The Knowledge of Geography Trainee Teachers on the Use of I-Think Thinking Maps in Learning and Facilitation (PdPc) in Schools

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Abstract: This article aims to identify the knowledge of Geography trainee teachers in the use of i-Think thinking maps in Learning and Facilitation (PdPc) in schools during their teaching practice. This study used the in-depth interviews method as a research instrument and primer data collected. Respondents consisted of 25 Geography trainee teachers who are currently studying for the sixth and seventh semesters but have been in the first phase of teaching practice. The data were collected by recording audio of each interview session conducted by the researcher with 25 respondents and transcribed in Microsoft Word and then categorized into sections and reviewed by the researcher to see the answers provided more clearly. The results of this study found that Geography trainee teachers’ knowledge of i-Think thinking maps such as the meaning, type, function, and how to apply i-Think thinking maps in PdPc is moderate. This due to the lack of exposure and experience to use i-Think thinking maps in their learning or in teaching practice. This study implies that there is a growing awareness among Geography teachers in enhancing their knowledge of the use of I-Think thinking maps. This will help the trainee teachers to apply it according to the topics to be taught when they become real teachers in future.

Keywords: i-Think, Learning and Facilitation (PdPc), Geography trainee teachers

1. Introduction

The education system in Malaysia, which is changing over time, demands that students become human capital capable of high-level thinking. The changes made from time to time by the Ministry of Education Malaysia (KPM) will require teachers in schools as well as future teachers to learn and master various learning methods to ensure that students’ thinking skills are at a higher level. It is essential to produce excellent human capital with extensive knowledge in multiple fields, especially in this developing country. This is also in line with the National Philosophy of Education (FPK), where thinking skills need to be mastered by all students to compete globally (Ministry of Education Malaysia, 2013). The Malaysian Education Development Plan 2013-2025 aims to provide every student in the school with the necessary skills to master such as thinking skills, leadership skills, bilingual skills, knowledge, ethics, and spirituality, and social identity. Therefore, teachers in schools need to work hard to ensure that students have all the skills they have targeted.

In Malaysia, the education system has determined that all teachers should apply i-Think thinking maps in the teaching process. Thus, teachers must take the initiative and strive to apply i-Think thinking maps using a variety of methods that will attract students to help produce students who are not only able to think at a high level but think creatively and critically about something. This supported by the opinion expressed by Linawati@Lina & Sharifah Nor (2017) that the i-Think thinking maps can enhance and cultivate thinking skills among students to make them more creative thinkers. The ministry also emphasized that the application of i-Think mapping in Learning and Facilitation (PdPc) to schools is one of the most important and a genuine effort to ensure that PdPc is student-centred not teacher-centred learning. Teaching techniques using this i-Think map can also change teachers’ perceptions and practices in teaching techniques while promoting these techniques to make classroom teaching more enjoyable, simple, informative, and time-saving and also to provide learning materials for students. As a teacher, the use of appropriate methods in PdPc is crucial to attracting students to be more engaged in learning and engaging in activities that are carried out during PdPc (Linawati@Lina & Sharifah Nor, 2017). This will not only help to test students' thinking skills and not just to ensure that their learning goals are achieved even though this aspect is important to everyone who calls themselves as a teacher.

2. Literature Review

A research conducted by Fadilla and Zamri (2019) titled knowledge, willingness and attitude of the Malay language teachers in implementing teaching and learning i-Think thinking map in a primary school deepening of Kapit in Sarawak. From their studies, they found that the teachers of the Malay language in the school knew that good about i-Think thinking maps and at the same time willing to use i-Think thinking maps. They also have a positive attitude towards using i-Think thinking maps as their teaching aids. More advanced methods in PdPc
such as the use of i-Think thinking maps are great for producing creative and critical thinking students. Therefore, the use of this thinking map can help teachers during the PdPc process (Fadilla & Zamri, 2019).

Furthermore, in a research conducted by Nurhafizah, Roslinda & Mohamed Yusof (2017) found that the application of i-Think thinking map is a pedagogical technique that teachers can use in the teaching and learning of Mathematics. This technique can create a meaningful mathematical learning environment and creative for students in the face of so many issues in education in Math. Before students are exposed to i-Think thinking maps, teachers should master all of the proposed thinking maps and take commitment to i-Think related courses with great commitment (Nurhafizah, Roslinda & Mohamed Yusof, 2017).

A research conducted by Azlili & Norazilawati (2016) entitled Development of i-Think Thinking Module for Primary 5 Year Science Subjects found that the module provided provides teaching aids (BBM) in the form of i-Think thinking maps which can help teachers to convey information to students more effectively. In the same study Azlili & Norazilawati (2016) stated that besides being practised, the thinking map can be made a note once it has been answered by the students and the use of the i-Think Thinking Module itself can be a guide for teachers in using i-Think in the classroom as well as reducing the burden of teachers while making i-Think main materials for helping students master the science.

According to Linawati @ Lina & Sharifah Nor (2017), the knowledge of teachers in the application of I-Think thinking map shows that courses and workshops attended by teachers can help them understand, know and master eight I-Think thinking maps before they are revealed to students and methods and has enabled students to think and develop ideas for finding information and finding important content in the lesson. The results of the interviews with pupils showed a positive perception of teacher teaching as it enhanced their knowledge of the subjects taught to use the I-Think method.

Next, some teachers who tend to dislike transformation and still use old ways of teaching that are teacher-centred (Linawati @ Lina & Sharifah Nor, 2017). This method is not widely used today as the 21st Century student-centred learning approach and materials have been introduced to change teachers' teaching way and methods, and one of them is the use of I-Think thinking maps within the teacher PdPc. Besides, teachers need to be positive in accepting education reforms to develop knowledge, and there is a paradigm shift among teachers to change from traditional teaching practices (Linawati @ Lina & Sharifah Nor, 2017).

According to Muhammad Sidek, Mohamad Ab. Kadir and Mohamad Sabri Awang Black (2012) in Linawati @ Lina & Sharifah Nor (2017) implementation and acceptance of I-Think program by PISMP, j-Qaf, neat, YIT, DPLI and PGSR students at Sultan Mizan campus IPG demonstrating teacher practice the program has transformed students' behaviour into positive and persistent and considers the I-Think program an effective teaching technique because each of the topics learned can be customized with an appropriate thinking map to help students focus and simple to remember. Furthermore, research by Chiew Wye May (2015) in Linawati @ Lina & Sharifah Nor (2017) found that doing practice exercise using I-Think thinking map in teaching business studies conducted with teacher guidance has increased the graduation rate and student grades in Form 6 Literature. The importance of this method in conjunction with the study of thinking maps can assist students in organizing their thinking, facilitating understanding and helping students to present new and exciting ideas (Lee & Gan, 2012; Linawati@Lina & Sharifah Nor, 2017).

Research by Jumaliah & Zamri (2016) teachers learned about thinking maps and their functions through courses held at the beginning of the year thinking maps introduced through the i-Think Program. The use of a thinking map in teaching and learning is also seen enhances student interest and finds students more enjoyable, active, and engaged in learning (Jumaliah & Zamri, 2016). Further, Khairuddin (2008 in Jumaliah & Zamri, 2016) states that every teacher needs to update knowledge according to the needs and changes of the current educational world while having a broad knowledge of the subjects to be taught. Jumaliah & Zamri’s (2016) study also found that the use of thinking maps makes student-centred learning more effective and students' thinking ability is enhanced. Besides, according to Zamri (2014 in Jumaliah & Zamri, 2016), students do not necessarily use all thinking maps in one subject or subject and adapt them to the learning subject and teachers need to take initiative to devise effective techniques to balance individual differences in class.

Besides, the Noornabilah & Hock (2020) research showed that overall the use of i-Think thinking maps among IPG trainee teachers is still relatively low and this shows that trainee teachers have a basic knowledge of i-Think thinking maps but have less use in pedagogical practice throughout the teaching practice at school. Similarly, the level of awareness of the effectiveness of the i-Think map of trainee teachers is also at a moderate
level. Every teacher needs to update his or her knowledge according to the changing needs of the current educational world and must have extensive knowledge of the subject being taught (Khairuddin, 2008; Noornabilah & Hock, 2020). Thus, the trainee teachers should strive to improve their knowledge of the i-Think thinking map (Noornabilah & Hock, 2020).

In the research of Kamaruddin, Janilah, Zuraidah & Fatimah (2019) found that the level of awareness of Mathematics teachers in implementing i-Think thinking maps in teaching and learning in the classroom is relatively low even though they have high levels of awareness using i-Think thinking maps in improving their skills think high. This has caused the application of i-Think thinking map to be completely incapacitated in the classroom, and students are unable to capitalize on the use of i-Think maps in helping to generate high-level thinking (Kamaruddin et al., 2019). In terms of the type of i-Think thinking map used by Mathematics teachers in classroom teaching and learning, the limitations of using i-Think thinking maps make use of frequency very low and focus only on some basic types of i-Think maps (Kamaruddin et al., 2019).

However, a study conducted by Rubananthan & Nurfaradilla (2018) entitled the level of teacher concern over the use of i-Think across curricular in the Learning and Facilitation Process (PdPc) found that school teachers were reluctant to change and did not believe in the effectiveness of i-Think thinking maps. The research also stated that teachers in the school still needed additional information and further disclosures about i-Think to effectively implement it in PdPc.

According to Muhammad Lintang (2018) both DOK and Bloom’s Taxonomy are concept fundamentals for the implement of Thinking Maps with students in that both concepts not only depict but inspire educators to evolve students’ higher-order thinking skills. As described on the Thinking Maps home website, “Thinking Maps are consistent visual patterns linked directly to eight specific thought processes and visualizing our thinking, we create concrete images of abstract thoughts (Muhammad Lintang, 2018). Muhammad Lintang (2018) state that these patterns will help the student reach higher levels of critical and creative thinking – essential components of 21st Century education”.

### 3. Research Area

These studies were conducted at the Universiti Pendidikan Sultan Idris (UPSI), Tanjong Malim, Perak (refer to Figure 1). UPSI is one of the largest public universities in Malaysia and the number one educational university in Malaysia where most of the future educators are from the university. The respondents selected were from different backgrounds. Students will be informed in advance of this study, and all students who have taken Geography course and have undergone teaching training as a trainee teacher has taken as unit analysis. This is because ISMP Geography students already have teaching experience in the school and have applied various 21st-century learning methods, including using i-Think thinking maps in their schools during teaching practice.

![Figure 1. Location Map of Universiti Pendidikan Sultan Idris (UPSI)](image-url)
4. Research Methodology

Qualitative Methods

Qualitative method is well used in this study as it can provide more detailed information on the review that is to be carried out. The readiness of the researcher during the conduct of the interview is essential in the mastery of the subject or issue being studied and other knowledge in making the questionnaire available. An interview form has been created as unstructured the interview instrument for an interview session to be run smoothly. Besides, this study was conducted by 25 Geography trainee teachers from UPSI for interviews on knowledge on the use of i-Think thinking maps in PdPc in schools.

The Interview Instrument

The qualitative research instrument in this study was an interview consisting 1 part which has four questions. The interview instrument used in this study was to identify the geography teachers' knowledge of the use of i-Think thinking maps in schools. The interview instrument is as specified below;

i. What does the i-Think thinking maps mean?
ii. How much of i-Think maps do you know? State it.
iii. Do you know the function of each i-Think map? Please provide an example of an i-Think thinking map with its functionality.
iv. Do you know how to apply the i-Think thinking map in Learning and Facilitation (PdPc)?

Qualitative Data Analysis

In this study, data recorded through interviews will be copied into Microsoft Word files. A total of 25 transcripts of each question have been transcribed into Microsoft word files and each interview data will be transcribed including conversations that do not provide any meaning such as 'erm' and 'aah'. A conversation in a vague and obscure form was not present in the transcript that was not written by the researcher. Subsequently, each transcribed data will be analyzed more clearly and organized in part following the two objectives stated.

5. Research Findings

Demographic Information of Respondents

Name of School, School Area, Semester and Teaching Practice Period among Respondents

The total number of respondents interviewed in this study was 25 respondents, comprising ISMP Geography students pursuing studies at UPSI in the six and seven semesters. The findings of this study did not determine the ratio of gender, race, and school location during teaching practice, and selections of respondents to interview were randomly selected. Based on the findings of the study as shown in Table 1 shows 25 respondents labelled as Trainer (GP), of which the trainee teacher was the first respondent interviewed to be labelled as GP1 and will be continued until GP 25.

Based on Table 1, it can be seen that out of these 25 respondents, 23 were undergoing teaching training at schools located in Selangor and the rest in Negeri Sembilan. Subsequently, for the school area during the teaching practice, 19 respondents underwent teaching practice in the urban area while 6 were in the rural area. All of these respondents also underwent the first phase of teaching practice in two months before resuming their studies in the sixth and seventh semesters at UPSI.

<table>
<thead>
<tr>
<th>Respondent Code</th>
<th>School Name During Teaching Practice</th>
<th>School Area</th>
<th>Semester</th>
<th>Teaching Practice Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>GP1</td>
<td>SMK. Tasek Permai, Ampang, Selangor.</td>
<td>Urban Area</td>
<td>7</td>
<td>- 2 Month</td>
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<tr>
<td>GP2</td>
<td>SMK. Dato Abu Bakar Baginda, Selangor.</td>
<td>Urban Area</td>
<td>7</td>
<td>- 2 Month</td>
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<tr>
<td>GP3</td>
<td>SMK. Tengku</td>
<td>Urban Area</td>
<td>7</td>
<td>- 2 Month</td>
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<td></td>
<td>Ampuan Rahimah, Klang, Selangor.</td>
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<tr>
<td>GP4</td>
<td>SMK. Urban Area Baru Sri Kendayan, Seremban, Negeri Sembilan. Urban Area 6 - 2 Month</td>
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<tr>
<td>GP5</td>
<td>SMK. Jalan Bukit Kajang, Selangor. Urban Area 7 - 2 Month</td>
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<td>GP6</td>
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<td>SMK. Batu Laut, Tanjong Sepat, Selangor. Rural Area 7 - 2 Month</td>
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<td>GP19</td>
<td>SMK. Raja Lumu Pandamaran, Pelabuhan Klang, Selango Urban Area 7 - 2 Month</td>
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<tr>
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<td>SMK. Bukit Kepayang, Seremban 2, Negeri Sembilan. Urban Area 6 - 2 Month</td>
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</table>
Respondent Gender

Based on Figure 2, the total number of respondents by gender did not show a significant difference, with the number of male respondents being 10 (40%) who had less than five respondents compared to the total female respondents who were 15 (60%).

![Figure 2. Respondent Gender](image)

Respondent Race

For the category of race respondents as shown in Figure 3, a total of seven respondents (28%) are Malays, 1 respondent (4%) were Chinese, and the rest 17 respondent (68%) consisted of other races such as Kadazan, Dusun, Iban and Bajau. However, there were no respondents for the Indians.

![Figure 3. Respondent Race](image)
Level of Student that has been taught by Respondent

Based on Figure 4, 15 respondents (60%) had taught form one students during their teaching practice. The respondents who had taught form 2 students were 19 respondents (76%). Besides, only 4 respondents (16%) taught Form 4 students and only 1 respondent (4%) taught Form 3 students.

Have you ever used i-Think Thinking Maps?

Based on Figure 5, 25 respondents (100%) used the i-Think thinking map by marking the answer 'Yes' on the set of interview questions that the researcher had distributed before the interview. This is because respondents not only used this i-Think thinking map during their teaching practice while being a trainee teacher but also as a student in high school and while studying at UPSI.

The Knowledge of Geography Trainee Teachers on The Use of I-Think Thinking Maps

To answer the questions presented in this study, a qualitative method of interviewing was conducted to identify the geography trainee teachers' knowledge of the use of i-Think thinking maps in PdPc in schools. Based on interviews conducted by researchers on 25 Geography trainee teachers, the trainee teacher answers the question of what does the i-Think thinking maps mean, how much of i-Think maps do you know, do you know the function of each i-Think thinking maps and do you know how to apply the i-Think thinking map in Learning and Facilitation (PdPc)? Respondents' answers to each question were as follows:
What does the i-Think thinking maps mean?

Based on the interview findings in this research, it was revealed that 25 of the trainee teachers interviewed knew about the i-Think map. Each of the trainee teachers has their own perception of the meaning of the i-Think thinking map where the trainee teacher mentions that the i-Think thinking map is one of the ways to make notes in simple form as described by GP2 where this i-Think thinking map is one of the easiest ways to write a note as well as the answer provided by GP 12 stating that thinking map is a tool or medium for making short notes.

These geography trainee teachers also stated that this i-Think thinking map is one of the ways to ensure students can think creatively and critically, especially in PdPc in schools. This is supported by the answer to GP 13, which implies this i-Think thinking map as a way to summarize the subtopics or to learn content that will ultimately help to enhance or cultivate thinking skills among students and thus enable them to think creatively, innovative and critical. This answer is slightly different from the answer provided by GP15 stating that the i-Think thinking map is like a brainchild that allows students to come up with ideas that they want to understand and ultimately lead them to think creatively and critically. GP19, however, just replied that this i-Think map is an excellent tool for thinking students.

The interviews given by these trainee teachers indicate that some of the trainee teachers still do not understand the true meaning of the i-Think thinking map. For example, GP6 says this i-Think thinking map is a creative map like a mind map. However, this i-Think thinking map is different from the mind map in which the i-Think thinking map is focused on eight types of i-Think thinking maps and aims to enhance students' thinking skills as targeted by the KPM. Meanwhile, the mind map is a method of writing notes in graphic form but in the free form that students want.

How much of i-Think maps do you know?

Based on the survey findings in this research, a total of 17 trainee teachers learned that there are eight types of i-Think thinking maps. However, only a few trainee teachers remember all eight types of i-Think thinking maps. For example, GP7 which states that the eight types of i-Think thinking maps are circle maps, foam maps, double foam maps, treemaps, rock maps, flow maps, multi-flow maps and bridge maps. Besides, GP2 only states six types of i-Think thinking maps such as circle maps, foam maps, and multiple foam maps, although some say that these i-Think maps have eight types. Besides, through the interview, there were also several of respondents stating the types of i-Think thinking maps they remember and used only as stated by GP3 where the trainee teachers only knew the types of i-Think thinking maps such as foam maps, principal maps and flow map.

Next, GP9 stated that it only knows one type of i-Think thinking map, which is a foam map although this trainee teacher has seen other maps but does not know the name of the i-Think thinking map. Overall, the interviews given by the coaching teachers indicate that these Geography trainee teachers know that there are eight types of i-Think thinking maps which indicate that these teachers are either directly or indirectly exposed to this i-Think thinking map through learning as a student while studying at UPSI as well as through their learning as well as previous teaching experience.

Do you know the function of each i-Think map? Please provide an example of an i-Think thinking map with its functionality

Based on the findings from this research, it's found that most of these Geography trainee teachers only know the function of i-Think map that they used or applied during their study and also during teaching practice especially in implementing PdPc. The interview also found that some of these trainee teachers were able to explain the function of the mentioned i-Think thinking map and to provide a good and accurate example. Among them are GP8, GP9, GP21, GP22 and GP24.

However, there are some of these trainee teachers who can explain general functions only as stated by GP6 and also GP12 where the circular map function is to define and GP7 states that the flow map function is a cause and effect. Overall, these Geography teachers know the function of the i-Think thinking map but what distinguishes them is that some of them can relate the function of the i-Think thinking map to a clear and concise example and other trainers can briefly explain the function. This indicates that the trainee teacher's knowledge of the function of the i-Think thinking map varies and may be influenced by the teacher's practise in which teachers can provide explanations along with examples that may be more exposed to the use of i-Think thinking maps as well and many find information on this map of i-Think through reading and so on.
Do you know how to apply the i-Think thinking map in Learning and Facilitation (PdPc)?

The results of the interviews conducted in this research found that all Geography trainee teachers know how to apply i-Think thinking maps within PdPc. One of the reasons is that these Geography trainee teachers are using i-Think thinking maps when implementing PdPc during past teaching practice. There are also some of these trainee teachers who use the i-Think thinking map to create their notes so that at the time PdPc would be easy to re-scan what was previously learned as stated by the GP20.

But the interview also found that in applying this i-Think thinking map, it sometimes depends on whether the student can follow or not as stated by GP21. This is certainly true because students' acceptance of what teachers teach varies. Therefore, teachers in their schools need to find an initiative that will attract students to learn by using the i-Think thinking map so that each student can improve their thinking skills and foster collaboration among classmates.

Overall, the interviews provided by these Geography trainers indicate that overall, these teachers know how to apply thinking maps in PdPc but what distinguishes these trainers is their in-depth skills to figure out how to use i-Think thinking maps according to the relevance of the title to be taught.

6. Conclusion

Overall, this study has successfully answered the objectives of the study that stated. The results of the survey, which resulted from the interviews of 25 geography trainee teachers, showed that the teacher's knowledge of i-Think thinking map is simple which covers aspects meaning of i-Think thinking map, type and function of i-Think thinking map and how to apply it in PdPc. In this regard, all parties teachers and future teachers need to plan, emphasize and improve the method of implementation of the i-Think thinking map especially when using it in PdPc to enable the KPM's aspiration can be achieved as well as to produce teachers with various teaching skills as well. ethics in higher education. The skills in using the i-Think thinking map are important for producing students who can think at a higher level and advance them progress to compete at a higher global level.

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References

