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Abstract— The Malaysia Ministry of Education is promoting the use of ICT by enhancing the 21st century learning skills in classroom lessons. This study aims to investigate students’ perceptions as well as their engagement in ESL classroom with the use of Plickers. An action research had been carried out in a suburban secondary school in Kuching, Sarawak on 75 students as the samples of this study. After two months of experiencing Plickers use in the ESL classroom, data was collected via a questionnaire on students’ perception of Plickers as well as their engagement level in Plickers classroom. The findings of this study show that Plickers is perceived as a useful educational tool which is able to engage students in their ESL learning process. This implies the need for teachers as well as stakeholders to promote the use of Plickers in ESL classrooms, ultimately to those schools with limited technology facilities.

Keywords— e-Learning, English Language Teaching, Mobile gadgets, Student Engagement.

I. INTRODUCTION

The use of Information and Communication Technologies (ICTs) in English as Second Language (ESL) classroom, as stated by Yunus and Salehi (2015), has become a hot issue in education field. This is to answer the call of Malaysia Ministry of Education, which highlights the urge for integrating ICTs in classroom lessons as well as for each Malaysian student to acquire English proficiency in the Malaysian National Educational Blueprint (2013-2025). It is of utmost importance for language teachers to be computer savvy so as to integrate ICTs into their teaching and learning. This is in agreement with Keengwe and Kang (2012) who indicate that the use of ICTs promotes students’ language skills, motivation, involvement as well as teamwork.

Li and Ni (2011) view Student Response System (SRS) as one of the most potential educational tools introduced as SRS allows teachers to questions and see students’ responses on the spot. Among the SRS applications are Kahoots!, Socratives and Plickers. Gok (2012) who finds that SRS has been widely discussed nowadays due to the vast benefits it may bring to the teaching and learning, yet he opines that the evidence on its effectiveness is still scarce. Seeing this, the objective of this paper is to elicit students’ perceptions on the use of Plickers in ESL classroom.

II. THEORETICAL BACKGROUND

This paper employs Constructivist learning theory, which suggests that learning is the process of building upon a student’s background knowledge, namely schema. Audrey Gray (1995) listed the characteristics of a constructivist classroom as below:

- learners’ active participation
- democratic learning atmosphere
- communicative and student-centered activities
- teachers as facilitators to promote students self-directed learning.

Williams Chinn (2009) described constructivism as a theory which enables learners to actively build their knowledge and meaning of the content that they are learning from their experiences. According to Noor Saazai Mat Saad and Melor Md Yunus (2015), “situation or the environment has the power to dictate human behavior” (p.39). Therefore, in order to help learners to construct their own knowledge, Marshall (2009) stated that teachers play important roles as facilitators in which they are to stimulate learners’ discovery of ideas by using different analogies and examples.

Norazah Nordin, Mohamed Amin Embi and Melor Md. Yunus (2010) related constructivism with the use of technology devices. They claimed that mobile learning activities are like e-learning materials which enable students to construct new knowledge with the data obtained from their...
mobile devices.

III. RESEARCH OBJECTIVES AND RESEARCH QUESTIONS

This research seeks to probe into the students’ perceptions of Plickers in ESL classrooms. Apart from that, this research also aims to answer the following research questions:

(1) What are students’ perceptions of Plicker use in ESL classroom?

(2) Does the use of Plickers have any effect on student engagement in ESL classroom?

(3) Is there any significant difference of engagement among the learners of proficient, intermediate and weak groups?

IV. LITERATURE REVIEW

A. Plickers

A plicker is defined by Bezglasnaya and Gorbatov (2015) as “a square that has its number parties defined by letters "A", "B", "C", "D" and special cuts on the parties and inside, which resembles QR”. Plickers is an SRS application in which it enables teachers to collect each student’s real time feedback, while analysing the pattern of the overall feedback at the same time. Compared to other SRS applications which involve students’ electronic devices, Plickers only requires a mobile phone to be used by teachers. The students are provided with a designated plicker card, which is different from their other friends in the class (fig. 1).

![Fig. 1 Plicker card](http://www.plicker.com)

B. The Use of Plickers in ESL Classroom

The steps of applying Plickers is easy and user friendly. The teacher only needs to sign up a free account in the Plickers.com and save the multiple choice or true and false questions in the library. During the lesson, the teacher displays the questions at the whiteboard in the class. Students are to raise their cards which indicate their choice of answers. Subsequently, teacher scans students’ cards with his mobile phone. An individual as well as accumulative response from the students will be immediately shown on the teacher’s mobile phone (fig. 2).

![Fig. 2 Individual and accumulative response screen display](http://www.plicker.com)

C. ICTs and Student Engagement

Axelson and Flick (2011) proposed in their paper that the degree of student engagement is a significant indicator the amount of learning they have achieved in a lesson. Alfawzan (2012) found that the integration of ‘instrument’ in the classrooms can motivate students’ participation in the lesson.

Lately, many studies have implied that ICT brings positive effects to teaching and learning in the classroom. Among them are Chen, Lambert, & Guidry (2010), who concluded in their study that the application of educational technology brought positive impact towards student engagement, both in terms of learning or interaction. Besides, Kinzie’s (2010) findings also indicate that the use of iPads will significantly lead to positive learning outcomes.

V. METHODOLOGY

This study is an action research which involved mainly four steps: plan, act, observe and reflect. A total number of 75 samples were chosen purposively among the Form 5 students which comprise three levels of English language proficiency in a suburban school in Kuching, Sarawak. The proficiency levels are classified by according to their results of Form Four final examination 2015. These selected samples had undergone the use of Plickers in their multiple-choice questions (MCQ) discussions once a week during their ESL lesson for two months. Every time after the lesson, the limitation of the lesson was identified and modified.

At the end of the two-month implementation, a questionnaire on students’ perceptions of their preference and engagement in the ESL classrooms with the integration of Plickers was distributed to the students. This questionnaire was adapted from Sundae and Underdal’s (2014) questionnaire, which consists of three sections involving 36 items.
To analyse the data collected, SPSS had been utilized to calculate values such as the frequency, percentage, mean score as well as standard deviation. Apart from that, Kruskal-Wallis H Test was also used to identify the possible difference of findings among the three diverse proficiency level groups. It is a non-parametric test “can be used to determine if there are statistically significant differences between two or more groups of an independent variable on a continuous or ordinal dependent variable.” (Lund Research Ltd, 2013).

VI. FINDINGS AND DISCUSSION

The samples went through the action research in three different proficiency groups. Similar lessons were carried out to identify their perceptions of preference and engagement of Plickers use in ESL classrooms. The demographic data of the samples is displayed in the Table I.

<table>
<thead>
<tr>
<th>Proficiency level</th>
<th>Gender</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
</tr>
<tr>
<td>Proficient</td>
<td>14</td>
<td>16</td>
</tr>
<tr>
<td>Intermediate</td>
<td>10</td>
<td>17</td>
</tr>
<tr>
<td>Weak</td>
<td>13</td>
<td>5</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>37</td>
<td>38</td>
</tr>
</tbody>
</table>

According to Table I, the sample group consists of a balanced number of male and female, which are 37 and 38. The samples were categorized into three different proficiency levels, namely proficient, intermediate and weak groups respectively. The total numbers of proficient English learners and intermediate learners are 30 and 27. Meanwhile, samples of weak group comprise 18 out of the total 75 samples.

Based on Table II, it is found that 76% samples have positive impression towards the use of Plickers. Only 2.7% samples feel negative about the use of Plickers. 21.3% students are not sure and have no comment towards this item. In sum, majority of the samples think positively about the use of Plickers in their ESL classrooms.

<table>
<thead>
<tr>
<th>Impressions</th>
<th>f</th>
<th>%</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive</td>
<td>57</td>
<td>76.0</td>
<td>76.0</td>
</tr>
<tr>
<td>Negative</td>
<td>2</td>
<td>2.7</td>
<td>2.7</td>
</tr>
<tr>
<td>No comment</td>
<td>16</td>
<td>21.3</td>
<td>21.3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>75</td>
<td>100</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Table III clearly signifies a higher means score of students experiencing positive feelings with the use of Plickers. For instance, the feelings of happy (M=3.51, SD=1.057), focused (M=3.37, SD=1.075), entertained (M=3.24, SD=1.217) and satisfied (M=3.07, SD=1.057) have higher mean score compared to the others. On the other hand, only a few of the students were reported had experienced negative emotions such as feeling frustrated (M=1.71, SD=1.010), bored (M=1.93, SD=0.977) and annoyed (M=1.60, SD=0.973). This goes in line with Fifer’s (2012) findings in his study that Clickers is able to gauge learners’ interest in learning. With the result, the first research question has been answered, which is most of the samples perceive positively towards the use of Plickers in ESL classrooms.

In terms of students’ performance with the use of Plickers, it is found in Figure 1 that most of the samples had successfully answered all the questions portrayed, which comprises 23 samples from proficient group, 18 from intermediate group as
out of 17 samples that could not complete the task in time, 15 samples responded that they did not know the answers while 9 students stated that they were running out of time. Only one student claimed that he or she did not care to answer. This result indicates that most students were engaged in terms of their participation as they had completed the Plickers tasks within the time limit allocated. In addition, by looking into this findings as well as result in figure 1, it is found that the findings of this study is in agreement with Akbiyik’s (2011) study, which found that positive attitudes and beliefs generally have a positive impact on the students’ learning engagement.

Based on Table IV, it is identified that 38.7% samples strongly agree that they were focused in the Plickers lesson. 42.7% showed agreement on their engagement on the task while 13.3% hold neutral opinion on this item. There are only a total of four samples who oppose or strongly oppose the idea that they were focused on the lesson.

Next, Kruskal-Wallis H Test had been utilized to further identify difference of engagement in Plickers lesson among the three groups of learners with different proficiency levels. Results of the analysis were displayed in Table V.

Table V showed the analysis generated by Kruskal-Wallis H Test which indicated that there was no statistically significant difference in students’ engagement among the three proficiency groups, $\chi^2(2)=2.827$, p = 0.243, with a mean rank engagement score of 41.30 for proficient group, 38.83 for intermediate group as well as 31.28 for weak group. This result further supports the findings in Krng’s (2011) and Lunderberg et al. (2011) studies that Clickers successfully engage learners in the lesson. This has answered research question 3 that there is no significant difference of students’ engagement level in using Plickers in MCQ discussion lessons among the three different proficiency groups.

VII. IMPLICATIONS

In general, this study aims to provide some insights towards the teaching and learning of ESL in Malaysian classrooms. With the positive findings of the study, it is hoped that the use of Plickers can be introduced to the Malaysian ESL teachers, especially those who have limited ICT facilities at schools. This is due to the convenience of the Plickers in which only a mobile gadget and a LCD projector are required.

Besides, this research also expresses students’ preference of learning approach in ESL classroom. It is found that most students find the use of Plickers very entertaining and advanced as their real time response are collected and analysed within a few seconds. It is a new innovation in Malaysian classrooms.
classrooms which is shown to be able to engage the ESL learners. Therefore, it is hoped that teachers, administrators as well as the stakeholders would take into account of students' needs and preferences by introducing more teaching pedagogies to engage the learners.

VIII. CONCLUSION

In a nutshell, the rapid development of technology advancement has required the teachers to always upgrade their teaching methods by catering to more 21st century teaching skills. This is to ensure our learners to be on par with the learners in other nations. ICT is indeed a pivotal educational tool which should be integrated into the ESL classroom. It is hoped that more studies can be done on the use of Plickers or other SRS tools in Malaysian classrooms in order to provide more in depth evidences in educational practices.

REFERENCES


http://www.plickers.com


A Research of Analysing the Effectiveness of Speaking-pen on English Learning in Consideration of Individual Differences Using a Linear Mixed-Effect Model

Yoshihiro Maeda*, Michiko Tsubaki & Masakazu Iwasaki

Department of Informatics, Graduate school of Informatics and Engineering, The University of Electro-Communications, 1-5-1Chofugaoka, Chofu-shi, Tokyo 182-8585, Japan

Abstract—The Ministry of Education, Culture, Sports, Science & Technology in Japan (2011) started the ‘Foreign Language Activities’ in fifth grade based on the new Courses of Study in April of 2011. The ministry has considered beginning this course in third grade and the ‘English Course’ in 5th grade in order to improve students’ reading, writing, listening, and speaking skills. The ministry also developed supplemental teaching instruments, such as the CALL system. The purpose of this study is to model and analyse the effectiveness of a speaking-pen on English learning among elementary school children in consideration of individual differences using a Liner Mixed-Effect Model. The authors constructed models representing students’ overall abilities in four English skills, and analysed the effectiveness of the tools such as a speaking-pen and an audio CD on English learning in consideration of students’ backgrounds including their English learning experiences and individual differences.

Keywords— Early English Education, individual differences, Linear Mixed-Effect Model, speaking-pen

I. INTRODUCTION

In an era of globalization, the Ministry of Education, Culture, Sports, Science & Technology in Japan (MEXT 2011) began implementing ‘Foreign Language Activities’ as a compulsory class beginning in fifth grade, which is based on the new Courses of Study that were introduced in April 2011. The MEXT (2014) has considered beginning ‘Foreign Language Activities’ in third grade which aims to improve ‘listening’ and ‘speaking’ skills, and implementing an ‘English Course’ in fifth grade, which aims to not only improve ‘listening’ and ‘speaking’ skills, but also ‘reading’ and ‘writing’ skills. They have also proposed adopting effective ICT materials in order to help children recognize alphabetical letters and notice differences in intonation, characteristics, and structure between Japanese and English as a guide for the teaching support material. Although many studies on tools used for early English education(Yang & Teng (2014), Hung, Young & Lin (2015) etc.) and studies using the Linear Mixed-Effect Model (LME) (Xu, Yuan, Xu, & Xu (2014) etc.) have been conducted, there are few studies on English education that have analysed longitudinal data according to detailed modelling of individual differences, and a student’s English educational experience.

Therefore, the purpose of this study is to analyse longitudinal data in order to propose modelling the effectiveness of a Speaking-pen in support of four English skills (reading, writing, listening, and speaking) and in consideration of individual differences depending on the experiences of English learning. The learning that was conducted during the investigation utilized two tools, a speaking-pen and an audio CD. Using a speaking-pen, children can learn English in a similar way as one uses a pencil. The speaking-pen adopted in this study can record and play back users’ voices in addition to its conventional function, in which English pronunciations are already recorded (the speaking-pen was made by Gridmark Inc.).

*Corresponding author: yoshihiro.maeda@uec.ac.jp
II. INVESTIGATION METHOD AND CONSTRUCTIONS OF IMPLEMENTED TEST AND TEXTBOOK

A. Investigation Method

The research for this study was conducted from October 2013 to March 2014. Ninety second-grade private school students at Shukutoku elementary school participated in this study with the consent of their guardians. In this study, a two-period (2×2) cross-over design was adopted as the experimental design. The children were divided into two groups in which both groups were able to use both a speaking-pen and an audio CD in different periods. A pre-questionnaire investigating the children’s English learning background was implemented before the research experiment began. Based on the pre-questionnaire, the children’s responses were categorized into eight categories in accordance with the results of three categories of responses, then the children in each group were allocated to two groups using a Bernoulli trial so that there would be no differences among the children’s background between the two groups (see Fig.1).

The experimental design of investigation is shown in Fig.2. The experiment has two period of studying English and the both periods were separated by a four-week long inactive term. The children’s initial skills or improvements in their learning were measured by four achievement tests. A post-questionnaire was administered to the children after the research experiment was complete. The post-questionnaire included some items for investigating timing, frequency and the hours of use.

B. Construction of Achievement Test and Textbook

The four tests looked similar to each other. This paper cites the second test in the explanation. All of the tests are composed of six sections, and their total scores add up to 100. In terms of the first test, we referred to the previous study conducted by Tsubaki, Gonda, Kato and Maeda (2015). The contents of each part of the test are shown in Table I.

<table>
<thead>
<tr>
<th>Part</th>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>After the children read the spelling of a word and see an accompanying picture, they connect the word and the pictures with a line (measuring reading ability).</td>
</tr>
<tr>
<td>2</td>
<td>After the children see a picture, they fill in the blank with one letter for each question (measuring writing ability).</td>
</tr>
<tr>
<td>3</td>
<td>After the children read a question and see a picture, they choose the correct answer (measuring reading ability).</td>
</tr>
<tr>
<td>4</td>
<td>After the children hear a question, they choose an appropriate answer sentence (measuring listening ability).</td>
</tr>
<tr>
<td>5</td>
<td>After the children listen to a sentence that contains one blank in the place of a missing word, they fill in the blank with a letter (measuring listening and writing abilities).</td>
</tr>
<tr>
<td>6</td>
<td>A native English teacher asks each child three questions in English, and each child answers the question in English (measuring speaking ability).</td>
</tr>
</tbody>
</table>

The textbook is composed of four units, and each unit is composed of seven sections. In this section, we refer to the second unit in order to describe the components of the textbook. One may refer to the study by Tsubaki et al. (2015) for a further understanding of the first unit. The components of the four units in the textbook are similar. The contents of each section of the second unit are shown in Table II.

<table>
<thead>
<tr>
<th>Section</th>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>The children learn basic conversational phrases that align with the theme of the unit, for example, “What colour is this?”</td>
</tr>
<tr>
<td>2</td>
<td>The children learn a set of words that corresponds with the theme of this unit. The theme of the second unit is colour.</td>
</tr>
<tr>
<td>3</td>
<td>The children can listen to question sentences that correspond with the theme of the unit and choose correct answers after seeing a set of pictures.</td>
</tr>
<tr>
<td>4</td>
<td>After the children listen to a word, they use the speaking-pen to spell the word.</td>
</tr>
<tr>
<td>5</td>
<td>After the children see pictures of objects and listen to their corresponding names, they can practice writing the correct spelling of the words.</td>
</tr>
<tr>
<td>6</td>
<td>After the children read question sentences and listen to questions using a speaking-pen, they can practice choosing correct answers.</td>
</tr>
<tr>
<td>7</td>
<td>After the children listen to a group of words that align with the theme of this section, they can practice the spelling of the words.</td>
</tr>
</tbody>
</table>
III. MODELLING THE EFFECTIVENESS OF SPEAKING-PEN IN CONSIDERATION OF INDIVIDUAL DIFFERENCES USING A LINEAR MIXED-EFFECT MODEL

In this chapter, the authors construct and propose models that can analyse the effectiveness of learning based on variables given in the pre- and post-questionnaire data, variables of time and variables of tools, such as the speaking-pen and audio CD. The authors analysed the variables using a one-way analysis of variance (one-way ANOVA) in order to choose effective variables among all 69 variables. Furthermore, the variables chosen using a one-way ANOVA by subtracting the scores of the first test from the scores of the second test for each period were included models as the effect of time, tools, and interactions between time and tools.

The authors propose a Model (T) of the total score. The total score is modelled as follows:

\[ y_{ijk} = \delta_i + \beta_j + \gamma_k + \beta_j\gamma_k + \epsilon_{ijk} \]  

(1.1)

\[ \epsilon_{ijk} \sim N(0, \sigma^2) \]

\( y_{ijk} \) is the total test score of the child \( i \) at time \( j \) with tool \( k \). \( \delta_i \) is defined as the parameter of each child \( i \). \( \beta_j \) is defined as the effect of time, \( \gamma_k \) as the effect of the tool, and \( \beta_j\gamma_k \) as the interaction between time \( j \) and tool \( k \). \( \epsilon_{ijk} \) is the error.

Furthermore, the parameter of each child \( i \) \( \delta_i \) is modelled by the variables whose clear trends were observed significantly using a one-way ANOVA of the total score of the first test.

\[ \delta_i = \mu + \alpha_1 + \alpha_2 + \alpha_3 + \alpha_6 + \alpha_7 + \alpha_8 + \alpha_9 + \omega_i \]  

(1.2)

The parameter \( \mu \) is defined as ‘Mean over individual’, \( \alpha_1 \) as fixed effect of ‘Gender’, \( \alpha_2 \) as fixed effect of ‘Private English School’, \( \alpha_3 \) as fixed effect of ‘Speaking-pen Experiences’, \( \alpha_6 \) as fixed effect of ‘Home Learning’, \( \alpha_7 \) as fixed effect of ‘Homework of Private English School’ and \( \alpha_9 \) as fixed effect of ‘Favour’. The parameter \( \omega_i \) expresses ‘Individual Differences’ and is assumed to be \( \omega_i \sim N(0, \sigma^2_\omega) \).

The effect of time \( \beta_j \) is modelled by the variables whose clear trends were observed significantly using a one-way ANOVA of the total improvements in test scores.

\[ \beta_j = \pi_j + \alpha_{ij} \]  

(1.3)

The parameter \( \pi_j \) is defined as ‘Mean of Time \( j \)’ and \( \alpha_{ij} \) as ‘Gender × Time \( j \)’, which means the fixed effect of ‘Gender effect at Time \( j \)’.

The effect of tool \( k \) \( \gamma_k \) is modelled by the variables whose clear trend was observed significantly using a one-way ANOVA of the total test score improvement.

\[ \gamma_k = \sigma_k + \alpha_{ik} \]  

(1.4)

The parameter \( \sigma_k \) is defined as ‘Mean of Tool \( k \)’ and \( \alpha_{ik} \) as ‘Gender × Tool \( k \)’, which means the fixed effect of ‘Gender effect using Tool \( k \)’.

The effect \( \beta_j\gamma_k \) is modelled by the variables whose clear trends were observed significantly using a one-way ANOVA of the total improvements in test scores.

The result of the one-way ANOVA showed that ‘Frequency’ was significant regarding the improvement of first period students, and ‘Gender’ was significant regarding the improvement of second period students. The authors considered this to be the result of interactions between these variables and the effect of time. Accordingly, these interactions are included in the model.

\[ \beta_j\gamma_k = \xi_{jk} + \alpha_{1jk} + \alpha_{10jk} \]  

(1.5)

The parameter \( \xi_{jk} \) is defined as ‘Mean of Time \( j \) × Tool \( k \)’, \( \alpha_{1jk} \) as ‘Gender × Time \( j \) × Tool \( k \)’, which means the fixed effect of ‘Gender effect in Time \( j \) × Tool \( k \)’, and \( \alpha_{10jk} \) as ‘Frequency × Time \( j \) × Tool \( k \)’, which means the fixed effect of ‘Frequency effect in Time \( j \) × Tool \( k \)’.

The authors also propose the models of four English skills. The four models are constructed in the same way as Model (T) and each models are adopted among all the possible models regarding all combinations of variables according to the minimum value of AIC.

IV. RESULTS AND DISCUSSIONS FOR ALL THE MODELS

An analysis of this study was carried out in the restricted maximum likelihood estimation using the MIXED PROCEDURE of SAS. One of the levels of each variable was assumed to be 0 in order to estimate values of the other levels. For example, for estimating the variable ‘gender’, the estimated value of ‘girl’ is estimated on condition that the estimated value of ‘boy’ (level 0) is set at 0.

Table III represents the estimated values of each model that were significant. In Table III, the total score model ‘Model (T)’, the reading model ‘Model (R)’, the writing model ‘Model (W)’, the listening model ‘Model (L)’, and the speaking model ‘Model (S)’ are denoted ‘T’, ‘R’, ‘W’, ‘L’, and ‘S’ respectively.

A. Discussion for the Overall Trend

The results show that the estimated values of ‘Mean over Individual’ were significantly positive except for Model (S). It seems that the maximum score of speaking was lower than the other skills’ scores.

The effects of ‘Private English School (present)’ were significantly positive in all the models. The children learning at a private English school tended to have high abilities overall.

The effects of ‘Favour (like very much)’ in all the models were significantly positive. It seems that the children who like English very much had usually been successful in learning English.

The effects of ‘Time (\( j = 4 \)’) were significantly positive in all the models. It seems that the children were generally able to improve their English ability on throughout the study.
### TABLE III

**THE ESTIMATED SIGNIFICANT VALUES OF FIVE MODELS**

<table>
<thead>
<tr>
<th>Variables and Parameters (Levels)</th>
<th>T</th>
<th>R</th>
<th>W</th>
<th>L</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean over Individual</td>
<td>38.382***</td>
<td>7.867***</td>
<td>8.304***</td>
<td>15.371***</td>
<td>1.341***</td>
</tr>
<tr>
<td>Gender (1:girl)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2.150**</td>
</tr>
<tr>
<td>Private English School (1: past)</td>
<td>8.883*</td>
<td>4.438***</td>
<td>3.957***</td>
<td>3.974***</td>
<td>2.082**</td>
</tr>
<tr>
<td>Private English School (2: present)</td>
<td>17.309***</td>
<td>4.967***</td>
<td>5.918***</td>
<td>6.840***</td>
<td>4.485***</td>
</tr>
<tr>
<td>Tutor (1: past)</td>
<td>-19.625***</td>
<td>-5.635***</td>
<td>-6.218***</td>
<td>-4.986***</td>
<td>-3.404***</td>
</tr>
<tr>
<td>Kindergarten (1: yes)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3.813*</td>
</tr>
<tr>
<td>Favour (4: like)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2.150**</td>
</tr>
<tr>
<td>Favour (4: like very much)</td>
<td>15.713***</td>
<td>4.707***</td>
<td>5.376***</td>
<td>3.448**</td>
<td>2.877***</td>
</tr>
<tr>
<td>Tool (k = 2: Speaking-pen) × Private English School (1: past)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3.276***</td>
</tr>
<tr>
<td>Time (j = 2)</td>
<td>6.282**</td>
<td>5.914***</td>
<td>2.913***</td>
<td>4.966***</td>
<td>-5.971***</td>
</tr>
<tr>
<td>Time (j = 4)</td>
<td>15.769***</td>
<td>6.399**</td>
<td>5.966***</td>
<td>5.498***</td>
<td>2.771***</td>
</tr>
<tr>
<td>Time (j = 2) × Gender (1: girl)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-4.219*</td>
</tr>
<tr>
<td>Time (j = 2) × Private English School (1: past)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2.511*</td>
</tr>
<tr>
<td>Time (j = 2) × Private English School (2: present)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-6.667***</td>
</tr>
<tr>
<td>Time (j = 3) × Private English School (1: past)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3.598**</td>
</tr>
<tr>
<td>Time (j = 3) × Private English School (2: present)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>9.441***</td>
</tr>
<tr>
<td>Time (j = 2) × Kindergarten with English Lesson (1: yes)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>6.601**</td>
</tr>
<tr>
<td>Time (j = 2) × Home Learning (1: yes)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5.455*</td>
</tr>
<tr>
<td>Time (j = 2) × Homework of Private English School (1: yes)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-4.492*</td>
</tr>
<tr>
<td>Time (j = 2) × Tool (k = 2: Speaking-pen)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-1.893*</td>
</tr>
<tr>
<td>Time (j = 2) × Tool (k = 2: Speaking-pen) × Gender (1: girl)</td>
<td>8.781***</td>
<td></td>
<td>3.598**</td>
<td></td>
<td>9.441***</td>
</tr>
<tr>
<td>Time (j = 2) × Tool (k = 2: Speaking-pen) × Private English School (1: past)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>6.601**</td>
</tr>
<tr>
<td>Time (j = 3) × Tool (k = 2: Speaking-pen) × Private English School (1: past)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5.455*</td>
</tr>
<tr>
<td>Time (j = 4) × Tool (k = 2: Speaking-pen) × Private English School (1: past)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-5.799***</td>
</tr>
<tr>
<td>Time (j = 2) × Tool (k = 2: Speaking-pen) × Parents Speaking English Very Well (1: yes)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-5.799***</td>
</tr>
<tr>
<td>Time (j = 1) × Tool (k = 2: Speaking-pen) × Frequency (five-seven times / week)</td>
<td>11.940***</td>
<td>3.719**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time (j = 2) × Tool (k = 1: audio CD) × Frequency (once / two weeks)</td>
<td>12.433***</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time (j = 2) × Tool (k = 1: audio CD) × Frequency (five-seven times / week)</td>
<td>9.575***</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time (j = 2) × Tool (k = 1: audio CD) × Frequency (five-seven times / week)</td>
<td>8.762***</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time (j = 3) × Tool (k = 1: audio CD) × Frequency (five-seven times / week)</td>
<td></td>
<td></td>
<td>-3.548***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time (j = 3) × Tool (k = 1: audio CD) × Frequency (five-seven times / week)</td>
<td></td>
<td></td>
<td>-6.642***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time (j = 4) × Tool (k = 2: Speaking-pen) × Frequency (once / week)</td>
<td>7.661*</td>
<td>2.901*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time (j = 4) × Tool (k = 2: Speaking-pen) × Frequency (five-seven times / week)</td>
<td></td>
<td></td>
<td>-3.352*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time (j = 4) × Tool (k = 1: audio CD) × Frequency (once / two weeks)</td>
<td>2.752*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time (j = 4) × Tool (k = 1: audio CD) × Frequency (five-seven times / week)</td>
<td></td>
<td></td>
<td>-4.040*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Individual Differences</td>
<td>283.92</td>
<td>24.43</td>
<td>42.14</td>
<td>14.13</td>
<td>4.38</td>
</tr>
<tr>
<td>Error</td>
<td>86.42</td>
<td>12.39</td>
<td>19.07</td>
<td>13.40</td>
<td>7.67</td>
</tr>
</tbody>
</table>

*** p ≤ 0.05, ** 0.05 < p ≤ 0.10, * 0.10 < p ≤ 0.15

### B. Results of Model (T)

The effect of ‘Private English School (past)’ was significantly positive. The result shows that the effect of their past-experience appeared. The effect and the significant level of ‘Private English School (present)’ were higher than ‘Private English School (past)’.

The interaction of ‘Time (j = 2) × Tool (k = 2: speaking-pen)’ was significantly positive. The results show that the children who learned using a speaking-pen during the first period were, on average, able to improve their overall ability more than the children who used an audio CD. It seems that the speaking-pen is more effective than an audio CD in the early stage of English learning.

The effect of ‘Frequency (five-seven times / week)’ in the interaction between ‘Time (j = 2)’ and ‘Tool (k = 2: speaking-pen)’ was significantly positive. The results show the overall abilities of the children who often used a speaking-pen improved significantly on average in the first period of the study.

The effect of ‘Frequency (once / week)’ in the interaction between ‘Time (j = 4)’ and ‘Tool (k = 2: speaking-pen)’ was significantly positive. It seems that overall ability improved through the use of a speaking-pen, even if only slightly in the second period of the study.

In terms of variances, the estimated value of the variance of ‘Individual Differences’ was larger than ‘Error’. It seems that the individual difference was large as a factor of a variance in Model (T).

### C. Results of Model (R)

The effects of ‘Private English School (past)’ and ‘Private English School (present)’ were positive. It seems that the effects of their past-experience or experience in the present appeared to affect their learning. In addition, the results can be interpreted as the effect of children being able to easily
link words to pictures, which were their knowledge of words they presumably learned at a private English school.

The effect of ‘Favour (like)’ was positive and high, though a significant level of the effect was weaker than the effect of ‘Favour (like very much)’. It seems that the children who liked English have high reading abilities due to having learned English with familiarity at an elementary school.

The interaction between ‘Time (j = 2)’ and ‘Homework (yes)’ was positive. The result shows that the reading abilities of the children who usually did their homework that was assigned by a private school or a tutor increased more than the children who did not do their homework in the first period. It seems that the homework assigned by a private English school or a tutor tended to focus on reading.

In terms of variances, the estimated value of the variance of ‘Individual Differences’ was larger than ‘Error’. It seems that the individual difference was a significant factor of a variance in Model (R).

D. Results of Model (W)

A few significant effects were observed in Model (W) compared to the other models. It seems that the structure of writing is simpler than the other models.

The values of the effects of ‘Time’ were high in order of ‘Time (j = 2)’, ‘Time (j = 3)’, and ‘Time (j = 4)’. It seems that the children were able to acquire an ability of writing letters and spelling words through learning by textbook.

In terms of variances, the estimated value of the variance of ‘Individual Differences’ was larger than ‘Error’. It seems that the individual difference was large as a factor of a variance in Model (W).

E. Results of Model (L)

The interaction between ‘Time (j = 2)’ and ‘Gender (girl)’ was significantly positive. The results show that the listening abilities of girls improved more than they did among the boys in the first period.

The interaction between ‘Time (j = 2)’ and ‘Private English School (present)’ was significantly negative. The results show that the abilities of the children who had never learned at a private English school increased more than the children who were currently learning at a private English school. In this study, the structure of the textbook focuses on the ability to ‘identify familiar words, provided they are delivered clearly and slowly’ and ‘understand easy questions’. It seems that prior to the study, the ability of the children who had been learning at a private English school had been higher than those who had never learned at a private English school. For this reason, the children who had never learned at a private English school were able to improve their own listening abilities more than those who had been learning at a private English school.

The interaction between ‘Time (j = 2)’ and ‘Tool (k = 2: speaking-pen)’ was significantly positive. The listening abilities of the children who used a speaking-pen during the first period tended to increase more than the abilities of the children who used an audio CD. The speaking-pen provides the children with an opportunity to listen to the same words repeatedly, while using an audio CD requires one to listen to the entire track. Thus, children can listen to pronunciations slowly and clearly using speaking-pen, which may account for these results.

In terms of variances, both of the estimated values, ‘Individual Differences’ and ‘Error’, were at the same level. The authors consider that this result means the tools relatively created a stable effect on speaking. It seems that individual difference was relatively small in listening since the tools focused on improving listening ability.

F. Results of Model (S)

The effect of ‘Kindergarten’ was significantly positive. It seems that the ‘Kindergarten’ effect resembled ‘Private English School (past)’ since the children learned English in kindergarten before the investigation research began. This means that the children who learned in kindergarten were able to have a daily conversation among themselves using familiar expressions.

The effects of ‘Favour (like)’ and ‘Favour (like very much)’ were positive, though the significant levels of the effect were weaker than the effect of ‘Favour (like very much)’. It seems that the children who like English usually learned the pronunciation of words and expressions with familiarity.

The interactions between ‘Tool (k = 2: speaking-pen)’, ‘Private English School (past)’ and each of the ‘Time (j = 2)’, ‘Time (j = 3)’, and ‘Time (j = 4)’ factors were significantly positive. It seems that the children could remember knowledge or experiences when they learned at a private English school.

Considering that significant levels were high in order of Time (j = 2)’, ‘Time (j = 3)’, and ‘Time (j = 4)’, the interaction of ‘Tool (k = 2: speaking-pen)’ and ‘Private English School (past)’ appeared most in the early stage of English learning.

In terms of variances, the estimated value of the variance of ‘Individual Differences’ was smaller than ‘Error’. The authors consider that this result means the tools created a stable effect on speaking. It seems that the children could consistently acquire speaking skills using tools such as a speaking-pen and an audio CD.

G. Conclusion of Results

In conclusion, a speaking-pen provided children with a means to improve their overall ability in the first period, on average, and in consideration of each skill, the differences of the effects depending on their background were observed. Furthermore, in the study, the authors found that the tools such as the speaking-pen and audio CD created a stable effect on listening and speaking.
REFERENCES
Abstract—As globalization advances, early English education for children in non-English speaking countries has been regarded as important. Many studies have proposed effective learning methods; however, few of these have analysed the relationship between learning processes and their effects with respect to detailed, classified interests. This study investigated and proposed detailed learners’ interests in primary school children’s English learning as variables from log data obtained through learning with a speaking-pen, and analysed the relationship between features of learners’ interests and their improvements. Children were classified into four types based on their initial abilities, and an effective learning method was hypothesized for each type. The relationship between the features of children’s interests and variables related to self-regulated learning and English education, and their improvement of English skills, were then analysed. As a result, the validity of using variables of interests for understanding factors in English skill improvement was shown.

Keywords—Classification, interest in learning, learning process log data, regression tree

I. INTRODUCTION

As globalization proceeds, various educational reforms for improving English ability have been practiced in numerous non-English speaking countries. Actual English education policies in the Asia-Pacific region and their practical problems were detailed by Nunan (2003). In Japan, the curriculum guidelines for elementary schools were revised and English language activities were established for children of grades 5 and 6 by the Ministry of Education, Culture, Sports, Science and Technology (2011). In light of this historical context, research in early English education is vital. Liu & Chu (2010) showed improvement in both learning outcomes and motivation in grade 7 students with an English education technique that used ubiquitous games as learning material. Tsubaki, Gonda, Kato, & Maeda (2015) proposed 30 variables for English education and self-regulated learning in primary school children’s English learning, and modelled the four basic English skills for improvement to verify the effectiveness of each learning strategy, after classifying children into four types based on the results of a pre-test.

On the other hand, the effect of learners’ interests on study and cognition has been examined and verified extensively. Hidi (1990) showed that interests are central elements in determining how people select and maintain certain types of information processing in preference to others. As a case study, Renninger, Ewen, & Lasher (2002) discussed the interests of 11-year-old children. Tanaka (2015) proposed a detailed classification of interests in science for children from elementary grade 5 to high school grade 1, and analysed the relationship between the characteristics of each interest to development of meaningful understanding strategies and learning activities. Although the features of the classified interests were examined, however, the factors of such interests that improve learning were not analysed in detail.

The present study examines and proposes variables for understanding factors in English skill improvement.
concerning interest in primary school children’s English learning, based on the classification of interest in science learning created by Tanaka (2015); it then analyses the relationship between these interests’ features in the English learning process of elementary school children and their English ability improvement. Improving upon previous variables for self-regulated learning and English education, proposed by Tsubaki et al. (2015), the study analyses effective learning elements in terms of interest, self-regulated learning and English education variables; the interest variables are evaluated by comparing them with the analysis results.

II. OVERVIEW OF THE RESEARCH

A. Investigation

This research analyses learning process data obtained from a Speaking-pen learning trial involving 90 students (parental consent was obtained for all participating children) from grade 2 of the private Shukutoku Elementary School in Japan. Since this school has its own curriculum that allows children to study English beginning in grade 1, its students’ English skills are considered to be more highly developed than those of ordinary elementary students. Initially, the children and their parents completed individual questionnaires to provide an understanding of the children’s background, such as English learning environment, motivation and experience. Based on the answers, eight categories were established by combining experience using a Speaking-pen, experience studying English, and home learning practices; for each category, children were allocated to one of two groups using a Bernoulli trial with the parameter set to 0.5 (see Fig. 1).

As shown in Fig. 2, one group studied at home with the Speaking-pen for the first six weeks and with a CD for the second six weeks after winter vacation, while the other group studied with a CD for the first six weeks and with a Speaking-pen for the second six weeks after vacation. This experiment did not enforce their study (e.g., study amount or timing), and all participants were directed to respect the intention of the children. To analyse effectiveness, a crossover study was used, measuring two test scores on the baseline and the second point of each term (see Fig. 2). In the experiment, each of the children used a Speaking-pen and the textbook developed for use with the Speaking-pen.

A usual Speaking-pen is a learning material which provides learners the opportunity of listening. When learners push the dots embedded in the words or sentences on a textbook, the Speaking-pen pronounces them. Then, learners using a Speaking-pen can focus on learning about the content which they want to learn, unlike the learners using an audio CD have to listen to the English in order of a textbook. Furthermore, the Speaking-pen used in this study not only plays the words and conversations in the textbook, but also enables learners to record and replay their own pronunciations. Moreover, because the Speaking-pen links to dots embedded in each question, information about the learning process can be obtained via log data, such as the order in which questions are solved and their results. The Speaking-pen is made by Gridmark, Inc.

B. Textbook

The textbook consists of four units, each with seven parts. The children studied two units during each six-week period before and after the winter vacation (see Fig. 2). The part 1 of the fourth unit, for example, is shown in Fig. 3.

In Part 1, the children practice some basic thematic conversations of the unit, such as ‘What do you like?’ / ‘I like cake’ (see Fig. 3), using the Speaking-pen for reading, listening and speaking. Therefore, the children can improve their reading, speaking and listening ability in this part.
C. Tests

Each test is organized into six parts similar to the textbook.

Fig. 4 Part 4 of the second test

The part 4 of the second test, for example, is shown in Fig. 4. In Part 4, the children are required to listen to questions and select the appropriate answer by referring to the matching pictures. Four points are allocated to each question for a total of 20.

III. PROPOSAL AND INVESTIGATION OF VARIABLES OF INTEREST IN LEARNING ENGLISH

Tanaka (2015) proposes and examines six types of interest in science. Interest based on experience of experiments, interest based on surprise and discovery, and interest based on achievement are classified as shallow interests, while interest based on acquiring knowledge, interest based on vitalizing thinking, and interest related to daily life are classified as deep interests.

This research proposes and investigates children’s interest in learning English using learning process data, to which the science learning interests of Tanaka (2015) are expanded.

A. Interest Based on Achievement

The emergence of interest based on achievement was defined as the case in which a child studied in one of the following ways: learning words or sentence structures by skipping through more than two parts, continuing to solve questions with wrong answers until the correct answer was obtained, and studying questions repeatedly after the correct answer was obtained. In Table I, S expresses Success in a question and O expresses other log.

As shown in Table I, a child was judged to have interest based on achievement in the case where the child learned questions repeatedly after the correct answer 5-5 for Q5 was obtained.

The definitive variables of interest are shown in Table II.

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Part</th>
<th>Content</th>
<th>Log</th>
</tr>
</thead>
<tbody>
<tr>
<td>10.28</td>
<td>19:17:30</td>
<td>3</td>
<td>Q4</td>
<td>Q</td>
</tr>
<tr>
<td>10.28</td>
<td>19:17:32</td>
<td>3</td>
<td>4-2</td>
<td>S</td>
</tr>
<tr>
<td>10.28</td>
<td>19:17:34</td>
<td>3</td>
<td>Q5</td>
<td>Q</td>
</tr>
<tr>
<td>10.28</td>
<td>19:17:36</td>
<td>3</td>
<td>5-5</td>
<td>S</td>
</tr>
<tr>
<td>10.28</td>
<td>19:17:38</td>
<td>3</td>
<td>5-1</td>
<td>O</td>
</tr>
<tr>
<td>10.28</td>
<td>19:17:40</td>
<td>3</td>
<td>5-2</td>
<td>O</td>
</tr>
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<td>19:17:41</td>
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<td>19:17:44</td>
<td>3</td>
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<td>10.28</td>
<td>19:17:45</td>
<td>3</td>
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</tr>
<tr>
<td>10.28</td>
<td>19:17:47</td>
<td>3</td>
<td>5-1</td>
<td>O</td>
</tr>
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</table>

TABLE II

CLASSIFICATION OF ENGLISH LEARNING INTERESTS

<table>
<thead>
<tr>
<th>Type</th>
<th>Variable</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value interests</td>
<td>DAILY1</td>
<td>Learning words related to daily life</td>
</tr>
<tr>
<td></td>
<td>DAILY2</td>
<td>Learning sentences related to daily life</td>
</tr>
<tr>
<td>Vitalizing thinking</td>
<td>THINK1</td>
<td>Learning content related to sentence structure</td>
</tr>
<tr>
<td></td>
<td>THINK2</td>
<td>Learning all content about a story in sequence</td>
</tr>
<tr>
<td></td>
<td>THINK3</td>
<td>Solving questions without incorrect answers</td>
</tr>
<tr>
<td></td>
<td>THINK4</td>
<td>Solving difficult questions correctly</td>
</tr>
<tr>
<td></td>
<td>TH5AC1a</td>
<td>Learning words by skipping through more than two parts</td>
</tr>
<tr>
<td></td>
<td>TH6AC2b</td>
<td>Learning sentences by skipping through more than two parts</td>
</tr>
<tr>
<td>Acquiring knowledge</td>
<td>KNOW1</td>
<td>Learning the same content repeatedly</td>
</tr>
<tr>
<td></td>
<td>KNOW2</td>
<td>Learning difficult questions with words not related to daily life</td>
</tr>
<tr>
<td></td>
<td>KNOW3</td>
<td>Learning all items in one part</td>
</tr>
<tr>
<td>Emotional interests</td>
<td>TH5AC1a</td>
<td>Learning words by skipping through more than two parts</td>
</tr>
<tr>
<td></td>
<td>TH6AC2b</td>
<td>Learning sentences by skipping through more than two parts</td>
</tr>
<tr>
<td></td>
<td>ACHIEVE3</td>
<td>Continuing to solve questions with wrong answers until the correct answer is obtained</td>
</tr>
<tr>
<td></td>
<td>ACHIEVE4</td>
<td>Learning questions repeatedly after the correct answer was obtained</td>
</tr>
<tr>
<td>Familiarity</td>
<td>FAMILIAR</td>
<td>Learning familiar words not related to daily life</td>
</tr>
<tr>
<td>Surprise and discovery</td>
<td>SURPRISE</td>
<td>Learning words related to daily life that are surprising and/or difficult to pronounce or use</td>
</tr>
</tbody>
</table>

*aTH5AC1=THINK5=ACHIEVE1, bTH6AC2=THINK6=ACHIEVE2.
IV. RE-EXAMINATION OF SELF-REGULATED LEARNING AND ENGLISH EDUCATION VARIABLES

In previous research, variables of self-regulated learning and English education were proposed as factors affecting study of English (Tsubaki et al., 2015). Self-regulated learning is a method in which the learner regulates his or her own learning based on an achievement target. The effectiveness of self-regulated learning has been proved by numerous studies (e.g., Zimmerman & Martinez-Pons, 1986). The elements of self-regulated learning are ‘motivation’, ‘learning strategy’ and ‘metacognition’ (Zimmerman, 1986, 1989). The variables for English education quantized the learning strategies for English study (e.g., amount of study) as observed for each of the four English abilities.

This research re-examined the level and validity of these variables based on the CEFR-J. The Common European Framework of Reference for Languages (CEFR) was published by the Council of Europe (2001) to provide a basis for language education for English language learners in Europe. CEFR-J, then, is a reconstructed guideline that extends the CEFR to English learning in Japan (Tono, 2012). The variables are listed in Tables III and IV.

<table>
<thead>
<tr>
<th>TABLE III</th>
<th>SELF-REGULATED LEARNING VARIABLES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category</td>
<td>Variable</td>
</tr>
<tr>
<td>Motivation</td>
<td>External regulation (EXR)</td>
</tr>
<tr>
<td></td>
<td>Preference for English (PRE)</td>
</tr>
<tr>
<td></td>
<td>Learning purpose (LPU)</td>
</tr>
<tr>
<td></td>
<td>Desire for communication with foreigths (DCF)</td>
</tr>
<tr>
<td></td>
<td>Utility of learning materials (ULM)</td>
</tr>
<tr>
<td>Learning Strategy</td>
<td>Vital strategy (VIS)</td>
</tr>
<tr>
<td></td>
<td>Starting with difficult content (SDC)</td>
</tr>
<tr>
<td></td>
<td>Starting with easy context (SEC)</td>
</tr>
<tr>
<td></td>
<td>Starting with favourite content (SFC)</td>
</tr>
<tr>
<td></td>
<td>Quantitatively dispersed learning (QDL)</td>
</tr>
<tr>
<td></td>
<td>Constant study (COS)</td>
</tr>
<tr>
<td></td>
<td>Interval of study (IOS)</td>
</tr>
<tr>
<td></td>
<td>Study days (DAY)</td>
</tr>
<tr>
<td>Metacognition</td>
<td>Metacognition by friendship (MFR)</td>
</tr>
<tr>
<td></td>
<td>Review (REIV)</td>
</tr>
<tr>
<td></td>
<td>Metacognition by parents’ contribution (MPC)</td>
</tr>
<tr>
<td></td>
<td>Recognition of main point (REM)</td>
</tr>
<tr>
<td></td>
<td>Associated with previous learning (APL)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TABLE IV</th>
<th>ENGLISH EDUCATION VARIABLES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Element</td>
<td>Variable</td>
</tr>
<tr>
<td>Listening</td>
<td>Quantity of listening learning (QUL)</td>
</tr>
<tr>
<td></td>
<td>3RL method (3RL)</td>
</tr>
<tr>
<td></td>
<td>Repeated LSL (RLSL)</td>
</tr>
<tr>
<td>Reading</td>
<td>Quantity of reading learning (QUR)</td>
</tr>
<tr>
<td>Writing</td>
<td>Word familiarity (WOF)</td>
</tr>
<tr>
<td></td>
<td>Learning related words together (LRW)</td>
</tr>
<tr>
<td></td>
<td>Learning by associating with other words (LAO)</td>
</tr>
<tr>
<td></td>
<td>Repeating strategy (RST)</td>
</tr>
<tr>
<td></td>
<td>Imaging strategy (IST)</td>
</tr>
<tr>
<td></td>
<td>Quantity of writing learning (QUW)</td>
</tr>
<tr>
<td>Speaking</td>
<td>Quantity of speaking learning (QUS)</td>
</tr>
<tr>
<td></td>
<td>Repeated SLS (RSLS)</td>
</tr>
</tbody>
</table>

V. ANALYSIS OF ENGLISH LEARNING PROCESS

A. Type Classification Based on Initial Abilities

In this section, children are classified into several types using Ward’s method of cluster analysis, based on the results for the four basic English skills on the first test. The deviation value of the test scores for each of the four elements is analysed to clarify the relations among them, since the four abilities’ scores do not have the same scale on the test.

<table>
<thead>
<tr>
<th>TABLE V</th>
<th>AVERAGE OF DEVIATION VALUES FOR CLASSIFICATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cluster</td>
<td>English element*</td>
</tr>
<tr>
<td></td>
<td>L</td>
</tr>
<tr>
<td>1</td>
<td>48.21</td>
</tr>
<tr>
<td>2</td>
<td>41.08</td>
</tr>
<tr>
<td>3</td>
<td>58.32</td>
</tr>
<tr>
<td>4</td>
<td>42.17</td>
</tr>
</tbody>
</table>

* L = Listening, R = Reading, W = Writing, S = Speaking.

The children were then classified into four types. The characteristics for English learning of each type were interpreted based on Table V, as shown in Table VI.

<table>
<thead>
<tr>
<th>TABLE VI</th>
<th>CHARACTERISTICS OF EACH TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>Characteristics</td>
</tr>
<tr>
<td>1</td>
<td>Middle level, good at speaking, not so good at writing</td>
</tr>
<tr>
<td>2</td>
<td>Lower level, somewhat good at speaking, and not good at reading</td>
</tr>
<tr>
<td>3</td>
<td>Higher level, not as good at speaking</td>
</tr>
<tr>
<td>4</td>
<td>Lower level, not good at speaking</td>
</tr>
</tbody>
</table>

B. Analysis of English Ability Structures

The structure of students’ English abilities at the start of this research were obtained using structural equation modelling based on the deviation values of four elements for each type. Because Shukutoku Elementary School provides English classes focusing on listening and reading at lower grades, models with a path from listening or reading to other skills are assumed to be valid. Similarly, models with a path from speaking to listening or from writing to reading, for instance, were rejected in advance. All possible models were then constructed, including differences in path direction of paths, based on the above assumption; the models with the highest AGFI on the four types were accepted respectively.

In type 4, for example, positive relations were found on the paths from listening to reading and especially listening to writing. A negative relation was found on the path from reading to writing, and a strong positive relation was found on the path from writing to speaking. With indirect effect, the speaking ability is considered to have strong relationships with the other abilities. Although the children of type 4 are not so good at any of the four English skills, they have presumably learned with links among the skills. After the first test, then, the children are expected to improve their overall English skills by studying with focus on listening and reading.
The hypotheses about effective focus on certain English skills were constructed by those observations, as shown in Table VII.

**TABLE VII**

<table>
<thead>
<tr>
<th>Type</th>
<th>Effective English elements for each type</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Listening and writing</td>
</tr>
<tr>
<td>2</td>
<td>Listening, reading and writing</td>
</tr>
<tr>
<td>3</td>
<td>Listening and speaking</td>
</tr>
<tr>
<td>4</td>
<td>Listening and reading</td>
</tr>
</tbody>
</table>

**C. Analysis of Important Variables of English Learning**

In this section, regression binary tree analysis is used to analyse the learning features of the children who improved in the experiment, where degree of improvement is set as the objective variable and the explanatory variables are those shown in Tables II to IV. A regression tree analysis for suggesting meaningful features of learning strategy was used by Matsukawa et al. (2007).

In this research, however, since only primary school grade 2 was targeted, the sample size was not large enough to detect the features of small groups like type 2 or type 4. Therefore, children were separated into the English superior group (type 3: n = 39) and the English inferior group (others: n = 51) and analysed respectively.
ability appeared on a tree with the variables of interest, as shown in Fig. 6.

<table>
<thead>
<tr>
<th>Element</th>
<th>English education</th>
<th>Self-regulated learning</th>
<th>Value interests</th>
<th>Emotional interests</th>
</tr>
</thead>
<tbody>
<tr>
<td>English</td>
<td>L</td>
<td></td>
<td>READ</td>
<td></td>
</tr>
<tr>
<td>Superior</td>
<td>R</td>
<td></td>
<td>READ, SPEAK</td>
<td></td>
</tr>
<tr>
<td>Group</td>
<td>W</td>
<td></td>
<td>SPEAK</td>
<td></td>
</tr>
<tr>
<td>Type 3</td>
<td>S</td>
<td></td>
<td>DAILY2</td>
<td>LISTEN</td>
</tr>
<tr>
<td></td>
<td>T</td>
<td></td>
<td>THINK1, THINK2</td>
<td></td>
</tr>
<tr>
<td>English</td>
<td>L</td>
<td>QUW</td>
<td>KNOW3</td>
<td>READ</td>
</tr>
<tr>
<td>Inferior</td>
<td>R</td>
<td></td>
<td>DAILY2, THINK4</td>
<td>ACHIEVE3, ACHIEVE4</td>
</tr>
<tr>
<td>Group</td>
<td>W</td>
<td>QUW</td>
<td>KNOW3</td>
<td>LISTEN</td>
</tr>
<tr>
<td>(Types 1)</td>
<td>S</td>
<td>QUS</td>
<td>KNOW3</td>
<td></td>
</tr>
<tr>
<td>2 and 4)</td>
<td>T</td>
<td>DCF, DAY</td>
<td>THINK4</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>THINK6, ACHIEVE4, LISTEN</td>
<td></td>
</tr>
</tbody>
</table>

Overall, children who scored highly for DAILY2 (Learning sentences related to daily life, Value interests) tended to show improvement. Of those, children with high scores for ACHIEVE4 (Learning questions repeatedly after the correct answer was obtained, Emotional interests) tended to improve, and in particular those with high scores for THINK4 (Solving difficult questions correctly).

The features of children showing improvement in reading ability also appeared on the tree with all variables, as shown in Fig. 7. Overall, DAILY2 again appeared on the top branching of the tree.

The series of improved children’s features, abstracted as variables, are listed in Table VIII.

VI. DISCUSSION

For the children of the English Inferior Group (types 1, 2 and 4), the common features obtained by the trees were ACHIEVE4 (Studying questions repeatedly after the correct answer was obtained, Emotional interests), KNOW3 (Learning all items in one part, Value interests) and THINK4 (Solving difficult questions correctly, Value interests). Thus, children of types 1, 2 or 4 would improve their overall English skill by focusing on listening, which also affected speaking skill. The feature of writing study is confirmed by the appearance of the QUW (Quantity of writing learning) variable, abstracted in the demonstrated improvements of both listening and writing skill. For reading skill improvement, however, no other English skills’ features had an effect, as shown in Table VIII. As a common suggestion for the entire English Inferior Group, the strategy that best improves overall total ability through practice with listening should be applied. The more specific assumed effective learning methods for children of type 4 are listed in Table IX. However, because only the common features for the group were detected by the regression trees, the listening study feature indicated by LISTEN was concluded to affect overall improvement by combining the hypotheses for each type and the results in Table VIII. Thus, although the hypotheses were found valid, a strategy for improving reading skill was also found to be necessary.

<table>
<thead>
<tr>
<th>English element</th>
<th>Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td>L</td>
<td>YES</td>
</tr>
<tr>
<td>R</td>
<td>YES</td>
</tr>
<tr>
<td>W</td>
<td>YES</td>
</tr>
<tr>
<td>S</td>
<td></td>
</tr>
</tbody>
</table>

Highlighted rows indicate hypothesized effective focus.

Significant difference was confirmed between the features of children showing improvement in the English Superior Group and the English Inferior Group. For overall abilities, Value interests for the English Superior Group and Emotional interests for the English Inferior Group were selected as the variables that determine the first branching of regression trees. However, for the four main English skills, the reverse tendency was found. For the English Superior Group, Emotional interests such as experience-based interest were selected as the variables that determine the first branching of regression trees. On the contrary, for the English Inferior Group, Value interests were selected for the three English skills other than listening. Another difference was found in the variables of self-regulated learning; DCF (Desire for communication with foreigners) and DAY (Study days) were selected only in the English Inferior Group.

REFERENCES


Trend of ICT in Teaching and Learning

Tini Mogea\textsuperscript{a} & Reynaldo Joshua Salaki\textsuperscript{b}

\textsuperscript{a}English Education Department, Manado State University, Manado, Indonesia
\textsuperscript{b}Education of ICT Department, Manado State University, Manado, Indonesia

Abstract—Information and Communication Technology (ICT) is now affecting every aspect of human life. ICT has an important role in workplaces, business, education, and entertainment. Understanding of many people today recognize ICT as a catalyst for change, initiated changes in working conditions, handling and exchanging information, methods of teaching, learning approaches, scientific research, and even in accessing information. The world of education is one of the sectors affected by ICT. This is certainly influential to support learning and teaching in education to be more forward again through the use of ICT media based. In this research will be discussed about Trend of ICT for Teaching and Learning. This research is descriptive qualitative research, the research carried out by conducting a case study at Manado State University and collecting information (Literature) relating to the use of ICT in Teaching and Learning in Education.

Keywords—ICT, Teaching, Learning, Qualitative Descriptive.

I. INTRODUCTION

TECHNOLOGY (ICT) in education became one policy of the Department of Education, where the application of ICT in the educational development of the future not just follow rather it is a global trend a strategic step in the effort improve access and quality of service to the public.

ICT developed in education should be towards the realization of the system integrated to build connectivity between components that exist in education so that education becomes more dynamic and active in a holding communication in order to obtain and achieve the opportunities that exist for the development of education in Indonesia.

In the era of globalization, the role of ICT into increasingly important use for disclose the data and facts into an information that can be utilized.

The contribution of ICT in education which is to support the learning process between teacher and student. ICT is essentially a tool for gain added value in produce an information quickly, complete, accurate, transparent and timely.

Education must now able improve the quality of a good education supported by ICT-based facilities for the success of the learning objectives.

II. LITERATURE REVIEW

A. ICT

Information and Communication Technology is a big term that covers the entire technical equipment for processing and conveying information. ICT covers two aspects of information technology and communication technology. Information technology covering all matters relating to process, use as a tool, manipulation, and management of information. While communication technology is everything associated with the use of tools to process and transfer data from one device to another. Therefore, information technology and communication technology are two inseparable concepts. So the Information and Communication Technology contains the broad sense that all activities related to the processing, manipulation, management, transfer of information between media.

Information technology is the infrastructure (hardware, software, brainware) systems and methods to acquire, transmit, process, interpret, store, organize and use data in meaningful ways (Warsita 2010: pp 135).

Information and Communication Technology (ICT) can broadly be defined as the tools, facilities, processes, and equipments that provide the required environment with the physical infrastructure and the services for the generation,
transmission, processing, storing and disseminating of information in all forms including voice, text, data, graphics and video. From the definition, ICT has a role to play in any country’s educational development (Asabere 2012 : pp 62).

B. Teaching

Teaching is a process of knowledge transfer is done by the teacher to the student in the learning process, teaching is done by teachers using the technique with certain media so that it can support the learning goals.

Shabanuddin et al, 2003, Teaching is something assignment and activity are cultivated jointly by teachers and his students. Without any one teaching there would not be valid. Teaching designed by teachers systematically using appropriate rules and techniques to create an environment that enables the process of learning. Results than teaching force changes in the relative same eternal exists in the form which explicitly or implicitly. Teaching may be added either in the quest to continue the investigation, the development of science, strengthening the skills and a reference to the practice of professional related. Teaching also encompass process they shape the curriculum, delivering the curriculum and student assessment system. In the teaching process, there are various approaches that may be applied as centered teaching students, teachers, results, processes and values. In summary, the components principles which form something the teaching process should contains the following traits that is, a teacher, a student or pupil, content, rules, objectives, outcomes (changes eternal in relative terms) and assessment (Nawi 2011 : pp 4).

C. Learning

Learning is an activity that a person or group of people who have the purpose to find out useful to develop knowledge possessed.

Learning in a broad sense can be defined as a psychophysical activities leading to the development of the whole person. Later in the narrow sense, intended as an effort to learn mastery of materials science which is part of activities towards the formation of the whole personality (Sardiman 2011 : pp 22).

Learning is a process where the behavior (in the broad sense) generated or modified through practice or exercise. Learning can also be interpreted as an activity that is indicated by a change in behavior as a result of the experience. Learning is also an individual process attempts to obtain a new change in behavior as a whole, as a result of the experience of the individual in interaction with the environment (Djamara 2002 : pp 12-13). The theories of learning can be seen in Table I.

<table>
<thead>
<tr>
<th>No</th>
<th>Definition of Learning</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Learning is a complex process that happens to everyone and lasts a lifetime, since he was a baby up to the grave later (Sadiman, et al., 1986: 2).</td>
</tr>
<tr>
<td>2</td>
<td>Learning is a relatively permanent change in behavior as a result of the experience (not as a result of development, the influence of drugs, or accident) and can execute on any other knowledge and be able to communicate it to others (Pidarta, 2000: 197).</td>
</tr>
<tr>
<td>3</td>
<td>Learning requires a relatively permanent change in knowledge or behavior due to experience (Mayer 1982: 1040 in Seels &amp; Richey, 2000: 13).</td>
</tr>
<tr>
<td>4</td>
<td>Learning is an activity of everyday people. Learning is a complex process that happens to everyone and lasts a lifetime. Learning activities that form a complex behavior that has long been the object of research scientists. Because of the complexity of learning, a lot of theories that attempt to explain how the process of learning that happens (Miarso, 2004: 550).</td>
</tr>
<tr>
<td>5</td>
<td>Genesis relatively simple, namely imitation, was initially complex and has implications for learners and learning (Gredler, 1994: 6-7).</td>
</tr>
</tbody>
</table>

III. RESEARCH METHOD

This research used Qualitative Descriptive method. The goal of qualitative descriptive studies is a comprehensive summarization, in everyday terms, of specific events experienced by individuals or groups of individuals.

Qualitative descriptive studies are the least “theoretical” of all of the qualitative approaches to research. In addition, qualitative descriptive studies are the least encumbered studies, compared to other qualitative approaches, by a pre-existing theoretical or philosophical commitment (Lambert 2012 : pp 255).

IV. RESULT AND DISCUSSION

The results of this research is to provide information about the trends of ICT in education, through ICT in Education and the implementation of ICT in Education. In this study will be known benefits of ICT to be used in education that can be used in the process of teaching and learning.

A. ICT in Education

Information and communications technology (ICT) also took a role in the development towards more advanced in the world of education. Technology is moving to connect between educators and students in the learning process. Better utilization of information technology will be able to provide positive benefits to the world of education to improve the quality of graduates.
According to UNESCO, 2010, the term ICT is plural, referring to a great many technologies and it is an all-encompassing term that includes the full of electronic tools by means of which we gather, record and store information, and by means of which we exchange and distribute information to others. ICT are composed of many different tools that enable capturing, interpreting, storing and transmitting information in a fast and easy way. In the following figure (UNESCO, 2010), we can observe several options which allow us to better understand the society where we live (Carmona 2013 : pp 429).

Information and communication technologies have helped life to be easier and they were very helpful in arranging a large amount of information that we receive every day. The use of today's technology can’t be separated from the activities conducted every day even today students are in constant contact with the technology and we can’t ignore it.

For this reason, the changing role of teachers is an important issue. The role of teachers to use technology as a medium in order to invite the attractiveness students to love learning atmosphere can be done using technology.

**B. Implementation of ICT in Education**

Currently the Implementation of Information and Communication Technology in education is very much available. This is certainly an advantage for teachers and students to participate in learning activities, as for some of Technological Innovation in education:

1. **E-Learning**

   E-learning is a system or education concept that use of information technology in teaching and learning, where learning is structured with the aim of using electronic or computer systems so as to support the learning process. The learning process based E-Learning is a distance learning by combining the principles in the process of learning with technology and learning systems that are used as a tool for teaching and learning process implemented without having to meet directly between teachers and students.

2. **Mobile Learning**

   Learning based on Mobile Learning (M-Learning) is a development that is currently actively developed. The term mobile learning (m-learning) refers to the use of handheld devices and mobile information technology, such as PDAs, mobile phones, laptops and tablet PCs used in teaching and learning. M-learning is learning that unique because learners can access materials, referrals and applications relating with learning anytime and any-where-else, so it will increase attention to the learning material, makes learning more interesting and motivating learners to learning.

3. **Cloud Computing**

   Cloud computing is the combined use of computer technology (computing) in a network with the development of Internet-based (cloud) which has the function to run a program or application via a computer - a computer connected at the same time, but not all that connected via the Internet using cloud computing. Cloud-based computer technology system is a technology that makes the Internet as a central server for managing data and user applications. This technology allows users to run the program without the installation and allow users to access their personal data through a computer with access to computing internet. Cloud whose data is stored in a server is permanent means that all users can access simultaneously via internet access, and use data is also simultaneously. Utilization of Cloud in the world of education is to support Internet-based learning with the use of large scale, where learning is done remotely with a large number of users at different locations. The implications of this trend for education systems are huge and they will make cheaper information appliances available which do not require the processing power or size of the PC.

4. **One-to-One Computing**

   Academic institutions such as schools or universities at this time provides the opportunity each student registered to be able to use electronic devices to access the Internet, digital learning materials and digital textbooks, it is more commonly known as “bring your own device” (BYOD). This situation is a situation where educators encourage or require students to use their own laptop, smartphone or other electronic devices in the classroom. For this reason, one-to-one computing is a major part of the education policy in force in many countries where learning can increase the excitement of the students in learning activities.

5. **Gaming**

   Based learning games are games designed specifically for use in the learning activities specified, where Function Game is to explain the concepts, reinforce development, understand
an historical event, cultural and even studies which will provide assistance to people who use (students). Game based learning is also a lesson in the design using a competitive exercise, good learners engage with each other to make them challenge themselves which later was expected to be able to motivate them to learn.

C. ICTs benefits in Teaching and Learning

Through developments in the field of information and communication technology is there, of course, there are the benefits of Information and Communication Technologies in Education. The benefits of ICTs in teaching and learning can be seen in Table. II

<table>
<thead>
<tr>
<th>No</th>
<th>BENEFITS OF ICTs</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Offer the opportunity for more student centred teaching.</td>
</tr>
<tr>
<td>2</td>
<td>Provide greater opportunity for teacher-to-teacher and student-to-student communication and collaboration.</td>
</tr>
<tr>
<td>3</td>
<td>Give greater exposure to vocational and workforce skills for students.</td>
</tr>
<tr>
<td>4</td>
<td>Provide opportunities for multiple technologies delivered by teachers.</td>
</tr>
<tr>
<td>5</td>
<td>Create greater enthusiasm for learning amongst students</td>
</tr>
<tr>
<td>6</td>
<td>Provide teachers with new sources of information and knowledge.</td>
</tr>
<tr>
<td>7</td>
<td>Provide distance learners country-wide with online educational materials.</td>
</tr>
<tr>
<td>8</td>
<td>Provide learners with additional resources to assist resource-based learning. Furthermore, the document states ICTs to cover all the technologies used for holding and communicating information and their use specifically in education with overall policy goals of.</td>
</tr>
<tr>
<td>9</td>
<td>Producing ICT literate citizens.</td>
</tr>
<tr>
<td>10</td>
<td>Producing people capable of working and participating in the new economies and societies arising from ICTs and related developments.</td>
</tr>
<tr>
<td>11</td>
<td>Leveraging ICT to assist and facilitate learning for the benefit of all learners and teachers across the curriculum.</td>
</tr>
</tbody>
</table>

D. Implementation of ICTs in Teaching and Learning at Manado State University

The role of ICT in education today is very important. In this case study at Manado State University has facilities ICT-based to support teaching and learning activity. Can be seen in Figure 2 and 3 are the facilities provided to support the activities of teaching and learning. Where there are facilities Academic Information Systems, E-Journal, E-Learning, and Web Mail is expected to help lecturers and students.

E. The relationship between ICT and Education

In the information and communication technology services have been found useful in teaching and learning, of course it relates to education. In Figure 4 can be seen the relationship between teacher and student is using ICT as a media for learning and to achieve the goal for Education ICT based.
V. CONCLUSION

The role of Information and Communication Technology (ICT) is necessary to encourage the advancement of quality in education, where technology is used in the process of teaching and learning between students and teachers. Technology development is currently challenging the teacher and the student, the teacher and the student is expected to overcome these changes and see the development of technology as an opportunity to improve our educational practices to achieve better quality education.

The development and application of information technology in education can be seen in this study is very rapid. The role of teachers in the face of these changes is an important part. The role of the teacher is required to be changed in ways of teaching using ICT-based learning. This situation can be clearly seen that the education system must change to adapt to the modern developments and to incorporate new technologies. By combining the technology trends in the educational system is expected to provide a new atmosphere better in improving the quality of education.

REFERENCES


Nominal Group Technique: A Brainstorming Tool for Identifying Learning Activities Using Malay Traditional Children Song to Enhance Creative Imagination of Young Children

Azli bin Ariffin¹, Saedah Siraj², Abdul Talib Mohamed Hashim³, Noor Amy Afiza Mohd Yusof⁴

¹Universiti Pendidikan Sultan Idris, 35900 Tanjung Malaim, Perak, Malaysia
²Universiti Malaya, 50603 Kuala Lumpur, Malaysia

Abstract—The purpose of this study is to identify consensus by experts on appropriate activities to enhance the development of preschool children's creative imagination through the use of Malay children traditional song. In order to obtain an in-depth understanding of teachers' conceptions on imagination in creativity development and their beliefs about the best way to promote imagination in the classroom, the nominal group technique (NGT) was used to structure each focus group meeting. Finding shows a list of activities that have been sorted according to ranking as determined by the experts. All the experts also believe that the list of activities can boost the child's creative imagination because such activity have the characteristics that suit well with children.

Keywords—Creative imagination, Malay traditional children song, nominal group technique (NGT)

I. INTRODUCTION

Creativity building among children concerns on two elements that need to be addressed, namely imagination and expression. According to Susan (2010), imagination of a child at an early stage is at a very high level. The child must be given ample opportunity and enough space for their imagination to take place in order for them to think creatively. According to Egan (1999), his study emphasized that imagination is a need to ensure that we think and be creative constantly in our modern society. Meantime, art allow us to keep on imagine (Gadsden, 2008). He also affirms that art:

Allow individuals to put their place in the skin of another; to experience reality and culture of others; to sit in another space; to transport themselves across time, space, era in history, and context; and to see the world from a different point.

(Gadsden, 2008)

Imaginative activities are involved in the creative process because creative ideas are generated through imaginative ability. The ability to imagine is an essential prerequisite to publish and translate creative ideas (Azhar, 2004). The ability to imagine are within every individual and it can be performed any time and in any situation regardless of age and background level. Nevertheless, to be a creative person, the ability to imagine is one of the most important factors of being a human. Imagination can be triggered using words to describe or illustrate certain abstract, view the conflict events or occurrences, reverse a hypothetical events, and using alternative thinking to something that has been considered (Schirrmacher, 2002). Critical thinking can permeate all aspects and beyond these aspects critical thinking is the real imagination activator. Imagination is usually associated with the allegation that fantasy practices as something that do not exist. But imagination in actual is the basis for any creative activity and it is an important component in every aspect of human life.

Built imaginations are often based on material obtained from reality through one's environment and experience. Moreover this factor is very important that influence one's imaginative ability. In addition, imagination also plays an important role on human action and development. Every human experience is translated through imagination because it is through imagination that human can conceive something that cannot be seen, describing information obtained through stories of others and describing something that are experienced by other people. The relationship between imagination and experience are closely intertwined and constantly influence each other. Apart from experience, imagination can also be influenced by one's emotions. Each feelings and emotions require different forms of imagination. This is because each feelings and emotions that are
seen and experienced will produce different imagination (Ribot, 1906). In one particular situation, emotions may affect imagination; nevertheless imagination may also affect emotions. Schirrmacher (2002) explains that creativity is dependent on one’s environment. Each creator includes those brilliant inventors who are product of their time and environment.

Studies show that a decrease in the level of a child’s imagination is caused by environment and culture of the child rather than caused by natural process (Torrance, 1974). Children should be exposed to different forms of experience so that they have the opportunity to play with fantasy in order to encourage them to imagine.

Music is seen as one of the tools that contribute to the children holistic development which includes the intellectual, emotional, physical, social and aesthetic developments. This is because musical activity is an integral part of their daily activities such as singing, moving, dancing, and playing musical instruments and the sounds that they produced on their own. Gadsden (2008) affirms that the arts allow us to imagine and allows individuals to put themselves in the experience, situation and environment that transcend different time, ages and contexts in viewing the world through different perspectives.

According to the philosophy of contemporary music pedagogy, music concepts such as melody and rhythm are good teaching materials using traditional music of local culture. Zoltan Kodaly who is an educator of Hungary suggested that the use of traditional music when teaching kids in school because music is considered to be the children’s “musical mother tongue” (Choksy, 1988). Traditional music can evoke a sense of belonging to the singer and the listener to something bigger than themselves, such as the family and society (Davis, 2005; Kvideland, 1989). Due to most of traditional music are based on environmental themes such as animal sounds that surrounds them, thus it could help the overall children development more easily. Traditional music also allows the child to remember, absorb and react faster in a manner that is distinctive and creative in style. According to Kodaly, before one is able to understand the music of other countries, it is necessary to first understand the music of his country (Choksy, 1981).

Thus, in the process of creating an innovative society that is viable in a challenging environment which further lead to well-being of society and country, such vigorous effort should be carried out in a prudent and systematic manner as well as going through appropriate process. The endeavor aims to generate individuals with innovative ability whereby characters of a creative innovator must exist within individuals and in order to nurture creative individuals; there should be ability to imagine.

This study is mainly to identify consensus by experts on appropriate activities to enhance the development of preschool children’s creative imagination through the use of Malay children traditional song. The main objectives of this study are as follows:

1. Explore related activities to improve preschool children’s imagination through Malay traditional children song.
2. Identified related activities to improve preschool children’s imagination through Malay traditional children song based on expert opinion.

II. RESEARCH DESIGN

This exploratory study uses qualitative method to provide further understanding on the area being investigated. The use of qualitative method is appropriate for this study because it is an attempt to understand the phenomenon of interest from the participant’s perspective rather than the researcher’s. In order to obtain an in-depth understanding of teachers’ conceptions on imagination in creativity development and their beliefs about the best way to promote imagination in the classroom, the nominal group technique (NGT) was used to structure each focus group meeting (Delbecq, Van de Ven, & Gustafson, 1975). NGT is a strategic and effective means of harnessing social facilitation processes so that group productivity on a given task is optimized (Forsyth, 1990). Prior to an NGT meeting, it is important to understand the informational needs to be addressed along with this procedure. Once the objectives are well understood, focus should be given on structuring questions posed to the group because wordings and grammatical structure of the questions will affect the levels of abstraction, breadth, and depth of the elicited responses. According to Delbecq et al. (1975), broadly stated or unfocused NGT questions are likely to elicit a variety of responses from respondents who have had varied experiences. Questions should be framed so that participants can generate information that sufficiently conveys their understanding of the issue under study.

III. SAMPLING

Subjects of this study consisted of nine preschool teachers who were purposively selected from nine government schools. As Denzin and Lincoln (1994) put it, many qualitative researchers employ purposive rather than random, sampling methods. Within the context of this study, the teachers were purposely selected because they might show differences in ideas, beliefs and practices due to their different characters in personality and physical settings.

IV. DATA COLLECTION METHODS

Nominal group technique (NGT) is a structured variation of a small-group discussion to reach consensus. NGT gathers information by asking individuals to respond to questions posed by a moderator, and later ask the participants to prioritize ideas or suggestions of all the group members. The process prevents the discussion from being dominated by a single member, encourages all group members to participate, and produces result in a set of prioritized solutions or recommendations that represent the group’s preferences.

NGT is a good method to gain group consensus, for example, when various people (program staff, stakeholders, community residents, etc.) are involved in constructing a logic model and the list of outputs for a specific component is too lengthy therefore the list has to be prioritized. In this case, the questions to be considered are: “Which of our outputs listed are the most important for easier goal achievement and easier measurement? Which of our outputs are less important that make us difficult to achieve our goal and make it more difficult for us to measure?”

V. NOMINAL GROUP TECHNIQUE

A. Generating Ideas

The moderator presents questions or problem to the group in written form and reads the question to the group. The moderator directs everyone to write ideas in brief phrases or statements and asks them to work silently and independently. Each person silently generates ideas and writes them down.
B. Recording Ideas

Group members engage in a round-robin feedback session to concisely record each idea (without debate at this point). The moderator writes an idea from a group member on a flip chart that is visible to the entire group, and proceeds to ask for another idea from the next group member, and the process continues. Repeat of ideas is unnecessary; however, if the group members feel that a particular idea provides different emphasis or variation, they are free to include the idea. The process is carried out until ideas of all the group members have been documented.

C. Discussing Ideas

Each recorded idea is later discussed to determine clarity and importance. For each idea, the moderator asks, “Are there any questions or comments that group members would like to make about the item?” This step provides an opportunity for members to express their understanding of the logic and the relative importance of the item. The creator of the idea need not feel obliged to clarify or explain the item; any member of the group can play that role.

D. Voting on Ideas

Individuals vote privately to prioritize the ideas. The votes are tallied to identify the ideas that are rated highest by the group as a whole. The moderator establishes what criteria are used to prioritize the ideas.

VI. FINDINGS

Findings were obtained from 11 experts involved throughout the NGT process. This process uses one set of seven Likert scale questionnaire that consists of a list of 16 activities sorted from previous literature review and need analysis. Table 1 show the list of sorted activities which are as follows.

The experts need to choose their agreement level on all of the activities listed. Next, the total of agreement level by the experts for each activity is calculated to determine the activity ranking that need to be carried out first. The total approval is as shown in Table 2.

Table 3 shows a list of activities that have been sorted according to ranking as determined by the experts.

<table>
<thead>
<tr>
<th>PROPOSED ACTIVITY LIST</th>
<th>TOTAL</th>
<th>RANKING</th>
</tr>
</thead>
<tbody>
<tr>
<td>Playing the Malay traditional children song to children.</td>
<td>74</td>
<td>6</td>
</tr>
<tr>
<td>Describing the Malay traditional children song being played</td>
<td>72</td>
<td>14</td>
</tr>
<tr>
<td>Having a question and answer session (Q&amp;A) with the children about Malay traditional children song</td>
<td>76</td>
<td>1</td>
</tr>
<tr>
<td>Showing pictures related to Malay traditional children song</td>
<td>74</td>
<td>7</td>
</tr>
<tr>
<td>Showing materials related to Malay traditional children song</td>
<td>75</td>
<td>2</td>
</tr>
<tr>
<td>Making motion related to Malay traditional children song</td>
<td>75</td>
<td>3</td>
</tr>
<tr>
<td>Talking about existing experience related to Malay traditional children song</td>
<td>74</td>
<td>8</td>
</tr>
<tr>
<td>Making movement on the existing experience related to Malay traditional children song</td>
<td>74</td>
<td>9</td>
</tr>
<tr>
<td>Singing while playing a percussion</td>
<td>74</td>
<td>10</td>
</tr>
<tr>
<td>Playing a role based on Malay traditional children song</td>
<td>75</td>
<td>4</td>
</tr>
<tr>
<td>Singing Malay traditional children song independently</td>
<td>75</td>
<td>5</td>
</tr>
<tr>
<td>Exploring environment that has to do with Malay traditional children song</td>
<td>72</td>
<td>15</td>
</tr>
<tr>
<td>Creating a scrapbook on Malay traditional children song</td>
<td>71</td>
<td>16</td>
</tr>
<tr>
<td>Forming objects using dough / Legos / block / sand / puzzle based on the Malay traditional children song</td>
<td>74</td>
<td>11</td>
</tr>
<tr>
<td>Creating visual art activities (origami / collage / painting / shaping / coloring / drawing / painting / weaving / diorama etc.) based on Malay traditional children song</td>
<td>73</td>
<td>12</td>
</tr>
<tr>
<td>Creating a play/pantomime based on Malay traditional children song</td>
<td>73</td>
<td>13</td>
</tr>
</tbody>
</table>

Table 1: Proposed Activity List

Table 2: Total of Expert’s Voting and Ranking
VII. CONCLUSION

Music has been seen as one of the tools that contribute to holistic children development, which include intellectual, emotional, physical, social and aesthetic developments. This is because musical activity is an integral part of their daily activities such as singing, moving, dancing, playing musical instruments and producing sounds on their own. Despite the importance of creativity and the role of music in the development of children education has long been recognized in Malaysian preschool education, but their appreciation, understanding and implementation are often put into question (Ministry of Education, 2009). In reality the present preschool education curriculum are more focused on formal education that emphasizes academic achievement of preschoolers (Rohaty, 1984). The emphasis contradicts with the specialists’ view on child development (Fortson & Reiff, 1995) who often emphasized that comprehensive children development through creativity and aesthetic construction should be raised in the process of teaching and learning in preschool education.

Therefore, in order to create a innovative society that could survive in a challenging environment that further lead to well-being of society and country, effort should be carried out in a prudent and systematic manner as well as going through appropriate process. This is because, in order to produce individuals who are able to innovate, characters of a creative innovator must exist within individuals and to create a creative individuals, there should be ability to imagine. It is reasonable to say that imagination development is indeed valuable for our education system and that abundance of benefits for the children can be gained if it is implemented effectively. Teachers are in position to either enhance or inhibit children’s imagination development, thus they should make an effort to promote imagination in the classroom. Other relevant authorities like the Ministry of Education, the Curriculum department and teacher training institutions also play an important role to ensure that the aim of promoting children’s creativity through the power of imagination could be realized. The development of children’s imagination need to be given higher priority in the education agenda to achieve a holistic and more meaningful growth for our children.

REFERENCES

Enhancing Students’ Academic Performance in an Online Distance Learning Institution: The Roles of Extrinsic Motivation, Intrinsic Motivation, Self-Efficacy and Time Management

Wardah Mohamad, Zahir Osman, Ratna Khuzaimah Mohamad, Liana Mohamad & Tuan Fatma Tuan Sulaiman

OUM Business School, Open University Malaysia, Bangi, Selangor

Abstract—The increasing numbers of learner failure rates are alarming in online distance learning. Previous studies have identified the factors that have contributed to online distance learning students’ failure as lack of time and lack of motivation. The purpose of this study is to develop a direct effect understanding of extrinsic motivation, intrinsic motivation, self-efficacy and time management on students’ academic performance in an online distance learning institution in Malaysia. The Structural Equation Model (SEM) was used to analyze the casual relationships between independent variables and dependent variables. The model was developed and later tested by adopting the Partial Least Square (PLS) procedure on data collected from a survey that yielded 210 usable questionnaires. The findings showed that extrinsic motivation, intrinsic motivation, self-efficacy and time management have a significant and positive influence on students’ academic performance in an online distance learning institution. The findings imply that the relationship amongst extrinsic motivation, intrinsic motivation, self-efficacy and time management on a student’s academic performance in an online distance learning institution will lead to the online distance learning institution’s low attrition rate. This study uses Smartpls 2.0 and SPSS 18.0 to test the hypothesis and analyze respondents’ profile respectively.

Keywords—Student performance, extrinsic motivation, intrinsic motivation, self efficacy, time management, performance.

I. INTRODUCTION

ACADEMIC success is deemed very important amongst students who pursue their higher education. A higher education institution’s performance will usually be gauged by its retention rates and the students’ results. Therefore, if the students’ failure rate is too high, eventually it will affect the image and the performance of the higher education institution. The effectiveness of online distance learning has been explained in many studies (Jung & Rha, 2000; Olson & Wisher, 2002). However, the increasing numbers of learner failure rates are alarming in online distance learning (Carr, 2000; Dalton, Manning, Hagen, Paul, & Tong, 2000). Furthermore, a high failure rate among students will be even worse due to the latest government decision to raise the enrolment rate and broaden access to education, at the same time cutting financial support to the higher education sector. The main purpose of this study is to look at how intrinsic motivation, extrinsic motivation, self efficacy and time management influence students’ performance in OUM and therefore offers a perspective of how these factors influence the performance of the students in their studies.

II. LITERATURE REVIEW

Online distance learning has gone through considerable change for more than a decade (Larreamendy-Joerns & Leinhardt, 2006). The internet and many related technology has caused online teaching and learning to merge into...
university regular practices. Simultaneously, it has also allowed the distance education to gain new appeal (Tallent-Runnels et al., 2006). According to Bates (2005), online learning is deemed to be a distance education subcategory that utilises the World Wide Web and internet. Online distance learning has gained popularity over the years and is being used by education institutions in many countries to give opportunities and meet the desires of student population growth and increase (Rumble & Latchem, 2004)

Miltiadou and Savenye (2003) found that studies on online distance learning environments and motivation have utilised many frameworks (e.g., Artino, 2008; Shroff et al., 2007; Yukselturk & Bulut, 2007). In many of these studies, intrinsic–extrinsic motivation theory has been adopted to discover the reasons why students engage in online learning environments (e.g., Martens, Gulikers, & Bastiaens, 2004; Xie et al., 2006). A famous theory that explains intrinsic–extrinsic motivation in detail is self-determination theory (SDT, Deci & Ryan, 1985). Self-determination theory is a modern theory of situated motivation that is constructed on the foundation of learner autonomy. Intrinsic motivation is a very powerful source in our lives and can often produce fast results (Gallo and Ronaldo, 2011). Students who have strong intrinsic motivation usually seek success for the sake of achieving it. In reality, if they believe they are forced to accomplish success in activities in which they are already interested in, their motivation level or inner interest is decreased. Bandura (1986) defined self efficacy as the personal confidence in a person and the capability to complete specific task successfully. Self-efficacy beliefs are important influential elements to determine an individual’s ability to use effort on tasks and continuously deal with difficulties. As Bandura suggested (1986), a person’s beliefs about his capabilities constitute the person’s self-efficacy. Time management can be defined by how an individual organizes, schedules and budgets his or her time in order to generate effective work and increase productivity. It is based on priority – how an individual allocates and distributes his time towards competing tasks.

The following are the research hypotheses tested in this study:

H1: There is a positive and significant relationship between extrinsic motivation and student performance.
H2: There is a positive and significant relationship between intrinsic motivation and student performance.
H3: There is a positive and significant relationship between self-efficacy and student performance.
H4: There is a positive and significant relationship between time management and student performance.

III. METHODOLOGY

The scaling applied on independent variables in this study is the 5-point Likert scale of 1-strongly agree, 2-agree, 3-neutral, 4-disagree and 5-strongly disagree. OUM students who are studying in the diploma, bachelor and postgraduate programmes were the main respondents in the study. A total of 300 OUM students were requested to complete a questionnaire that contained measures of the construct. The questionnaires were distributed to the respondents in the Klang Valley on the spot by using convenient sampling technique. Out of the 300 distributed questionnaires, 226 were returned. The mahalanobis analysis was successful in indentifying the multivariate outliers which were deleted permanently, leaving 210 datasets to be used for further analysis. The software used was the SmartPLS 2.0 (Ringle et al., 2005) and SPSS ver.18.

IV. RESULTS

A. Model Measurement

The measurement sufficiency models and the inner model predictive relevance, and test of the four hypotheses were assessed by SmartPls. PLS focuses on the explanation of variance using ordinal least squares, a technique suitable for relationships such as mentioned in this study (Gudergan et al., 2008). The adequacy and significance of reflective outer measurement models for the other constructs were evaluated through a range of indices test including of individual indicator weights and loadings, composite reliability, average variance explained (AVE), bootstrap t-statistic (critical ratio), discriminant validity and convergent validity.

<table>
<thead>
<tr>
<th>TABLE 1: CONSTRUCT VALIDITY &amp; RELIABILITY</th>
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<td>Construct</td>
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As demonstrated in Table 1, all constructs composite reliabilities and their first-order factors range from 0.846 to
0.934. Additionally, the significance of reflective outer-measurement model significance was evaluated by computing bootstrapped t-values critical ratio. The reflective outer-measurement models established acceptable bootstrap critical ratios conforming to the recommended 1.96 benchmark.

B. Convergent Validity

Composite reliability computation was used to evaluate the adequacy of outer-measurement models convergent validity (Hulland, 1999). The outer measurement models were used to confirm the analysis for convergent validity results and their first-order factors in line with Nunnally’s (1978) reliability criteria, 0.70. As demonstrated in Table 1, all constructs composite reliabilities and their first-order factors range from 0.846 to 0.934. Therefore, the constructs linked with outer-measurement models showed satisfactory convergent validity.

C. Discriminant Validity

Discriminant validity of the constructs was evaluated in three ways. Fornell and Larcker (1981) suggested the use of AVE, which indicates that discriminant validity existed if the square root of the AVE is greater than all corresponding correlations. As shown in Table 2, the square roots of the AVE values are steadily greater than the off-diagonal correlations, signifying discriminant validity at the construct level. An assessment of Table 3 shows that no single correlation (ranged from 0.551 to 0.784) was higher than their respective AVE (ranged from 0.724 to 0.861), thus demonstrating all constructs satisfactory discriminant validity.

D. Hypothesis Testing and Results

H1 states that extrinsic motivation is predicted to have a positive influence on student performance. Table 4 results confirmed this hypothesis with a path coefficient of 0.298 and t-value of 6.088. In H2, student performance is predicted to be positively influenced by intrinsic motivation and the results in Table 4 supported H2 with the path coefficient of 0.206 and the t-value of 3.852. In H3, student performance is predicted to be positively influenced by self efficacy and results in Table 4 supported H3 with the path coefficient of 0.174 and the t-value of 3.344. Lastly, in H4, student performance is predicted to be positively influenced by time management and results in Table 4 supported H4 with the path coefficient of 0.304 and the t-value of 5.022.

V. Discussion & Conclusions

This research was conducted to determine the possible causal relationship among the variables, namely intrinsic motivation, extrinsic motivation, self efficacy and time management and students’ performance. In relation to this, the review of the previous study in the area of intrinsic motivation, extrinsic motivation, self efficacy and time management and students’ performance was done. From the academic studies initial findings, the model was developed and it revealed that intrinsic motivation, extrinsic motivation, self efficacy and time management have a positive and significant direct effect on a student’s performance. It is not enough to determine the validity of a model theoretically and therefore empirical testing was done. This study proposed a model to empirically test and validate that there are positive direct relationships amongst extrinsic motivation, intrinsic motivation, self efficacy and time management on student’s performance. The PLS data analysis technique was used to attain this objective. The findings showed that the most accepted relationship between intrinsic motivation and students’ performance was verified. The direct relationship between extrinsic motivation and students’ performance path coefficient is 0.298 and the critical ratio t-value is 6.088 which is significant. Secondly, the direct relationship connects intrinsic motivation and students’ performance was also well supported with the path coefficient of 0.206 and the critical ratio t-value of 3.852 which is significant. Thirdly, the relationship between self efficacy and

<table>
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<tr>
<th>Variable Correlation Matrix based on AVE Square Root</th>
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<tbody>
<tr>
<td>EM</td>
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<tr>
<th>Hypothesis Relationship</th>
<th>Path Coefficient</th>
<th>T-Value</th>
<th>Conclusion</th>
</tr>
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<tbody>
<tr>
<td>H1: There is a positive and significant relationship between extrinsic motivation and student performance.</td>
<td>0.298</td>
<td>6.088</td>
<td>Supported</td>
</tr>
<tr>
<td>H2: There is a positive and significant relationship between intrinsic motivation and student performance.</td>
<td>0.206</td>
<td>3.852</td>
<td>Supported</td>
</tr>
<tr>
<td>H3: There is a positive and significant relationship between self-efficacy and student performance.</td>
<td>0.174</td>
<td>3.344</td>
<td>Supported</td>
</tr>
<tr>
<td>H4: There is a positive and significant relationship between time management and student performance.</td>
<td>0.304</td>
<td>5.022</td>
<td>Supported</td>
</tr>
</tbody>
</table>

Table 3: Path Coefficient & T-Value

Table 4: Hypotheses Result
students’ performance was verified. The direct relationship between the self efficacy and students’ performance path coefficient is 0.174 and the critical ratio t-value is 3.344 which is significant. Lastly, the relationship between time management and students’ performance was verified. The direct relationship between self efficacy and students’ performance path coefficient is 0.304 and the critical ratio t-value is 5.022 which is significant. In view of this, it is concluded that intrinsic motivation, extrinsic motivation, self efficacy and time management have positive influence and impact on students’ performance in online distance learning. The findings of this study suggested that a student’s performance in online distance learning institutions can be strengthened and enhanced by emphasising the factors that can boost intrinsic motivation, extrinsic motivation, self efficacy and time management. Conversely, online distance learning students’ performance can be reinforced and enhanced by increasing the level of intrinsic motivation, extrinsic motivation, self efficacy and time management. Ultimately, students’ performance in online distance learning should play an important role in reducing the university’s students’ attrition rate. The findings of the study also supports the findings from Wei et al (2011) who found that learners also had problems in terms of their time as they are all full-time working adults. Many students studied at night and whenever they can, although some had fixed study routine. Therefore, it is recommended that the university could include a time management session for the students as this would assist them in managing their studies. The limitation of this study, the focus is only on OUM students in Klang Valley due to time and other constraint. For future research, it is recommended students from other online distant learning institution be included in sample selection.

REFERENCES


Abstract—Decision-problem structuring is conceptualized to be a process comprising activities characterized by the students. The activities are cognitive efforts of a group coming to an understanding and determining the representation of the decision-problem and of what knowledge is relevant to the decision-problem. Cognitive effort refers to the fraction of limited attention with respect to resources that are momentarily allocated to a process. The consensual representation of the decision-problem provides the basis for modeling those activities in some form and order. Knowing how a decision-problem is structured by students based on Management Information System domain will enable the modeling to be based on a simple descriptive behavior in problem structuring. One such method would be a mathematical model to quantify the problem which ultimately becomes well-structured.

Keywords—decision-problem, problem structuring, modeling, decision consensus.

I. INTRODUCTION

Building representations of the problem in a group involved a consultative and iterative process (White, Burger, & Yearworth, 2015). The process provides a succession of representations, each with different perspectives to the problem. Each subsequent perspective alludes to a deeper understanding of the problem as new insights add to the refinement of the representation. This study is premised on the concept of collective decision-making as a means for understanding how students as a group behave. We introduce and explore the use of activity theory as a means to study the interactions of students in the context of decision-problem structuring. A case scenario was presented to create condition for a collective behavior towards decision-problem structuring.

II. THEORETICAL FOUNDATION

The focus of operational research (OR) on problem structuring has primarily been on the process itself through the lens of critical realism, constructivism, and pragmatism. The social process, through which concepts and actions are negotiated, produces abstract models and representations of the problem. Requisite models were introduced as a form of representation (Phillips, 1984). A requisite model with information and knowledge is sufficient to serve as a guide to collective activities by the group. Additionally, a model represents a facilitative device where there is no clear agreement as to the exact situation (Ackermann, 2012). Ackermann in his role as Jury Duty used his knowledge of problem structuring methods to the messy situation. As he listened to his fellow jurors, he realized that his understanding of the case was different from theirs. He believed that statements were clear assertions with little or no evidence, were taken as facts. Emotions were running high and ‘facts’ were embellished. He concluded there were a lot of different issues, facts, assertions, uncertainties, and contradictions. However, they all helped to develop a shared understanding towards an emergent problem structure thereby come to some consensus.

The basic structure of any problem structuring methods comprises the captured representation of various points of view in a rich picture if using Soft Systems Methodology; a design graph if using Strategies Choice; a causal map if using Strategic Options Development and Analysis. This captured material is explored within the group to develop an enhanced understanding so as to negotiate towards a set of
improvements and actions to resolve the situation. The exploration adopts a cyclical approach with the actions from one deliberation providing insights for the next iteration while possibly raising questions, demanding a return to a previous consideration.

Activity is the smallest unit of analysis. In OR, the settings for different activities are not determined by the objective features of the problem. Instead, the activities are emergent interactions by the participants who are engaged in the problem. OR interventions are activities imposed on different situations by the participants themselves (Alberto Franco, 2009). Additionally, Activity Theory offers the concept of activity which emphasizes that people do not just think. They collectively act on the world (White et al., 2015). White and his researchers further explain the nature of activity systems. Mediating mechanisms comprise tools, models, language, social rules, and the division of labour that transform the relationship between individuals and communities in collective activity. These mechanisms are interwoven in a complex web of mutual interactions. Collective or social learning occurs in the community albeit contradictions and dilemma. Participants would construct new conceptions of their actions and develop new activity systems.

Additionally, OR is primarily a consultancy activity focusing on the tactical while providing a strategic advantage to some organisations (Ranyard, Fildes, & Hu, 2015). This was further emphasized with a search in the Web of Science for terms such as “strategy tools” and “problem structuring’ yielded no articles from 2010 to 2014. OR interventions were mainly deployed in sectors such as logistic, production, and supply chain.

According to a survey conducted by Liberatore and Luo (2013), problem structuring which comprises problem formulation and problem recognition were more important for the OR analyst. The development of problem structuring methods has been successfully embraced by elements of the OR community. In contrast, problem structuring is more challenging as the problem has to be in the perspective and context of the decision-makers.

It is reasonable to expect students to provide their own structure to the decision-problem in this instance. This paper discusses decision-problem structuring as a process to justify the qualitative approach. This paper presents a model of students’ decision-problem structuring which is subsequently expressed mathematically.

III. Methodology

The case study can be conceptualized as an activity system whereby the participants are active in the shaping and reshaping the problem representation assisted by auxiliary artefacts. Collaboration among the participants with varying expertise necessitates a dynamic, dialogic relationship between the multiple actors. The decision-problem was constructed out of case scenarios. For this study the knowledge domain of Management Information Systems (MIS) is contextualized through three case scenarios. Each case scenario presents a complex problem for students to respond to in a fortnight. Structuring the decision-problem was a process by the students to transform an initial state (complex problem in MIS) to a goal state (structured problem). A virtual workspace was created to enable participants to interact and have a close dialogue. The virtual workspace was consistent with the characteristics of a study by von Winterfeldt and Fasolo (2009). In their study on structuring decision-problem, they found that structuring decision-problem is a task that requires close dialogue between participants. This dialogue should be highly interactive (with many exchanges) and iteratively converging towards a consensus (tracking exchanges for structuring the decision-problem). The dialogue would enable participants to participate in the process by providing important inputs.

The virtual workspace had the affordance of the Internet which enabled participants to explore and possibly to resolve concerns that arose during their reading of the case scenarios. The Internet may also have cued them to previously unrecognised issues. In a nutshell, the Internet affords information acquisition and interpretation for the participants while being engaged on a case scenario.

Besides, the virtual workspace was to function as a meeting room where students with different perspectives come to work on a common problem focus and a shared commitment to action.

The analysis commenced with the examination of the entries in the threaded discussion for each of the three case scenarios by a group of 15 students. Each entry was segmented based on the interpreted activity. An activity was taken as an action that the participant did or caused to happen.

It must be noted that entries that infringed on the decision-making process, such as analysis of factors to the decision-problem and generation of options, were not analyzed for this study.

Students may interact with the environment for information, expertise, experience, and advice while forming their strategies towards structuring the decision-problem. These elements (information, expertise, experience, and advice) are not part of the system. Instead these elements are constituents of other systems besides the students.

The decision-problem of each case scenario took shape after brainstorming by the students for two weeks, the time duration as determined in the study. The final state of the decision-problem was the representation brought about by the consensus of the group participants.
IV. EMERGENT MODEL

Fig. 1 Processes of Students in DPS

Fig.1 shows the emergent model of the decision-problem structuring (DPS) of the students. Students expressed ignorance, doubts, fear, and to some extent, self-assuredness when they did not understand or realise the significance of the available information. Their ignorance and doubts led to the sharing of additional information while their fear reflected a perceived threat that relates to worsening of a situation or a situation that is unacceptable. The sharing of information induced reciprocity and self-assuredness in forming a structure for the decision-problem. The sharing information in some instances required paraphrasing or summarising of facts and ideas. The condensation of the ideas at times elucidated some participants to expressing their points of views while to others questioning for more information. The constructs, “Expressing Points of Views”, “Role-playing”, and “Assuming a Situation” are iterative processes of students in facing an atypical decision-problem. Keywords were identified for each of the seven constructs. For example, “Questioning” would comprise keywords such as who, why, what, where, when, and how. “Sharing Information” would have keywords “according”, “share”, “information”, and so forth.

V. MODELLING THE DPS MATHEMATICALLY

In the text classifying systems vector space model (VSM) is used to transfer the unstructured text data to structured ones. There are two main aspects to construct a classifier based on vector space model. Firstly, an appropriate feature subset is selected along with a measure for evaluating it. Secondly, a classification paradigm is selected. Vector space model (VSM) is an algebraic model for representing of texts in classification and retrieval. It maps an unstructured text data into structured vectors. In this model, text sample $x_i$ is expressed as $x_i = (w_{i1}, w_{i2}, ..., w_{im})$ where $w_{ij}$ denotes the weight of the keyword $T_j$ in text $x_i$ and $m$ is the total number of keywords. Every text is a point in m-dimensionality space.

Similarity between two texts, $x$ and $y$, is calculated by the following formula

$$SIM(x, y) = \cos(x, y) = \frac{\sum_{k=1}^{m} w_{ik} \cdot w_{jk}}{\sqrt{\sum_{k=1}^{m} w_{ik}^2 \cdot \sum_{k=1}^{m} w_{jk}^2}}$$

The weighting formula used is

$$w_{ij} = fT_{ij}$$

where $f$ is the frequency the term $T_j$ occurs in text $x_i$.

The early stage of DPS involves participatory visioning of the decision-problem. The importance is for the participants to agree on a series of ways of knowing and understanding the context.

Let us assume there is a collection of $i$ number of text categorized as Sharing Information in the exchanges between the novices.

$$S = \{s_1, s_2, ..., s_i\}$$

(1)

However, $s_i = (w_{i1}, w_{i2}, ..., w_{im})$ where $w_{ij}$ denotes the weight of the keyword $T_j$ in text $s_i$ and $m$ is the total number of keywords. Also, $w_{ij} = fT_{ij}$ where $fT_{ij}$ is the frequency the keyword $T_j$ occurs in text $s_i$.

Information sharing in the context, $s_i$, is initiated when there is Questioning. Let us assume there is a collection of $j$ number of text categorized as Questioning.

$$Q = \{q_1, q_2, ..., q_j\}$$

(2)

As such, a collection of questions can be answered by a particular Sharing Information, $s_i$. Hence we have,

$$s_j \leftarrow q_j \quad \text{where } n \leq j$$

(3)

Sharing Information may embed Expressing Emotions, $E$, which is a set of emotions.

$$E = \{e_1, e_2, ..., e_t\}$$

(4)

In one Sharing Information several emotions may be expressed to address $q_j$. Thus, we have

$$q_j \leftarrow \sum_{k=1}^{m} e_k \quad \text{where } 1 \leq m \leq j$$

(5)

Expressing Emotions may invoke Sharing Information. For example, “I am confused. Excuse me if I sound ignorant. Can someone explain the meaning ...”. In this instance, we can write,

$$e_m \leftarrow \sum_{i=1}^{n} s_i \quad \text{where } 1 \leq m \leq j$$

(6)

Sharing Information may initiate Expressing Points of Views. The participants express their multiple interests and perspectives. Let us assume there is a set of Expressing Points of Views.

$$P = \{p_1, p_2, ..., p_i\}$$

(7)
For each Sharing Information there may or may not have
Expressing Points of Views. We have
\[ s_i \leftarrow \begin{cases} p_i = 0 \\ \sum_{t=1}^{j} p_t \end{cases}, \quad 0 < j \leq i \] (8)

Sharing Information may lead to Role-playing. Let us assume
there is a set of Role-playing:
\[ R = \{ r_1, r_2, ..., r_i \} \] (9)

We have,
\[ s_i \leftarrow r_i \] (10)

Sharing Information may lead to Assuming a Situation. Let us assume
there is a set of Assuming a Situation.
\[ A = \{ a_1, a_2, ..., a_i \} \] (11)

We have,
\[ s_i \leftarrow a_i \] (12)

Assuming a Situation and Role-playing leads to Reaching
Consensus, C. Hence, we can write
\[ C = A \cup R \] (13)

A consensus towards the structure of the decision-problem
is reached after all the situations were assumed and a fair
amount of role-playing.

VI. DISCUSSION AND FUTURE WORKS

A similar model of DPS of novices in decision-making as
published in an earlier work (Cheong, 2014) differs in the
iterative processes of students. The novices had attended a
course in Management Information Systems but with no work
experience. They responded to isolated facts in an ad hoc
fashion based on the information shared and are expressing
points of views in their personal capacity as well as a team.
Whereas the students lacked knowledge about the complexity
or difficult issues in the three case scenarios presented as
complex decision-problems. The students did not have deep
knowledge of problem structuring. The seven activities
detailed as follows were of no particular order except for the
activity of reaching consensus which was evident in all three
case scenarios. Nevertheless, the activity of expressing
emotions would be the first to be addressed.

Students are likely to be subjective and too emotive in
responding to a decision-problem. Without understanding or
realising the importance of the available information some
novices expressed ignorance, possibly a state of being un informs. Some may have followed the brainstorming for
quite a while before expressing their failure to acquire the
relevant information. Besides ignorance, there was doubt.

Doubt may involve uncertainty or distrust over an alleged fact
as seen in some novices. Both instances of doubt bring into
question some notion of a perceived representation of the
decision-problem and may involve delaying or rejecting
relevant action out of concerns for mistakes or faults or
appropriateness. As a result, doubt sometimes tends to call on
additional information. Hence reciprocity which was a
 correspondence between two participants was evident. It was
expressed in the form of gratitude.

There were others who expressed self-assuredness. Self-
assuredness relates to one's personal judgment to manage the
decision-problem in a time frame. Self-assuredness also
relates to the ability in forming a structure for the decision-
problem.

On the other hand, there was fear. Some novices perceived
a threat that relates to worsening of a situation, or continuation
of a situation that is unacceptable. They expressed fear as an
instant reaction to something presently happening to them.

Basic information was provided from Internet search.
Some of the sharing contained information that could possibly
be sourced from the textbook and other reading materials. The
shared information required reviews by the students in order to
effectively derive its value and meaning. Systems theory
refers to this information in this sense as an input comprising
something potentially perceived as a representation to the
decision-problem. This was evident in some students that
threw a perspective for the others to ponder on.

Sharing information required paraphrasing to keep the
same meaning. Paraphrasing was useful when dealing with
facts and definitions of the decision-problem. In paraphrasing,
some students had aptly put the information in a context that
was easily understood by the group. There were other students
that took to summarising which was generally used to refer to
ideas contained in a long text. Summarising enables such
students to reduce all the ideas to key points in an outline of
the brainstorming by omitting unnecessary details and
examples. The summary was an overview of the information
for the decision-problem. The important ideas were
condensed. The condensation of the ideas may elucidate some
participants to expressing their points of views.

Assuming a situation is a proposition to take a situation for
real based upon presupposition without preponderance of the
facts of the decision-problem. There were students assuming a
situation based on their knowledge with new technologies.
Yet there were others assuming a situation where his team
mates were not unanimous on a particular issue.

Students role-played by assuming a character role and
collaboratively create circumstances. They determined the
actions of their characters based on their characterization, and
the actions succeed or fail according to a formal system of
rules and guidelines. Role-playing may add diversity to the
students’ perception of the decision-problem.

There was a consensus on the terminologies used. When
most of the students had participated in building upon each other’s concerns and suggestions to shape the decision-problem, there would be a position reached by the group. This position is known as reaching consensus on a representation of the decision-problem. The decision-problem was ultimately structured by the activity of reaching consensus towards a conceptual representation. In case scenario #1, the group was contemplating on favouring the traditional use of technology. In case scenario #2 the group was bent on employees’ issues to represent the decision-problem while it was new technologies for business in case scenario #3. Reaching consensus may happen before the brainstorming is at its peak (Case Scenario #3).

In questioning a form of words were used to address the team in order to elicit information or evoke a response. It is also an expression of inquiry that invites or calls for a reply. Questioning may take place at the beginning of the brainstorming (Case Scenario #2). Additionally, questioning from one novice may elicit information of another to a search on the Internet. Students may seem eager to acquire further information on the decision-problem. They could have shared information with the team but were perplexed at not knowing more and they would like other participants to enlighten them (Case Scenario #3).

VII. CONCLUSION

A conclusion section is not required. Although a conclusion may review the main points of the paper, do not replicate the abstract as the conclusion. A conclusion might elaborate on the importance of the work or suggest applications and extensions.

REFERENCES


Role Playing in the Classroom

Sharifah Sheha Syed Aziz Bafitim

Universiti Teknologi MARA, Kuala Pilah, Negeri Sembilan

Abstract— Role play is a learning tool that can allow students to embark in many different levels of higher order thinking skills. Role play helps students to improve on their cognitive skills, and allows them to explore their emotion at the affective level. To ensure that students get the most benefits out of role play, it is important that different techniques are used by the teachers in the classroom. Thus, an action research in the classroom was developed to allow students to enhance their communicative skills and thinking levels through role play, and at the same time, provide an interesting language learning experience. This study will look into some strategies that can be implemented in the teaching of role play in the classroom. The effective use of role play not only stimulates students’ thinking and creativity, but also allows students to participate actively in the English language classroom, thus increase their motivation in learning.

Keywords— role play, teaching strategies, thinking skills.

I. INTRODUCTION

Role play has been adopted in many classrooms as a learning tool, from preschool to higher education. It is an active learning approach that has been implemented in many disciplines in the tertiary level, with the purpose to increase understanding and providing real-life situations and simulations (Rao & Stupan, 2012).

Many studies have shown that role play serves as an effective approach in increasing students’ communicative ability, as well as cognitive and affective levels, as it involves problem solving and communication skills. To ensure that adult learners achieve all lesson objectives at a maximum level, attention should be given on formulating an effective teaching strategy when including role play in the classroom.

II. WHY ROLE PLAY?

Many studies have shown that role play contributes to increasing one’s communicative skills, as this activity allows individuals to practice in real life situations and take up different roles in various contexts. A study by Cho (2015) has shown that role play is a suitable tool to be utilized in improving students’ communicative and language skills. Blatner (2009) believed that role playing can be considered as one of the best way to help students increase their self-awareness, communicative and problem solving skills, thus prepare them better when they enter the real world. Oradee (2012) has proven that students improve their communicative skills when given the opportunity to use the language in problem solving and role play activities. In another study, students who were exposed to experiential learning using role play had shown great improvement in communicative skills as they were able to express themselves in many ways such as agreeing, negotiating and justifying ideas, as well as using body language such as eye contact and facial expressions (Mohamad Jafre, Siti Rafizah & MoniroSadat Hosseini, 2012).

Using role play in the classroom also helps to develop students’ cognitive and affective thinking skills. Rao & Stupan (2012) stated that role play serves as an active learning approach which contributes to the development of cognitive and affective skills. Bhattacharjee & Ghosh (2013) believed that role play can become a teaching tool in imparting critical thinking among the students, as the activities involved may integrate problem-solving and decision making skills. Role play requires students to use their imagination in various situations, thus developing their creative thinking, which can be an asset in the future when they embark in their career (Kusnerek, 2015). As role play allows students to step into many different shoes, this allows them develop their affective skills as they have to insert values and express emotions in role playing (Nickerson, 2007).

Other than that, role playing is simply fun and thus, provides students an enjoyable learning experience (Kusnerek, 2015), and thus increases their motivation in learning and participating in class activities. As role play is applied in a wide range of situations in many different areas of study, it provides greater understanding of the topic that is being discussed in class (Rao & Stupan, 2012).
III. BACKGROUND OF STUDY

This study is an action research in which strategies are formulated in teaching using role play to adult learners at tertiary level. This study has arisen when the researcher observe some challenges in dealing with doing role play in the classroom. From the researcher’s observation, students in this course were shy as this was their first semester in the program. There was no proper guidance yet in how students should conduct the role play given as one of the continuous assessments in the classroom. When given tasks based on previous questions from the role play test papers, it was found that students perform with little creativity and interaction, and the performances do not reflect on active learning experiences.

With this problem observed, the researcher decided to create a framework on role play activities for the students. The framework consists of a mixture of different activities used in the classroom to ensure students perform well in the role play given, as this is part of their assessment during that particular semester in the English subject. Therefore, the objective of this study is to provide the necessary tools through role play, which can increase students’ communicative and creative skills, thus assisting and improving students’ performance in the role play assessment which is carried out at the end of the course.

IV. METHODOLOGY

This is a research carried out in a classroom of 20 students from a semester one diploma group. As role play is part of their continuous assessment, it is important that students are provided with specific input as a preparation for the assessment. The input is formulated into a series of activities for the students to ensure that the role play in the assessment is carried out in a more effective manner. The activities were carried out throughout the semester once a week for 12 weeks before the actual role play assessment on the 13th and 14th week.

The teacher plays the role of a facilitator and spectator in the role play activities (Kusnierek, 2015). It is important that a teacher facilitates to assist students especially if they have difficulties finding the right word or language to use in their tasks.

V. ROLE PLAY ACTIVITIES

There are 14 weeks allocated for this course which is a compulsory subject for semester one students in a diploma program. Besides role play, there are also other forms of assessments in reading and listening skills that the students have to take. Thus, the tasks created in preparation for the role play assessment is carried out once a week between one to two hours. The researcher took the role of the facilitator in all the activities carried out with the students.

A. Week 1 – 8

Students were exposed to the various language expressions and given short situations as practice in utilizing the expressions. Language expressions that were given as exercises to students came in various forms from the very basic such as introducing oneself and others, to the more advanced forms like giving opinions and making justifications.

The exercises that were carried out were taken from the tasks provided in the prescribed textbook. For the tasks, students were given some time to practice on their own in pairs. However, they were not allowed to write notes, and therefore, they presented without referring to any written notes. This is important as it is a good training for them to speak without relying on any notes, and the researcher believes that this can help to increase students’ confidence level.

B. Week 9 – 10

The activities that were carried out here were taken from websites that offer ideas for a drama workshop. These types of activities are interactive and can provide students with a good learning environment and create an active learning experience (Bhattacharjee & Ghosh, 2013). The researcher feels that it is important for students to experience these kinds of activities to provide them with a clear picture of the necessary elements required in doing a role play. The inclusion of elements of a drama such as voice control, body language, facial expression and many others can help to create a good and interesting scene in a role play.

Therefore, the games played here with the students forced them to be mobile. The classroom was emptied of tables and chairs, and the scenes created from the games could become loud at times, as students had to experiment with their voice and body movement. In these sessions, the researcher noticed some discomfort among a few students who were shy in participating in the activities. Thus, the role of the facilitator was to observe and assist students who were shy and encourage them to participate. There were times when the researcher had to participate with the students to ensure that the students realized that they could project themselves as much as they want during the activities.

After each activity or game was played, debriefing was carried out whereby students were required to examine what is achieved at the end of the activity. This process encourages self-reflection and self-awareness among and within the learners (Jackson & Back, 2011). The researcher also believes that by doing debriefing, students retain better the knowledge that they gain from the activities.

C. Week 11 – 12

At this time, students were exposed to the types of questions that would be given in the actual speaking tests. The questions consisted of situations and they had to present it in the form of a role play. Students were expected to apply the knowledge
and experience they had gained from previous activities in these practice sessions. The facilitator assisted by giving comments on each presentation that was carried out by the students.

### Table 1

#### Teaching Framework on Role Play

<table>
<thead>
<tr>
<th>WEEK 1 - 8</th>
<th>LESSON</th>
<th>OBJECTIVES</th>
<th>ACTIVITIES</th>
<th>TOPICS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Language Expressions</td>
<td>1) To exposed students to the different language expressions utilized in conversations</td>
<td>• Practice dialogues</td>
<td>• Introductions</td>
<td></td>
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<tr>
<td></td>
<td>2) To reengage students in using the correct language expressions in conversations</td>
<td>• Create conversation based on given situations</td>
<td>• Requests</td>
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<td></td>
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<td>• Permissions</td>
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<td>• Apologies</td>
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<td></td>
<td>• Suggestions</td>
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<td>• Opinions</td>
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<td>• Arguments</td>
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<td></td>
<td></td>
<td></td>
<td>• Justifications</td>
<td></td>
</tr>
</tbody>
</table>

Source: Prescribed textbook

<table>
<thead>
<tr>
<th>WEEK 9 - 10</th>
<th>LESSON</th>
<th>OBJECTIVES</th>
<th>ACTIVITIES</th>
<th>TOPICS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Role play</td>
<td>1) To identify the necessary elements of role play and drama</td>
<td>• Role play games such as Standing Still, Circle Walk &amp; Orchestra of Emotions</td>
<td>• Voice control</td>
<td></td>
</tr>
<tr>
<td>and drama</td>
<td>2) To increase students’ confidence and communicative levels</td>
<td></td>
<td>• Audience</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>• Dialogues</td>
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<td>• Body language</td>
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<td></td>
<td>• Facial Expressions</td>
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<td>• Emotions</td>
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<td>• Settings</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Props</td>
<td></td>
</tr>
</tbody>
</table>

Source: Websites
- Classroom lesson plans
- Drama workshop: Something brilliant at the barn
- How to teach drama workshop

<table>
<thead>
<tr>
<th>WEEK 11 - 12</th>
<th>LESSON</th>
<th>OBJECTIVES</th>
<th>ACTIVITIES</th>
<th>TOPICS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Role play simulations</td>
<td>1) To expose students to questions that are similar to the ones set in the actual assessment</td>
<td>• Act out scenarios based on the situations given</td>
<td>• General issues</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2) To provide students some practice sessions before the actual assessment</td>
<td></td>
<td>• Current issues</td>
<td></td>
</tr>
</tbody>
</table>

Source: Past Year Speaking Test Papers

<table>
<thead>
<tr>
<th>WEEK 13 - 14</th>
<th>LESSON</th>
<th>OBJECTIVES</th>
<th>ACTIVITIES</th>
<th>TOPICS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speaking Test</td>
<td>1) To test students communicative level through role play</td>
<td>• Act out scenarios based on the situations given</td>
<td>• General issues</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Current issues</td>
<td></td>
</tr>
</tbody>
</table>

Source: Speaking Test Paper

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### D. Week 13 - 14

The speaking test was carried out in the form of a role play, in which students were assigned in pairs to present based on a situation given. Here, students were given five minutes to prepare and another five minutes to present. The evaluation of each presentation was looked upon from the aspects of language, task fulfilment and communicative ability.

The activities described above across 14 weeks of the course duration are summarized in the teaching framework on role play (Table 1). The framework consists of a short description of the lessons, objectives, activities and topics that are utilized in teaching role play in the classroom.

### VI. Conclusion

The activities carried out in the teaching of role play have contributed to the students’ development in the classroom. From the researcher’s observation, the role play activities were successful in achieving the objectives of the lesson. Students were observed to be more responsive and adventurous in the classroom especially during the speaking test. Not only the role play activities help students to be more prepared for the actual assessment, but these tasks promote self-confidence, thinking skills and communicative skills.

For future research, the researcher intends to find out if there is a significant difference in the level of communicative ability and thinking skills among students after the role play activities are conducted. These activities will continue to be carried out in future for this course, as they consist of fun and interesting tasks, and most importantly, they provide a rich and active learning environment in the teaching of role play.

### References


Abstract—Nowadays, an interactive learning tool is becoming the most effective learning method that aligned with rapid evolving technologies in the Malaysian higher education system compared to the traditional method such as classroom lecture. XRace game board is a game board prototype. It is a multilevel pyramid structure which represents questions of different levels of difficulty aimed at assisting students in basic Mathematics or Statistics. Thus, it can help students effectively by promoting reflective cognition and better learning experience. These two subjects make learning uninteresting and disconnected to the students which means there is no direct relevance to their career plans. Thus, it will contribute to the high failure rate due to less motivation, interest, fear of number and formula. This study involved UiTM Negeri Sembilan lecturers and students who have practiced game learning as their teaching module. This study aimed; (1) To see the response of the XRace game board in terms of its user interface and usability (2) To gather data for the XRace game board development. Data were gathered through surveys among students taking basic Mathematics and Statistics subject. The data obtained from the survey were analyzed using Statistical Package for Social Sciences (SPSS) version 22. Statistical analyses used in this study were descriptive statistics and correlation analysis. There are three main stages involves in XRace game board which are the development, implementation and assessment on the effectiveness of the implementation of the XRace game board. This study will focus on the first and second stage only. The findings will give an early insight on the effectiveness of XRace game board for the improvement and make it applicable to every course which consequently can motivate all educators to utilize it. The results suggest that XRace game board provides a motivating environment for students to explore the underlying mathematical or statistical concepts. The features also matches student’s interests and were conducive to their enjoyment of the learning session.

Keywords—Learning tool, XRace game board, descriptive analysis, correlation analysis

I. INTRODUCTION

An interactive learning tool has been viewed as a potential tool for helping students increase motivation, gain a deeper understanding and develop better problem solving skills. It is also becoming an important tool to aid student self-learning. By using the developed tools such as online learning game, video and prototype, students will be able to use the material during their own time, more than once anytime and anywhere. This process can be repeated until they can understand a particular concept.

Apart from learning process, the developed tools can assist lecturers to ensure their students have reliable tools to refer outside the classroom lecture time. Interactive tools also can attract students’ interest and encourage team spirit. By having such activities, students are motivated to actively participate and exchange their ideas among group members. Thus, activities such as knowledge sharing can be conducted and subsequently develop their soft skills in communication and etc.

This study aimed to investigate an early feedback on the interactive XRace game board implemented on basic Mathematics and Statistics course. XRace game board was constructed as a tool to help educators and students to enhance their teaching and learning in Faculty of Computer and Mathematical Sciences, UiTM Negeri Sembilan. It involved lecturers and students who have utilized game learning as their teaching module. Therefore, the XRace game board application tries to facilitate a meaningful, varied and interactive learning process.

Data were gathered through surveys among students who took Mathematics and Statistics subject. This study provides an early insight on the effectiveness of XRace game board applied in UiTM Negeri Sembilan and evaluates its application in various subjects in providing educators an
alternative interactive teaching tool.

II. LITERATURE REVIEW

Mathematics is among the most dreaded subject in school. Many students tend to think that learning mathematics is the hardest and most difficult subject to score. This problem does not only happen in school, but it is also a big problem for university students (Coùtu, Aydn, & Filiz, 2009; Onwuegbuzie & Daley, 1999). In order to make learning fun and enjoyable for all students, it would be better if educators can identify students’ abilities in their learning. Effective learning method can cater students who are visual, audio, or kinesthetic learners.

Apart from the traditional teaching methods, there are many applications such as video games, simulation and online method that are used by educators (Nurul Aityqah, Nadiah, Rosemawati, & Foo, 2011, 2013). These applications have been used as a learning tool in many fields such as biochemistry, psychology, biology, and others. This method has increased students interest as well as their understanding of the subjects in the classroom (Sugarman, Leach, Leach, & Sugarman, 2005). Furthermore, field trip is one of the methods that can be used to improve students’ physical ability, increase their critical thinking skills and to be more independent (Robinson & Kakela, 2006).

Moreover, crossword puzzles and Jeopardy-like game have been used for assignment and review sessions that gave positive impact to examination result and student's learning skill (Massey, Brown, & Johnston, 2009). In addition, puzzle, scenarios or word puzzle can trigger students’ critical thinking if these activity goals are clear and understandable by the students.

Another application of games that have been used in learning is by using interactive board. The board game is used to teach medical students in deciding the most suitable treatment for cancer patients (Fukuchi, Offutt, Sacks, & Mann, 2000).

Moreover, business educators also use this method in order to introduce a brand-related topic. It is found that students have experienced greater motivation, enjoyment and absorption than students in the control group (Khan & Pearce, 2015). A study was also done involving Pre TESL students. According to the study, some of the benefits of using board game are it eliminates fear in learning grammar, helps to develop self-confidence and enables students to use new words and structures unconsciously (Paris & Yussof, 2012, 2013).

Problems associated with traditional approaches to teach have been well-documented. While the usual problems with a one-way system of lecture delivery are recognized emphasizes the lack of experiential learning in a usual class environment (Dawson, 2000). Educators from a variety of backgrounds have also commented how a course may seem uninteresting and unpleasant to students, who often want to see a direct relevance to their career plans. Similarly, teachers have commented on students' lack of motivation and self-discipline (Caillois & Barash, 1961; Pieroni, Vuan, & Ciolino, 2000).

III. METHODOLOGY

There are three main stages involves in XRace game board which are the development, implementation and assessment on the effectiveness of the implementation of the game board. This study will be focused on the first and second stage only. Apart from that, only descriptive statistics are used to identify the feedback of the XRace game board at improving performance and enhancing students learning experience by giving them a set of questionnaire. The information gained will provide the quantitative data that can be used to improve the XRace game board and were analyzed using Statistical Package for Social Sciences (SPSS) version 22. Statistical analyses used in this study were descriptive statistics and correlation analysis.

The first stage involves the development of the XRace game board which consists of the identification of the game board material and its accessories such as sets of questions based on specific chapters and the game rules. The type of game proposed in this project is the traditional non computer type games that rely on prototype model.

The second stage is the implementation of the XRace game board in the basic Mathematic or Statistics course. The aim of this proposed game board is to show on how the application of games in their learning session provides greater student participation, interaction and increase their interest subsequently developed their soft skill.

The third stage focuses on the study of the effectiveness of this game board implemented for basic Mathematic or Statistics course. The content of the tool developed is based on descriptive statistical terms used in any basic statistical course in UiTM Negeri Sembilan.

IV. ANALYSIS AND FINDING

The main objective of this research was to investigate the early feedback on the XRace game board implementation towards teaching and learning among UiTM Negeri Sembilan lecturers in Mathematics and Statistics subject. The aims of this study were as follows:

1. To see the response of the XRace game board in terms of its user interface and usability.

2. To gather data for the XRace game board development.

The data obtained from the questionnaire were analyzed using Statistical Package for Social Sciences (SPSS) version 22. Statistical analyses used in this research were descriptive statistics and correlation analysis.

Table 1 represents the descriptive statistics of the respondents’ demographic information. The total number of respondents was 20 comprising students from Microbiology, Food Technology, Textile and Science courses with one third of them were from semester 3.
The results indicated that the XRace game board prototype modal value score minimum at rank 7 to the highest rank 10. Enhancing learning were positive. It is shown that most of the characteristics to be focused:

1. Originality
2. Novelty
3. Innovative
4. Usefulness
5. Commercialization
6. Fair use of local materials
7. Packaging
8. Attractive
9. Fun & Engaging
10. New learning game
11. Rule of the game
12. Motivation

A classroom evaluation of the initial prototype was conducted to provide a preliminary assessment of the usability of the XRace game board in terms of student’s reactions to its design and usability. This assessment helped to refine the game design for the final evaluations.

The distribution of student’s responses is shown below. Based on the results of the preliminary evaluation of the initial prototype, student’s responses to the XRace game board for enhancing learning were positive. It is shown that most of the modal value score minimum at rank 7 to the highest rank 10. The results indicated that the XRace game board prototype provided a fun game environment for students.

<table>
<thead>
<tr>
<th>No</th>
<th>Items</th>
<th>Scale percentage for rank 1 – 10</th>
<th>Modal value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Originality</td>
<td>0 0 0 5 10</td>
<td>8,10</td>
</tr>
<tr>
<td>2</td>
<td>Novelty</td>
<td>0 15 30 15 30</td>
<td>8,10</td>
</tr>
<tr>
<td>3</td>
<td>Innovative</td>
<td>0 10 20 20 35</td>
<td>10</td>
</tr>
<tr>
<td>4</td>
<td>Usefulness</td>
<td>0 15 15 15 35</td>
<td>10</td>
</tr>
<tr>
<td>5</td>
<td>Commercialization</td>
<td>0 5 5 5</td>
<td>10</td>
</tr>
<tr>
<td>6</td>
<td>Packaging</td>
<td>0 15 25 20 10</td>
<td>8</td>
</tr>
<tr>
<td>7</td>
<td>Attractive</td>
<td>0 0 0 0</td>
<td>8,9</td>
</tr>
<tr>
<td>8</td>
<td>Fun &amp; Engaging</td>
<td>0 5 5 5</td>
<td>9,10</td>
</tr>
<tr>
<td>9</td>
<td>New learning game</td>
<td>0 10 20 25 30</td>
<td>10</td>
</tr>
<tr>
<td>10</td>
<td>Rule of the game</td>
<td>0 15 15 15 30</td>
<td>10</td>
</tr>
<tr>
<td>11</td>
<td>Motivation</td>
<td>0 0 0 0</td>
<td>9,10</td>
</tr>
<tr>
<td>12</td>
<td>- Encourage Mathematics/Statistics learning.</td>
<td>0 10 20 20 35</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>- Encourage determination to solve problems</td>
<td>0 15 15 15 30</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>- Encourage hard work to win the game</td>
<td>0 0 0 0</td>
<td>10</td>
</tr>
</tbody>
</table>

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).

This study provides an initial evaluation for XRace game board. It plays an important role in the game design and the development of the next formal progress. It is important to the product to be used by users in order to achieve goals with effective and efficiency. Therefore, there are fifteen (15) characteristics to be focused:

1. Originality
2. Novelty
3. Innovative
4. Usefulness
5. Commercialization
6. Fair use of local materials
7. Packaging
8. Attractive
9. Fun & Engaging
10. New learning game
11. Rule of the game
12. Motivation

<table>
<thead>
<tr>
<th>Variable</th>
<th>Category</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Course</td>
<td>Microbiology</td>
<td>5</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td>Food Technology</td>
<td>5</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td>Textile</td>
<td>5</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td>Science</td>
<td>5</td>
<td>25</td>
</tr>
<tr>
<td>Semester</td>
<td>1</td>
<td>12</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>8</td>
<td>40</td>
</tr>
</tbody>
</table>

Regarding these particular variables, the finding as presented in Table 2 shows that there is a significant strong positive linear relationship between students’ knowledge in Mathematics and Statistics with their interest in these two subjects, Spearman’s rank correlation coefficient were 0.807 and 0.887 respectively.
V. CONCLUSION

XRace game board, a game-based interactive learning tool was developed. There are three main stages involves in XRace game board which are the development, implementation and assessment on the effectiveness of the implementation of the game board. This study focused on the first and second stage only. The aim of this study is to develop tool in order to assist students in learning basic Mathematics or Statistics. This study aimed: (1) To see the response of the XRace game board in terms of its user interface and usability (2) To gather data for the XRace game board development. Based on the results of the preliminary evaluation of the initial prototype, student’s responses to the XRace game board for enhancing learning were positive. Overall, the modal value score minimum at rank 7 to the highest rank 10. This suggest that XRace game board provided a motivating learning environment and the features of game matched student’s interests and were conducive for their enjoyment of the learning session. The current results suggest some directions for future research for XRace game board stage three developments in order to create more usable learning environments.

ACKNOWLEDGMENT

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REFERENCES


Motivation on Games Based Learning Approach in Learning Corporate Finance Subject for Non-Business Students.

Nurazilah Zainal*, Jamilah Mohd Mahyideen, Habsah Kasim, Zaidatulhusna Mohd Isnani & Ida Haryanti Mohd Noor

Universiti Teknologi MARA (UiTM), 74000 Seremban, Malaysia

Abstract—The purpose of this study is to investigate the impact of game based learning approach on the non-business student’s motivation in learning corporate finance subject. The sample was 30 students, randomly chosen from 110 students of Faculty of Science Computer and Mathematic (FSCM) registered for the Corporate Finance examination. In the games, the participating students were required to complete various assigned tasks within 45 minutes and students accumulating the highest marks were declared as a winner and awarded with prize. Furthermore, after the game, students’ views on the game they had played were stimulated through a feedback questionnaire. The responses and results reveal interesting insights into learning through simulation game playing. Data analyses showed that the level of student’s motivation improved with greater participation and interaction between them as a group in the games simulation. The evidence suggests that game-based learning can improve motivation and thus should be integrated into traditional teaching methods especially when dealing the business subject with non-business students for a more interactive and practical approach to learning corporate finance subject.

Keywords—Games-Based Learning, Motivation Corporate Finance, Non-Business Student.

I. INTRODUCTION

GAME-based learning has been known as an effective tool for learning that can promote to enhance learning experiences and student’s motivation (Connolly, Stansfield, & Hainey, 2007 and Papastergiou, 2009). Connolly et al. (2007) defined game based learning as “the use of a computer game-based approach to deliver, support, and enhance teaching, learning, assessment, and evaluation”. Besides that, the term ‘game-based learning’ can also refer to the use of non-digital games such as card games (Baker, Navarro & Hock, 2005) and casino chips (Cook & Hazelwood, 2002) as activity to engage and hold the students in focus by encouraging learners to participate during the lesson through game-play. Game-based learning might be a more appropriate approach for teaching and engaging the students in a more successful way than traditional learning methods (Prensky, 2001).

The game based learning is equipped with decision-making process that provide students with hands-on experience and opportunities to make decisions in a safe environment, and thus allowing students to experiment and learn from experience (Zantow et al., 2005). Connolly et al., 2007 and Prensky, 2001 explain the magnificence of game based learning approach can develop the level of student’s motivation, which is related to the student’s willingness to participate in tasks and activities held in a class.

Studies have indicated that academicians need to equip themselves with more flexible approaches (Galton & Eggleston, 1979; Nelson, 1996) in the teaching of mathematics and science. Academicians in the classroom play an important role and are a significant factor in creating a conducive learning environment. These varied teaching styles all contribute to the effectiveness and efficiency of the delivery of the lessons.

Understanding Corporate Finance subject has always been a challenge to most of Business school students. Could we imagine what will be the situation when it comes to non-business student? As they have no finance background and to obey with prerequisite university, some of non-business
students are compulsory to take corporate finance subject. This study attempts to investigate the non-business student’s motivation in learning corporate finance subject by conducting a Game-Based Learning approach. Nowadays most of the students present less interest particularly for those in tough subjects. When they find the subject is difficult and hardly to score, this condition will distract the attractiveness in learning environment. As an academician, to make this subject more interesting instead of using traditional teaching approach in class, the researcher try to apply different approach of Games Based Learning to develop their interest toward corporate finance subject. Previous literature from Cook and Hazelwood (2002) suggest the Game-Based Learning approach can encourage the students to participate during the lesson.

II. LITERATURE REVIEW

Education games are developed for educating and training purposes (Davidson, 2008; Hamari & Koivisto, 2015b). Pedagogy, instruction and assessment will influence the games on teaching and learning as an educational approach. So that, to have an effective educational techniques games as a potential tools needed in new environment of learning (Hamari, Shernoff, Rowe, Coller, Asbell-Clarke & Edwards, 2015). In today’s environment, learning and gamified will become more useful in learning method for engagement and flow in students (Crisp, 2014). Proven by Hung, Sun & Yu (2015) shows that the challenge in the game-based learning will increased the flow and learning outcomes as well as satisfaction. Besides, game-based learning also will be more interesting approach compare traditional learning methods (Prensky, 2001). It makes students more motivated and willing to participate in tasks and activities.

According to Luis, Eva & Antonio (2015), games can be a set of meaningful motivation elements to challenge the player. Thus, normally in an educational game has been designed in a variety of contexts that can be used in classroom specifically to meet the learning objectives. Other previous studied proven that an element of problem solving makes that learning occurs, when the challenges and learning are meet directly will motivate and entertain the players (Gee, 2007). An ideal educational game, encourage students to study how to solve complex problems (Hamari et. al., 2015). Based on Csikszentmihalyi’s (1990), the more complex and challenging classwork activities are, the higher the student’s participation. According to Hung et. al., (2015), the satisfaction elements also increases when the games-based learning rise the flows and learning outcomes. Educator or academician can apply game-based tacit learning in order to influences the technique of teaching that related to content in class (Hamari et. al., 2015). Students enjoyed participating in games and it makes as a unique experience in learning. Students also felt more interested to the lesson that used in simulation games when the transferred skills encourage student’s attentiveness and motivation (Loon, Evans & Kerridge, 2015)

Instruments and evaluation items play a major role that need a relevant for gamification in education and it’s have a potential to impact on learning performance based on Marcos, Garcia-Lopez & Garcia-Cabot, (2015). According to Martin-Sanjose, Juan, Segui & Garcia (2015), there are significant differences between the knowledge before and after used games application is suitable for transmitting knowledge.

III. DATA COLLECTION

A. Participants

The questionnaires were distributed to a subsample consisted of N=30 (3 males, 27 females) from the Faculty of Computer and Mathematical Sciences, Universiti Teknologi MARA (UiTM) Negeri Sembilan (Seremban 3 Campus). The sample investigated here was a subsample taken from a 110 number of students who sit for Corporate Finance course. 30 questionnaires were returned, yielding a response rate of 100% and all 30 questionnaires were used in the data analysis.

B. Procedures

The data collection method was carried out using personally administered questionnaire. The personally administered questionnaire was used in this study as the questionnaire will be distributed and collected during a workshop organized by their business lecturers on 14 December 2015. The game was always administered first and students were required to complete the tasks given within 45 minutes. Below is the instruction on how the game is being conducted;

1) This game consists of Part 1 and Part 2. A student will be given 45 minutes to complete the task
2) The student need to give a correct answer for all questions in Part 1 before proceed to Part 2
3) If the student gives any wrong answer in Part 1, he can’t proceed to the next part and will lose the game
4) In Part 1, students need to give the best possible criteria based on the given situation
5) While in Part 2, students need to decide which project should the company choose based on five criteria in Capital Budgeting Technique

Students received no reward for their participation in term of marks however the winner of the game awarded with prize. To measure the success of the activity, students are given questionnaires to obtain feedback about their perception in the learning activity.

The survey consists of seven statements to evaluate the students’ motivation while playing the simulation game on capital budgeting.

In the present study, all usable responses were further analysed using Statistical Package for Social Science (SPSS).
IV. RESULTS

This section discussed the findings according to constructs presented. In this study, we used the 1 to 5 point Likert Scale (strongly disagree – disagree – neither disagree nor agree – agree – strongly agree) respectively. The results were presented using percentage, mean and standard deviations. In order to assess the reliability of individual items, a consistency analysis of the questionnaire was performed. The assessment of reliability is based on the Cronbach’s coefficient alpha (α). Nunnally, J. C. (1978) has indicated a Cronbach’s coefficient alpha (α) of minimum 0.7 to be an acceptable reliability coefficient for most researches, and a minimum of 0.6 to be desired in exploratory researches. The Cronbach’s alpha reliability of the overall research in the questionnaire was α = .780, which is over the minimum and thus evidencing reliability of the questionnaire. The questionnaire items were adapted and modified from Roslina et al. (2011).

<table>
<thead>
<tr>
<th>TABLE 1</th>
<th>FREQUENCY AND PERCENTAGE STUDENTS’ MOTIVATIONS TOWARDS BUDGETING CAPITAL SIMULATION GAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>ITEMS</td>
<td>STRONGLY DISAGREE</td>
</tr>
<tr>
<td>Game simulation is a challenging learning environment (M1)</td>
<td>TOTAL</td>
</tr>
<tr>
<td></td>
<td>PERCENT</td>
</tr>
<tr>
<td>Simulation game increased my knowledge of capital budgeting (M2)</td>
<td>TOTAL</td>
</tr>
<tr>
<td></td>
<td>PERCENT</td>
</tr>
<tr>
<td>Prefer to answer questions this way compared to using books or paper (M3)</td>
<td>TOTAL</td>
</tr>
<tr>
<td></td>
<td>PERCENT</td>
</tr>
<tr>
<td>It increased my interest for this subject (M4)</td>
<td>TOTAL</td>
</tr>
<tr>
<td></td>
<td>PERCENT</td>
</tr>
<tr>
<td>Simulation game provides an exciting alternative to a regular lecture course (M5)</td>
<td>TOTAL</td>
</tr>
<tr>
<td></td>
<td>PERCENT</td>
</tr>
<tr>
<td>The usage of simulation game makes this subject more interesting (M6)</td>
<td>TOTAL</td>
</tr>
<tr>
<td></td>
<td>PERCENT</td>
</tr>
<tr>
<td>This game helps me to understand the subject better (M7)</td>
<td>TOTAL</td>
</tr>
<tr>
<td></td>
<td>PERCENT</td>
</tr>
</tbody>
</table>

The total number of respondents was 30 (n=30) comprising 27 (90%) female students (n=27) and 3 (9%) male students (n=3). From the analysis, the result in Table 1 shows that 90 percent of the respondents found that the game simulation creates a challenging learning environment and only 10 percent of them not sure about it. Respondents also prefer to answer questions using games compared to using traditional methods such as books or paper. More than 80 percent of the respondents agree that learning through games has increased their knowledge about the subject matter while 13 percent of the respondents are not sure. All respondents agree that the simulation game provides an exciting alternative to a regular lecture course, increases their interest for the subject, makes the subject more interesting and helps them to understand the subject better. This shows that simulation game can trigger students’ motivation for learning and that this finding is in line with what have been found in other previous studies such as Nor Azizah et al. (2015), Zainal Abedin et al, (2015) and Roslina et al. (2011).

In this study, we identifying the relevant seven motivations construct to be considered. It can be seen in Table 2 that the level of motivation towards educational games was at high level. It is proven by the value of mean range at a high level for all items. Increase students’ knowledge and make the subject more interesting have the highest means while students’ preference to answer question using game holds the lowest mean. This provides empirical support for Nor Azizah et al. (2015) observation about the hybridization of educational games in enhancing students’ motivation towards learning.

<table>
<thead>
<tr>
<th>ITEMS</th>
<th>LEVEL OF MOTIVATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Game simulation is a challenging learning environment (M1)</td>
<td>High</td>
</tr>
<tr>
<td>Simulation game increased my knowledge of capital budgeting (M2)</td>
<td>High</td>
</tr>
<tr>
<td>Prefer to answer questions this way compared to using books or paper (M3)</td>
<td>High</td>
</tr>
<tr>
<td>It increased my interest for this subject (M4)</td>
<td>High</td>
</tr>
<tr>
<td>Simulation game provides an exciting alternative to a regular lecture course (M5)</td>
<td>High</td>
</tr>
<tr>
<td>The usage of simulation game makes this subject more interesting (M6)</td>
<td>High</td>
</tr>
<tr>
<td>This game helps me to understand the subject better (M7)</td>
<td>High</td>
</tr>
</tbody>
</table>

From the analysis, the majority of the respondents agreed that they get motivated to learn capital budgeting when using the game with the overall scores mean of 4.6558 and standard deviation 0.5022 as shown in the Table 3 below.

<table>
<thead>
<tr>
<th>TABLE 3</th>
<th>LEVEL OF MOTIVATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motivation</td>
<td>Mean</td>
</tr>
<tr>
<td>Low (1.00 - 2.33)</td>
<td>4.6558</td>
</tr>
<tr>
<td>Moderate (2.34 - 3.67)</td>
<td>4.7273</td>
</tr>
<tr>
<td>High (3.68-5.00)</td>
<td>4.7727</td>
</tr>
</tbody>
</table>

IV. CONCLUSION

This paper was carried out to identify students’ motivation in UiTM Negeri Sembilan Branch, Seremban Campus towards
using simulation educational game for Budgeting capital subject. In order to accomplish this, seven constructs of motivation were used. Findings of the study revealed that most students were highly motivated in using the game as one of their learning approach. In addition, results also showed that this game adds to the excitement element in learning, and students rated the game as an effective way to learn capital budgeting subject. Students also found the use of game and simulation elements as a better way to answer the questions rather than traditional way of using paper and books. The integration of game and traditional method of lecture-based is seen as a promising approach to enrich the learning and teaching experience.

REFERENCES


Fun Learning through Accounting Simulation Game Board Increases Student’s Motivation and Performance

Amariah Hanum Hussin, Dalila Daud, Norhidayah Ismail, Ida Haryanti Binti Mohd Noor & Wan Mardyatul Miza Wan Tahir

Faculty of Accountancy, UiTM Negeri Sembilan

Abstract—Students are tended to be demotivated when they cannot understand the subject. This may affect to their overall performance. Thus, this innovation educational simulation game being developed to help students to understand better and educate them with a captivating and interactive tool to supplement their curriculum in an accounting subject for introductory level. The game was incorporated the accounting equation concept into playing this game so that students will have fun in learning and thus will improve their understanding on the effect of accounting classification. Accounting is Easy features a board game and more than 100 color cards represent for each accounting classification. The approach of the game was designed for students to be competitive, interactive and teamwork spirit rather than learn though conventional method of teaching. The effectiveness of the game is proven by showing a reduction of failure rate and improvement of A grade during final examination as compared to previous 2 semesters.

Keywords—Accounting education, Accounting games, Teaching method, Simulation.

I. INTRODUCTION

Traditional classroom environments struggle to engage and motivate students towards teaching and learning process. By having current system of chalk-and-talk in the class, students become detached from the lesson and the material thus students disengage for the instructors and they have difficulty with connecting the information and understanding the content. To overcome this problem, developing a new research and innovation of teaching and learning are ways to engage students thus will increase the motivation and performance of the students as well as to drive classroom involvement, energy and value.

To initiate the solution, this study combines the games with course content to develop a collaborative learning game. This innovation focus on Introduction of Financial Accounting (ACC106) subject. This subject was selected because of high failure rate during final examination. Other than that, this subject also taken by non-accounting student in other academic discipline such as business, economics, science policy, agricultural and information technology. Prior studies Koh and Koh (1999); and Duff (2004) have revealed that non-accounting students perceive the subject of accounting as irrelevant to their discipline. Consequently, several non-accounting students did not perform well in the accounting courses (Malgwi, 2006). UiTM Negeri Sembilan is facing the same situation whereby some of non-accounting students fail in accounting subject.

II. LITERATURE REVIEW

In recent years, accounting educators have used games and simulations in their accounting education as an effort to improve educational pedagogy. It is part of an active learning approach by incorporating games into accounting courses. Active learning is recommended to educators to meet demands for a broad accounting education which promotes a wider general knowledge base and interpersonal skills such as communication, problem solving and group work (Kober and Tarca, 2000).

Simulation game will to actively engage students into educational activities by way of increasing their responsibility and accountability. In simulation game, the students need to solve problems and make the right decision by applying concepts and principles learned in classroom. This type of game adds some flair to the classroom and help students learn...
somewhat difficult accounting concepts and financial processes in exciting ways (Jaijairam, 2012).

A simulation game in this paper is an activity that involve accounting practice set (questions to illustrate transactions, board and printed magnetic cards). Based on the questions given, students will record all financial transactions onto the board by using printed magnetic cards. At this point, students need to ensure that the answers given by them are correct by way of applying accounting principles learned in classroom. Thus, it “imitates some part of reality and is a contest” (Heyman 1975, 11).

The purpose of this study was to determine whether the integration of simulation game into introductory accounting course would increase students’ motivation in which subsequently improve students’ performance.

III. METHODOLOGY

A. Participants

The sample investigated here was a subsample taken from a larger number of students 137 students. This subsample consisted of N = 46 (30 males, 14 females) from the Faculty of Public Administration and Science Policy, UiTM Cawangan Negeri Sembilan. Mean age of participants was 18.67 years (SD = 2.35; range: 18-19 years).

B. Statistical Analysis

In order to access the understanding of basic accounting principles, we analyzed the 5 items of accounting concept. In the present study, we used SPSS to find the result. To keep the number of estimated parameters within a reasonable range, we grouped into five categories. That is, the categories “strongly disagree” and “disagree” were collapsed into the category “1” and “2” while “agree” and “Strongly agree” were collapsed into the category “4” and “5”.

IV. RESULT AND CONCLUSION

A. Correlations

A correlation analysis was conducted to describe the relationship between student's performance with motivation and game application. The results illustrated in Table I only include the sub sample (n=46) that was used for the correlation model.

Pearson correlation coefficients were 0.910 and 0.770 respectively with p-value < 0.01. Therefore, it is concluded that there was a significant positive linear relationship between independent variables; game application and motivation towards dependent variable; performance.

<table>
<thead>
<tr>
<th>Performance (Y)</th>
<th>Pearson Correlation</th>
<th>Sig. (2-tailed)</th>
<th>N</th>
<th>Game Application (X1)</th>
<th>Pearson Correlation</th>
<th>Sig. (2-tailed)</th>
<th>N</th>
<th>Motivation (X2)</th>
<th>Pearson Correlation</th>
<th>Sig. (2-tailed)</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Performance</td>
<td>Pearson Correlation</td>
<td>.910(**)</td>
<td>.000</td>
<td>N</td>
<td>46</td>
<td>46</td>
<td>46</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>Sig. (2-tailed)</td>
<td>.770(**)</td>
<td>.000</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Game application</td>
<td>Pearson Correlation</td>
<td>.910(**)</td>
<td>1</td>
<td>.719(**)</td>
<td></td>
<td></td>
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<td>Sig. (2-tailed)</td>
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</tr>
<tr>
<td>Motivation</td>
<td>Pearson Correlation</td>
<td>.770(**)</td>
<td>.719(**)</td>
<td>1</td>
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<td>Sig. (2-tailed)</td>
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</tbody>
</table>

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

This study revealed that these two dimensions as having positive correlations with the dependent variable “performance” supporting the results of the study. Interestingly, the variable “game application” and “motivation” correlated positively with student performance. The performance of the student seems to increase during the game experience.

In addition, in the main study, the correlation of “students' performance” with the “motivation” and “game application” are significant on the highest level. Previous research such as Kober and Tarca (2000) already showed that application of game motivates students more than academic interest. Such knowledge of student expectations should help lecturers design their teaching programs. Malaysian educators should perhaps pay more attention to educational game aspects in their teaching as they regularly receive criticism for offering courses that are too theory-laden. Lecturers could also provide assignments that are directly relevant to work, and use interesting and thought-provoking examples and case studies from the business life.

As per Table II, the model was fit [F (2.43) = 126.875, p-value=0.000] and R-square=0.855 indicates that 85.50% of the total variation in accounting subject performance can be explained by the regression line using the game application and motivation.

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As seen in Table III, the ANOVA results indicated a significant difference among the two independent variables types F (2.36) = 126.875, p < 0.00. The table shows that the output of the ANOVA analysis has a statistically significance difference between the groups means. We can see that the significant value is 0.00 (i.e. p= 0.00) which is below 0.05 and, therefore has significance difference. The descriptive analysis comparing the three types of variables in terms of students' performance revealed that game application was favored more by the students because of its features of interaction. Having more motivation and as well as game application have resulted higher performance in a student academic result.

This game was proven to attract students interest to learn fundamental of accounts. The survey conducted after the game shown students prefer this educational game and hopes for more interactive game since it improve their understanding of accounting. Students need to rank their agreement using the scale (5) agree and least agree (1) and the result only indicate to score 3 (don’t know) , 4 (agree) and 5 (Strongly agree). It means none of the student feel the game was useless and not contribute anything to them.

The effectiveness of the game also proven by decreasing student’s failure rate for this subject. Since the game was conducted to AM110 part 1 students, the result of ACC106 shows decreasing failure rate trend after this game initiated. Semester December 2014 – April 2015, which is second intake part one student, no game was initiative and the failure rate was high which is 52.1% students fail. During Semester Jun – September 2015 (first intake) only a week students were selected to play the game and the number of failure rate reduce to 17.1%. Surprisingly, the result of semester December 2015 – April 2016 (second intake) shows a decreasing of failure rate of 10.3% only and result for ‘A’ increase to 27.2%. During this semester, all students were selected to play the game during the class session. Hence, rather than decreasing failure rate, it also contributes to increasing of ‘A’ grade for that semester.

To sum it all, this innovation in teaching and learning had been introduced as an initiative to overcome a problem of high failure rate for Introduction of Financial Accounting (ACC106) course. An educational game was developed with an attractive board of accounting equation together with accounting classification magnetic color card. Student as a player will form a group and play the game following the instruction given. The winner will be determined by checking the correct answer as shown in a board. The game was proven to attract student interest to learn accounting subject and thus enhance students’ performance in their final examination. It also a useful tool to enhance teaching in accounting making the non-accounting students mindful and attentive as well as to demonstrate high level of understanding of accounting education institution.

ACKNOWLEDGEMENT

The study of innovation in teaching and learning was funded by Geran Aras 600-RMI/DANA 5/3/ARAS (32/2015). The author would like to thank to the Universiti Teknologi Mara Malaysia and for the supported and encouragement as well as to the AM110 students who participate in this education game.

REFERENCES

Blended Learning: Towards Innovative Teaching Practice in University

Aini Hayati Musa¹, Alia Nadira Rosle², Tengku Sharifeleani Ratul Maknu¹, Intan Syafinaz Mat Shafie³, Rohasmizah Hashim⁴ & Nur Nafhatun Md Shariff⁵

¹Faculty of Business Management, Universiti Teknologi MARA, 72000, Malaysia
²Faculty of Computer and Mathematical Sciences, Universiti Teknologi MARA, 72000, Malaysia
³Faculty of Business Management, Universiti Teknologi MARA, 40450, Malaysia
⁴Faculty of Applied Sciences, Universiti Teknologi MARA, 72000, Malaysia
⁵Academy of Contemporary Islamic Studies, Universiti Teknologi MARA, 40450, Malaysia

Abstract—Environmental atmosphere of a classroom is important in traditional learning methods; where educators are still using chalk and blackboard. However, in today's era of technology, online learning is becoming important. In order to ensure the effectiveness of education delivery, educators should incorporate the use of traditional method with modern technology (online learning). The combination of stated methods is known as blended learning. Based on the above background, this action research aims to examine whether the use of blended learning can increase the level of student knowledge in learning activities. The research was conducted on 40 undergraduate students in UiTM Negeri Sembilan. Samples are taken among Applied Sciences students. They are randomly selected. Results from this study showed that educational activities are more effective using blended learning. The result showed majority of the students agreed that Blended Learning as one of the online learning method that can assist them in improving their learning approaches and understanding the subjects taught better. The combination of traditional learning method and online method can provide more advantages in improving the teaching and learning activities in university.

Keywords—Online Learning, Blended Learning, Traditional Learning, Innovative Teaching, Modern Education

I. INTRODUCTION

ONLINE learning method is important in order to improve the quality of teaching delivery among educators. UiTM has introduced online learning method known as Blended Learning in December 2005. Blended Learning is aimed to respond on today’s technological advancement; where the improvement of learning system as a platform that supports the teaching and learning process in education.

Education is a process of changing the patterns of human behavior that includes thoughts, feelings and actions. (Tyler, 1949). Therefore, education is an important agenda for the country to create a knowledge society and thus stimulate the advancement of civilization. Thus, teaching and learning must also be changed along with the progress of a country.

According to Aini Hayati et al. (2015), in today's world, our jobs as educators become more challenging. As an educator, teaching techniques need to be improved to make it more efficient so that we can keep pace with today's world. In line with the rapid technological changes, students become more informative and active. Therefore, as educators we need to devise teaching and learning activities more proactive than using traditional approaches. Therefore, as educators, we have to actively strategize our teaching methods in order to meet the demand of the education system nowadays. Blended Learning is seen as one of the method towards providing innovative teaching practice in university.

II. LITERATURE REVIEW

A. Blended Learning

Education and learning style had changed significantly due to technology advancement. According to Norman and
Spohrer (1996) “technology is certainly a catalyst for change, helping to bring about the new revolution in education”. Traditional learning where face to face interaction in a classroom is required while blended learning is a combination modes in learning. It may consists of a range of synchronous and asynchronous activities inclusive of lessons, chat rooms and quizzes (Bryant et al., 2005). It is the combination of face to face and collaboration of technology devices. (Joanna Poon, 2011), found that blended learning gave flexibility in learning style and pace which lead to improve in learning experience and high engagement. Blended learning “promotes student-centred learning [and] encourages wider student participation” (Davies and Graff, 2005).

According to Mitchell and Honore (2007), the importance of human behavioral factors over content and tool selection when implementing a blended learning solution cannot be ignored. The role of group dynamics in achieving the learning outcomes also needs to be considered, as does the perceived value of the approach to be taken by the participants. Findings relate to both the e-learning experience and other learning methods experienced on the course, influenced partly by the students’ expectations and preferences. Fleck, J. (2012) found that there is no doubt that blended learning will become more prevalent. Even conventional face-to-face campus-based teaching operations will use on-line activities as important supporting elements, and information and resources available over the web will take over from printed library resources.

B. Modern Learning

Froumin and Kasprzhak (2012) stated that “the fundamentals of traditional schooling framework and a consensus of universal cultural units to be acquired and learnt are broken up in the present-day world.

According to Sadler-Smith et al (2000), the application of technology in both its “hard” (for example through computing technology) and “soft” (for example through instructional design) forms has enhanced the range of training methods available to practitioners. Much rhetoric has surrounded the use of techniques such as distance learning and computer-based learning methods. Recent years have seen the range of training methods available to practitioners greatly enhanced through developments in the fields of instructional design and in computing and communications technologies. Many organizations have turned to “modern” methods of delivery which do not rely on conventional face-to-face contact between trainer and trainee. In distance learning, for example, “the learner is: not continuously and immediately supervised by a trainer or a tutor; does benefit from the services of a training/tutorial organization; utilizes [training] materials in a variety of formats” (Stewart and Winter, 1995, p. 202). Computer-based methods allow flexibility of delivery allied to a responsiveness to individual needs (Marchington and Wilkinson, 1996) which opens the way for the development of “intelligent” tutoring systems.

C. Innovative Teaching

According to Wan Noor Hazlina and Suraya (2016), many lecturers and students claimed that the conventional lecture approach in the classroom is less effective in the teaching and learning process. In the classroom, a lecturer usually controls the instructional process; the content is delivered to the entire class, as they tend to emphasize on factual knowledge. In other words, the lecturer delivers the lecture content and the students listen to the lecture. As a result, the learning mode tends to be passive and the learners play little part in their learning process (Damodaran and Rengarajan, 2007). In this case, lecturers have to decide whether to pull digital students away from their native digital world or to motivate digital students by tapping into their digital world and using their natural inclination and inquisitiveness about all that is digital (Shelly et al., 2006).

Creativity and innovation are the elements for organizational survival, effectiveness and success (Amabile, 1996; Shalley, 1995). Creativity is important in giving the ideas and innovation is the implementation of the ideas (Amabile, 1996). Instructors must have high creativity thinking level in order to be teaching innovatively. They have to move the learner center stage and discover different dimension in teaching and learning.

D. Online Learning

When first online learning was introduced, time management is very important due to the efforts of the instructor in preparing resources online and the time responding to the students’ questions. Time of preparing and responding depend on the level of fluency in technology. It brought significant change from traditional learning and teaching and it is achieved with “growing pains” (Jones and Chen, 2008). For a start, online teachings were found unfamiliar, uncertain and far away hard than teaching using a traditional method but after a long term, it becomes easier (Dykman and Davis, 2008).

According to Michael (2012), having decided to explore the concept of online classes, a committee comprising five staff was established to oversee the project. The aim was not to replace face-to-face classes but to provide students with a mix of study modes to help facilitate and enhance their learning experience. Prior to the project implementation, extensive work was undertaken in planning and advertising the online tutorials e.g. posters were placed around the university grounds; flyers were handed out at enrolments; and announcements were made on the student learning management system (Blackboard). Since the concept of online classes was new to the school, a number of software training sessions were also held for staff involved with the project.

III. METHODOLOGY

The target population of this study comprises of forty (40) respondents of UiTM Negeri Sembilan Science students. The self-administered questionnaires were distributed among
respondents who participated in answering the questionnaires. Survey instrument consists of cover letter and questionnaires. Random sampling method was chosen in this study.

IV. Result Analysis

A. Research Design

The design of this study is felt under frequency category. The study is conducted to observe the students' acceptance of the use of Blended Learning as online teaching platform in UiTM Negeri Sembilan. The results of the study were analyzed using frequency analysis.

B. Sampling

Sampling was done randomly on the Faculty of Applied Science Degree students who take the program Bachelor of Science in Biology and a Bachelor of Science in Chemistry. A total of 40 questionnaires were distributed. All of the respondents managed to give a response to the questionnaire.

C. Results

The results are as follow:

<table>
<thead>
<tr>
<th>Table 1: Student Interest Level of Blended Learning</th>
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</thead>
<tbody>
<tr>
<td>Q1: Interest level of Blended Learning</td>
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<tr>
<td><img src="graph1.png" alt="Graph" /></td>
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</tbody>
</table>

Table 1 show that majority students are interested with the use of Blended Learning in their learning process. There are 10 students strongly agree and 18 of them agree that they like to apply Blended Learning as an approach in learning. Out of forty students, only two of them (5%) did not show their interest in this online method of learning.

<table>
<thead>
<tr>
<th>Table 2: Student Communication with Lecturer</th>
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</thead>
<tbody>
<tr>
<td>Q2: Communication with Lecturer using BL</td>
</tr>
<tr>
<td><img src="graph2.png" alt="Graph" /></td>
</tr>
</tbody>
</table>

Table 2 show ten (10) students strongly agree and nineteen (19) students agree that by having Blended Learning, they can have more time to communicate with their lecturers. They can have online forum to discuss subject matters with the lecturers. There are about five (5) students neutral with this statement; and about fifteen (15%) of them disagree with this statement. They stated that not much differences using Blended Learning in frequency of communicating with the lecturer.

<table>
<thead>
<tr>
<th>Table 3: Blended Learning Assist Student in Understanding Subject Taught Better</th>
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</thead>
<tbody>
<tr>
<td>Q3: BL assist in better understanding</td>
</tr>
<tr>
<td><img src="graph3.png" alt="Graph" /></td>
</tr>
</tbody>
</table>

Table 3 indicates twenty seven (27) students positively agree that Blended Learning assist them in understanding subject taught better. They can have more time and notes uploading online and discuss the subjects. Eight (8) of them are neutral with this statement while only 12.5 per cent students did not agree with this statement. This minority felt they are having difficulties in learning non face-to-face.
Table 4 illustrate out of forty (40) respondents, there are ten (10) students strongly agree while sixteen (16) students agree that Blended Learning provide them online platform to discuss subjects taught with team members. This number represents 65 per cent respondents having good experiences using Blended Learning in solving the subject matters. There are seven (7) students neutral and six (6) of them disagree. Out of forty respondents, only one (1) of them strongly disagrees with the statement.

Table 5 shows majority of the respondents strongly agree (9) and agree (20) they can actively discuss and solving the problems using Blended Learning. They can work anytime and anywhere to finish their assignments. There are only ten (10) respondents neutral and only one (1) of them disagree with this statement.

Table 6 illustrates that nine (9) respondents strongly recommend and eighteen (18) of them recommend Blended Learning to be implemented in university (UiTM Negeri Sembilan). This number represent majority 67.5 per cent of the students agreed that the use of Blended Learning as one of the method to improve learning methods and activities in university. There are seven (7) students neutral, four (4) disagree and only two (2) of them strongly disagree of the implementation.

V. CONCLUSION

The result showed majority of the students agreed that Blended Learning as one of the online learning method that can assist them in improving their learning approaches and understanding the subjects taught better. The students also recommended Blended Learning to be implemented in university (UiTM Negeri Sembilan). This method is seen as an additional way to improve the learning activities and also connecting the students and educators effectively. The combination of traditional learning method and online method can provide more advantages in improving the teaching and learning activities in university.
REFERENCES


A Survey on Learning Style Indicator between Genders and Game-based Learning in UiTM Seremban

Nur Fadhlina Zainal Abedin*, Nooraza Tukiran, Nurhanani Aflizan Muhamad Rusli & Mohd Elfee Ab Rashid

Faculty of Business Management, Universiti Teknologi MARA, Seremban, Negeri Sembilan

Abstract— Traditional or conventional learning process is found insignificant for the new generation of students nowadays. The learning process has become very challenging as students are more exposed to technological devices. A conventional teaching method is no longer suitable for them since they have different styles of learning in different circumstances. It is hypothesized that students are inclined to be visual learners due to the significant enhancement in technology and gaming. Therefore, the objective of the study was to identify the learning style indicators among students in Universiti Teknologi MARA, Seremban, Malaysia. A survey on students’ perception about game-based learning was also conducted. The results show that 47.3 percent of the students were visual learners compared to kinaesthetic (30 percent) and audio (22.7 percent) learners. Pearson Chi-square shows there was no significant difference in learning style preference between male and female students. Students also agreed that game-based learning was an effective learning approach that helped them understanding their lesson better. Hence, it is suggested that the learning process should be in interactive manner to motivate student and helps them to score in the subject.

Keywords— Game-based learning, learning style, visual, kinaesthetic and audio

I. INTRODUCTION

Conventional teaching method focuses on the teacher as a key role and based on oral recitation. Students usually listen to the statement recited by the teacher or friends in learning. It is known as passive learning approach where students study and memorize the fact. This method is inefficient and gives problems to them especially those with visual and kinaesthetic dominance. Every student has a different learning style whether he or she prefers visual, audio or kinaesthetic learning style. It is common to have mix learning styles in class. However, there is only one most dominant learning style that they are comfortable with. The different approaches among students include the aspect of individual thoughts, reactions, interests, preferences, achievements and understanding.

Recognising student’s learning approach is important because it is a key factor in the formation of an individual (Nur Fadhlina Zainal Abedin et al, 2012). Uninteresting learning process will easily get students bored in class and face difficulties to focus. They tend not to being engaged and are not enthusiastic in class. As a result, it will definitely decrease their academic achievement.

There are several methods to make a learning process interesting. The best practice is by adding tools and equipment that are close to their real world, for example, the use of technology. Nowadays, students are more exposed to computers, smart phones, the Internet and also video games. The exposure of too many devices at homes makes them bored in the passive learning environment because they are not seeing all these technological devices while learning. In order to keep students engaged, they need to be interested. If the technology changes every aspect of students’ life and can make them doing something enjoyable, convenient and time saving, it can also change the way how they communicate and learn.

Learning process can become lively and enjoyable with the help of various tools and equipment in the classroom, especially game based learning. Past studies showed that the shift from passive to active learning or from a teacher-centred to a student-centred approach is probably the most positive
consequence of technology (Struyven, Dochy, Janssens, & Gielen, 2006; Wilson & Fowler, 2005; Brown & Kathy 2003).

Therefore, this paper is interested in determining the learning style indicator among students of Universiti Teknologi MARA Negeri Sembilan in Seremban Campus. The survey was also conducted to investigate students’ perspective about game-based learning.

II. LITERATURE REVIEW

A. Learning Styles

Learning style has been defined by Keefe (1979) as a characteristic of the cognitive, affective and physiological behaviours perceived by the learners that serves as relatively stable indicators. Understanding students’ individual learning styles can play a very important role in the learning process. Over the past decade, more than 60 universities have been conducting research on students’ learning styles. From these research investigations, some useful results regarding the effects of environmental, physiological and cognitive development on the students’ achievement have been discovered.

There are numerous learning style models. McAdams and Pals (2006) offer five principal models of person including dispositional traits, characteristics adaptations, culture contexts and others. According to Thomas and Amit (2007), a use of a variety of teaching and learning approaches has the potential to enhance performance of adult students. The advocates of learning style models (Claxton & Murrell, 1987; Coffield, 2004) mention that students have different learning styles. By taking that as a basic premise, the higher education should not assume all adult students learn in the same way. According to Fleming (2001), a widely-used model of learning style is the Visual Auditory Kinesthetic (VAK) model. Most people possess a dominant or preferred learning style; however some people have a mixed and evenly balanced blend of the three styles.

Zapaliska and Dabb (2002) note that the teaching strategies best suited to students’ learning improve the way students learn as their learning style is being recognized. According to Dunn (1982, 1986), individual learning style uniqueness could be thought of as a fingerprint. She further explains that as a result of maturation, over the time an individual’s learning style changes.

According to Dunn, Beaudry and Klavas (1989), students’ achievement increases when the methods of teaching match their learning styles. Reich (1991) adds that, the diversity of students learning style should be taught sufficiently by the faculty to promote innovation in their fields.

B. Game-based Learning

Games have been recognized as being a good tool to promote learners to actively participate in learning activities (Baid & Lambert, 2010; Huizenga et al 2009). Game-based learning broadly refers to the use of video games to support teaching and learning. Current scenario shows that digital technologies and various digital tools such as games and social media have impacted in how students learn, play and socialise. Since the introduction of mobile devices, digital games as a form of entertainment are becoming popular as a tool for people to spend their time. Educators and teachers are therefore increasingly interested in focusing more on using digital games as a tool to facilitate learning. If these new digital technologies are ignored, the opportunities to maximize students’ potentials and addressing digital literacy of today’s youth is hard being achieved (Judson, 2010).

Researchers also have indicated that game-based learning could be the best way to trigger students’ learning motivation (Papastergiou, 2009a; Dickey, 2010; Tüzün et al 2009). According to Lepper et al (2005), game-based-learning is often considered to be necessary or become the priority for learning. When motivated, students are likely to consume more time and effort in learning, eagerly complete challenging work, and take pleasure in their achievement (Malone, 1981).

In addition, it has been reported that a game-based learning approach might provide a good chance to stimulate student’s abstract thinking during the process of cognitive development, and further foster their higher order thinking ability (Carbonaro et al, 2010). Terrell and Rendulic (1996) state that internal motivation and learning achievements of elementary school students can be increased through computer games. Therefore, if educators or teachers are able to apply computer games during the teaching process, students will learn happily, become more alert, creative and have better learning achievements.

III. METHODOLOGY

A set of questionnaire was distributed randomly to 300 diploma students in Universiti Teknologi MARA, Seremban, Negeri Sembilan. The respondents were from various programmes and semesters. However, there were only 273 valid samples collected due to poor quality and unreturned questionnaire. It made the response rate of 91 percent.

The questionnaire consisted of three parts. Part A contained students’ demographic background. Part B consisted of 20 statements that reflected the learning styles among students. The learning style statements were adopted from VAK Learning Styles Self-Assessment Questionnaire. Meanwhile Part C comprised five statements about student’s perception on game-based learning. The statement follows the rule of Likert scale from 1 (strongly disagree) to 5 (strongly agree) in the scoring procedure.

A set of data were analysed using SPSS software. The Reliability test was conducted to determine the internal consistency of the questionnaire. The reliability test was used to measure how accurate and precise the measurement made on a certain variable by the research instrument. The overall Cronbach’s alpha reliability coefficient of the questionnaire was 0.882 which is high and acceptable. Thus the questionnaire can be used to collect data in the actual study. In determining the learning style between genders, nonparametric
chi-square (Pearson) was tested. There were two important concept involved; observed and expected frequency. Observed frequency is the count of observations in the group and expected frequency is the count of frequencies in the comparison group. The comparison between these two frequencies is called chi-square analysis. Lastly, Part C was analysed by using frequency distribution and percentage value.

IV. RESULTS

The results show that there were significant difference \( [x^2(2, \ N=273) = 26, \ p<.05] \) in visual and kinaesthetic learning style. The residual value for visual learning style was 38, and kinaesthetic was -9. It means that the most preferred learning style was visual learning style that show almost half of respondents (47.3 percent) were visual learners followed by kinaesthetic learners (30 percent). Only 22.7 percent of the respondents were audio learners.

<table>
<thead>
<tr>
<th>TABLE I</th>
<th>LEARNING STYLES PREFERENCES</th>
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<tr>
<td></td>
<td>Observed N</td>
</tr>
<tr>
<td>Visual</td>
<td>129</td>
</tr>
<tr>
<td>Audio</td>
<td>62</td>
</tr>
<tr>
<td>Kinaesthetic</td>
<td>82</td>
</tr>
</tbody>
</table>

Meanwhile, Pearson Chi-square in Table 4 \( [x^2(2, \ N=273) = 2.699, \ p>.05] \) shows there was no significant difference in learning style preference between male and female students. The values of standardized residuals are small which show the difference between observed and expected frequency is also small.

<table>
<thead>
<tr>
<th>TABLE II</th>
<th>CROSS TABULATION BETWEEN LEARNING STYLES &amp; GENDER</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
</tr>
<tr>
<td>Visual</td>
<td>Count</td>
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<tr>
<td></td>
<td>33</td>
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<tr>
<td></td>
<td>96</td>
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<tr>
<td>Learning Style</td>
<td>Audio</td>
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<td>23</td>
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<td></td>
<td>39</td>
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<tr>
<td></td>
<td>62</td>
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<tr>
<td>Kinaesthetic</td>
<td>Count</td>
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<td>25</td>
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<td>57</td>
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<td>82</td>
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<tr>
<td>Total</td>
<td>Expected Count</td>
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</tbody>
</table>

Frequency analysis was conducted on items in Part C: Learning Process through Game. For the first item, 50.5 percent of the respondents agreed that game-based learning was an effective learning approach. It was in line with the result obtained in Part B where almost half of the respondents were visual learners. Games normally involve figures and graphics that attract students in the learning process. However, 41 percent were unsure whether game-based learning could help them to score in their final grade whereas 49.5 percent students agreed that game-based learning helped them in better understanding their lesson. Lastly, they also agreed that game tools motivated and attracted them to study.

V. CONCLUSION

Almost half of the respondents were visual learners, followed by kinaesthetic and audio learners. The study also shows no difference between learning styles and genders. According to the frequency distribution test, the students gave positive feedback on game-based learning. Thus, it is suggested that the learning process should be in an interactive ways to engage students’ interest in class. Future research may consider effective game tools for students. If it is applied in the classroom, the learning process will become lively and interesting.

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REFERENCES


Applying the Bloom’s Taxonomy in Instructional Games for Learning Grammar

Tuan Sarifah Aini Syed Ahmad1* & Anealka Aziz Hussin2

1 Academy of Language Studies, Universiti Teknologi MARA, Kuala Pilah Campus, Pekan Parit Tinggi, 72000 Kuala Pilah, Negeri Sembilan, Malaysia
2 Academy of Language Studies, 40450 Shah Alam, Selangor, Malaysia

Abstract— The Bloom’s Taxonomy is a distinguished framework applied in education. It covers three domains namely cognitive, affective and psychomotor. However, the most well-known one is the cognitive domain. It is helpful for guiding instructors to set learning objectives for educational courses and prepare standardised test items. Currently it is also applied in the design of instructional games since it is one of the educational features of games that can promote learning to takes place. The original taxonomy was established in 1956, and the cognitive domain of the taxonomy was revised in 2000 by Lorin and her colleagues with several modifications including the change in the names, arrangement of the levels and the number of dimensions from one to two. The paper aims to discuss the original and the revised Bloom’s Taxonomy, how the Bloom’s Taxonomy has been applied in various instructional games and how it can be applied in instructional games for learning grammar.

Keywords— Bloom’s Taxonomy, cognitive domain, instructional game, educational, grammar

I. INTRODUCTION

Instructional games are games used for educational purposes. They can be in the conventional or digital forms. In this paper, instructional games are defined as computer games that are played online or offline. There are many types of instructional games with different classifications. However, the traditional classification of entertainment games is useful to categorise instructional games. They include first-person shooter (shooting), role-playing, action, adventure, sports, racing and strategy (Rosman et al., 2013). The types of questions for language learning that can be used in instructional games are similar to conventional language practice such as multiple choice question (MCQ), gap-filling, matching items and rearranging items.

Instructional games have two features which are enjoyable and educational (Garris et al., 2002; Bellotti et al., 2013; Backlund & Hendrix, 2013; Boyle et al., 2016). The principal objective of playing instructional games is to promote learning, but it takes place in the enjoyable learning environment. Therefore, instructional games should have distinctive elements to ensure that students learn progressively when they are playing instructional games. Learning content in a course is presented from easy to difficult in term of the hierarchy of cognitive difficulty. This has been accomplished in education by the application of the Bloom’s Taxonomy especially in the development of curricula and assessments. Krathwohl (2002) states that after its introduction in 1956, it has commonly been used worldwide for classifying curricular objectives and test items with the aim to indicate the scope of the objectives and items across the various categories. Currently, it is prevalently utilised in the design of instructional games (Bellotti et al., 2013). Thus, the paper aims to discuss the original and revised Bloom’s Taxonomy, how the Bloom’s Taxonomy has been applied in various instructional games and how it can be applied in instructional games for learning grammar.

II. THE BLOOM’S TAXONOMY

The discussion on the Bloom’s taxonomy in the paper is only restricted to the cognitive domain. The original taxonomy
is referred as the Bloom’s Taxonomy and the revised one is referred as the Revised Bloom’s Taxonomy.

The levels in the Bloom’s Taxonomy are arranged from the simplest (1) to the most complex level (6) and their definition (Lorin et al., 2000) are as follow:

1. **Knowledge**: To remember or retrieve material that has been learnt before
2. **Comprehension**: To be able to grasp or construct meaning from material
3. **Application**: To be able to utilise learnt material, or to apply material in new and concrete settings
4. **Analysis**: To be able to classify or distinguish the components of material into its parts whereby its structure of organisation to aid the understanding of the material
5. **Synthesis**: To be able to put components together for building up a coherent or unique new whole
6. **Evaluation**: To be able to judge, check, and even critique the material value for a given objective

The Bloom’s Taxonomy is unidimensional, and is presented graphically in Fig. 1.

![Fig. 1 The original Bloom's Taxonomy](image)

The Bloom’s Taxonomy was discovered to have several weaknesses (Krathwohl, 2002). He claims that the Knowledge level is dual in nature, not like other levels. Therefore, Knowledge need to be separated as another dimension, and should not be placed in the cognitive dimension. Thus, Knowledge is not listed in the Revised Bloom’s Taxonomy, but it becomes another dimension. The Knowledge Dimension include four different categories: factual, conceptual, procedural, and metacognitive. As a result, the Revised Taxonomy has two dimensions: the knowledge dimension and the cognitive process dimension.

The Revised Bloom’s Taxonomy was introduced by Lorin et al. (2000). The overview of the taxonomy is presented by Krathwohl (2002). The levels arranged from the simplest level (1) to the most complex level (6) and their definition (Krathwohl, 2002) are as follow:

1. **Remember**: To retrieve appropriate knowledge from long-term memory
2. **Understand**: To determine what the meaning of instructional messages that come in the form of oral, written, and graphic communication
3. **Apply**: To perform or use a procedure in a given setting
4. **Analyse**: To break down material into components and distinguish how the components are associated to one another and to a whole structure or purpose.
5. **Evaluate**: To judge according to criteria and standards.
6. **Create**: Putting elements together to form a novel, coherent whole or make an original product.

Krathwohl (2002) states that by combining the two dimensions, a table called Taxonomy Table can be formed for categorizing objectives, activities, and assessments. He explains that the table enables the instructor to see the presentation of a course clearly, concisely and visually. He claims that a table with completed entries can help in the course evaluation to improve the curriculum planning and the instruction delivery. The Revised Bloom’s Taxonomy is presented in Fig. 2. It is modified from Munzenmaier & Rubin (2013, p. 22). The original source from Munzenmaier & Rubin is taken from the website of Iowa State University Center for Excellence in Learning and Teaching (http://www.celt.iastate.edu/pdfs-docs/teaching/RevisedBloomHandout.pdf).

![Fig. 2 The Revised Bloom's Taxonomy](image)

### III. HOW THE BLOOM’S TAXONOMY HAS BEEN APPLIED IN INSTRUCTIONAL GAMES

Buchanan, Wolanczyk, & Zinghini (2011) designed a few casual games using Flash for cyber security training based on six different levels of learning objectives as defined by Bloom’s Taxonomy in the curriculum. The types of games were puzzle (knowledge), shooting (comprehension), puzzle and problem solving (application) and capstone exercise (analysis, synthesis, evaluation). When designing the games, they took into account game interaction types that would support the basic objectives of learning for specific skills and tools. They believe that games essentially need to have a well-defined concept of specific learning objectives that can help the game designer during the development of initial concept. Thus, they state that the development of these games must integrate content, learning objectives of instructional design and engaging game design in order to enhance students’ participation in practicing and developing their skills.
Roslina, Rasimah, Hasiah, & Azizah (2011) designed two types of mini games (crossword and shooting) to learn Introductory Programming. The games were designed based on learning outcomes in the learning content that applied three lower levels of the Bloom’s Taxonomy (knowledge, comprehension and application) in order to address the pedagogical needs in the game design. Roslina et al. report that students were motivated to highly learn using the games. Students also had positive attitude toward using games and using games enhanced their cognitive development in order to think critically and challenge their understanding about the subject.

Antunes, Pacheco, & Giovanela (2012) researched on the development and implementation of instructional games teaching Chemistry at the higher education level. They used four levels of the Bloom’s Taxonomy (knowledge, comprehension, application, and evaluation) to construct questions in the games in order to include the educational requirements in the game design. It was proven in the study that this made the game useful in the reconstruction of students’ knowledge. Thus, they confirm that the game can be a practical pedagogical tool to promote learning in higher education.

Hwang, Sung, Hung, Yang, & Huang (2013) used a knowledge engineering approach to design instructional games on the knowledge classification of plants by differentiating a set of learning targets. The approach included the higher levels of the Revised Taxonomy (analyse, evaluate and create) as integrated part of instructional games by applying them as learning guidance in the game development. They claim that this can promote knowledge learning of different learning objectives in the interesting and meaningful way. They revealed that the games enhanced students’ learning attitudes and learning achievements. Moreover, students found the games enjoyable and provided realistic learning environments for developing skills and establishing knowledge.

Petit dit Dariel, Raby, Ravaut, & Rothan-Tondeur (2013) argue that instructional games need to apply learning theories and pedagogical approach in order to achieve specific learning objectives. Therefore, they combined the Bloom’s Taxonomy with Gagne’s Nine events of instructions to design instructional games for nursing that include knowledge: recalling information, comprehension: explaining and predicting, application: solving problems and using information, analysis: seeing patterns or concepts and understanding organisational structure, synthesis: building a structure, putting parts together to form a whole, particularly in creating a new meaning or structure, and evaluation: comparing and making judgements about the value of ideas or materials. They state that the pedagogical approach permit students to progress from the least complex level, and they move on to higher levels as their knowledge competencies increase. They explain that students could repeat the level if the learning objectives were not achieved. Thus, they express that students get the opportunity to develop new skills and competencies which are demanded in healthcare.

Söbke & Londong (2015) did not design any game, but they utilized an elementary social network game called Fliplife. Therefore, they conducted a study on Fliplife for over three years from May 2011 to September 2014. They state that although Fliplife is not a universal tool applicable for learning, they discovered that they could map out the learning outcomes that can be obtained in Fliplife using the Bloom’s taxonomy (cognition, motorskills and affective) and communicative. Hence, they argue that social network game are easily accessible and have limited game appeal, but the games may have pedagogical values.

Based on the studies (Buchanan et al., 2011; Roslina et al., 2011; Antunes et al., 2012; Hwang et al., 2013; Petit dit Dariel et al., 2013; Söbke & Londong, 2015), the application of the Bloom Taxonomy adds the educational values to instructional games by addressing the needs for pedagogical feature in order to promote learning. The application of the taxonomy in the instructional game design are as follow:

1. Using the learning contents that their difficulty levels have been arranged according the taxonomy (Buchanan et al., 2011)
2. Using learning outcomes in the learning content (Roslina et al., 2011)
3. Creating game levels (Antunes et al., 2012)
4. Integrating the taxonomy as learning guidance in designing instructional games (Hwang et al., 2013)
5. Combining the taxonomy with Gagne’s Nine events of Instruction to create a new meaning/ structure, and evaluation

It is evident that The Bloom’s Taxonomy and the Revised Bloom’s Taxonomy are used to align the game play with learning objectives. Whitten (2010) states that instructional games are principally designed to achieve specific learning objectives and learning is intended to take place, unlike entertainment games where learning is expected to occur incidentally. Therefore, she cautions that the main challenge in instructional game design is on how to ensure the objectives within games support learning objectives. She suggests that learning objectives, learning activities and game objectives need to be mapped in order to help the game designer to select a suitable type of games and interactions that can support learning objectives. For that reason, both taxonomies can be applied in the instructional game design to provide game objectives aligned with learning objectives that have long been prepared by using the taxonomies.

IV. HOW THE BLOOM’S TAXONOMY CAN BE APPLIED IN INSTRUCTIONAL GAMES FOR LEARNING GRAMMAR

Learning grammar is considered the most boring part of language learning (Jalali & Dousti, 2012). Instructional games have the potential to break the dullness of conventional classroom routines (Mukundan, Kalajahi, & Naghipour, 2014). Therefore, providing instructional games for learning grammar is essential in language learning. The application of the Bloom’s Taxonomy in instructional game design for
learning grammar is seen crucial to promote effective learning. Thus, how the Bloom’s Taxonomy can be applied in instructional games for learning grammar needs to be explored.

The Revised Bloom’s Taxonomy is appropriate to be applied in designing instructional games for learning grammar. It is because of two reasons (Munzenmaier & Rubin, 2013). First, it has been refocused the original taxonomy in the accountable programme development, the curriculum alignment and the assessment design. Second, it is has been updated based on the understanding of new learning and methods. Thus, it is suitable to be applied in the design of instructional games in learning grammar as learning occurs in the new environment that is online, not in the conventional environment that is classroom, and it provides a clearer classification of levels of cognitive difficulty.

Munzenmaier & Rubin (2013, p.29) list various action verbs for digital learning activities based on the Revised Taxonomy. They are shown in the following table:

<table>
<thead>
<tr>
<th>Level</th>
<th>Action Verbs</th>
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<tbody>
<tr>
<td>1 Remember</td>
<td>define, describe, find, identify, label, list, locate, match, name, outline, point to, select, show, state, study, what, when, where, which, who, why</td>
</tr>
<tr>
<td>2 Understand</td>
<td>compare, conclude, contrast, define, demonstrate, describe, estimate, explain, identify, interpret, paraphrase, predict, retell, rewrite, summarize, understand</td>
</tr>
<tr>
<td>3 Apply</td>
<td>adapt, choose, construct, determine, develop, draw, illustrate, modify, organize, practice, predict, present, produce, select, show, sketch, solve, respond</td>
</tr>
<tr>
<td>4 Analyse</td>
<td>analyze, ask, classify, compare, contrast, correlate, diagram, differentiate, edit, examine, explain, group, identify, infer, monitor, observe, order, outline, reason, review, select, sequence, sort, survey</td>
</tr>
<tr>
<td>5 Evaluate</td>
<td>assess, choose, compare, conclude, consider, construct, contrast, critique, determine, estimate, evaluate, explain, interpret, justify, prioritize, prove, recommend, relate, summarize, support, test, verify</td>
</tr>
<tr>
<td>6 Create</td>
<td>arrange, collect, combine, compose, connect, construct, coordinate, create, design, develop, explain, formulate, frame, gather, generate, graph, imagine, incorporate, integrate, interact, invent, judge, make, model, organize, plan, portray, produce, publish, rearrange, refine, reorganize, revise, rewrite, summarize, synthesize, test, write</td>
</tr>
</tbody>
</table>

It is important to select the precise action verbs when designing instructional games for learning grammar. This is due to the selected action verbs can determine suitable learning activities and help in aligning learning activities with the game objectives. This is essential to promote effective learning as proposed by Whitton (2010). Fig. 3 illustrates the proposed action verbs selected from Munzenmaier & Rubin (2013, p.29) and types of instructional games that are suitable for learning grammar are proposed. This may help game designers to maintain consistency and accuracy in preparing learning activities in instructional games for learning grammar. The chart is named as Action Verbs for Instructional Games: Grammar (AVIG: Grammar). It is proposed as follow:

![Fig. 3 Action Verb for Instructional Games: Grammar (AVIG:Grammar)](Image)

**V. CONCLUSION**

The Revised Bloom’s Taxonomy is suitable to be applied in the design of instructional games in learning grammar as learning occurs in the new environment that is not in the conventional classroom and it provides a clearer classification of levels of cognitive difficulty. The proposed Action Verb for Instructional Games: Grammar (AVIG:Grammar) is hoped to help game designers in creating effective instructional games for learning grammar.

**REFERENCES**


