Feasibility Study on the Integrated Learning Method

Nazrie Bin Baini, Anding Nyuak & Ng Boon Ding

JTMK, Politeknik Kuching Sarawak, Km 22 Jalan Matang,
93050 Kuching Sarawak, Malaysia

nazrie@poliku.edu.my

ABSTRACT

This paper presented the feasibility study on the integrated learning method. Knowledge Hunting is a method of teaching and learning that is able to give the real life experience for student to gain valuable information. Knowledge Hunting is the integration of real life gamification method which promotes experiential learning. This method is invented by applying the principle of learning centred through experience. The application of this method in the teaching and learning is able to improve the interaction rate of student in their learning process, and at the same time, create a more interactive environment for student to gain information related to their learning session. Thus, the teaching and learning will give a better impact for student to improve their knowledge and also to encourage student to develop creative and critical idea.

Key Words: knowledge hunting, gamification, experiential learning, integrated learning

1.0 INTRODUCTION

Knowledge Hunting is a type of integrated learning method where it integrates the gamification elements into the teaching and learning session. This method delivers knowledge and information through a set of gaming instruction while giving the real life experience for student to play with. 21th century learning has is a new era where the new generation is greatly exposed with all the high end technology specifically the smart phone, tablet and etc. According to Teresa (2015), Generation Z nowadays prefers to learn in an environment that required skills that deal with the real life problems. Thus, the olden time *'chalk and talk'* method is no longer effective in the current environment.

Therefore, the design of the Knowledge Hunting method eventually focusses on three main objectives:
   i.   To improve the rate of interaction of students with instructor in the teaching and learning process
   ii. To create a learning environment that inculcate student's interest in obtaining information
   iii. To create teamwork and improve student's effective communication skills and at the same time, improve their knowledge in that particular subject.

2.0 LITERATURE REVIEW

Knowledge hunting incorporates the elements of game to engage students to support traditional learning and classroom activities. This game approach is assumed to enhance student's participation, engagement and enjoyment in which the outcome to improve student's interest in continuing to practice the strategies to achieve the goal of the game (Roscoe, R., et al 2014). Proske, A et al (2014) found that game based practice is significantly more interesting and engaging compared to question based practice. Inclusion of game features into the traditional classroom teaching method has become increasingly widespread adoption among the educators to encourage deep and meaningful interactions among students with the content of the game (Jacovina, M. E., et al 2016).

Some of the characteristics of game based learning approach are that game provides interactive environment, ongoing feedback, retain and grab attention, have appropriate and adaptive levels of challenge (Shute and Ke 2012). Thus, those above are the reasons why more educators adopt game in their classroom rather than just rely on 'chalk and talk' method. Dindar (2018), described that digital game-based learning (DGBL) able to help students in taking initiative for their learning by inculcate of students' skills in analysing, synthesizing, evaluating, and performing higher-order thinking skills, such as critical thinking and problem-solving. Liao et al (2019) integrates the use of DGBL and video in their

---

research to get insight of students' learning behaviour patterns. The finding suggests that video and DGBL provides necessary conceptual understanding and better learning achievement.

3.0   DATA COLLECTION AND METHODOLOGY

In order to test on the feasibility of the application of Knowledge Hunting method in the teaching and learning session, a pilot test is carried out among students that enrol in the Inventive Problem Solving subjects. This is a partial theoretical and practical subject, where students have to understand the concept of the theory before they can carry out the hands-on practice on the subject.

Figure 1.0: Interface of HP Reveal desktop version using website.

The methodology of the application of knowledge hunting is categorized into three stages: The preparation stage, first round and final round. During the first round of the game, there are a few topics related to the syllabus of the subjects were distributed to students. The questions and answers were prepared and attach to a given checkpoints accordingly. Each students form in different groups was required to register an account for 'HP Reveal' in order to participate in this learning method. *HP Reveal* can be access using website or mobile by installing *'HP Reveal'* application in smartphone. Interface of '*HP Reveal'* for desktop version as shown in Figure 1.0.

Lecturer will act as a facilitator for the whole process in completing the session. The facilitator has to set timer for each checkpoint to avoid delay of time.

At the first round of the game, each group of students have to move towards the checkpoints that are set by the facilitator earlier. Students have to scan or flash their '*HP Reveal'* applications towards the hints that are hidden around the checkpoint. At each checkpoint, the group of students are required to solve the problem given according to the hints within the timer set earlier. The group of students that can solve the problem correctly within the timeframe will be considered as winner for the first round. Checkpoint image has to be set into lecturer's account in *HP Reveal* as shown in Figure 2.0.
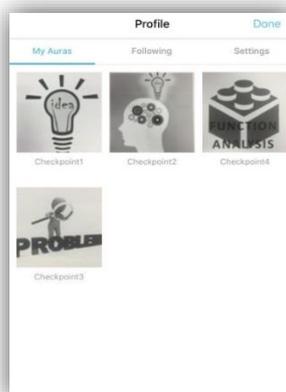

Figure 2.0: Image for each checkpoint is set into *HP Reveal* account.

At the final round of the game, each group were given 10 minutes to discuss on the problem solved before proceed with the following activity at the next check point. At the final round, each group have to appoint two representatives from their group as speakers to present their findings to other group, time given for the presentation is 5-7 minutes. After the presentation, question and answer session is opened to other group and the group members presenting have to answer the question. This is where the exchange of idea and brainstorming process occur. Facilitator also acts as moderator which guides students if the students answer the questions incorrectly.

In this research, there are three classes of students involve in this pilot test, and a sample of 40 students are randomly chosen to answer a set of questionnaires. The questionnaire is design to capture four categories of information, namely (i) The effectiveness of the knowledge delivery, (ii) Interactive Learning, (iii) Student Study Interest and (iv) Knowledge Application. The analysis result is as discuss in the following section.

4.0   FEASIBILITY STUDY

The main focus of this research is to evaluate the feasibility of the learning method. This involved the students from semester 4 of Politeknik Kuching Sarawak that enrolled in the Inventive Problem solving course. This section discusses the finds on the feasibility study of the integrated learning method. The survey done is based on the Likert Scale 1 – 5 (Strongly Agree, Somewhat Agree, Neither Agree nor Disagree and Strongly Disagree).

A random of 40 students was chosen to fill up the survey form out of the 3 classes of students (95 totals of them).

Table 1.0 responds for the effectiveness of knowledge delivery

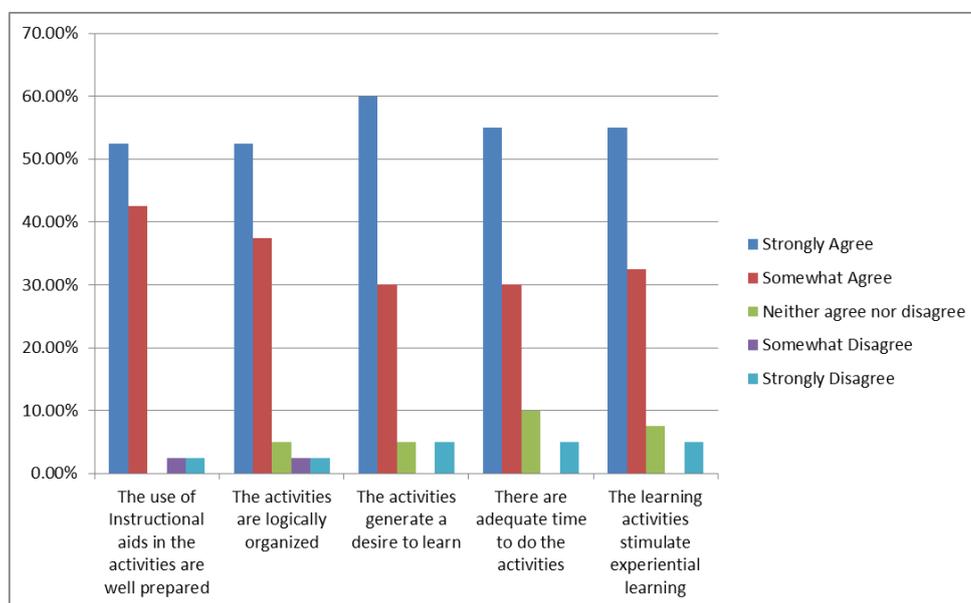| Questions	Strongly Agree	Somewhat Agree	Neither agree nor disagree	Somewhat Disagree	Strongly Disagree
The use of Instructional aids in the activities are well prepared	52.50%	42.50%	0.00%	2.50%	2.50%
The activities are logically organized	52.50%	37.50%	5.00%	2.50%	2.50%
The activities generate a desire to learn	60.00%	30.00%	5.00%	0.00%	5.00%
There are adequate time to do the activities	55.00%	30.00%	10.00%	0.00%	5.00%
The learning activities stimulate experiential learning	55.00%	32.50%	7.50%	0.00%	5.00%

Figure 3.0: Responds for the effectiveness of knowledge delivery

Table 1.0 and Figure 3.0 illustrate the data of the responds for the effectiveness of knowledge delivery. There are 52.5% students strongly agreed that the used of instructional aids in the activities are well prepared, 42.4% of the students somewhat agreed that the use of instructional aids in the activities are well prepared and 2.5% somewhat disagreed and strongly disagreed that the use of instructional aids in the activities are well prepared. 52.25% of the students strongly agreed that the activities are logically organized, 37.5% of the students somewhat agree that the activities are logically organized, 5% of the students neither agreed nor disagreed that the activities are logically organized.

2.5% students somewhat disagreed and strongly disagreed that the activities are logically organized. There are 60% of students strongly agreed that there are adequate time to do the activities, 30% somewhat agreed that the activities raise their desire to learn, 5% of the students neither agreed nor disagreed and strongly disagreed that this activity generate a desire to learn. 55% of students strongly agreed that there are sufficient time to do the activities, 30% of them somewhat agreed that there is enough time for them to complete the activities. There are 10% of students who neither agreed nor disagreed that there are adequate time to do the activities and 5% of the students strongly disagreed that there are adequate time to do the activities. There are 55% of students strongly agreed that the learning activities stimulate experiential learning, 32.3% of students somewhat agreed that the learning activities stimulate experiential learning, 7.5% neither agreed nor disagreed that the learning activities stimulate experiential learning and 5% strongly disagreed that the learning activities stimulate experiential learning.

Table 2.0 respond for the interactive learning

| Questions	Strongly Agree	Somewhat Agree	Neither agree nor disagree	Somewhat Disagree	Strongly Disagree
The activities are fun.	60.00%	32.50%	2.50%	0.00%	5.00%
The activities designed are more effective than the conventional method	45.00%	45.00%	5.00%	0.00%	5.00%
The activities involved all the students in the hands-on exercise.	52.50%	37.50%	5.00%	0.00%	5.00%
The activities help me to strengthen the problem solving and critical thinking skills	55.00%	35.00%	5.00%	0.00%	5.00%
The activities gave me flexibility to gain more knowledge of the course	52.50%	37.50%	5.00%	0.00%	5.00%
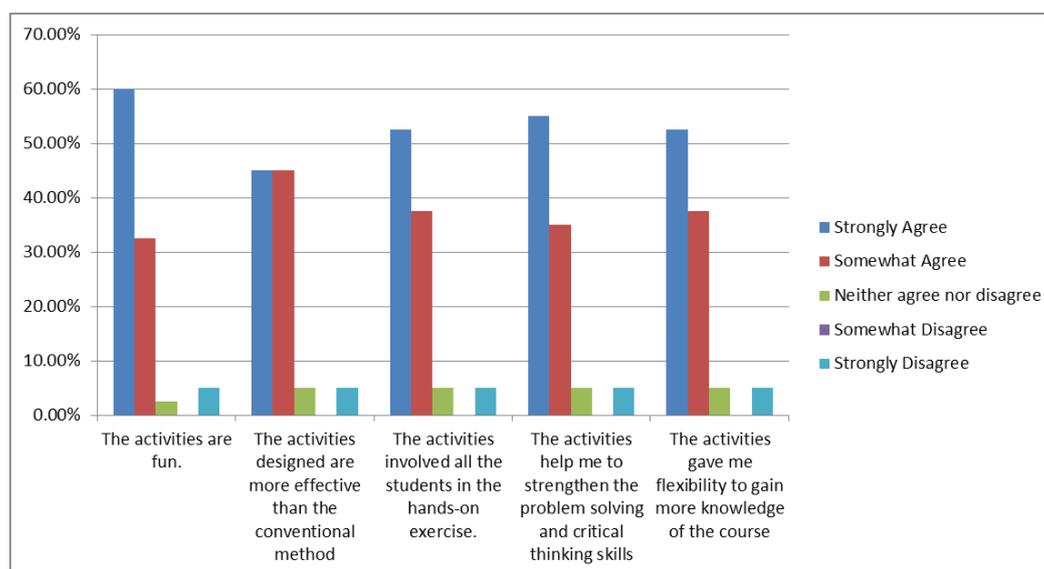
Figure 4.0: Respond for the interactive learning

Table 2.0 and Figure 4.0 show the respond for the interactive learning. 60% students agreed that the activities are fun, 32.5% somewhat agreed, 2.5% neither agreed nor disagreed and 5% of students strongly disagreed that the activities are fun. 45% of the students strongly agreed and somewhat agreed that that the activities designed are more effective than the conventional method, 5% of the students neither agreed nor disagreed and strongly disagreed that the activities designed are more effective than the conventional method. 52.5% of the students strongly agreed that the activities involved all the students in the hands-on exercise, 37.5% students somewhat agreed that the activities involved all the students in the hands-on exercise, 5% of the students strongly disagreed that the activities involved all the students in the hands-on exercise. 55% students strongly agreed that the activities help them to strengthen the problem solving and critical thinking skills, 35% of the students somewhat agreed that the activities give them flexibility to gain extra knowledge of the course, 5% of the students neither agreed nor disagreed and strongly disagreed that the activities help them to strengthen their problem solving and critical thinking skills. 52.5% of the students strongly agreed that the activities gave them flexibility to gain more knowledge of the course, 37.5% of the students somewhat agreed that the activities gave them flexibility to gain more knowledge of the course, 5% of the students neither agreed nor disagreed and strongly disagreed that the activities gave them flexibility to gain more knowledge of the course.

Table 3.0 responds for the student study interest

| Questions	Strongly Agree	Somewhat Agree	Neither agree nor disagree	Somewhat Disagree	Strongly Disagree
The activities raise my interest in the subject	47.50%	40.00%	5.00%	5.00%	2.50%
The activities keep me focus in the topic in the course syllabus	40.00%	47.50%	5.00%	5.00%	2.50%
The method of teaching raise the motivational level of my interest in this course	52.50%	30.00%	12.50%	0.00%	5.00%
The involvement of discussion among group members increase my learning desire	50.00%	35.00%	10.00%	0.00%	5.00%
The activities create interest in learning to enhance my understanding in the course topic	47.50%	37.50%	10.00%	0.00%	5.00%
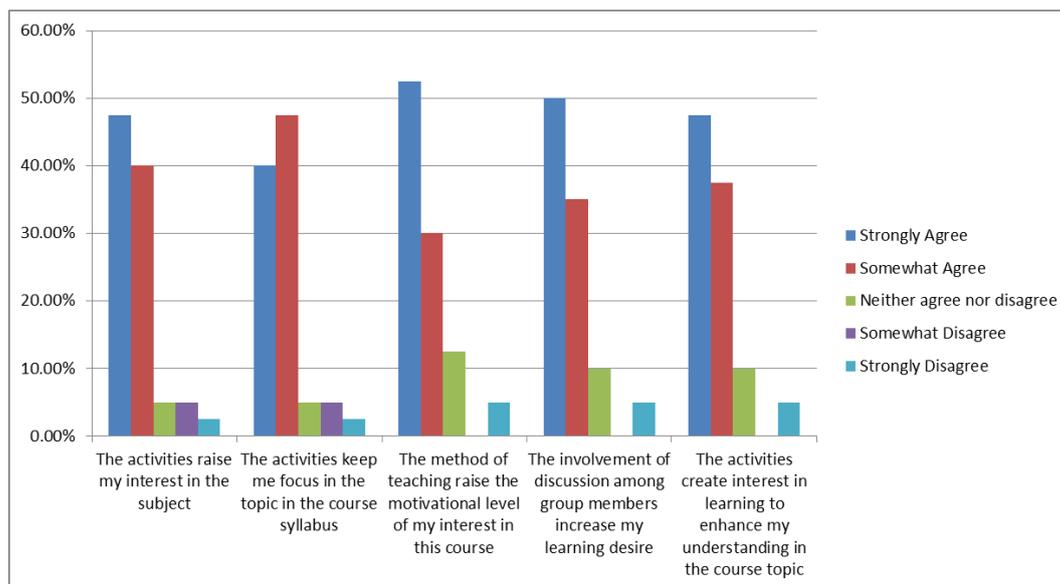
Figure 5.0: Responds for the student study interest

There are 47.5% students strongly agreed that the activities raise their interest in the subject, 40% of the students somewhat agreed that the activities raise their interest in the subject, 5% of the students neither agreed nor disagreed and somewhat disagreed that the activities raise their interest in their subject and 2.5% of the students strongly disagreed that the activities raise their interest in the subject. 40.0% of the students strongly agreed that the activities keep them focus in the topics in the course syllabus, 47.5% of the students somewhat agreed that the activities keep them focus in the topic in the course syllabus, 5% of the students neither agreed nor disagreed and somewhat disagreed that the activities keep them focus in the topic in the course syllabus and 2.5% of the students strongly disagreed that the activities keep them focus in the topic in the course syllabus. 52.5% of the students strongly agreed that the knowledge hunting raise the motivational level of their interest in this course.30% of the students somewhat agreed that this teaching method raise the motivational level of interest in that particular course, 12.5% of the students neither agreed nor disagreed that this teaching method raise the motivational level of interest in the course, and only 5% of students disagreed that the method of teaching raise the motivational level of their interest in the course. 50% of students strongly agreed that the involvement of discussion among their group members increase their learning desire, 35% of the students somewhat disagree, 10% of the students neither agreed nor disagreed and 5% of the students strongly disagreed. There are 47.5% students strongly agreed that the activities create interest in learning to enhance their understanding in the course topic, 37.5% somewhat agreed, 10% neither agreed nor disagreed and 5% strongly disagreed.

Table 4.0 responds for the knowledge application

| Questions	Strongly Agree	Somewhat Agree	Neither agree nor disagree	Somewhat Disagree	Strongly Disagree
The information presented in the activities useful for my future undertaking	45.00%	47.50%	2.50%	2.50%	2.50%
The activities help me to have a better understanding on the topic learnt.	50.00%	40.00%	5.00%	0.00%	5.00%
The activities are based on current, up-to-date information	57.50%	37.50%	0.00%	0.00%	5.00%
The activities addressed the topic identified in the course	47.50%	42.50%	5.00%	0.00%	5.00%
The educational materials and content were easy to understand.	52.50%	37.50%	5.00%	0.00%	5.00%
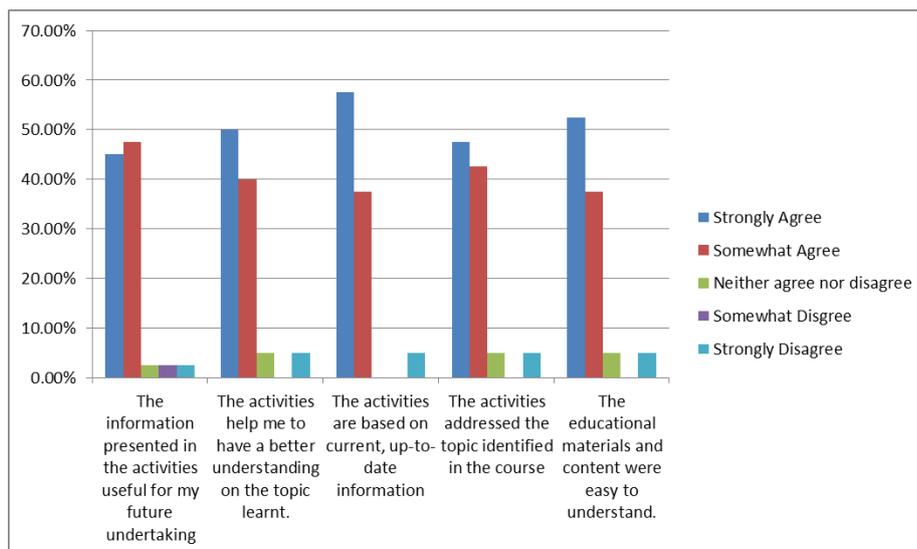
Figure 6.0: Responds for the knowledge application

Table 4.0 and Figure 6.0 show the data of the responds for the knowledge application. This section is trying to find out the effectiveness of knowledge delivery. 45% of the students agreed that the information presented in the activities are useful for their future undertaking, 47.5% of the students somewhat agreed that the information are useful with their future undertaking, 2.5% of the students are neither agreed nor disagreed, somewhat disagreed and strongly disagreed with this element respectively. 50% of the students agreed that the activities of the knowledge hunting help them to understand better on the topic they learnt, 40% of the students somewhat agreed that the activities help them to understand better topic, 5% of the students neither agreed nor disagreed and disagreed that the activities helps them to understand better the topic learnt in their subject. 57.5% students strongly agreed that the activities are based on the up to date information, 37.5% of the students somewhat agreed that the information are up-to-date and there are 5% of students disagreed that the activities are based on current, up-to-date information. There are 47.5% of students strongly agreed that the activities addressed the topic identified in the course, 42.5% of the students somewhat agreed that the activities are based on the topic identified in the course, 5% of the students neither agreed nor disagreed and strongly disagreed that the activities are aligned with the topic identified in the course. 52.5% students strongly agreed that the educational material and content were easy to understand. 37.5% students somewhat agreed that the educational materials and content were easy to understand, 5% students neither agreed nor disagreed and strongly disagreed that the educational materials and content were easy to understand.

5.0 DISCUSSION

From the result above, it is proven that this learning method is still acceptable by majority of the students who already adopted the learning method. Most of the students agreed that this learning method give an effective way of delivering knowledge in the subject. Overall, the students agreed that knowledge hunting is an interactive way of learning, where the activities are fun and designed in order to help them to improve their problem solving and critical thinking skills. Most of the students also agreed that knowledge hunting is able to raise their study interest. They agreed that the activities in this teaching and learning method motivate them to learn this subject and enhance their understanding in the course topic. Most of the students also agreed that this learning method applies knowledge effectively. The materials and also activities are aligned with current up-to-date information.

Although majority of the students think that this learning method is feasible to be carried out in future, but, there are still improvement to be done. Prior implementation of this method we have found that this integrated learning method can be enhanced by providing the tools kit for the ease of implementation process. Tools kit includes the instruction guideline, template of question and related tool that necessary. Using proper tools kit will provide the systematic and complete set of this method. This will also increase the aesthetics value and hence create the higher motivational factor for student to gain knowledge.

6.0 CONCLUSION

In summary, the study on the integrated learning method shows a good degree of feasibility for the integrated learning method for teaching purpose. The study proves that the increase of interaction rate student with lecturer will help student to have better understanding related to syllabus. This feasibility study also prove that the integrated learning method help to promotes teamwork among student's and can help improve student's communication skill. Hence, their knowledge in certain particular subject can be improved.

REFERENCES

Denham, A. R., Mayben, R., & Boman, T. (2016). Integrating game-based learning initiative: Increasing the usage of game-based learning within K-12 classrooms through professional learning groups. TechTrends, 60(1), 70-76.

Dindar, M. (2018). An empirical study on gender, video game play, academic success and complex problem solving skills. Computers & Education, 125, 39-52.

Jacovina, M. E., Jackson, G. T., Snow, E. L., & McNamara, D. S. (2016, June). Timing game-based practice in a reading comprehension strategy tutor. In International Conference on Intelligent Tutoring Systems (pp. 59-68). Springer, Cham.

Liao, C. W., Chen, C. H., & Shih, S. J. (2019). The interactivity of video and collaboration for learning achievement, intrinsic motivation, cognitive load, and behavior patterns in a digital game-based learning environment. Computers & Education, 133, 43-55.

Proske, A., Roscoe, R. D., & McNamara, D. S. (2014). Game-based practice versus traditional practice in computer-based writing strategy training: effects on motivation and achievement. Educational Technology Research and Development, 62(5), 481-505.

Roscoe, R., Brandon, R., Snow, E. L., & McNamara, D. S. (2014). Game-based writing strategy practice with the Writing Pal. In Exploring technology for writing and writing instruction(pp. 1-20). IGI Global.

Shute, V. J., & Ke, F. (2012). Games, learning, and assessment. In Assessment in game-based learning (pp. 43-58). Springer, New York, NY.

Teresa B. (2015). 5 Ways The workplace Needs To Change to Get The Most out Of Generation Z. Retrieved from http://www.fastcoexist.com/3049848/5-ways-the-workplaceneeds-to-change-to-get-the-most-out-of-generation-z