOC Independent Landscape Design, challenges faced through ODL implementation is tackle successfully.

Besides, these successful students in distance learning contexts showed the ability to study independently, highly motivated and able to absorb the communicated information on their own. Hence the excellent result depicted in Figure 3 has verified that an online learning platform is another teaching method for a landscape architecture student.

[1] Due to MCO (Movement Control Order) imposed by the Malaysian Government from 18 March 2020, some students were affected financially due to parents loss of jobs, and some of them are doing part-time online work to support the family financial problems (data were based on the online survey for Independent Landscape Design that was conducted in March 2020). These difficulties have indirectly impacted the work progress of the related students.

4. Conclusions

Based on the e-survey findings and student performance analysis, this paper demonstrated that distance learning is significant in safeguarding the teaching and learning strategy amid the Covid-19 pandemic. The student performance, for instance, showed an overwhelming contribution of online learning platform replacing the conventional teaching method. These findings also represent the student's survival strategy and how they have able to overcome the situation as part of the lifelong learning experience. This adds a new dimension to the field of online learning evaluation that enables the comparison of different modalities besides proposing a methodological shift for the future. Furthermore, this online learning for design-based students evidences the desired findings, where the majority of students are still able to achieve good grades although they are facing various challenges and difficulties. The educator's efforts in exploring various teaching strategy, together with the students' initiatives and motivation, are the self-driven factors that have made this online teaching and learning successful. Therefore, this paper highlighted the reliability of teaching strategy, learning initiatives, online platforms and electronic devices are important factors assisting the effectiveness of these pedagogical changes.

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This study aims to assess whether the use of the informative map increases the cognitive level among geography students. The cognitive level was tested using test scores based on pre-test and post-test questions. The cognitive levels are classified as knowledge, comprehension, application, and analysis developed based on the standard school level as approved by the geography teacher in the respected school. The test score was compared at the end of the sessions.

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Jenglish: A Game for ESL Classroom

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ABSTRACT

Gamification is not a foreign concept of language learning, and it has been extensively researched in the field of education. Jenglish is a language game produced by five ESL students under the supervision of a lecturer. Leslie Scott's popular Jenga game was adapted into this game. This paper aims to present the results of a case study in which a group of 22 ESL students participated in four ESL lessons while playing Jenglish. A set of questionnaires was distributed to the respondents of the study after the final lesson and they are expected to answer 3 research questions: 1) To investigate ESL students' opinions on the usefulness of Jenglish on ESL learning, 2) To investigate ESL students' opinions on the usefulness of Jenglish in relation to affective domain, and 3) To investigate ESL students' opinions on how Jenglish can be improved. The data were analysed using IBM SPSS Statistics 25 and thematic analysis. The first and second research questions received positive feedback, while the game's presentation, content, and rules were suggested for improvement. Four themes emerged from an open-ended question about the respondents' opinions of the game which were Compliments, Suggestions to Improve the Game, Benefits, and Others. Although the results indicated that the game needed to be improved, it can be concluded that Jenglish was a useful language game for the respondents in language learning.

Keywords: *Gamification, language learning, language game, ESL learning.*

1.0 Introduction

In this present era of globalisation and modernisation, it is important for ESL educators to be imaginative in their teaching and learning sessions. Developing learning materials that can capture the interest of ESL students has been a major challenge for ESL educators. For the learners to participate, the learning materials must be engaged in the lesson practice. Any lesson in which the students are required to participate as active participants would encourage them to understand the knowledge more quickly (Resnik, 2004).

There are many approaches that can be used to make a lesson informative and enjoyable. One of them is to create a well-designed game-based activity that encourages students to persevere and strive for excellence. The 'gamification' approach is a popular technique that can be used. Gamification is a term used to describe gaming that has a consistent learning effect on the learner's vocabulary, logical thought, and problem-solving skills (Wahyuni & Junior, 2018). It is believed that by going through a thought process when playing games, would enable better involvement of students and inspire problem solving among them (Zichermann & Cunningham, 2011). In order to increase player engagement, gamification technically includes elements that are usually associated with games, such as competitiveness, teamwork, gaining points, winning and losing, completing levels, and collecting rewards (Wahyuni & Junior, 2018). This learner-centered pedagogy used in the game-based learning activity would inspire the learners to participate positively in the learning activity.

Game-based learning shapes a region of proximal growth formed by scaffolding and mentoring strategies. The proximal development zone is characterised as the distance between the current developmental area and the future stage of development, as measured by the ability to solve problems with adult guidance or in collaboration with more capable peers (Vygotsky , 1978). Scaffolding is used in game-based learning to make it easier for learners to advance from one stage to the next, which is needed to achieve the ultimate goal. In this sense, the teacher can provide scaffolding in the form of feedback or encouragement, while still keeping the lessons open and ready to fulfil the students' need for interaction (Ghazal & Singh, 2016). As the students are acquainted with the idea and can solve problems on their own, the instructional assistance is progressively decreased.

Another benefit of game-based learning is that it allows learners to be in constant motion. According to Paras and Bizzocchi, students can experience flow while playing the game if they are completely engaged in the practise (2005). Flow,

according to Csikszentmihalyi (1975), is a state in which one is fully consumed by an event to the point that external stimuli have no effect on one's attention. This means that the student has a high degree of intrinsic motivation and is entirely focused on the task, which allows him to unintentionally progress from one level to the next (Kurt & Kurt, 2018).

Games that are challenging but offer attainable challenges will capture the learners' imagination and keep them engaged for a long time (Ghazal & Singh, 2016). The gratification they get from seeing the results of their actions while playing the game inspires them to engage more, even though they are unaware of the game's extensive impact on vocabulary, grammar, and other facets of language improvement (Ghazal & Singh, 2016). Scrabble or simulation-based games, for example, intrinsically empower learners, which is good for improving player ability and effectiveness (Ghazal & Singh, 2016). These games are attention getters that add fun and excitement to the lesson (Kurt & Kurt, 2018).

Furthermore, communication skills can be developed by game-based learning. Students must work together in a game-based learning classroom to help others and accomplish a difficult task. When players engage in multiplayer games, they can develop their social skills while also gaining empathy for ethics and ethical decisions while they are in the position of the game (Ghazal & Singh , 2016). According to Fung and Min (2016), students were able to boost their self-confidence and sense of control by playing games because there was less pressure, which reduced the reluctance to speak up and created a positive peer learning environment.

As a result, the aim of this research is to contribute to the field of gamification in ESL learning by answering three key questions:

a) To investigate ESL students' opinions on the usefulness of the language game, Jenglish, on ESL learning
b) To investigate ESL students' opinions on the usefulness of the language game, Jenglish, in relation to affective domain
c) To investigate ESL students' opinions on how the language game, Jenglish, can be improved

2.0 Methodology

A group of 5 ESL students was given the task of designing and developing their language game in three weeks while being supervised by their teacher. They decided to adopt the concept from Leslie Scott's iconic game Jenga and develop a new collection of rules and tasks that were more suitable and engaging for ESL students. Following its completion, it was played by their classmates, 22 ESL students, in four ESL classes. After the fourth lesson, the participants were asked to fill out a survey to express their thoughts on the game, Jenglish, and their suggestions on how to improve it.

There were three main sections in the questionnaire:
a) the usefulness of the game on ESL learning (5 Likert-scale items)
b) the usefulness of the game in relation to affective domain (3 Likert-scale items)
c) suggestions to improve the game (1 checkbox item + 1 open-ended item).

The data were analysed and descriptive statistics were used to present the findings using IBM SPSS Statistics 25 to answer the three research questions. All Likert-scale items (8 items) were tested for normality using the Shapiro-Wilk test, and their reliability was calculated using Cronbach alpha. Thematic analysis was used for the open-ended item, and the concepts that arose from the analysis were addressed.

3.0 Findings and Discussion

a. Test of Normality

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
SKILLS	.304	22	.000	.773	22	.000
FUN	.290	22	.000	.740	22	.000
KNOWLEDGE	.274	22	.000	.828	22	.001
RECOMMEND	.240	22	.002	.817	22	.001
PLAY	.284	22	.000	.766	22	.000
MOTIVATE	.294	22	.000	.799	22	.000
EXCITED	.270	22	.000	.760	22	.000
CONFIDENT	.274	22	.000	.828	22	.001

a. Lilliefors Significance Correction

The Sig. value of each Likert scale item for the Shapiro-Wilk statistic was either.000 or.001 in the table above, indicating that the presumption of normality was violated (Pallant, 2016). In order to report the descriptive study, the median (a non-parametric statistic) of each Likert scale item was used instead of the mean.

b. Research Question 1: ESL Students' Opinion on the Usefulness of Jenglish on ESL Learning

Table 2

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.916	.920	5

The table shows that the Cronbach's Alpha value for the 5 Likert scale items was 0.916, suggesting very good internal consistency reliability (Pallant, 2016).

Table 3

Statistics						
		SKILLS	FUN	KNOWLEDGE	RECOMMEND	PLAY
N	Valid	22	22	22	22	22
	Missing	0	0	0	0	0
Median		4.00	4.50	4.00	4.00	4.00
Std. Deviation		.631	.790	.811	.853	.907
Percentiles	25	4.00	4.00	4.00	4.00	4.00
	50	4.00	4.50	4.00	4.00	4.00
	75	5.00	5.00	5.00	5.00	5.00

The table above shows that all 5 Likert scale items in this section were rated positively by the respondents. They agreed that Jenglish helped in improving their English language skills (median = 4.00), helped in learning English while having fun (median = 4.50), improved knowledge about English language (median = 4.00), they would recommend the game to other people (median = 4.00), and they wanted to play the game in their English class (median = 4.00).

c. Research Question 2: ESL Students' Opinion on the Usefulness of Jenglish in Relation to Affective Domain

Table 4

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.835	.835	3

The table above shows that all 3 Likert scale items in this part had .835 as the Cronbach's Alpha value, suggesting very good internal consistency reliability for the scale with this sample (Pallant, 2016).

Table 5

Statistics				
		MOTIVATE	EXCITED	CONFIDENT
N	Valid	22	22	22
	Missing	0	0	0
Median		4.00	4.00	4.00
Std. Deviation		.774	.767	.811
Percentiles	25	4.00	4.00	4.00
	50	4.00	4.00	4.00
	75	5.00	5.00	5.00

The table above shows that all 3 Likert scale items were rated positively by the respondents. They agreed that playing Jenglish motivated them to use English (median = 4.00), made them excited to learn English (median = 4.00), and made them become more confident to use English (median = 4.00).

d. Research Question 3: ESL Students' Opinion on How Jenglish can be Improved

The respondents were also requested to give their opinions and suggestions to improve Jenglish. Data from the checkbox item were presented in the figure below.

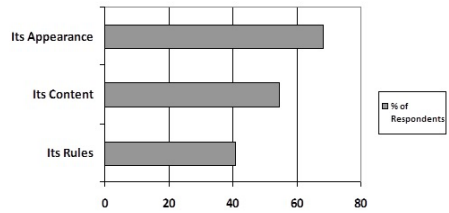

Figure 1

The figure shows that 68.2% (n=15) of the respondents thought that Jenglish needed to improve its content. Other than that, 54.5% (n=12) of the respondents chose the game's content and 40.9% (n=9) of the respondents chose the game's rules as the other 2 aspects that needed to be improved.

Table 6

Themes	Comments
Compliments	"nice" "I think this game is so great and nice" "good game" "good rules" "good" "I love it so much" "Its amazing" "Excellent" "Interesting" "Best" "i like this game" "gg yey" "Splendid" "A recommended english game"
Suggestions to Improve The Game	"The games should be more interesting" "More fun question" "Make more interesting the appearance" "its good game but more content and improve your game" "more creative" "The block of jenga beed to be more bigger" "Improve the rules of the game and the createria for finding the winner" "more questions needed" "Add more task or question to make it more fun." "More colourful" "Need to make it interesting while play the game" "they need to make the game become more interesting by give the participent the prize if they win the game" "the jenga make it bigger"
Benefits	"fun" "It is fun to play with others" "It is fun and intersting to play it."
Others	"Do the best" "trying not to give any excuses for the participant"

The comments were presented exactly as written (verbatim) by the respondents.

4.0 Conclusion

Jenglish, an ESL game created by ESL students, received positive reviews from respondents who had played the game four times in ESL classes. The game was found to be useful in ESL learning in the first research question, and in the second research question, it was found to be useful in relation to the affective domain. Despite these findings, the third research question revealed that the game's presentation, material, and rules needed to be improved, as shown by one of the thematic analysis' themes, Suggestions to Improve the Game.

Ultimately, from the perspective of other ESL students, a carefully designed language game by ESL learners can produce interesting positive results. Despite the fact that the game was directed and supervised by a language teacher, the respondents of the study proposed that certain aspects of the game should be enhanced for potential use in ESL lessons. Future research should look into the impact of this language game on ESL learners' English language skills as well as the effects of creating an ESL game on ESL game developers.

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Language Learning with Copacabana

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ABSTRACT

Songs and music in the classroom are known to be attractive and a valuable teaching tool in language learning. They can be utilized to help students improve on the various skills of the language. They also enhance students' motivation and interest in language learning. Numerous studies have been carried out in using songs for school students to improve on a specific language skill such as vocabulary skills and grammar. However, a song can be utilized to help students practice many different skills in language learning. Thus, an action research in the classroom at the tertiary level was developed to allow students practice on the various language skills through a song. The purpose of this study was to develop activities in the classroom that integrate the four major language skills through the use of a song. Using the song titled Copacabana by Barry Manilow, this study explored some possible ways in enhancing language learning in all the four major language skills basically writing, reading, listening and speaking. Through a survey that was carried out, this approach received positive feedbacks from the students. It was also observed that students were more responsive and attentive in class when using this approach. Thus, integrating songs into language learning serves not only as an effective teaching tool, but it also provides a positive learning experience for students.

Keywords: Songs, Language skills, Tertiary level

1.0 Introduction

As we are now venturing in the different educational approaches in this technology era, songs remain to be a valuable tool in language teaching and learning. Many researchers agree that using songs in the language classroom can help to motivate learners and make learning environment more interesting. Songs have been a valuable tool in language learning at different levels of students (Alisaari & Heikkola, 2017). However, songs have normally been used in the classroom to teach a certain language skill and few studies have been carried out to examine the effectiveness of a lesson in which one song is utilized and integrated into the learning of all the language skills in a classroom. Therefore, this study aims at developing activities that integrate the four major language skills through the use of a song in the classroom at the tertiary level.

2.0 Background of Study

This study is an action research in which activities are formulated in teaching English by using songs to adult learners at the tertiary level. This study was initiated to facilitate students' learning in the English language course which is a prerequisite for the students before they proceed to other semesters. In this higher institution, students are required to take the English language course in the first three semesters of their studies. This study was conducted with the first semester students as they have to undergo listening, reading, writing and speaking skills in the course. From the researcher's observation, many students find it challenging to overcome their lack of proficiency in the language and this affect their motivation level in learning. Therefore, songs are brought in as a tool to assist students in language learning and increase their motivation level in the classroom. Language activities are created using songs and the exercises help increase students' communicative and creative skills, thus assisting and improving students' motivation and performance in language learning.

3.0 Literature Review

Research has shown that using songs in a classroom brings many benefits to the students. First of all, songs serve as an effective tool in supporting students' understanding in learning a language, thus help them in improving their proficiency in the language (Ludke, 2016). In a study by Ainul Azmin Md Zamin, Nor Azrul Hardy Adzmi & Maslawati Mohamad (2020), students have shown improvement

in their vocabulary skills through the use of songs in the classroom as new words are found in the song lyrics. Using songs in the classroom can also bring in a more relaxing setting in learning English. Dolean (2015) has found that music and songs help to decrease student's anxiety level, thus provide the benefit of improving their wellbeing. Students also felt less apprehensive in the classroom and it is found that they tend to ask questions more in lessons with songs than in a normal lesson (Ainul Azmin Md Zamin, Nor Azrul Hardy Adzmi & Maslawati Mohamad, 2020)

Thus, songs are seen as a useful tool to use in the classroom. Teachers believed that students seemed to perform better in the classroom when learning takes place with the use of songs (Alisaari & Heikkola, 2017). According to Malekian (2016), songs are universal and easy to find, and it was found in his study that using songs in the classroom has helped to increase students' motivation in learning new words as they helped to create an interesting classroom environment.

4.0 Methodology

This study was carried out in a classroom of 25 students from a semester 1 Diploma level of the Faculty of Applied Science at a higher institution. The lesson took two hours to complete, in which a song was utilized to create exercises in reading, listening, writing and speaking. The song that was employed for this particular study is titled Copacabana by Barry Manilow which was released in 1978. It is an old song and it is purposely selected by the researcher as students are not familiar with the lyrics. The activities during the two-hour lesson were divided into two parts. In each part, the strategy of the lesson was explained, followed by a display of the task, students' output, language skills involved and the duration of the task. A summary of the activity is given in table 1.

Table 1: Module for Copacabana

NO	TASK	OUTPUT	LANGUAGE SKILLS	DURATION
PART 1 – THE FIRST HALF OF THE SONG IS PLAYED				
1	Listen to the song and try to understand what the song is about. Take note of the characters, and the place of the scene and the story.	Written notes	Listening	5 minutes
2	Answer the following questions about the song. 1. How many characters are there in the song? 2. Name the main characters? 3. Where does the scene take place? 4. What is the profession of the characters?	Verbal responses	Speaking / Listening	15 minutes
3	In groups, predict the ending of the story in the song. Discuss and write the ending of the story. OR Discuss and role play your prediction of the story.	Written paragraph/short essay Role play presentation	Reading and writing Speaking	40 minutes
PART 2 – THE SECOND PART OF THE SONG IS PLAYED				
4	Play the song and sing together. Listen to the actual ending of the song	Singing	Speaking	5 minutes
5	Students fill in a gap-filling exercise on grammar and vocabulary based on the lyrics of the song.	Grammar and vocabulary exercises	Writing	15 minutes
6	In groups, create a different style to singing the song (eg: rap) and present it.	Group presentation	Speaking	40 minutes

After the activities were carried out, a short and simple survey was given to the 25 students to find out their perceptions of the lesson. There were two parts to the survey in which part A comprised of the demographic profile which was made up

of 2 items while Part B consisted of 5 items of a five-point Likert scale (1- strongly agree (SA), 2- agree (A), 3- not sure (NS), 5- disagree (D), and 5- strongly disagree (SD)). The data were analyzed by using descriptive analysis.

5.0 Results

Using songs such as Copacabana in the English language classroom has brought in positive feedback from the students. The result of the survey is shown in Table 2.

Table 2: Students' feedback

No	Question	SA	A	NS	D	SD
1	I like doing writing tasks by using a song in the classroom	64%	36%	0%	0%	0%
2	I like doing listening by using a song in the classroom	72%	24%	4%	0%	0%
3	I like doing reading comprehension exercises by using a song in the classroom.	72%	28%	0%	0%	0%
4	I like practicing on my speaking by using a song in the classroom.	80%	20%	0%	0%	0%
5	I like learning new words through songs	76%	34%	0%	0%	0%
6	I like doing grammar exercises based on a song played in the classroom	60%	32%	8%	0%	0%
7	I like learning English through songs	92%	8%	0%	0%	0%
8	Using a song helps me to relax in learning English	88%	12%	0%	0%	0%
9	I like the song Copacabana	56%	44%	0%	0%	0%

The result in Table 2 showed that 64% of the students strongly agreed that they liked working on their writing using songs and 80% of the students were keen on doing speaking activities through songs, while 72% of the students strongly agreed

that they enjoyed doing listening tasks and reading comprehension exercises by using songs in the classroom. The result also showed that 76% of the students enjoyed learning new words and 60% of the students liked working on grammar through songs. It was also shown that more than 80% of the students enjoyed learning English through songs as that helped them to relax in the classroom.
From the result, using songs in the classroom has brought in positive responses from the students. This study is in line with other studies which has shown that songs serve as a valuable tool in the classroom in assisting students to increase their proficiency, interest and motivation in the English language (Ainul Azmin Md Zamin & Nor Azrul Hardy Adzmi & Maslawati Mohamad, 2020; Romero, 2017; Dolean, 2016; Ludke, 2016;). In addition, introducing songs from the past to the younger generation provides a different outlook and new appreciation towards music.

6.0 Conclusion

This study has provided input on how a song can be used in an English language classroom at the tertiary level to teach the four major language skills: reading, writing, speaking and listening. It is shown that songs work as a powerful tool in language learning and one song can be used in learning numerous language skills. Having songs as a teaching aid to learning English can help students to increase their proficiency and motivation levels. It provides a path to students in learning new words and gaining understanding in the language. Therefore, it is recommended that more songs from the past are selected as teaching tools in language learning. Further research can be carried out on the effectiveness of using songs in language learning particularly on the cognitive and affective levels of students at the tertiary level.

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Language Learning Strategies of ESL Students in Online Distance Learning Environment

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ABSTRACT

When learning, learners can use language learning strategy (LLS) either knowingly or unknowingly to process the new knowledge in their language class. Oxford published the Strategies Inventory of Language Learning (SILL) in 1990. Cognitive, Memory, Affective, Meta-cognitive, Compensatory, and Social interventions are the six broad categories in this inventory. Various studies have since been carried out with an emphasis on LLS in L2 learning. LLS has been shown to assist learners in developing their language skills. Although technology advances, it has also an effect on the teaching and learning process. L2 learners can now learn the language in a technology-mediated environment thanks to the advancement of technology. As a result, this study looked into L2 learners' preferences for LLS while learning English in an online distance setting. This study included 78 participants, with questionnaires serving as the research method. When learning English online, learners used more Compensation strategy in terms of LLS choice. There is also a significant gap between male and female students. In contrast to males, females used more LLS. Female students preferred to use the Metacognitive approach, while male students preferred to use the Compensation strategy. This study's results have pedagogical implications to English teaching and learning.

Keywords: Language Learning Strategies; ESL; Online Distance Learning; L2 Learners.

1.0 Introduction

As we are now venturing in the different educational approaches in this technology era, songs remain to be a valuable tool in language teaching and learning. Many researchers agree that using songs in the language classroom can help to motivate learners and make learning environment more interesting. Songs have been a valuable tool in language learning at different levels of students (Alisaari & Heikkola, 2017). However, songs have normally been used in the classroom to teach a certain language skill and few studies have been carried out to examine the effectiveness of a lesson in which one song is utilized and integrated into the learning of all the language skills in a classroom. Therefore, this study aims at developing activities that integrate the four major language skills through the use of a song in the classroom at the tertiary level.

The process of learning a language varies from person to person. Rubin (1975) claims that good language learners learn differently than poor language learners. From there, researchers have attempted to learn more about the basic learning methods used by language learners. When learning, learners can use language learning strategy (LLS) either consciously or unconsciously to process the new knowledge in their language course. There is a large body of evidence linking the use of effective language learning strategies to academic achievement. A diverse collection of learning strategies and metacognitive strategies are known and used by effective, self-regulated learners to control themselves and their learning activities (Zimmerman, 1994). Despite the fact that much has been learned about students' language learning strategies in recent years, little is understood about how they are used in today's online distance learning environment.

Research Objectives

1. To identify language learning strategies of L2 learners in online distance learning environment.
2. To identify the preference of language learning strategies of L2 learners according to gender.
3. To identify the preference of language learning strategies of L2 learners according to faculties.

2.0 Literature Review

2.1 Language Learning Strategies

Learning strategies are described in a variety of ways by researchers. Language learning strategy, according to an earlier concept by Rigney (1978), is characterised as the actions or routines used by language learners to acquire, record, absorb, remember, and use new knowledge. It is characterized by Wenden (1991 in Mohammad Hossein Gerami & Shiva Madani Ghareh Baighlou, 2011) as steps or operations taken by learners when learning a new language and organising their efforts. Language learning strategies are described as "the specific actions taken by the learner to make learning easier, faster, more enjoyable, more self-directed, more effective, and more transferable to new situations," according to Oxford (1990). Cook introduced a new definition of language learning strategy in 2001, describing it as a principle of choice made by learners in learning the language, which has an impact on their learning. All these different definitions of language learning strategy are based on the same principle. It refers to the steps, processes, or techniques that English language learners use, apply, and adapt to aid in their language learning. Oxford established the Strategies Inventory of Language Learning (SILL), which includes six categories: cognitive, memory, affective, metacognitive, compensatory, and social strategies. Metacognitive methods, according to Oxford, are the ability to schedule, arrange, organise, concentrate, and evaluate one's own learning. It gives the learner power over their own cognition by allowing them to prepare, track, and assess their own progress. Affective strategies help learners regulate their emotions, motivation, and attitudes toward language learning, while social strategies improve engagement with the target language, enabling learners to be more committed to learning with others. Cognitive strategies are the skills of highlighting, analysing, and summarising messages that enable learners to comprehend and create a new language based on their own understanding and through a variety of means. Memory strategies are a direct approach in which the learner is in control of his or her own learning strategies for memorising form and function, vocabularies, and sentence structure. By focusing on nonverbal communication to convey meaning, compensation strategies assist learners in overcoming information gaps and continuing communication. Numerous previous studies have found a positive and significant connection between language learning strategies and language proficiency (Muhammad Irfan & Nur Alyani, 2015; Al-Maktary, 2018). Via the use of the Web 2.0 medium, Ibrahim, Prain, and Collet (2014) discovered that ESL learners embrace and use language learning strategies in order to develop their ESL competence. Rao (2016) discovered that learners' English proficiency has a significant relationship with the amount of strategies

they use, with high achievers using more strategies than low achievers. Lin, Zhang, and Zheng (2017) found that students' learning strategies have an effect on their learning outcomes in an online language learning study. According to Sartika, Santihastuti, & Wahjuningsih (2019), more efficient students prefer metacognitive strategy, while less efficient students prefer cognitive strategy.

2.2 Online Distance Learning

The landscape of language teaching and learning is evolving due to rapid technological advancements. Without having to see each other, teaching and learning can now be done online. One of the major drivers of distance learning has been the ease of online learning. "Online learning evolves as a product of distance education" (Malithong, 2005). Distance learning, online learning, web-based learning, e-learning, cyberlearning, and computer-based learning are all definitions with varying meaning (Moore et al., 2011). The word "online learning environment" is then used to refer to a group of similar learning concepts that take place on the Internet or require the use of the Internet (Moore et al., 2011). One distinguishing feature of e-learning is the separation of learner and instructor in a synchronised or non-synchronized class, which allows students to learn independently (Solak & Cakir, 2015). Distance learning, often known as distance education, is a new reality that provides educational institutions with challenges and opportunities, according to Mehrotra, Hollister, and McGahey (2001). It is a reality that offers students more choices about where, when, how, and from whom they learn. It is also a reality that allows an ever-increasing number of people to access education. According to Puteh (2008), the advantages of online distance learning include 1) 24-hour access to knowledge, 2) up-to-date content materials, 3) self-paced learning, 4) personalised courses, and 5) cost-effectiveness. Online distance learning provides excellent mobility, a wide range of study options, and increased scheduling flexibility for students and the institutions that deliver these options (Aslanian et al., 2019).

2.3 Language Learning Strategy in Online Distance Learning

Although much has been discovered in recent years about students' learning strategies, little is known about how they are used in today's online distance learning environment. Even in this digital world, language learning strategies are still considered important and essential for successful language learning, and strategies for a variety of digital learning challenges exist (Oxford & Schramm, 2007). Zariski & Styles (2000) found that adaptive strategy appeared to control students' approaches to e-learning. When students seek assistance in the

learning process, they use an adaptive strategy. An analysis of language e-learners in Turkey was conducted by Solak & Cakir (2015). Learners used metacognitive and memory strategies the most, while cognitive and affective strategies were used the least, according to the findings. In online environments, students who make good use of their time, are mindful of their learning patterns, objectively examine content, and remain optimistic about understanding the learning material despite difficulties are more likely to achieve higher academic grades (Broadbent & Poon, 2015).

3.0 Methodology

This study is exploratory in nature and data is obtained using a survey questionnaire, which will be used in the analysis and investigation. Students from both the social sciences and the sciences filled out the questionnaire, which yielded results. This study's respondents are university students who are actually enrolled in an English course as part of their curriculum. A total of 78 respondents were involved with this study and were chosen using a convenience sampling method. All of the respondents studied English in an online distance learning environment. The entire teaching and learning process took place entirely online. Questionnaires were adapted from Oxford's Strategy Inventory for Language Learning (1990). The SILL (Strategy Inventory for Language Learning) (Oxford, 1990) was developed as a method for determining the frequency with which students use LLS. SPSS is used to analyse the gathered data from the respondents.

4.0 Findings

This research focuses on L2 learners' language learning strategies in an online distance learning environment.

Table 1: Mean for Language Learning Strategies

LLS	Mean
Memory	3.4316
Cognitive	3.5720
Compensation	3.5872
Metacognitive	3.5769
Affective	3.3419
Social	3.4658

Using mean and standard deviation, the data obtained from the respondents was analysed to determine the most preferred LLS. Compensation strategy is the most widely used LLS among learners, with the highest mean value (3.5872). Affective strategy is the least used LLS, with a mean value of 3.341. However, as shown in Table 1, the difference between each strategy's mean value and the others is not major. This indicates that learners also employ other LLS in their L2 learning and they were equally used.

Table 2: Mean for Language Learning Strategies Based on Gender

LLS	Male	Female
Memory	3.2611	3.6111
Cognitive	3.2827	3.8765
Communication	3.2850	3.9053
Metacognitive	3.1861	3.9883
Affective	3.1083	3.5877
Social	3.1833	3.1083

Data is analysed according to gender to learn more about the respondent's preferred language learning strategies. The most preferred learning strategy for male students is compensation, with a mean value of 3.2850, whereas the most preferred learning strategy for female students is metacognitive, with a mean value of 3.9883. Affective strategy is the least favoured LLS for men, with a mean value of 3.1083. With a mean value of 3.1083, female students seem to have the least preference in social strategy.

Table 3: Mean for Language Learning Strategies Based on Faculty

LLS	FPDP	FKA	FKM
Memory	3.4330	3.5979	3.2346
Cognitive	3.6351	3.6447	3.3504
Communication	3.6769	3.7143	3.2444
Metacognitive	3.7179	3.5873	3.2593
Affective	3.5043	3.3849	3.2083
Social	3.5684	3.4365	3.4365

The following three faculties provided data for this study: Fakulti Pengurusan dan Perniagaan (FPDP), Fakulti Kejuruteraan Mekanikal (FKM), and Fakulti Kejuruteraan Awam (FKA). As data is analysed by faculty, it is discovered that

FPDP students have the highest tendency to use metacognitive strategy, with a mean value of 3.7179, whereas FKA students prefer communication strategy, with a mean value of 3.7143. With a mean value of 3.3504, FKM students are more oriented toward cognitive strategy. Memory, with a mean value of 3.4330, is the least favoured strategy for FPDP students. With mean values of 3.3849 and 3.2083, respectively, affective strategy appeared to be the least common among FKA and FKM students.

5.0 Conclusions

When learning English in an online distance learning environment, this study was able to illustrate the learners' preference for their LLS. According to the findings, respondents prefer to use a compensation method while learning English in an online environment. L2 learners use compensation strategy to compensate for their poor knowledge of the language with something else. Where the exact word is unknown, compensation strategy is primarily an ability of guessing meanings from context in reading and listening, as well as using synonyms and gestures to communicate meaning (Oxford, 1990). When faced with a language challenge, L2 learners tend to make educated guesses, according to the finding of this study. This study could help educators and students develop lessons that are tailored to the learners' learning styles. Teachers and educators can implement a variety of language learning strategies so that students can choose the ones that best fit their personalities and are relevant to their learning objectives. Students who recognise the value of language learning and employ a range of strategies will find new ways to learn and improve their language skills.

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II J
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Designing Online and Distance Learning: AID Pedagogical Approach for Creative and Critical Thinking Course

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ABSTRACT

The notion of delivering a diploma program module through an online and distance learning mode overcame accessibility to teaching and learning facilities. However, a more challenging issue in the course design ensures the successful delivery of the learning objectives. This project attempted to find the most suitable structure of a creative and critical thinking course for online learning. It proposed integrating the Active, Inquiry and Deep (AID) learning pedagogical approaches to shape students' desired thinking skills. The project was conducted using 15 groups of students with 308 working adults aged between 20 to 40 years old from 2011 till 2017. The online and open distance learning mode is determined by 10 hours of synchronous and 30 hours of asynchronous learning. In the beginning, class discussions were centred on developing communication and information-seeking skills. As the students were ready to share and listen, the teaching was directed to identifying problems critically before taking on creativity in finding potential solutions to selected issues. Students translated their ideas into tangible and intangible outputs based on scientific techniques applied in investigation. Various activities were adopted to develop a set of skills for intended learning outcomes. Programmatic assessment tools were carefully selected to evaluate the progress. Students could present their innovative products at the end of the course through a small-scale innovation project exhibition.

Keywords: Active Learning; Inquiry Learning; Deep Learning; Online Learning; Open Distance Learning.

1.0 Introduction

Malaysia is one of the countries that had to make critical decisions in delivering quality education after undergoing lockdown due to the COVID-19 pandemic in March 2020. The primary, secondary and tertiary education providers had to reconsider the adequacy of its conventional education system. The prolonged COVID-19 pandemic situation had forced the educators to shift the synchronous learning from face-to-face to an online teaching mode as instructed by the Ministry of Education, after rethinking students and teachers' safety accessibility to quality education for all. Despite the rising concerns on the educators and students' readiness in embarking on new norms, online learning had largely replaced the traditional classroom for the past year. A paradigm shift in education has resulted in new modes of educational delivery, new learning domains, new learning principles, new learning processes and outcomes, and new academic roles and entities (Bates, 2005). One of the most prevalent changes in determining the best solution in providing education upon learning facilities' closure is to execute online and distance learning. However, a more challenging issue in the course design is ensuring the successful delivery of the learning objectives regardless of the learning approaches used.

2.0 Background of Study

Open distance education (ODL) as a multidisciplinary field has reacted to the changes in ICT technology diffusion; it has and is still evolving and orienting itself to fulfil demand (Harasim, 2000). Communication, collaboration, and information exchange (Levy, 2017) are the main aspects that facilitate open distance learning. Due to the availability of internet access, smart mobile devices and the development of telecommunication services, online application in the learning environment has increased rapidly via video conferencing, chats and forums, online assessments, remote laboratories or teamwork through the web (Herrador-Alcaide, Hernández-Solís, Hontoria, 2020). Eventually, the concept of ODL has evolved to include online learning as a type of distance learning – the idea for learning across distance and not in a traditional classroom. Online education became increasingly accessible and allowed new pedagogical models to emerge.

Within the past decade, online learning is one of the most popular forms of education that significantly impacted the education system, and the trend is only increasing during the COVID-19 pandemic. The critical difference between online learning and open distance learning is location, interaction and intention (Pahwa et

al., 2005). Traditionally, a paradigm shift in attitudes towards online education has been prevalent since the 1990s (Bates, 2005). Online learning takes place over the internet and is often referred to as e-learning, among other terms. Online learning delivers course materials through the internet, which is offered synchronously and asynchronously (Osman et al., 2016). While instructors conduct online learning in a classroom through digital lessons and assessments, distance learning allows students to work online at home at their own pace and time. The teacher assigns work and checks digitally. However,

Several platforms and tools are available to conduct the teaching-learning processes where these have made ODL more feasible to provide course materials. The study by Raihana et al. (2021) investigates the students' preferences toward ODL tools, and the survey focused on undergraduates from universities in Malaysia. One of the most widely used platforms is the Learning Management System (LMS). LMS is an online platform that connects educators and learners via online communication (Adzharuddin, 2013). The LMS also allows educators to monitor and manage classes by providing online materials, discussions, task evaluation and other online activities. Some higher learning institutions' LMS are uFuture, Blackboard, and Spectrum. The non-campus LMS are Google Classroom, Schoology and Moodle. Generally, both LMS types provide comprehensive features that allow the educator to monitor and analyze students' progress and performance during ODL. Google Meet, Zoom, Jitsi, Microsoft Team, and Cisco Collaboration solutions are among the standard tools used for video conferencing. To support ODL, online video conferencing is a beneficial tool, especially for ODL, where students can fully benefit by reviewing past recorded videos for their revision. There are some limitations to online video conferencing, such as poor connectivity, broadband and audio and video quality (Nambiar, 2020). Telecommunication services fee and cost of available smart mobile devices would be one of the main concerns in implementing these online platforms for ODL in their respective institution.

On the other hand, discussions on delivering a skill-based course through an online platform are mixed. The skill-based courses emphasize the teaching of proofs; cognitive skills that are enhanced with practice. Education-based skills development (also known as competency-based learning) evolved with the implementation of didactic techniques such as Problem-Based Learning (PBL), Project-Oriented Learning (POL), and Research-Based Learning (RBL) (Brown, Patrick, Tate & Wright, 1994). Students and educators need to actively engage and interact through learning by doing sessions in the skill-based learning model. Some studies describe the success of hybrid learning contents support such as video class and video conferencing to complement the missing session of face-to-

face instruction (Adzaharuddin, 2013; Raihana et al.,2021).

Similarly, other studies illustrate the shortcomings of online education that lacks engagement, less real-time and real-life contact. The studies attempted to identify the pedagogical method design (Ada, Steve, Sophie & Raymond, 2010; Delgado, 2021;). Therefore, the rising concerns are not about technology (LMS, video conferencing and others), which help deliver education. Effective teaching and learning remain unclear, giving disruptive technology the only mode to provide quality education during the COVID-19 pandemic. In the future, the practicality of the teaching and learning approach has to be reviewed. This study is timely and vital, giving increasing discussions on online learning. Even though ODL is not a new concept, future online-based education is becoming essential. Therefore, this paper poses the question of the adequacy of the pedagogical approaches for developing cognitive skills through online and distance learning.

The purpose of this paper is two-fold:
- To discuss issues related to learning approach for effective delivery of skill-based courses through online and distance learning mode;
- To propose an appropriate pedagogical approach and study plan structure for skill-based courses through online and distance learning mode.

The following section presents some relevant literature on pedagogical approaches. The third section discusses the methodology. The fourth section presents the result of the project-based action research. The final section ends with some discussion, limitation and recommendation for future research.

3.0 Literature Review

Online education is a paradigmatic shift from traditional education due to innovation diffusion, particularly Web technologies. Online education increasingly accessible, open, flexible; it allowed new pedagogical models to emerge and reasoned the revolution in the digital knowledge age that enabled more excellent and faster human communication. At the same pace, education is not a stand-alone activity within the classroom. Online learning is catalyzing a pedagogical shift in how we teach and learn. There is a shift away from teacher-centred education to student-centred learning. It turns passive students into a more interactive, collaborative approach in which students and the Instructor co-create the learning process. The Instructor's role changes from the "sage on the stage" to "the guide on the side".

3.1 Constructivism and Collaborative Approach through Online Education

A constructivism approach is the centre of an online and distance learning mode. Constructivism maintains people actively construct new knowledge as they interact with their environment. The student-centred approach in which students "co-create" three learning experiences. This approach empowers students as active learners instead of passive recipients, absorbing information and reproducing standardized tests. Constructionism asserts that learning is particularly effective when constructing something for others to experience, such as a spoken sentence or an internet posting to more complex things like a painting or a presentation. Another way is to explain ideas to someone else in their own words or produce a slideshow that explained these concepts. Students would gain a deeper understanding that is more integrated into ideas. A constructivist approach, emphasizing adult learning principles and placing emphasis on the student, is advocated.

The collaborative approach is another centre of online education that led to new economic activity forms that produced the knowledge economy and required fundamental education changes (Harasim, 2000). The unique understanding of the very nature of learning has affected the definition, design, and delivery of education. Collaborative learning promotes the joint construction of knowledge and the development of skills related to the interaction, resulting in more essential learning processes (Miguel, 2021). For a skill-based course, an instructor focuses on the experiences that would best generate learning from the learner's point of view, rather than just publishing and assessing the information. In student-centred learning, the student is a teacher as well as a learner. Hence, an Instructor has many roles, from being the sole source of knowledge to being a guide and role model. Students address their own learning needs by moderating discussions and activities that collectively lead others towards the class's larger learning goals (Miguel, 2021).

3.2 Active, Inquiry and Deep Learning Pedagogical Approach

Regarding the pedagogical approaches, there are three identified learning approaches relevant to creating critical and creative thinking. First, active learning as the most fundamental approach in learning has attracted considerable attention in higher education in response to concerns about how students are learning. There are many different forms of active learning, yet most of them are classroom-based. Studies show an alternative to active learning in the classroom through active learning outside of the school in student projects (Heriot et al., 2008).

Second, while traditional learning, such as lecturing by the teacher, is supposed to increase learners' understanding and keeps them active during the learning process, it has been widely asserted that inquiry-based learning increases learners' knowledge and thinking skills (Nedungadi et al., 2015). inquiry-based learning is a pedagogy that supports student-centred learning and encourages them to think scientifically. It develops evidence-based reasoning and creative problem-solving skills that result in knowledge creation and higher recall (Khalaf, 2018).

Third, in-depth learning instruction provides students with the advanced skills necessary to deal with practical problems where jobs are becoming more cognitively demanding. It prepares them to be curious, continuous, independent learners and thoughtful, productive, active members. Deep learning is less focused on teaching many topics, providing a breadth of information, and more focused on promoting meaning and understanding, making connections, building relationships between relevant information and ideas, and fostering advanced analysis, interpretation, and application. There are many opportunities for students to process information and images as they develop and use literacy and thinking skills. Students are less passive and more engaged in the learning process. A review of relevant literature found that formative is key to deep learning (Rushton, 2009). In line with the paradigm shift, the assessment culture has emphasized the importance of formative assessment.

3.3 Skill-based Course related to Thinking Skills

A skill-based course, such as developing thinking skills, is a highly engaged and interactive model. Critical thinking requires several strategies and studies to apply in business education courses successfully. Bartlett (2002) found that high school business students ranked critical and creative thinking as the secondary level's highest cognitive strategy. One of the unique ways of supporting the upper-grade students' necessary thinking skills is through technology in learning (Shakirova, 2007). At the university level, Tempelaar (2006) investigated the role of critical thinking in business education programs and found a positive correlation between critical thinking (identified as a subset of metacognition skills) and course performance. In another study, a group of researchers developed a critical thinking module in an undergraduate business studies program that used experiential exercises to enhance students' decision-making and conflict resolution skills (Hannon, McBride, & Burns, 2004).

Another way to enhance critical thinking skills is by conducting collaborative learning activities (Yazici, 2004). For example, a project-based team approach

for undergraduate e-commerce activity (Ngai, 2007). Results from both student surveys and assessments indicated that students gained critical thinking skills based on the practical application of "learning-by-doing" and the project's collaborative effort. Similarly, problem-solving skills may also result in students acquiring essential thinking skills when business students completed a new business model to solve poor firm performance. In another study, Whatley and Dyck (2000) applied International Monetary Fund development scenarios to international business topics with MBA students. The case method (Rippen, 2002) provides students with the experience of practising intervention skills and solving complex problems. With a bit of investigation and creativity, instructors can find resources that facilitate integrating critical thinking activities into their course.

Therefore, the study decided to explore the three approaches in addressing online and distance learning effectiveness. The following section describes the project's detail in proposing an improved class structure for delivering a skill-based course through a combination of carefully designed pedagogical approaches.

4.0 Methodology

This research project was conducted for the Creative and Critical Thinking Course addressing the students of the Diploma in Business Administration program offered by the Institute of Continuing Education and Professional Studies (ICEPS, UiTM). ICEPS provides a distance learning program through the iCLASS Learning Management System. The motivation in initiating the project was due to the constraints that the lecturer and students faced. The problems include access to teaching and learning facilities, the proximity of class members to the campus for possible meetings and difficulty of communication among students and the lecturer.

The project was conducted using 15 groups for 308 working adults aged between 20 to 40 years old from 2011 till 2017 in the UiTM Shah Alam campus. Table 1 lists the class group and the number of students who participated in the project. The students are Bumiputra students that work in various government agencies and small-medium enterprises. They work as officers and senior officers. Some of the students have more than five years of work experiences.

Regarding the students' profile, the adults working groups came from various industry backgrounds and working experiences. The majority of the students were working adults who resided outside of Selangor, such as Johor, Kelantan, Penang

and Perak. They need to travel and stay over the weekend near Shah Alam campus for attending the five-time two hours classes over alternate Sundays.

Table 1: Profile of The Students Involved in The Research Project as Participants

Year & Semester	Number of Students
2017 2	18
2016 4	13
2016 2	18
2015 4	14
2015 2	27
2015 2	17
2014 4	46
2014 2	27
2013 4	23
2013 2	24
2012 4	5
2012 2	26
2011 4	23
2011 2	27
Total	**308**

Source: LMS Record
https://iclass.uitm.edu.my/Group/default.php?ttype=course&cuserid=93926773

This paper adopted project-based action research. Action research is essentially a collaborative, democratic, and participatory approach to systematic inquiry into a problem of practice within a local context. Action research has become prevalent in many fields and disciplines, including education. This prevalence can be understood in how action research lends itself to action-based inquiry, participation, collaboration, and the development of solutions to everyday practical problems in local contexts (Towns et al., 2000).

It is an experimental type of project-based action research to find the most appropriate method of teaching creative and critical thinking skills. Multiple attempts were made to restructure the class delivery between 2011 to 2017. From 2011 till 2015, classes' location allowed the tangible presentation of outputs and ample space for activities. However, between 2016 to 2017, the site was shifted to new learning facilities that provided limited sharing space for displaying the course's outcome. Therefore, an online platform, such as WhatsApp and iCLASS LMS, was highly dependent between 2016 and 2017. The diploma classes were conducted during the weekend alternately; 5 meetings-2 hours on Sunday afternoon with 10 hours face to face meeting and 30 hours online classroom using iClass LMS platform of 3 credit units. Thus, contributing to a minimal opportunity for active interaction among members.

5.0 The Research Process

Action research generally follows a systematic and cyclical pattern of reflection, planning, action, observation, data collection, and evaluation, which then repeats in an iterative and ongoing manner. The goal of action research is to inform local practice, engage in professional learning, build a community practice, solve a problem or understand a process or phenomenon within a particular context, or empower participants to generate self-knowledge (Dickens & Watkins, 1999; Elg et al., 2020). This project sets 3 learning approaches. The project integrated innovative teaching and learning methods through 3 stages: 1) The Active, 2) Inquiry and 3) a Deep (AID) Pedagogical Approach for Critical and Creative Thinking course delivered using online and distance learning mode. Table 2 summarizes the design of the class structure. The following section describes the process:

Steps 1 Active Learning

Active learning is any learning activity in which the student participates or interacts with the learning process instead of passively taking in the information. For this project, active learning refers to learning activities conducted during the face-to-face 10 hours classroom setting. The class started with understanding the student profile, state of origin, position at the workplace, and challenges in completing the course. Students have grouped accordingly by considering the ease of networking. Several active learning activities were discussed and planned with the students upon consensus. For every 2 hours of class, a one-hour traditional lecture was conducted according to the course contents. The class conducted active learning activities such as guided group discussion, brainstorming, role play, business issue review and guided information-seeking events using mobile technology (YouTube, Google Search). At the end of the class, class members will plan for the active learning activities scheduled for their next class meeting. Apart from the face-to-face class setting, the online class platform iClass Learning Management System and WhatsApp were utilized and updated regularly to provide smooth communication among members on their preparation for following the active learning activities.

Steps 2 Inquiry Learning

Inquiry learning is directed by questions, problems or challenges that student work addresses using online classrooms. It is a teaching and learning method that prioritize student questions, ideas and analyses. In this project, the Structured Inquiry was adopted to fit the thinking level — applying business and management

concepts. Students were given an open question and an investigation method. They must use the technique to craft an evidence-based conclusion. Students conducted market surveys on existing products such as bottled juice, sardine, cornflakes, and others for in-class active learning. Students have to run a market survey by selecting one type of product from 4 different product brands. They have to bring samples and collect feedback for comparative product analysis using a simple matrix of decision-making factors (multi-criteria decision-making techniques) – to understand, rate and rank products for improvements. Students have to analyze and discuss their outcome with group members to present findings and results to the class members. Simultaneously, while inquiry learning in the online classroom took about 30 hours, students were also guided on questioning critical information-gathering techniques. Some of the assigned works were conducting online discussion on current business issues such as sustainable development, e-marketing, Fintech, Industrial Revolution 4.0, IoT, Society 5.0 others. The lecturer will pose a topic or theme for the class members to upload their views, sharing video or evidence of their claims for the related responses.

Table 2: New Structure of AID Pedagogical Approach by Week of Study

AID Pedagogical Approach	Application	Skills	Activities & Assignments	Learning Outcome
Step 1: **A**ctive Learning Week 1-4	*Learning* which engages students as active participants in their learning during face to face class /online with class members.	Communication Information Seeking using Webs, WhatsApp.	Creative Presentation Using White Board, Notice Board, Poster, Video, Mind Map, PPT Slides *Presentation Kit	CO2 & CO4 Comprehension Application
Step 2: **I**nquiry Learning Week 5-9	*Learning* directed by questions, problem or challenges that student work to address.	Critical thinking using video, observation at site, YouTube channel, Newspaper.	Market Survey and Comparative Analysis of Product Design. *Factor Rating Method	CO3 Application Analysis
Step 3: **D**eep Learning Week 10-14	*Learning* that allows a student to take what's known in one situation and apply it to another.	Creative Thinking using video making, voice recording, infographic and prototype making	Small Scale Innovation Project *Design Tools	CO1 Synthesis Evaluation

Source: Author's work

Step 3 Deep Learning

In this project, the in-depth learning process took place between physical classes. Simultaneously, the students are assigned to complete their small-scale innovation project outside the classroom instead of sitting for the final examination. Some of the small-scale innovation projects conducted are Innovative Packaging, New Product Design, and Eco-friendly Product Development. The groups were guided at every step and needed to continuously develop their projects by performing a few inquiry learning activities beforehand. Some of the compulsory activities are brainstorming, market survey, analysis using techniques (factor rating method, product comparative analysis matrix), drawing and creative presentation of ideas, and writing a full report. Students were also guided on presentation skills for the project proposal.

Between 2011 to 2014, the students could only demonstrate a low level of critical and creative thinking through notice board presentation of sustainability-related themes. The students' performance was generally poor due to the task assigned as the final group project, the formative assessment. Creative expression with summarized information was put up on the notice boards and evaluated by peers and instructors. After 2015, an evaluation of the progress and performance through the online platform becomes the only way possible to the new groups. Due to space and learning facilities' limitations, the final group project's main task was to submit a short video presentation on social innovation and environmental issues. Students could take the challenge to learn independently from peers and online and internet sources to make a short video presentation at sites. They recorded interviews and observations compiled into a written report and presented creatively on critical issues. Students displayed a much higher level of creative ability and essential thinking skill due to the assigned task.

After 2016, the Instructor started to improve the formative assessment to a more challenging market survey assignment, product design and video presentation. The changes were made because of the classroom's minimal space for active learning and small class size. The range of 15 to 18 students per group has given more room for personal and close monitoring and contact. After a few rounds of trial and error, finally, the Instructor completed a standard study plan with proper planning, scheduling, work instruction, and guidelines. The improved study plan facilitates the precise class's conduct for timely distribution through the LMS platform. Preparation was done according to strict deadlines for projects to be completed on time. The achievement of the project is not only measured by how well the project was completed.

In order to understand whether the activities have changed the thinking skills and attitude of the students in becoming critical and creative, students were asked to give feedback on their experiences and satisfaction towards the final small-scale innovation project upon completion and submission of the report. Overall, students commented that they have learned and completed the task well. However, they responded that if they were given a second chance to conduct the innovation project, they will do it better and differently. It can imply that there is some evidence of a changing attitude and thinking style. Some of the comments are as below:

"… I have learned the proper way to conduct analysis. I think I can improve in future by studying more techniques in conducting analysis." Student 1
"… I think I may improve this analysis if there are any products that are cheaper than Myrasa with the same quantity and same featured product." Student 2
"… I can make this analysis more detailed…" Student 3
"…I believe I can make this analysis better if I can able to know how this product processed…" Student 4
"…after conducting the project, I found that people look for more criteria before they decide to consume…" Student 5

The above comments show the confidence and desire to make the innovation project better if the students have known better techniques, have more time and knowledge of the study object. These statements show the course has achieved the desired outcome and objectives. Throughout the project, a few rounds of confirmation from the class members were obtained. The lecturer carefully refined the instruction for selected activities to be objective and align with the learning approaches. The related records of activities and experimentation with 15 groups were then turned into a finalized study plan structure as in Table 2.

6.0 Discussion

This classroom technique of blending the online and traditional face-to-face lecture with the AID pedagogical approach has allowed both students and the lecturer to achieve all the course objectives. Table 3 summarized the AID pedagogical approaches' outcome to the original course objectives designed before rearranging the structure during the project.

Table 3 Summary of the Outcome

No	Course Objectives	The Outcome of AID Pedagogical Approach
1	Demonstrate skills in creative and critical thinking	**Small Scale Innovation Project** helps to achieve all the required objectives by developing ability and skills among students. Discussion on issues (CO1), fact-finding and selecting relevant information (CO2), critical and analytical thinking using appropriate decision-making techniques (CO3), display new product design and convincing the appropriateness of ideas for problem solving/solutions (CO4). Students are aware of plagiarism and infringement, the ethical issue related to innovation (CO4).
2	Use Information technology and communication skills to express critical thinking and innovation	
3	Justify ideas adequately in any study/work-related discussion/events	
4	Organize events that will show understanding of processes involved in ethical innovation	

Source: Adapted from course information of the Creative and Critical Thinking, ICEPS (2017)

There are two benefits of the AID pedagogical approach on innovative teaching and learning processes. First, it has proven that online classroom technology, iClass LMS and WhatsApp are helpful in the module. With the help of innovative education technology, the online and distance learning program is just as effective as traditional learning in achieving the objectives of creating critical and creative thinking. Online learning also allows students to receive continuous guidance and supervision throughout their learning stages. It enables students to learn at their pace systematically. The results of the project are recorded in the LMS class system.

Second, the AID pedagogical approach has significantly contributed to the creative and critical thinking course's teaching and learning process. The AID pedagogical approach contributed to a new way of teaching for business students. The student-centred learning approach is a feasible way of learning for working adults. A highly guided teaching approach is needed for a diploma program to help students acquire knowledge and enhance extended life learning skills. At the same time, students can pursue their studies from simple to complex tasks and individual competency to group networking. Records of students' work are kept in the LMS IClass system and confidential.

7. Conclusion, Limitations and Recommendation for Future Studies

The study has proven the pedagogies' effectiveness in addressing the limitation

of resources even in an online and distance learning setting. Thus, extend our understanding of practices as discussed by related studies in pedagogical approaches (Heriot et al., 2008; Nedungadi et al., 2015; Khalaf, 2018; Rushton, 2009).The AID pedagogical approach needs to be carefully designed, scheduled, and planned many months ahead of the class to ensure that the course objectives are achievable and doable. Clear instructions, guidance, supervision and appropriate duration of the time has to be given to students. The Instructor intentionally redesigned the delivery schedule and approach to systematically structure the Active, Inquiry and Deep learning (AID) pedagogical approach in sequence; shift from simple active learning activities to more complex inquiry learning and deep learning at the end of the course. The Instructor conducted the feedback on experience in running the projects, assessing the changing attitude and desire in making improvements even after the class is done. As a result, the students as the evidence of a change agent; the student's thinking style has changed to become a curious, systematic, realistic and innovative.

Technological advancements are awe-inspiring and provide opportunities to expose students and lecturers to the efficient and effective online learning process. Educational technology should be wisely used to enhance personal learning, not to replace traditional learning methods entirely in line with the concepts recommended by Harasim (200). The implementation of various innovative classroom techniques, including critical analysis and creative presentation and product innovation, has made the class an exciting session for all. The project has extended the understanding of the conduct of project-based action research as described by Dickens & Watkins (1999), Elg et al. (2020) and Towns et al. (2000).

However, there are some limitations to the project. It was found that only with the availability of online platforms and accessibility to the internet could open and distance learning be successfully conducted. As the project was completed between 2011 to 2017, open distance learning was the class's central concept. However, the structure and method are still relevant for the current online and distance learning due to the shared issues of inability to meet physically (face to face mode). The limitation of class time and engagement in the physical classroom can be overcome with a systematic online teaching and learning process.

Some practical implications can be drawn for this project. First, in designing the online and distance learning structure, one needs to be responsive to the learners and understanding the adult students' profile. It is also essential to consider the course contents and delivery method following the three pedagogical approaches. High consideration must be given to the availability of a user-friendly online learning

platform, conducive infrastructure (if available), and ecosystem, facilitating and guiding the lecturer and students into the practice of online and distance learning in assuring the quality of education.

Some suggestions for future studies to evaluate the module's effectiveness include a more comprehensive study to measure the course's impact in extending the critical and creative thinking abilities into some entrepreneurial capabilities. Also, it may be an added value to explore the way to embrace the pedagogical and andragogy approaches in exploring adult learners' best learning approaches.

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II J
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Application of Internet-Based Tools in Integrated English Language Skills Classes for Open/Online Distance Learning (ODL)

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ABSTRACT

The application of various approaches is an integral part of a teaching and learning session. Numerous tools and techniques are readily available to be integrated into the sessions to ensure that the outcomes desired can be successfully achieved. However, thorough consideration and preparation must be done when it comes to choosing and integrating suitable tools. Some of the aspects considered are the learning outcomes, the types and function of the tools, and the usability of the chosen tools, which include the materials and interaction tools. This paper presents the application of internet-based tools in the integrated English language skills classes using the open/online distance learning (ODL) medium. All the three stages of teaching and learning process namely the pre, while and post are included in this study.

Keywords: Online learning, open distance learning, English, integrated language skills, e-learning.

1.0 Introduction

The development of education, in-line with the progress of time has required various shifts in the landscape of teaching and learning. Students are constantly changing in terms of age, background, and generation, necessitating the use of various approaches to meet their needs and learning preferences. This requires the instructors to further delve into the variety of teaching approaches and use multiple

platforms in ensuring the quality of the teaching and learning process is preserved hence achieving the main objective and purpose of education itself.

Among others, Education 4.0 which is a response to the needs of Industrial Revolution 4.0 (IR4.0) where humans and technology are aligned to enable new possibilities, highlights the flexibility of learning, where it can be done anytime and anywhere (Fisk, 2017). E-learning tools play such a major part in flexible learning as they offer great opportunities for activities involving it (Anealka A.H., 2018). As far as internet-based tools are concerned, some of the aspects worth-noting when it comes to the preparation of lessons which are digital literacy of the learners, the types, function, and usability of the chosen tools.

In general, the students who enroll in a tertiary education at present are the Generation Z (Gen-Z) kids ranging from 18 to 23 years old. This generation is revolutionized by technology, and well-engaged in flexible learning with minimal boundaries, which includes both the usage of related software or applications, as well as the devices in the process (Kozinski, 2017). They can use multiple platforms and technologies at the same time and quickly pick up new software. Information technology (IT) is a major part of their life, with no exception to learning. Therefore, the integration of internet-based tools either web or mobile apps-based is seen to fit the need in teaching and learning.

The tools readily available on the web or smartphone applications store can be categorized into different types and functions. As for the types, it can be generally divided into:

a) Web-based - accessed via Internet browsers
b) Mobile apps-based - accessed via applications for smartphone/tablet PC
c) Combination of both web and mobile apps-based

In general, the tools which offer handheld device applications can also be accessed via their web-based applications (e.g.: Google Classroom, Kahoot, Mentimeter), but not all web-based tools offer handheld device application (UFuture, iClass).

As for the function, the most comprehensive one is the learning management system (Google Classroom, OpenLearning, UFuture, iClass) which integrates all integral functions related to teaching and learning such as material sharing platform, discussion board, assignment or assessment management. Through these platforms, learners are able to upload and share their works to be checked and marked by the instructors.The assessment management functions in general also

integrate the auto-marking feature which allows the instructor to automatically generate the marks of the learners once the assessment is completed.

Other individualized functions range from communication (WhatsApp, Telegram), social media (Facebook, Instagram), media storage (Google Drive, Dropbox), media sharing (Padlet, Flipgrid), online quiz (Kahoot!, Quizizz), survey (Mentimeter, Google Form), screen recording, (ScreenRec, Screencastify), video conferencing (Google Meet, Zoom), and multimedia editing and designing (Canva, Powtoon, Prezi). The combination of these functions can assist both instructors and learners in elevating their teaching and learning experiences.

Usability is the other factor that also needs to be considered concerning the teaching and learning process. On one hand, good usability for online learning materials alludes to the site, content and media which are easy to be found, used and navigated. Whilst usability for the people signifies easy to be used and facilitated interaction tools (such as email and discussion forums) (Shank, 2009).

All the aspects mentioned above ranging from the learning outcomes of the lesson to the users' level of digital literacy are essential in ensuring a success in the teaching and learning process.

2.0 Objective

The objective of this paper is to present the application of internet-based tools in an integrated English language skills class for open/online distance learning (ODL).

2.1 Background

The subject for this particular paper is ELC151 students (Integrated Language Skills II), which is a compulsory English language subject for undergraduate students (diploma level) for numerous programs in the institution. As it is an integrated language skills course, the learning outcomes focus on the main language skills, namely reading, speaking, and listening, whereas grammar is taught incidentally in the teaching of the stated skills.

2.2 Learning outcomes

The general learning outcome for this lesson is to demonstrate the ability to listen and respond to various discourse at a higher intermediate level. The specific learning outcome is listening to details.

2.3 Pre-listening stage

The lesson started with a set induction for the learners to familiarise themselves with the activities and theme of the lesson. They were given a brief explanation about the lesson, including the kind of activities and the expected outcomes. The initial question given to the learners via WhatsApp group using voice notes was "Who do you think is the strongest/the best superhero in The Avengers?", and they were instructed to respond also by using voice notes. All of them participated in the activity, and they were sharing their personal opinion, agreeing as well as disagreeing with others regarding the issue.

2.4 While-listening stage

There were two parts to this stage, which involved similar activities. In the first part, the learners were instructed to watch and listen to a video on Facebook entitled Kids' Choice Awards - The Avengers. For the second part, the video was on YouTube, entitled Avengers Infinity Wars singing The Marvel Bunch. After a few minutes, they were instructed to complete a live online quiz on Quizizz, in which the link is given to them via Google Classroom. The types of questions were multiple-choice questions and fill in the blanks, which replicate the same type of questions for their assessment.

2.5 Post-listening stage

After completing the activities in the second stage, the learners were instructed to engage in a sharing session on the WhatsApp group about the challenges in the listening activity, their strategies in answering the questions, and suggestions for them to improve their listening skills. They were given options to use voice notes or text messages for this activity.

2.6 Assessment

The assessment was done using Google Forms with an auto marking function in the Google Classroom platform. The types of questions were filled in the blanks, which is the same as one of the question types for the activities done during the lesson.

3.0 Discussion

All in all, the application of internet-based tools presented in this paper combine the usage of various applications, which involve the consideration of the learning outcomes of the lesson, the various types and functions of the tools, as well as the aspect of usability. The applications used are of different types and functions, which were integrated into the complete lesson to achieve the desired learning outcome which is listening to details. The applications used such as Facebook, YouTube, WhatsApp, and Google Classroom are among the top apps and widely used which lead to the familiarity of their usage among the learners, who belong to the generation coined as true digital natives who do not have a problem in flitting between platforms. The combination and usage of applications are dynamic as the learning outcomes and learners' acceptance need to be considered.

The best part of integrating ODL with the various internet-based tools and applications is it does not only benefit the learners, but the instructors as well by making the teaching and learning process easier. The idea of having more choices in integrating different types of applications in various learning stages helps the instructors to grab the students' interest. The instructors can always choose the most suitable applications that suit students' needs and at the same time focus on achieving the lessons' objective. Teaching listening skill, for example, requires a lot of activities involving listening. The ability to listen to the various authentic materials helps in the process of lesson delivery. Incorporating various platforms such as Facebook and YouTube, opens the door for the learners and instructors to obtain a lot of authentic materials, be it from the native or nonnative speakers of English. On the other hand, WhatsApp and Google Classroom serve as mediums of communication that are easily available and free to be used by both the instructors and students. In terms of assessments, Quizizz and Google Form provide a different experience of completing a quiz or a test for the students while at the same time helping instructors to reduce their marking load through the usage of auto-marking features.

The learners also have the opportunity to study at their own pace anytime and anywhere. The idea of using platforms that students are familiar with definitely has made the activity more interesting and engaging to them. The learners seem to be more comfortable using the platforms such as Facebook, YouTube, and WhatsApp as they are using them for other personal purposes almost every day.

Whichever way internet-based tools are utilized, if their usage can assist the success of the teaching and learning process hence achieving the desired objectives, there

should be no boundaries for creativity among the instructors for they could make full use of all the mentioned tools.

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Readability of Digital Display

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ABSTRACT

Background: Digital display has been widely used as visual aids nowadays to enhance learning. Visual aids enhance the audience engagement and learning experience. However, it can turn into a source of distraction or annoyance if not used properly. Luminance and chromatic contrast can impact the visibility, legibility, and readability of the digital display. This study aims to provide a better understanding of the illumination setting of digital display and its impact on the learner's readability at a six meters' viewing distance. Methods: The background illumination for Microsoft Office PowerPoint was pre-set at one-quarter (25%), half (50%), three-quarter (75%), and full (100%) transparency levels in the legibility investigation. Four texts were constructed with the same word count of sixty-three words and four to twelve related words per sentence. The font, colour, alignment of the texts were standardized. Readability was inferred from the reading speed measurement to complete a digital text display projected at six meters. Results: Variation in reading performance was found at the viewing distance of six meters ($F=2.83$, $p<0.05$). Readability was significantly affected by different background illumination settings. It was interesting to unearth that the optimum readability was at 75% transparency level, but not in a complete transparency setting. Conclusions: It is generally accepted that high luminance contrast enhances visibility and legibility. Optimum readability at a three-quarter transparency level found in our study has prompted the need for further contrast investigation on the relationship between visibility, legibility and readability in different durations of digital display exposures.

Keywords: legibility, visibility, readability, visual aids, teaching & learning

1.0 Introduction

Readability is closely linked to information retrieval (Hoover & Gough, 1990; Jufri et al., 2016; Khalid et al., 2017). In order to read, we need to understand the words in sentences and paragraphs. Information retrieval engages complex cognitive processes of deciphering transcripts or codes (Hoover & Gough, 1990; Jufri et al., 2016; Khalid et al., 2017). Before engaging in any form of information processing, the text must be visible and legible to identify and read. Appropriate lighting and contrast are inevitable. Here, visible means clear enough to see while legible means clear enough to read.

High contrast between the text and its associated background is essential for efficient reading. Better visibility and legibility have been associated with increased contrast (Tinker & Paterson, 1931). Positive text-background polarity has been associated with efficient reading due to high display luminance (Buchner et al., 2009). The reading rate was higher for black-on-white text compared to other colour combinations (Tinker & Paterson, 1931). The reading rate reduced when the text contrast was reduced (Legge et al., 1990). Inappropriate background luminance can elicit glare (Duchnicky & Kolers, 1983). Visual or ocular discomfort has been linked to visual display terminals, spatial structure and perceived naturalness (Jaiswal et al., 2019; Yoshimoto et al., 2020). Insufficient lighting has been suggested to cause visual discomfort and compromise legibility (Boyce & Wilkins, 2018). However, adaptive luminance contrast has been indicated after prolonged contact (Na & Suk, 2014).

There are many types of digital screens used in digital presentation, such as cathode ray tubes, liquid-crystal-displays, light-emitting diodes, high-definition televisions, and digital projectors. High text-background contrast is essential to enhance visual resolution (Buchner et al., 2009). Ambient lighting conditions have been reported and identified to affect the text-background contrast (Boyce & Wilkins, 2018). When the luminance difference between text and background increases, the visibility becomes better (Legge et al., 1990). However, visual discomfort may occur in high contrast due to the glare factor (Jaiswal et al., 2019). Contrast sensitivity was strongly associated with reading performance (Whittaker & Lovie-Kitchin, 1993). Poor contrast sensitivity resulted in poor reading performance. Nevertheless, a significant study highlighted the effects of contrast on reading performance at near. Distance performance was also an important aspect to be considered when assessing contrast as it does not only involve reading but also

relates to orientation and mobility, driving, face recognition, and daily living activities (West et al., 2002). This study aims to provide a better understanding on the illumination setting of digital displays and its impact on learner's readability at a six-meter viewing distance.

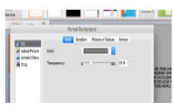
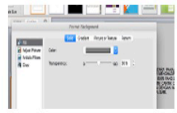
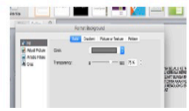
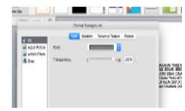
2.0 Methods

The study was an experimental study using a cross-over design. The study adhered to the Declaration of Helsinki. Ethical approval was obtained from the Research Ethics Committee, Institutional Review Board. The sample size was calculated using the formula [$n= (Z/\Delta)^2*P(1-P)$]. Twenty-two subjects were recruited using convenient sampling. Informed consent was obtained before participation. The inclusion criteria for subject recruitment included habitual binocular visual acuity of 6/6 with no known ocular and general health problems.

The visibility of each text-background luminance contrast was assessed by measuring the reading speed in words per minute (wpm). Four different texts were assigned at random to minimize the learning effect and memorization. Transcripts used in the investigation were composed using sentences extracted from the local Standard Five school textbooks in the Malay language. Each transcript contained the same word count of sixty-three words, employing four to twelve related words per sentence. The font, colour, indent, spacing and size of the four transcript sets were kept consistent. The text colour was black. Text alignment was justified. The font size was set at thirteen points that were equivalent to 6/14 Snellen Notation or the Logarithm of the Minimum Angle of Resolution - LogMAR 0.8. when projected. The text content was prepared using PowerPoint slides. Each digital display was constructed with a black circle on a different background (Table 1). It began with the right click on the background, then chose "format background" and adjusted the transparency levels at a quarter (25%), half (50%), three quarters (75%) and full (100%), respectively. Transparency levels of each background were proportionally correlated to the text-background contrast levels. One-quarter yielded the lowest text-background luminance contrast while full transparency yielded the highest text-background luminance contrast. The transcript was projected with a digital projector on a white screen six meters apart. Calibration of the projector was carried out using an online calibrator (DisplayCal) that provided a rough estimation of the gamma value using a visual matching method. The luminance was measured by the luminance meter LS110 Luminance Meter (Konica Minolta, Japan). The measurement of luminance was measured at the black circle and the background. Michelson Contrast was calculated based on the Lmin (luminance minimum at font/back circle) and Lmax (luminance maximum at

the background) measurements formula: Contrast = (Lmax-Lmin)/(Lmax+Lmin).

Table 1: Information about Transparency Settings and Reading Materials

Levels of Transparency	One-Quarter (25%)	Half (50%)	Three-Quarter (75%)	Full (100%)
Setting on the Microsoft Office PowerPoint				
Illustrations of reading materials				

In the readability investigation, each subject was asked to read the transcript presented at a random order aloud. The voices of subjects were recorded using a voice recorder. Time taken to complete each transcript and numbers of correct words were also recorded. The reading performance was presented as words per minute.

3.0 Results

The spectral power distribution of the four settings of the digital display is presented in Figure 1. The readability of the digital display transcript was inferred from measuring the speed of the subjects reading from the transcript projected on the screen at a 6 meters viewing distance. Reading speed was significantly different at different transparency levels of the digital displays ($F=2.83$, $p<0.05$). Readability was affected by the level of transparency setting in Microsoft Office PowerPoint transpired through variation in reading performance at the viewing distance of six meters (Figure 2). The best readability was captured at the three-quarter transparency level.

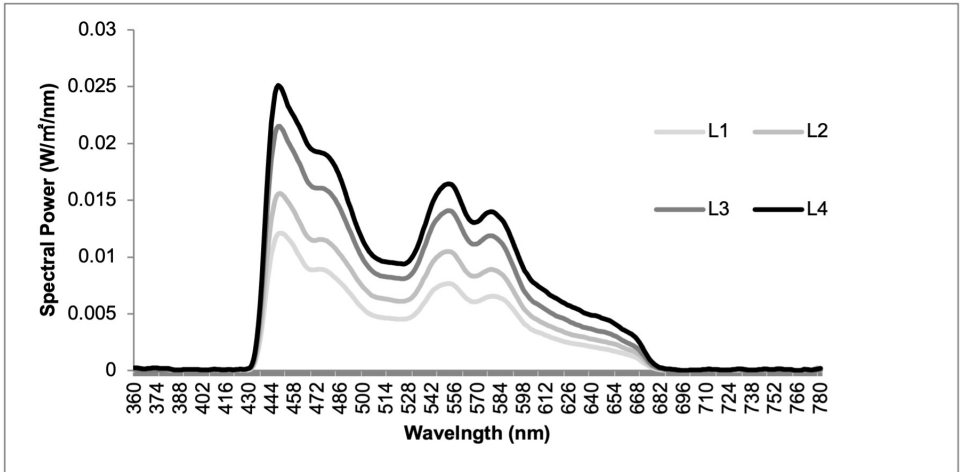


Figure 1: Spectral power distribution of four digital displays [L1/L2/L3/L4 are 25%, 50%, 75% and 100% level of transparency respectively].

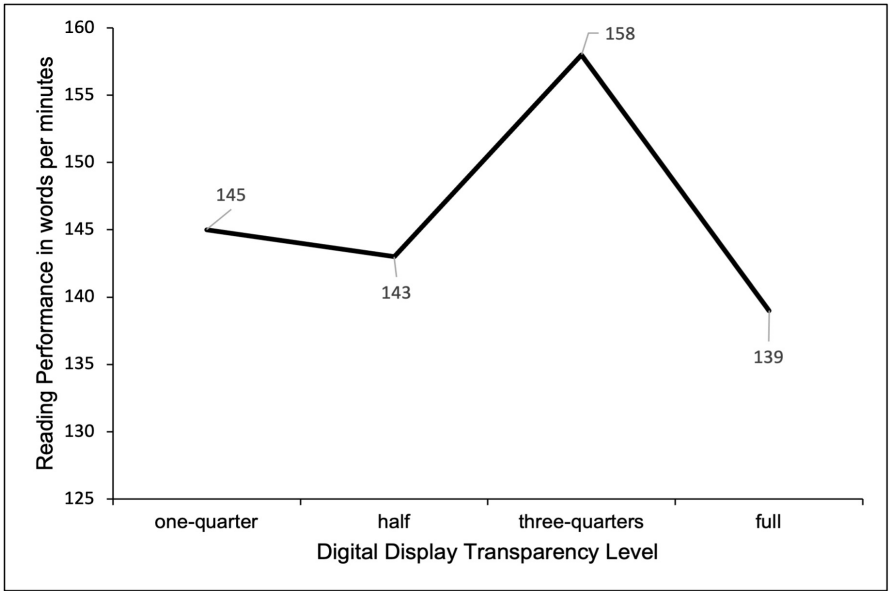


Figure 2: Variation in readability for different transparency levels of digital display. The number indicates the mean reading performance in words per minute.

4.0 Discussion

It is predictable that high luminance contrast usually enhances visibility and legibility. We would expect readability to reflect a similar trend. However, the best reading performance did not occur at the highest transparency level in our study, despite the apparent reading speed reduction at lower transparency levels. Previous studies reported a similar tendency of reading speed reduction under low luminance, together with fewer saccades velocity and more eye blinks than high luminance (Benedetto et al., 2014). The decline of reading performance at the highest transparency level might be related to the glare effect (Yoshimoto et al., 2020). The glare generated by the background might interfere with the comprehensibility of the text (A. Wilkins, 2015). The luminous veil's effect might diminish the contrast of the retinal image (Flynn & Badano, 1999). The average reading speed at a distance in this study was slightly lower than the reading speed found near (164wpm) in the Malaysian population for contextual sentences (Chen et al., 2019).

The maximum reading speed was found in a three-quarter transparency level at approximately 158 wpm. This value is very similar to the previous reading speed report (164wpm for contextual sentences) in the Malaysian population (Chen et al., 2019). Our findings suggested that contrast might not be the only deciding factor on reading performance. A study on the temporal impulse responses under different lightings implied that the visual comfort shifting pattern could not be fully explained by the stimuli's actual luminance contrast (Yoshimoto et al., 2020). Visual discomfort occurs when the retinal image fluctuates from the average views (A. J. Wilkins, 2016). Uncomfortable visual stimuli may amplify oxygenation at the visual cortex to cope with inefficient neural encoding.

5.0 Conclusions

The best readability was revealed in the three-quarter transparency setting of the digital display. In using a digital display, we should focus on visibility by setting the highest contrast, but we need to consider visual comfort that may affect legibility and readability. An appropriate contrast between background and text is vital for visibility and ease of reading using the digital display. The contrast difference should not be excessive between the text and background that might elicit visual discomfort. It is recommended not to set the digital display at the maximum level to minimize the glare effect that can affect readability. Adequate text-background illuminance difference with minimum glare should be practiced to achieve better ergonomic digital presentation. Our study draws attention for

future contrast investigations to compare visibility, legibility, and readability in different digital display exposure durations.

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Feedback on the Usage of Flipgrid as Platform for Short Video Assignment

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ABSTRACT

The world has been surprised by the COVID-19 pandemic. Teaching and learning activities have changed tremendously. Alternative online platforms have been used to cater to the need in assessing the affective domain activities such as presentations, discussion and group projects. Therefore, this paper intends to share the feedback on the approach of online assessment for the affective domain using Flipgrid as a platform for short video assignment. One of the amazing and useful online apps for video assignment that captured students' verbal responses. This app helps the students to take part in the learning process, especially in the affective domain. The process of learning to portray an idea or concept, and to convert into own understanding is the learning outcome. This paper explains the students' feedback on the usage of Flipgrid for a short video assignment. Feedback process was carried out by using questionnaires to gauge students' satisfaction and their experience. The advantages of Flipgrid are easily downloadable by any user to a mobile device.

Keywords: Flipgrid, Affective domain, Online assessment, Video assignment.

1.0 Introduction

Before this pandemic surfaced, the student's individual or group presentation was conducted face to face. Since no physical class is allowed to be conducted during the period, an alternative platform must be used to replace the face-to-face assessment. With the students scattered in different regions, and some with the limited access for suitable video recording and editing gadgets, an appropriate online platform for video assignment must be considered. It must be accessible without any cost involved and easy to use on mobile devices such as mobile phones or tablets.

The purpose of finding a suitable online platform is to avoid the students stress out in completing the video assignment. When students feel that way, creativity will cease. Thus, by creating an enjoyable learning experience during the process of video making, the learning outcome can be achieved without hassle. Flipgrid is a free and accessible social learning platform that allows students to creatively record their responses verbally to the assigned questions (Stoszkowski, Hodgkinson, & Collins, 2020).

2.0 Method and Results

The overall process of the short video assignment is shown in Figure 1. Google Classroom has been used as a learning management system for this course throughout the semester. Table 1: Information about Transparency Settings and Reading Materials.

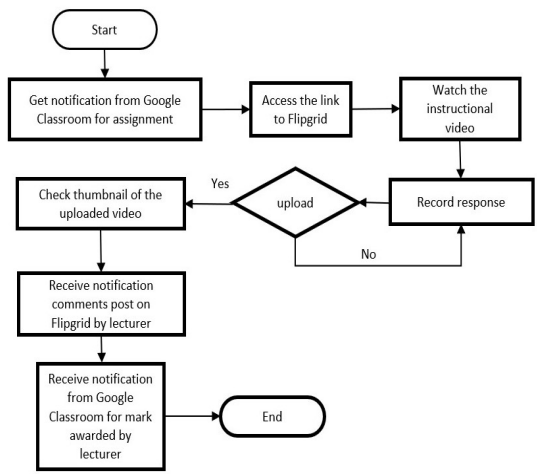


Figure 1: The process flow of the short video assignment

Details on the assignment, as shown below:

a. Type of assignment

In April 2020, 83 diploma students from the Faculty of Mechanical Engineering, Universiti Teknologi MARA Johor, Pasir Gudang Campus were assigned to a short video assignment for Production Management subject as shown in Figure 2. The duration of the assignment was two weeks.

b. Course learning outcome

Apply Operation Management tools and techniques for decision making with affective domain level of A3 (Valuing). In the affective domain, students are encouraged to respond to the information they have received through learning. According to Krathwohl, Bloom and Masia (1973), the affective domain deals with things emotionally, such as appreciation, values, feelings, enthusiasm, motivations, and attitudes. As for the learning outcomes, affective taxonomy covers receiving, responding, valuing, organizing, and characterization.

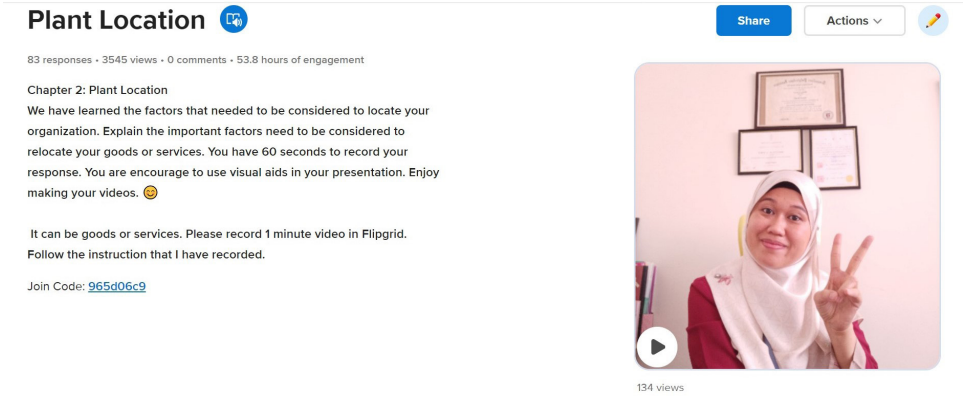


Figure 2: Information on the short video assignment

c. Submission of the video on Flipgrid

Students recorded their verbal responses directly using a smartphone or tablet with a camera. Besides that, they were allowed to edit their videos on the app creatively. After uploading the short video, the students checked the thumbnails to ensure it was safely submitted on Flipgrid. Figure 3 shows the thumbnails of the submitted videos.

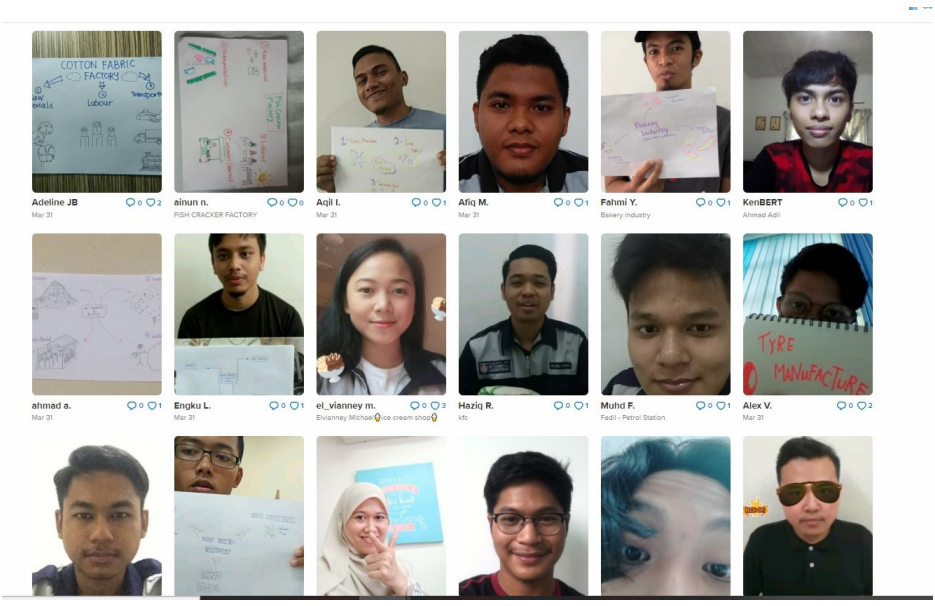
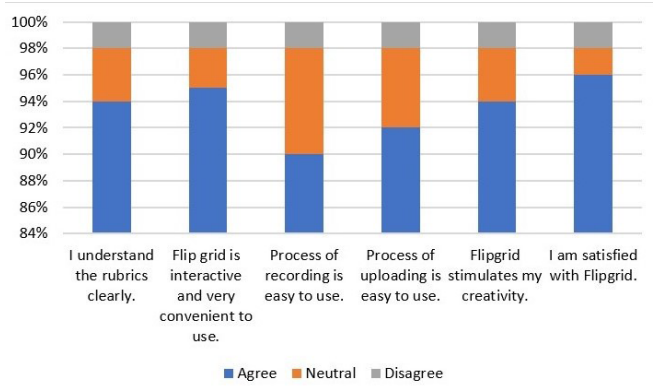


Figure 3: Thumbnails for uploaded videos

d. Questionnaire for the feedback

After completing the assignment, a questionnaire was applied to gauge the students' satisfaction on Flipgrid usage. The questionnaire comprises six statements with three answers to choose which are agree, neutral and disagree, as shown in Figure 4.

Figure 4 shows that more than 90% of the students were satisfied with using Flipgrid for the platform to submit the assignment. During the process of recording and uploading the videos, more than 90 per cent agreed that Flipgrid is user friendly. Finally, 94 percent agreed that Flipgrid stimulates creativity.



4.0 Conclusions

The students found out that Flipgrid is easy to use and encourage creativity. This online platform promotes students' creativity in delivering verbal responses through video recording (Dunn & Mulvenon, 2009). The positive feedback gauged from the usage of Flipgrid indicates that it is highly convenient in giving assignments based on student engagement and communication.

Extension for future work will be focused on creating a higher level of affective domain assignments such as appreciation, enthusiasms, motivations, and attitudes. The use of Flipgrid can be extended to develop social learning by having the students to present in groups. Flipgrid can be used to empower learners and facilitate social interaction between students (Stoszkowski, 2018).

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