AN ENHANCEMENT OF INQUIRY-BASED LEARNING THROUGH THE INCORPORATION OF GENIUS HOUR (GH)

Peningkatan Pembelajaran Berasaskan Inkuiri Melalui Aplikasi Genius Hour

Chiam Sun May, Ph.D. Ronald Yusri Batahong, Ph.D. Low Kee Sun & Tan Cho Chiew
Institut Pendidikan Guru Kampus Kent
chiam26-33@epembelajaran.edu.my

ABSTRACT

This research studies if Inquiry-Based Learning can be enhanced through Genius Hour (GH) in one of the courses in IPG. It explored how GH has provided liberty to the PPISMP students in their learning, in terms of time space, topics chosen and mode of collaboration. We investigated how this approach enabled students to acquire deep learning, which was an authentic experience for them, and studied what were the factors that hindered them from collaborating with others. Five students were selected at random as respondents of this study, after a lecture on e-Learning was carried out using 5E instructional model. This study used survey as the instrument to collect data. It was administered through Google Form. The instrument has two sections where Section A collected data on the demographic while Section B consisted of six open-ended items, requiring their opinions on GH. The respondents agreed that GH has provided them the freedom in their learning, has given time space, has made them very comfortable to collaborate with their peers after they had ice breaking with their peers. GH has led them to acquire deep learning and other areas. However, they expressed that they need more time to explore other areas and they do not like the unstructured development of the exploration. They faced a few challenges as they have heavy schedules every day, fully occupied with activities and other tasks most of the time. They need to acquire the ability to manage their time well, multi-tasking skills and good internet supply.

Keywords*: Inquiry-based learning, genius hour, and e-learning*

ABSTRAK

Kajian ini mengkaji sama ada Pembelajaran Berasaskan Inkuiri boleh dipertingkatkan melalui Genius Hour (GH) dalam salah satu kursus yang ditawarkan di IPG. Pembelajaran Berasaskan Inkuiri meneroka bagaimana GH telah memberikan kebebasan kepada pelajar PPISMP dalam pembelajaran mereka dari segi ruang masa, topik yang dipilih dan cara kerjasama. Kami menyiasat bagaimana pendekatan ini membolehkan pelajar memperoleh pembelajaran mendalam yang merupakan pengalaman autentik kepada mereka dan mengkaji faktor yang menghalang mereka untuk bekerjasama dengan rakan sebaya. Lima orang pelajar telah dipilih secara rawak sebagai responden kajian, selepas kuliah e-pembelajaran dijalankan menggunakan model instruksional 5E. Kajian ini menggunakan tinjauan sebagai instrumen untuk mengumpul data. Pembelajaran Berasaskan Inkuiri telah ditadbir melalui Borang Google. Instrumen ini mempunyai dua bahagian di mana Bahagian A mengumpul data tentang demografi manakala Bahagian B terdiri daripada enam item terbuka, memerlukan pendapat mereka tentang GH. Responden bersetuju bahawa GH telah memberi mereka kebebasan dalam pembelajaran mereka, mereka diberi ruang masa, sangat selesa untuk berkolaboratif dengan rakan-rakan mereka selepas sesi suai kenal bersama rakan-rakan mereka. GH telah membolehkan mereka memperoleh pembelajaran mendalam dan bidang lain. Walau bagaimanapun, mereka menyatakan bahawa mereka memerlukan lebih masa untuk meneroka bidang lain dan mereka tidak selesa dengan perkembangan penerokaan yang tidak berstruktur. Mereka menghadapi beberapa cabaran kerana mereka mempunyai jadual yang padat setiap hari, selalu sibuk dengan pelbagai aktiviti dan tugas lain. Mereka perlu memperoleh keupayaan pengurusan masa yang baik, kemahiran melakukan tugasan serentak dan bekalan internet yang baik.

Kata kunci: *pembelajaran berasaskan inkuiri, genius hour & e-pembelajaran*

INTRODUCTION

Genius Hour (GH) is an approach which can be applied in teaching and learning. Teacher guides students to make decision based on their choice of interests, existing background knowledge, and curiosity to decide what they wish to learn in depth. GH is not highly organized, informal, and is also less standardized as compared to traditional learning, and it gears to open-ended learning that emphasizes much on students' own self-direction in learning, passion-based learning, inquiry-based learning, autonomy, and sense of belonging. Students are given the space, necessary tools, and sufficient time to create their own authentic learning processes and experiences (Keslerscience, 2022).

As lectures who serve in teacher training institute (Institut Pendidikan Guru, IPG), we studied the course information (maklumat kursus, MK) before we plan our semester teaching schedule (rancangan pengajaran semester, LAM-PT03-01). In this study, we referred to one of the courses, Trends and Issues in Science Education (SCES1134) which was offered in semester 2 to the students from the Bachelor of Teaching Preparatory Programme (Program Persediaan Ijazah Sarjana Muda Perguruan, PPISMP).

This course discusses trends and issues in science and education in Malaysia with reference to the Philosophy of Science, Philosophy of Education, and Philosophy of National Science Education through the current and latest reports in science education. This course also further discusses the current and future trends and issues related to science education locally in Malaysia as well as globally. It aims at enabling students to expand their knowledge and understanding in the trends and issues pertaining to science education to become a novice teacher who can function as an implementer in line with current developments. The total interaction hours is 140 hours where 45 hours are face-to-face, and 95 hours are non-face-to-face in the form of e-learning and independent learning (Maklumat Kursus SCES1134, 2021). We concluded that it covers a wide range of areas to explore for our students to acquire the learning outcomes as stipulated in the *Maklumat Kursus* (MK).

Meaningful learning is one aspect of the 21st century learning which places a lot of emphasis on the elements of collaboration, creativity, communication, critical thinking, and values. Capacity New Meaningful Learning (NPDL, KPPB) has brought changes in pedagogies which include teaching approaches, holistic assessment and provides authentic learning experience to learning. We concluded that our best practises need to foster deep learning among our students so that they could contribute to the common good and to address global challenges in complex world (Fullan and Langworthy, 2013).

LITERATURE REVIEW

In contrast to the traditional classroom learning where a teacher explains facts and knowledge about a subject, inquiry-based learning (IBL) is an educational strategy where students are guided to follow the methods and practices which are similar to professional scientists, and to construct knowledge on their own. IBL has a few prominent benefits such as improves students' engagement, improves students' knowledge retention, and assists students to acquire deeper understanding on a selected topic (Abdi, 2014).

Bauld (2022) claim that IBL begins with the teacher. Even though students are responsible for their own learning during an inquiry-based lessons, teachers provide very crucial guides to assure that learning among students take place. The amount of guidance and facilitation provided by a teacher may vary depending on the needs of the students. The roles of the teachers include introducing topics and encouraging questioning, and modelling to spark curiosity among the students. Teachers need to promote and to guide the focused dialogue and discussion among students who attempt to answer questions, to debate and to justify their explanations. The teacher is to lead students and to facilitate

small-group discussions and whole-classroom discussions. At the same time, teachers need to pay attention to discussions and to clarify misconceptions. Teachers will chip in information, to further develop students' understanding of the topics chosen. A good IBL brings students' experiences into the discussion and is able to make learning relevant to the students.

Genius Hour (GH) is an approach of learning, where students are guided by their own interests, background knowledge, and curiosity to learn. It is less organized, less formal, and less standardized as compared to traditional learning. It is regarded as 'open-ended' learning, where it is characterized by students' self-direction, passion-based learning, inquiry, and autonomy. They are given the liberty and space of time to create something personal and compelling on their own. GH has a few unique characteristics such as teachers empower students by connecting them with the ideas and content, provide them opportunities, allow them to choose topics that they want to learn more, and allow them to explore based on their curiosity through inquiry and deep learning. GH provides authentic learning experiences, embraces new challenges, sparks creativity, is purpose-driven, provides rooms for collaboration and social interaction. Teachthought (2022) mentioned that GH should be driven by students' own curiosity, and teachers are advised to use clear driving questions to guide the students. In the process of learning, it should involve research or clear new learning / new knowledge and experience to the students. To increase the sense of belongings among the students, the products of students' work are advised to be shared / published.

OBJECTIVE OF THE STUDY

This study has a few objectives. It intended to explore how GH has provided liberty to the PPISMP students in their learning, in terms of time space, topics chosen and mode of collaboration. It also examined how this approach enabled students to acquire deep learning which is authentic experiences for them. The study also studied the factors that hindered the students from collaborating with others.

There are six research questions in this study.

1. Did GH provide the freedom to the PPISMP students in their learning?
a. How did GH provide freedom to the PPISMP students in their learning?

2. Did GH provide time space to the PPISMP students in their learning?
a. How did GH provide time space to the PPISMP students in learning?

3. Did GH provide the freedom to the PPISMP students to pick topics that they are interested to find out more?
a. How did GH provide freedom to the PPISMP students to pick topics that they are interested to find out more?

4. Did GH make the PPISMP students feel comfortable during collaboration with their peers in learning?
a. How did GH provide comfort to the PPISMP students during collaboration with their peers in learning?

5. Did GH enabled the PPISMP students to acquire deep learning?
a. How did GH enable the PPISMP students to acquire deep learning?

6. Were there any factors that hindered the PPISMP students from collaborating with their peers?
a. How did these factors hinder the PPISMP students from collaborating with their peers?

SIGNIFICANCE OF THE STUDY

This study applied the same principles of GH in our classroom. It helped us to explore how much time needed to be provided for the students to work on their passion projects. It also helped us to understand our students better when they were challenged to explore their project and what they wanted to learn about. Throughout the process, we facilitated the student projects to ensure that they were on task. This trained us to become better facilitators, to understand the authentic needs and to apply GH specially according to the context of the course.

LIMITATION

There were five respondents from PPISMP Science Option students from one IPG from Sabah Zone. They were required to respond after they had completed one task. Therefore, this study only applied on this group of students from this IPG for one of the tasks of this course.

METHODOLOGY

This study has taken the topic on the current and latest trends in strategy and technological development as an activity for GH. We have chosen e-learning as a specific topic for our students to explore further and planned the lesson using 5E instructional model. The lesson started off with a brief introduction on E-learning to keep students engaged. We showed them some infographics on E-learning with the intention to spark their curiosity and imagination. Some of the examples of infographics are as shown in Figure 1.

Figure 1

Examples of Infographic

(courtesy from https://www.google.com/)

Students were facilitated to talk about e-learning, such as their personal experiences, what they had learnt from E-learning Pandemic Covid-19, how they reduced their problems and obstacles. The engagement phase ended with a brief conclusion from us and limited input on E-learning was given.

During the exploration phase, students were asked to form groups of three persons. Each group was required to make decisions on which topic they would like to explore from the sub-topic on Digital learning (DL), Gamification (GF), Virtual Reality (VR), Mobile Learning (ML). They were given two days to explore the topic that they had agreed in group, at a pace and time they agreed among the group members, and to decide on how they would like to share with their peers from other groups.

In the explanation phase, students performed a gallery walk. Each group member was encouraged to share their work (GH group work). Peers were encouraged to pose HOTS questions /

constructive comments to their peers. Each group was required to explain / to justify their findings / opinions to their peers if required.

The next phase is the elaborate phase. During this phase, each individual student was asked what their field of expertise were during the group interaction. They were asked to decide on what they wanted to share with their peers, and they were given two days to upload their sharing in Google Drive.

In the evaluation phase, students were asked to perform self-reflection and tweet in twitter. Self-reflection was meant to provide space for them to develop their skills and to review their effectiveness, and to decide whether there is a better way of doing the same task in the future. Tweeting their reflection in twitter was intended to help them improve their ability to summarize in written form, and to get engaged with social media in a healthy way.

This study used survey as the instrument to collect data. It was administered to the five PPISMP students who were randomly selected. They responded to the survey through Google Form. The instrument consisted of two sections where Section A collected data on the demographic. Section B consisted of six open-ended items, requiring their opinions on GH (refer appendix A). The demographic of the respondents are in Table 1.

Table 1

Demography of the Respondents

Option	No of Respondents
Science 1	3
Science 2	2

FINDINGS

All respondents agreed that GH has provided them the freedom in their learning. They were happy that they were given the liberty to pick any topic, and in any scale to explore further.

Yes, there are so many things for me to learn when it comes to E-Learning. I am free to pick any small topic that I am keen to explore more. - R1

Yes. I can choose what I like to find out more. – R2

Ya. I am not given any specific instruction on what to explore. – R3

Yes. I pick what I like. -R4

I decide my own. -R5

Respondents also agreed that they were given time space in their learning. They were given the freedom to decide how much time they needed to complete the task.

Yes, the lecturer discussed with us how much time we need to complete our task. -R1

We were asked to suggest the time space that we need. -R2

Yes, we were given the freedom to suggest the time space that we need. -R3

We decided on the time we need after a brief discussion among ourselves. -R4

I was given the right to decide the time that I need. – R5

Respondents were happy that they were given the freedom to pick topics of their interest. However, they were overwhelmed with the choices that they had, and they needed more guidance and facilitation from the lecturer.

Yes, the lecturer allows us to decide on what we want to learn. -R1

Yes I do have the freedom (to pick the topics)…but I don't know how to pick…too many (things to explore). -R2

Yes, I like to have the freedom…but I am kind of lost with the freedom I have. -R3

I need my lecturer to guide me more on choosing the topics. -R4

I need more discussion with friends and lecturer when I was given the freedom (to choose the topics). – R5

Respondents felt very comfortable to collaborate with their peers. An unintended outcome was discovered where they felt it was not comfortable last semester as it was a full online mode due to Pandemic Covid-19. They expressed that it was difficult for them as they did not get to meet their peers face-to face last semester. There was no ice breaking before they had their collaboration last semester. However, as the teaching and learning mode is back to face-to-face, they fell GH made them feel comfortable during the collaboration with their friends.

Yes, I am very comfortable with them. -R1

Yes I do feel very comfortable now….we can meet face-to-face (to discuss). Last semester I don't like (collaborative activities)….I don't know them (peers). -R2

Yes, I am not stress now. I stress (last semester) because I don't see them..only can read message (fro whatsapps and Google Meet chat) and hear voice (voice message from whatsapps and Google Meet). -R3

I feel comfortable because now I can meet my friends physically...we still discuss online…I know them already. -R4

I like the situation now..can talk to (discuss) face-to-face and online too.– R5

Respondents expressed that GH led them to acquire deep learning. They discovered more on the topics that they had decided to explore. However, they were frustrated as they discovered GH led them to other aspects which they did not know. They needed more time to explore on the new aspects, and they did not like the unstructured development of exploration.

Yes, I get to find out more about mobile learning..I thought it is refering to using smart phone at first. But this is not what moblie learning means. -R1

Yes I find out more about E-learning now….but I felt kelam kabut hop from one thing to another. -R2

I do find out deeper…I binggung banyak things got to investigate. -R3

I need more time to learn more. -R4

Banyak juga yang belum tahu. -R5

Even though the respondents were able to collaborate with their friends through GH, they were challenged by a few factors. They had heavy schedules everyday, were fully occupied with activities and other tasks which they needed to attend to. They needed to have the ability to manage their time well, multitasking skills and good internet supply.

I learnt much through collaboration with my peers and friends from blogs. But I need to spend a lot of time…sometimes internet very poor (cannot go online). -R1

Very stress when internet not good. -R2

I can learn extra when my friend share with me. -R3

Many things need to be handled at the same time. I have trouble to focus. -R4

I need to atur my time well. I still trying to improve on this. -R5

DISCUSSION

A few lessons were learnt from this study. When designing a GH, there are a few guidelines which should always be referred to, such as student-cantered learning approaches, teacher's role as facilitator, providing authentic experience for students, giving enough time, a well-prepared classroom instructional, to consider students' engagement with other activities and allow time for students' reflection.

When designing such activities, it should focus on student-focused learning and exploration. Teachers need to support students to determine their area of passions, and to help them authentically pursue what they had decided to explore. As there were time allocated for the course, the lesson needed to be planned well, and to limit the time spent introducing a concept or lesson. Students need to be given time for brainstorming, teachers need to facilitate them to think about the source of references and areas for in-depth exploration. In this study, students complained that they did not have enough time to answer the questions / to explore other areas, but teachers need to take it as a sign of successful activity as this complain means students were well engaged, and they wanted to explore further and in-depth.

Teachers need to be flexible as each students are different, having diverse needs, and require diverse types of guidance. Teachers need to be willing to adapt and adjust their approaches to keep the inquiry going and students' engagement remain strong. To end the activity, teachers need to allocate time available for reflection at the end of every inquiry lesson. It could be a discussion as a class or a period of quiet journaling. Reflection should include the concepts learnt, and also the reflection on the learning process, as it is a powerful tool for growth and improvement. To understand and to employ GH effectively, and to reduce the degree of bias in the study, larger population should be drawn in future so that the results of the study could then be generalized.

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Appendix A

Section A: Tick your answer in the box provided.

Group:

Science 1

Science 2

Section B: Tick your answers in the box provided and write your answers in the space provided.

1. Did GH provide you freedom in your learning?

Yes ☐ No ☐

i. If yes, how did GH provide freedom to you in your learning?
_____
ii. If no, why do you say so?
_____
2. Did GH provide time space to you in your learning?

Yes ☐ No ☐

i. If yes, how did GH provide time space to you in learning?
_____
ii. If no, why do you say so?
_____
3. Did GH provide the freedom to pick topics that you are interested to find out more?

Yes ☐ No ☐

i. If yes, how did GH provide the freedom to you in learning?
_____
ii. If no, why do you say so?
_____
4. Did GH make you feel comfortable in the collaboration with your peers in learning?

Yes ☐ No ☐

i. If yes, how did GH provide such comfy to you in learning?
_____
ii. If no, why do you say so?
_____
5. Did GH enabled you to acquire deep learning?

Yes ☐ No ☐

i. If yes, how did GH enable you to acquire deep learning?
_____
ii. If no, why do you say so?
_____
6. Were there any factors that hindered you to collaborate with your peers?

Yes ☐ No ☐

i. If yes, what were the factors?
_____
ii. How did these factors hinder you to collaborate with your peers?
_____