

# Online Multiple Intelligence Teaching Tools (On-MITT) For Educators

Siti Nurul Mahfuzah Mohamad, Sazilah Salam, Norasiken Bakar

**Abstract**— The theories of Multiple Intelligence (MI) used in this paper which cater to students' intelligence are able to enjoy learning in class and have a positive academic achievement. Nowadays, educators are faced with the younger generation that is not only highly skilled in ICT but also constantly exposed to a source of information and a variety of media. In this situation, all educators should equip themselves with ICT skills more than students and use all existing platforms and mediums. Educators must always be well prepared to make changes to the teaching and learning environment. Thus, innovation is necessary to make effective teaching and learning in classroom. Online Multiple Intelligence Teaching Tools (On-MITT) provides several tools to facilitate educators in preparing teaching materials that utilizes interpersonal, visual-spatial and verbal-linguistic intelligences. With only few steps in preparing teaching activities, educators can create creative and interesting teaching materials. The objective of this paper is to develop On-MITT prototype for educators. This paper also addressed On-MITT module and initial prototype of this study. An evaluation of On-MITT has been completed by 79 lecturers of Malaysian Polytechnics from different subject matter experts. Motivation Survey Questionnaire is used as the instrument to measure four motivation variables: ease of use, enjoyment, usefulness and self-confidence. Based on the findings, the On-MITT can motivate polytechnic lecturers to prepare interactive teaching materials.

**Keywords**—Multiple Intelligence, Interpersonal, Visual-Spatial, Verbal-Linguistic, Online Learning

## I. Introduction

The main focus of this paper is to assist educators by providing effective teaching aids without the need for skills in programming. Educators can reduce preparation time and indirectly attract the attention of students to learn and use the teaching materials. Using these teaching tools can also improve educators' motivation to teach and enjoy preparing teaching materials. The theory of Multiple Intelligences (MI) has been used in this paper that cover interpersonal, visual-spatial and verbal-linguistic intelligences. In order to apply the MI theories in the classroom, it is important for educators to identify students' strength and recognize suitable activities. All students should be given the opportunity to experience variety styles of learning according to their interests and intelligences.

At the ministry level, [1] fully supports the efforts made in improving the quality of the teaching and learning is through e-learning initiatives. Teaching and learning innovation is a key requirement for an excellent learning. E-learning to date and effective based on the latest technology for example can increase the understanding and critical thinking among students.

In addition, educators can create a variety of teaching activities using On-MITT which enables more interesting teaching and learning can be carried out in the classroom. Students' will be able to communicate with one another if the lesson is interesting. By using the theory of MI in teaching and learning in the classroom, the biggest impact is the need to expand the teaching aids that can provide a variety of experiences and interesting activities.

## II. Related Works

The MI theory can expand the potential of a student because not all students learn in the same way. According to [2], educators should find students' strengths and weaknesses through all types of intelligence. He believed that all educators have a responsibility to make sure the use of technology and the accommodation of MI in the classroom. He also mentioned that software tools can be used to create, solve problems, provide students with different approaches and across all disciplines, meet varied objectives as well as immerse students in rich, real world tasks. This statement is supported by [3] where he used the theory of MI in the classroom by establishing a center for one kind of intelligence. Each center uses the appropriate media type that suited to their intelligence. The students will take turns into all the centers that are designed to expand the range and potential of all the intelligences available to them.

To address all students' MI and apply the theory in a successful way, Gardner proposes three instructional guidelines. First, he suggests that educators should provide opportunities and materials for students in various ways. Second, he reminds educators to take individual differences seriously and allow them to inform instruction so as to personalize education for students. Finally, Gardner states that "schools should cultivate those skills and capacities that are valued and in the community and in the broader society" [4]. According to [5], using MI in the classroom makes lessons more interesting, which causes students to pay more attention to what is taught and then learned. As a result, students are more engaged, they remember more, and achievement increases. [6] also stated that when students become aware of their intelligence strengths and consider themselves as being 'smart' in that area of intelligence, their self-confidence is raised.

In other related study, [7] recommended by targeting one or more of the intelligences into daily lesson plan activities. He suggested that many educators have already incorporated MI without realizing it. With the knowledge of how to implement MI, an educator can make sure that they are incorporating all the intelligences throughout the day. However, the idea is not to create nine different activities of the same content to accommodate each of the intelligences, but to select a few intelligences to be included into in one lesson or activity [8].

Identifying learners' level of MI can provide educators with the opportunity for predicting activities appropriate for both learners with higher level of some intelligences and those who are weaker. For this to happen, educators need to realize that different learners with different levels and the combinations of the eight intelligences have difference in learning. Also, students' awareness of the MI profile may help both themselves and educators [9]. Therefore, the teaching methods need to be changed so that students can use their intellectual's strengths to better understand the topic, increase their intrinsic motivation, and encourage the active participation of students to enhance learning in the classroom.

### III. Materials and Methods

This part presents the development of On-MITT prototype. On-MITT is a rich collection of teaching templates designed to save educators' time in preparing their teaching materials. Most of the teaching aids via online offer only trial versions and users cannot edit and save the template. Using the On-MITT, educators can create teaching activities based on the MI theory in a few seconds and use freely via online. Not only that, no coding is required because these tools are easy to use and user friendly. These tools also offer the user to organize, save, print and export to other documents such as jpg file, doc and etc. In addition, the templates can be changed later or edit in any time. These tools allow educators the wisdom to generate their own in-depth, effective and innovative teaching tools.

#### A. On-MITT Teaching and Learning Model

Figure 1 shows the On-MITT teaching and learning model where the educators and students have their own user accounts with a different interface. An educator is refer to a polytechnic lecturer and will be evaluated the motivation of using On-MITT based on the ARCS Motivation model. Educators can also explore all the tools but access for students is limited. Educators also act as an administrator to register student's id, names and others. Educators can upload and download files, create and load existing files as well as observe student activities before and after class.

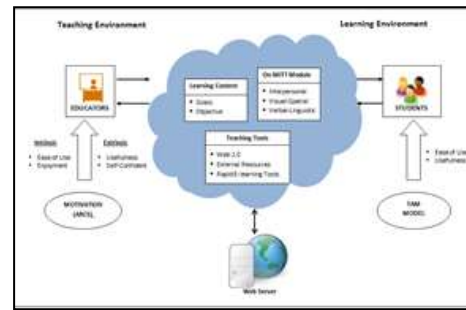


Figure 1. On-MITT Teaching and Learning Model

#### B. Prototype

The novelty of On-MITT, the system can easily be customized, maintained and updated. On-MITT allows lecturers and students to navigate through system to a specific part of their interest. There are three teaching tools available after login. Educator can select the suitable tools that they want to use in the classroom. Before start using the system, lecturers and students have to logon with their usernames and personal password. If username and password correct, user can access main menu as figure 2 below.



Figure 2. Main Menu

Students with interpersonal intelligence are encouraged to work together in cooperative groups where interpersonal interaction is practiced. Students will use the knowledge and skills to help the group or partner succeed. Students can also learn from each other and require their verbal and non-verbal communication skills, co-operation and empathy in within the group. Meanwhile, educators can incorporate cooperative groups such as jigsaw activity, online whiteboard and apply online sticky notes in a classroom. Figure 3 is part of the activities that can be used to enhance interpersonal teaching activities.



Figure 3. Jigsaw Activity

The following section elaborates on the screen design of visual-spatial module based on the flow of the teaching and learning process. Figure 4 shows the visual-spatial teaching activities which are divided by three activities: Interactive Diagram Generator, Presentation Tools and Mind Map Maker. This initial prototype is one of the initiatives in helping educators to assist student with visual-spatial or ‘picture smart’ in teaching and learning in a classroom.



Figure 4. Interactive Diagram Generator

To meet the needs of students with verbal-linguistic intelligence, the proposed activities are Word Games Maker, Online Quiz Maker and Word Cloud Maker. Figure 5 shows available activities for ‘word smart’ learners.



Figure 5. Word Cloud Maker using Tagxedo

### C. Respondents

The instrument used in this study is Motivation Survey Questionnaire. It is used to measure four motivation variables: ease of use, enjoyment, usefulness and self-confidence. The survey contains a few questions. The number of female respondents is greater than the number of male respondents. The participants involved were 79 Polytechnic lecturers from different subject matter experts (61 females and 18 males).

## iv. Results

An evaluation of On-MITT has been completed by 79 lecturers from the Malaysian Polytechnics from different subject matter experts. The instrument used in this study is ‘Motivation Survey Questionnaire’ which is used to measure four motivation variables: ease of use, enjoyment, usefulness

and self-confidence. The survey contains a few questions to answer. Table I showed the mean ranged from 3.68 to 4.01. Item 8 possessed the highest mean value whereas the mean value was 4.01. Analysis shows that most of the lecturers agreed the teaching materials can be easily developed using On-MITT.

TABLE I. ANALYSIS ON THE EASE OF USE

No	Ease of Use	Mean	SD
1	Interpersonal teaching tools are easy to use	3.84	0.79
2	Visual-Spatial teaching tools are easy to use	3.95	0.68
3	Verbal-Linguistic teaching tools are easy to use	3.90	0.71
4	Activities can be obtained easily via internet.	3.95	0.78
5	My class is now student-centered	3.80	0.81
6	I do hands on activities in my class	3.92	0.73
7	I do collaborative activities	3.68	0.74
8	I can create teaching materials easily using these teaching tools	4.01	0.71

Table II showed the analysis of enjoyment. Analysis showed that most of the lecturers agreed that they are more excited when using online teaching tools (mean=4.28) and suggesting all these tools to their friends (mean=4.27).

TABLE II. ANALYSIS OF ENJOYMENT

No	Enjoyment	Mean	SD
1	I will use On-MITT for other subjects.	4.00	0.75
2	I will suggest these teaching tools to other lecturers	4.27	0.69
3	I enjoy teaching using these online tools.	4.09	0.68
4	I am excited of using online teaching tools	4.28	0.64
5	I like using this online teaching tools for teaching my subjects	4.18	0.67

Table III show the analysis of usefulness. Most of the lecturers find that On-MITT is very helpful for teaching in their class (mean=4.06) and the tools offer a variety of teaching techniques (mean=4.28).

TABLE III. ANALYSIS OF USEFULNESS

No	Usefulness	Mean	SD
1	On-MITT is very helpful for teaching in my class.	4.06	0.72
2	It will be good for interpersonal learners.	3.84	0.61
3	It will be good for visual-spatial learners.	3.86	0.55
4	It will be good for verbal-linguistic learners.	3.84	0.63
5	Interpersonal teaching tools that I use are useful to me.	3.94	0.72
6	Visual-spatial teaching tools that I use are useful to me.	3.96	0.69
7	Verbal-linguistic teaching tools that I use are useful to me.	4.01	0.71
8	The tools are related to my goals	3.95	0.71
9	The tools offer varieties of teaching techniques	4.28	0.66

Table IV show the analysis of self-confidence. Most of the lecturers feel that On-MITT give a lot of motivation to them (mean=4.04). Overall, all the respondents give a good response when using On-MITT.

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TABLE IV. ANALYSIS OF SELF-CONFIDENCE

No	Self-Confidence	Mean	SD
1	On-MITT can motivate my teaching in class.	4.10	0.69
2	I found that it is interesting when using On-MITT.	4.20	0.72
3	I became motivated teaching through online.	4.04	0.76



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## v. Conclusion

Educators play an important role in creating a variety of teaching aids to ensure that the learning environment can give an impact to the students in the learning process. In certain situations, educators can also lack of ideas to impart knowledge to students. Sometimes, students are bored and just listen without showing any response to the educator. This will be difficult for educators in an effort to produce gifted students and the potential students for the country. Therefore, it is important that educators should take a wise step of applying the theory of MI element in the process of teaching and learning in the classroom.



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