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# Teaching and facilitation implementation methods among lecturers and their influence on students' interests in learning geography

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**Abstract**

This study aimed to examine the implementation of the teaching and facilitation (PdPc) methods among lecturers and their influence on students' interests in learning Geography. Students' interests in learning were measured based on two aspects: emotionaland cognitive aspects. A survey approach was used in this study, involving a total of 120 final year students (seventh semester) who have completed all the eight Geography core subjects offered in Universiti Pendidikan Sultan Idris (UPSI). The sample was selected using a simple random sampling method. A set of questionnaires with 40 items was distributed to the respondents. The findings from the descriptive analysis indicated that the overall students' interests in learning Geography subjects in UPSI was at a high level (M=4.19, SD=0.83). Additionally, the analysis also discovered that the implementation of the PdPc methods in the Geography subjects using the traditional learning method was moderate (M=2.72, SD=1.34), while the game-based learning method was at a high level (M=4.27, SD=0.75), the flipped-based learning method was at a high level (M=4.32, SD=0.78), and the challenge-based learning method was also at a high level (M=4.36, SD=0.71). The Pearson correlation analysis revealed that students' emotional interests and cognitive interests had a relationship with all the learning methods. The multiple linear regression analysis indicated that the game-based learning method was the method that had the most influence on students' interests in learning the Geography subjects with a percentage contribution value of 64.5 percent. Therefore, PdPc methods that are creative and go beyond traditional learning need to be implemented by lecturers to attract interest in learning Geography and further achieve student development.

*Keywords:* Traditional Learning; Game-Based Learning; Learning Geography; Emotional Interests; Cognitive Interests

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## 1. Introduction

Various efforts have been implemented to improve the teaching and facilitation (PdPc) methods (also known as "pengajaran dan pemudahcaraan" (PdPc) in Malay language) to attract students' interests in learning. Certain learning methods implemented in lecture rooms or classrooms are said to attract students' interests in learning. According to Abdillah et al. (2015), interests are related to attitudes of an individual in which when someone is interested in a matter, one would be positive towards the matter. Effective learning exists if there are interests among students, and one of the ways to arouse students' interests is through interesting teaching methods and learning activities (Norhayati et al., 2013).

A country education system, particularly Malaysia, is constantly changing in line with the current developments and progress. This scenario also challenges educators to re-evaluate the PdPc process conducted in classrooms. More than 10 years ago, studies conducted in Malaysian schools revealed that traditional PdPc methods are still the top choice in universities and schools. A study conducted by Jalil (2006) in schools discovered that 69.5 percent of students stated that the teaching methods by their teachers were 'chalk-and-talk', 83 percent stated that the debate method was not conducted, 76 percent stated that projector slides were not used, 76 percent stated that motivational workshops were never conducted, 62.6 percent stated that the game method was not conducted, while the visit method only involved 37 percent among teachers. However, changes have occurred in these educational institutions adopting more attractive PdPc methods in line with the requirements of the 21st Century Learning.

Various factors drive a person's interest in learning. According to a study conducted by Faizatul and Syahilia (2017), they discovered that the learning methods used in PdPc are the main pillars that can attract students to learn and could improve students' achievements. However, the influence of PdPc methods such as the traditional method as well as other methods including flipped-learning, challenge-based learning or game-based learningon students' interests is still limited, especially in the Geography subjects at the university level. Thus, to fill the knowledge gap on learning interests, this study focused on the influence of PdPc implementation methods used by lecturers in the Geography subjects, particularly the eight Geography core subjects in UPSI. This study is essential to determine to what extent the PdPc methods used by the lecturers influenced students' interests in these Geography subjects. These findings could be used as a guide to the implementation of PdPc, especially for the Geography subjects.

## 2. Literature Review

According to Rosnah (2016), learning is a complex aspect of human activity that could not be fully explained. She further stated that learning is also an effort made by a teacher to deliver knowledge to students to achieve the desired purpose. Meanwhile, interests refer to a tendency that causes a person to strive in finding something (Nadzalinda, 2015). Interests are also a key factor of motivation for students to be active in learning activities (Erma & Eu, 2017). According to Lan (2015), there are four main elements in interests: enjoyment, desire to learn, concentration and involvement in learning activities. This study examined the extent of students' interests in the implementation methods of PdPc among lecturers.

The behaviourist theory stated that learning occurs when students exhibit behaviours consistently as desired, such as when students respond to planned events. It is in line with the statement given by Syarifah et al. (2013), who stated that the learning process would continue if there is appropriate extrinsic motivation, either positive or negative assertion, while learningis said to end when the changes in behavioursis formed and maintained. The theory also promotes learning through

encouragement and stimuli, such as praise and appreciation.On the other hand, based on the cognitive theory, the learning process occurs when an individual absorbs or adapts the existing knowledge in the brain with the data obtained from the environment.

Basically, this study is based on the model presented by Mazer (2010). The model introduced by Mazer is the 'Model of Communication, Interest, Involvement, and Learning'. The model describes emotional and cognitive interests. Both interests are positive experiences that may provide significant benefits to students. According to the model by Mazer (2010), student's involvement may be influenced by additional effects of emotional and cognitive interests, such as teachers' effectiveness and clarity, potential interactive effects between student's emotional and cognitive interests that may cause them to function together to influence students' involvement. Students are more likely to benefit when they are emotionally and cognitively interested in the learning methods used by the teachers.

### *2.1. Emotional Interests*

A study conducted by Khadijah et al. (2012) discovered that the excellent Islamic Education teachers play a vital role to improve students' academic performances and personalities. Teachers' creativity and personalities that emphasized on emotional and social intelligence skills make the teaching and learning process more effective, smooth, and stimulate students' emotional interests as well as increase their excitement towards learning. Meanwhile, a study conducted by Munir (2018) aimed to examine the teaching strategies of Is.

lamic Education teachers from four schools in the district of Besut, Terengganu discovered that suitable teaching techniques are closely related to physical, emotional, spiritual, and intellectual growth in students to create excellent learners in various aspects. Furthermore, many other researchers have studied the relationship between students' interests in learning and teaching methods used by educators. Among them are Nadzalinda (2015); Subadrah and Sakunthala (2014) and Faizatul and Syahilia (2017). These studies discovered that the learning methods implemented by teachers will draw students' emotional interests towards learning.

### *2.2. Cognitive Interests*

There are also studies related to cognitive interests in students. One of the studies was the one conducted by Hassan et al. (2014) entitled "Partial least squares modelling of attitudes of students towards learning statistics", aimed to examine the relationship between students' attitudes towards statistical learning using several constructs, namely affects, cognitions, values, difficulties, interests, efforts, and desired achievements in the subject of statistics. The findings revealed that all the relationships in the hypothesis model are significant, all constructs of students' attitudes play an important role in statistical learning. The statistical learning method can strengthen students' understanding of the learning materials and could be a starting point for lecturers to inspire students' interests in the teaching and learning process, especially for statistical learning. In addition, Hasril et al. (2017) conducted a study related to cognitive interests in students. The findings showed that the IQ Stick Game is very suitable to be used as a teaching aid because it allows students to cooperate as well as increase their cognitive interests and performance holistically through learning objectives targeted according to learning domains, namely psychomotor, cognitiveand affective.

Additionally, Norhayati et al. (2013) discovered that the implementation of animation as a teaching tool in learning the Arabic language for all students is at a high level. It shows that the use of animation technology in learning Arabic can attract students to understand the flow of ideas and master the language, apart from complying with the latest learning concepts. A study conducted by Haslina and Eftah (2014) showed that teaching and learning using the Google Earth Application could

attract students towards the History subject and help students to remember facts in the subject. Students can indirectly expand their knowledge about other nations, such as the location of countries on a map.

### *2.3. Traditional Learning Method*

The traditional learning method is a method that involves the use of textbooks and lectures (Fauzia et al., 2017). The teaching and learning process is passive in nature, in which teachers teach while students listen. Teachers use textbooks as a guide while students individually completed tasks given by their teachers. Traditional lecture-based teaching techniques guided by textbooks, topical exercise books, and practice notes make the topics uninteresting, additionally making students are unable to concentrate on the teaching (Azizi et al., 2007). Since the 1990s, this traditional method of learning has become a heated topic of discussion. The traditional teaching involves using textbooks and one-way methods that are less interesting for students. Davis and Sorell (1995) suggested that schools should have accepted that traditional teaching and learning methods are ineffective for most students. It was further reinforced in an argument by Ishak (2009), who stated that the disadvantage of the traditional teaching methods is that this method could quickly become tedious because a teacher is unable to focus on each student, especially with a large number of students at one time. However, the traditional learning also has its advantages. According to Ishak (2009), the advantages identified through this teaching method is that plenty of information can be conveyed in a short time, and students will still be able to continuously taking notes.

### *2.4. Game-Based Learning Method*

According to Asliza (2018), the game-based learning is an approach that makes the PdPc process more interesting and effective because it appears to be more livelywith game activities conducted. Students will be able to explore the storytelling realm of the integrated games by themselves. The findings of a study conducted by Asliza (2018) also showed that the students agreed that the use of game scenes in explaining the basics identity of programming could provide motivation and excellent learning experiences. According to Azmin and Faridatulazna (2014), the game-based learning is an alternative for teachers because it can give good feedback to students, encourage students to control or master their learning, and allow students to be the source of reference to each other. Furthermore, they also claimed that game-based learning approaches could motivate students to learn. Noorfarahin and Farahdilla (2016) further explained that the practice of teaching through games, such as the ‘Cardboard Challenge’, is interesting in creating a meaningful learning environment.

### *2.5. Flipped-Based Learning Method*

Various modern learning methods could be applied in schools or Higher Education Institution (IPT), one of them is the flipped-learning. According to Noraini et al. (2017), a flipped classroom is a student-centred teaching approach model where students will be motivated to be more active in classroom learning activities. It is in line with the opinion given by Zheng et al. (2014) that teachers will be able to make full use of time while in the class for collaborative activities and learning reinforcement to students individually, and this would also make the discussion period longer. A study conducted by Mahesh (2016) aimed to examine whether the flipped-learning could improve students’ performances in a design program compared to the traditional learning. The findings revealed that 82 percent of students had improved their communication skills, critical thinking, and were able to solve problems on their own as well as begin to explore new concepts. In addition, Kaviza (2018) conducted a study on the effects of applying peer instruction techniques with flipped-classroom approach towards

achieving an understanding of historical concepts among the form four students. The findings showed that the students in the experimental group (flipped approach with peer instruction technique) had a higher understanding of historical concepts than the students in the control group. So, it is evident that using the flipped-based learning methods can attract students' interests in learning.

### *2.6. Challenge-Based Learning Method*

The challenge-based learning is a model that combines important aspects, such as problem-based learning, project-based learning and contextual learning. It aims to solve problems and enable students to collaborate and manage their own time with guidance from lecturers. Johnson and Adams (2011) stated that the challenge-based learning is a multidisciplinary approach to education that encourages students to utilize the technology they use in their daily lives to solve real-world problems. A study conducted by Cheung et al. (2011) investigated the improvement of students' learning through the challenge-based learning approach that encourages them to collaborate with their peers, ask questions, develop an understanding of the subject, and solve problems. The findings discovered improvements in students' safety skillsand ability to teach other people. Additionally, Jou et al. (2010) conducted a study on the use of challenge-based learning approach in robotics education. The findings discovered that the challenge-based learning approach can improve students' achievements and motivation. Through this approach, students could explore the essence of robotic design, manufacturing, mechanisms, control, and robotic integration.

## 3. Methodology

The study on the PdPc implementation methods among lecturers and their influence on students' interests in the Geography subjects is a quantitative study. This quantitative study used a survey design that is a questionnaire. The focus of this study is Universiti Pendidikan Sultan Idris (UPSI) involving 120 students in their seventh semester who have taken all the eight core subjects of Geography determined by the university. The subjects include Introduction to Physical Environment, Natural Resources and Environmental Studies, Climatology, Introduction to Human Environment, Population of Geography, Urban and Metropolitan Geography, Geography of Malaysia, and Quantitative Techniques and Methods in Geography. These respondents were also selected from the final year students in the seventh semester of semester 1 2019/2020, who registered the Geography subjects either as the major students or minor students. This study used a questionnaire that was distributed online by using Google Form software.

The questionnaire was divided into four sections: Section A (respondent's information), Section B (student's interests in learning the Geography subjects), Section C (PdPc methods conducted by the lecturers), and Section D (suggestions on PdPc process that could improve students' interests in learning). The items in Sections B and C were measured using a Likert scale of 1 (strongly disagree), 2 (disagree), 3 (disagree), 4 (agree), and 5 (strongly agree). The items used in this study were also reviewed by the experts in the field to ensure that the items and language used were appropriate and accurate. A total of 30 third year Geography students were sampled for a pilot study to determine the reliability of the items that have been constructed. The findings of the cronbach's alpha reliability values for all items in the pilot study were above 0.8 which has strong internal consistency between the items (Table 1).

**Table 1.** The Reliability Value of the Questionnaire

| Cronbach's Alpha | Sections | Number of Items |
|---|---|---|
| 0.94 | B | 12 |
| 0.91 | C | 25 |

This article will discuss the level of students' interests in learning the Geography subjects and examine the PdPc methods conducted by the lecturers. In addition, it also evaluated the PdPc methods that influenced students' interests in learning. A descriptive analysis was used to show the mean and percentage scores to explain the students' background, interests in learning the Geography subjects, and the PdPc methods conducted by the lecturers. Meanwhile, the Pearson correlation coefficient was used to identify the relationship between students' interests in learning and the learning methods implemented by lecturers, whereas the multiple linear regression test evaluated the PdPc methods that affected students' interests in learning.

## 4. Findings and Discussion

The majority of the respondents in this study were female: 74 percent that is 89 respondents are female, while 26 percent that is 31 respondents are male. In addition, there were three categories of races among the respondents: Malay, Chinese and others. The race that had the highest number is Malay, with a total of 96 respondents (80%), other races with a total of 22 respondents (18%), while Chinese were two respondents (2%). The respondents involved in this study consisted of different religions. The findings revealed that the majority were Muslims, with a total of 101 respondents (84%). The second-highest number of respondents was other religions with a total of 18 people (15%), while 2 people (1%) of the respondents were Buddhists.

### *4.1. Students' Interests in Learning the Geography Subjects*

The students' interests in learning the Geography subjects are classified into two categories: emotional interests and cognitive interests. Following is the students' interest levels from emotional and cognitive perspectives in Geography.

#### *4.1.1. Emotional Interests*

Six items were presented to the respondents to identify their level of emotional interest towards learning the Geography subjects they were targeting. Table 2 shows the mean score and standard deviation score for the respondents' emotional interests in learning the Geography subjects.

**Table 2.** Mean Scores and Standard Deviation for Respondents' Level of Emotional Interests in Learning Geography Subjects

| Item No | Emotional Interests | Mean | Standard Deviation | Interest Level |
|---|---|---|---|---|
| 1 | The class makes me excited. | 4.25 | 1.01 | High |
| 2 | Being in this class is fun. | 4.17 | 0.88 | High |
| 3 | Learning in this class feels very positive. | 4.22 | 0.84 | High |
| 4 | The topics covered in this subject are very interesting. | 4.26 | 0.84 | High |
| 5 | The learning materials interest me. | 4.20 | 0.80 | High |
| 6 | I love the things that I learnt in class. | 4.17 | 0.84 | High |
| | **Total** | **4.21** | **0.866** | **High** |

*Level Indicators: 0 - 2.49= Low, 2.50 – 3.49= Medium, 3.50 – 5= High

Results indicate that the respondents' overall emotional interests in learning for the targeted subject of Geography is at a high level with a mean value of 4.21 and a standard deviation of 0.87. Out of the six items presented to identify the level of students' emotional interests in learning, Item 4, 'the topics covered in this subject are very interesting', is the item with the highest emotional interest among the students. The majority of respondents agreed to the item with a mean value of 4.26 and a standard deviation of 0.84. The topics covered in a subject are an important factor for the lecturers to focus on. Thus, lecturers need to plan appropriate learning methods by focusing on the topics to be presented to ensure they become topic that interests the students. Among the elements to be considered during PdPc in making the topics interesting is to relate the teaching topics with real-world experiences (Keller, 2010). This is also in line with the results of a study conducted by Subadrah and Sakunthala (2014), who discovered that the Mastery learning method can attract students' interests towards a topic learnt.

*4.1.2. Cognitive Interests*

In this section, six items were presented to the respondents to identify their level of cognitive interests in learning the Geography subjects studied in UPSI. Table 3 shows the mean and standard deviation of the given items.

**Table 3.** Mean Score and Standard Deviation for Respondents' Level of Cognitive Interestsin Learning the Geography Subjects

| Item No. | Cognitive Interest | Mean | Standard Deviation | Interest Level |
|---|---|---|---|---|
| 1 | I understand the content that I learnt. | 4.26 | 0.80 | High |
| 2 | My classmates helped me to stay interested in learning. | 4.15 | 0.87 | High |
| 3 | I can remember the content that I learnt. | 3.98 | 0.81 | High |
| 4 | The information contained in this learning made me more knowledgeable. | 4.24 | 0.69 | High |
| 5 | I can understand the flow of ideas. | 4.13 | 0.90 | High |
| 6 | The information in this subject is useful. | 4.35 | 0.76 | High |
| | **Total** | **4.18** | **0.80** | **High** |

*Level Indicators: 0 - 2.49= Low, 2.50 – 3.49= Medium, 3.50 – 5= High

Overall, the respondents' cognitive interests are at a high level. This is because the mean score obtained from the findings recorded a total of 4.18, while the standard deviation was 0.80. Based on this study, students' overall cognitive interestsis high based on their feedback on the comprehension of the subjects content (M = 4.26), the ability to remember the contents (3.98) as well as the four other items of cognitive interests were also at a high level. The results revealed that the overall emotional interests of students towards learning were at a high level, the mean score recorded was 4.21, and the standard deviation was 0.87. The findings also discovered that the overall cognitive interests of students towards learning the Geography subjects was at a high level with a mean score of 4.18 and a standard deviation of 0.802. Therefore, it can be concluded that overall students' interests in learning is at a high level with the mean score of 4.19 and standard deviation of 0.83.

## *4.2. PdPc Methods Implemented by Lecturers*

This section is the findings related to the PdPc methods conducted by the lecturers for the Geography subjects in UPSI. There are four learning methods examined: traditional learning method, game-based learning method, flipped-based learning method and challenge-based learning method.

### *4.2.1. Traditional Learning Method*

The traditional learning methods areone of the variables examined in this study. There are eight items in the variable given to the respondents to answer. The findings are illustrated in Table 4.

**Table 4.** Traditional Learning Methods

| Item No | Traditional Learning Methods | Mean | Standard Deviation | Implementation Level |
|---|---|---|---|---|
| 1 | Lecturers only use reference books in the lecture room. | 2.30 | 1.413 | Low |
| 2 | Lecturers only use whiteboards in their teaching. | 2.38 | 1.28 | Low |
| 3 | I only listened to the lectures by the lecturers. | 2.80 | 1.22 | Medium |
| 4 | I carry out assigned tasks individually. | 3.00 | 1.44 | Medium |
| 5 | Lecturers use the lecture method while teaching. | 2.90 | 1.30 | Medium |
| 6 | I copied notes only in the lecture room. | 2.83 | 1.32 | Medium |
| 7 | I am interested in the one-way teaching method conducted by the lecturers. | 2.45 | 1.31 | Low |
| 8 | I was comfortable with the lecture room which was equipped with a row of chairs and a desk along with a blackboard in front. | 3.14 | 1.46 | Medium |
| | **Total** | **2.72** | **1.34** | **Medium** |

*Level indicators: 0 - 2.49= Low, 2.50 – 3.49= Medium, 3.50 – 5= High

Overall, the implementation of PdPc by lecturers using the traditional learning methods in the Geography subjects in UPSI is at a moderate level. The mean for all traditional learning methods recorded was 2.72 and the standard deviation was 1.343. This shows that the lecturers have started to explore new PdPc methods in the Geography subjects thus focused less on the traditional methods.

### *4.2.2. Game-Based Learning Method*

In this section, seven items were presented to the respondents to identify their lecturers' implementation of the game-based learning in the Geography subjects. Table 5 shows the results of the analysis related to the game-based learning method.

**Table 5.** Game-Based Learning Method

| Item No. | Game-Based Learning Method | Mean | Standard Deviation | Implementation Level |
|---|---|---|---|---|
| 1 | I was allowed to solve learning problems through puzzle activities. | 4.26 | 0.95 | High |
| 2 | I was able to play games that involved active movement. | 4.25 | 0.70 | High |
| 3 | I got to play in groups. | 4.31 | 0.79 | High |

| | | | | |
|---|---|---|---|---|
| 4 | I was able to plan strategies with group members in completing learning activities. | 4.26 | 0.65 | High |
| 5 | My friends and I were able to play our roles in the activities involved. | 4.36 | 0.74 | High |
| 6 | I was able to achieve the learning objective well. | 4.36 | 0.67 | High |
| 7 | I can be a source of reference to other friends | 4.15 | 0.74 | High |
| | **Total** | **4.27** | **0.75** | **High** |

*Level Indicator: 0 – 2.49= Low, 2.50 – 3.49= Medium, 3.50 – 5= High

The overall findings indicated that the game-based learning method implemented by the lecturers in the Geography subjects was already at a high level. The analysis revealed that the overall mean value recorded for this method was 4.27. It proves that the implementation of this method has become a habit in the Geography subjects in UPSI.

*4.2.3. Flipped-Based Learning Method*

The flipped-based learning method implemented by the lecturers was also at a high level with a mean value of 4.32. Some of the methods used including students using learning materials and videos outside the classroom and conducting active discussions inside the classroom with guidance from lecturers (Table 6).

**Table 6.** Flipped-Based Learning Method

| No. | Flipped-Based Learning Method | Mean | Standard Deviation | Implementation Level |
|---|---|---|---|---|
| 1 | I am active in learning activities in the lecture room. | 4.35 | 0.86 | High |
| 2 | I conducted the learning activities through videos for learning. | 4.15 | 0.78 | High |
| 3 | I can learn outside the lecture room. | 4.40 | 0.78 | High |
| 4 | I used learning materials from outside of the lecture room. | 4.34 | 0.78 | High |
| 5 | I collaborated with my friends in the lecture room. | 4.47 | 0.61 | High |
| 6 | I have plenty of time to discuss in the lecture room. | 4.22 | 0.88 | High |
| | **Total** | **4.32** | **0.78** | **High** |

*Level Indicator: 0 - 2.49= Low, 2.50 – 3.49= Medium, 3.50 – 5= High

*4.2.4. Challenge-Based Learning Method*

This section analyses the findings related to the challenge-based learning method. There are four items in this section. Table 7 presents the mean and standard deviations scores for the items found in these variables. As a whole, the findings revealed that the level of implementation for the challenge-based learning method in the Geography subjects in UPSI is also at a high level, with the mean value recorded at 4.36.

**Table 7.** Challenge-Based Learning Method

| No. | Challenge-Based Learning Method | Mean | Standard Deviation | Level of Implementation |
|---|---|---|---|---|
| 1 | I can solve learning problems in the real world. | 4.29 | 0.69 | High |
| 2 | I can actively collaborate in learning. | 4.39 | 0.75 | High |
| 3 | I can manage my time with the guidance from my lecturer. | 4.36 | 0.78 | High |
| 4 | I can take advantage of the technology I use in life. | 4.43 | 0.62 | High |
| | **Total** | **4.36** | **0.71** | **High** |

*Level Indicator: 0 - 2.49= Low, 2.50 – 3.49= Medium, 3.50 – 5= High

The summary of the above findings shows that the majority of PdPc methods implemented by lecturers in Geography subjects at UPSI have focused on participatory learning methods in which lecturers function as a "guide on the side" through challenge-based learning, flipped-learning dan game-based learning methods. Meanwhile, the traditional PdPc method in the form of "sage on the stage" has begun to be minimized.

### *4.3. The Relationship between PdPc Implementation Methods and Students' Emotional Interests towards Learning*

Students' emotional interests have a weak negative and significant relationship with the traditional learning methods ($r=-0.41$, $p<0.01$). It shows that students' emotional interests decreased with the implementation of the traditional methods. Although the relationship between the two is relatively weak, it still existed significantly (Table 8).

The relationship between emotional interests and the game-based learning method was also analysed. There was a strong and significant positive relationship between these two variables with a value of $r=0.77$ ($p<0.01$). It indicated that students' emotional interests correlate with the game-based learning method conducted by the lecturers for the Geography subjects. In addition, the findings discovered that there was also a strong and positive relationship between the students' emotional interests and the flipped-based learning method conducted by the lecturers for the Geography subjects with a value of $r=0.720$ ($p<0.01$). Other than that, there was also a positive and strong relationship between students' emotional interests with the challenge-based learning method ($r=0.71$, $p<0.01$). It is evident that the challenge-based learning method conducted by the lecturers correlates with the emotional interests of students.

Overall, students' high emotional interests in the Geography subjects ($M=4.21$) and the PdPc methods implemented by the lecturers has a strong positive and significant relationship with the game-based learning method, the flipped-based learning method and the challenge-based learning method. Meanwhile, these high emotional interests have a weak negative relationship with the traditional learning method conducted by the lecturers.

**Table 8.** Correlation Test on Students' Emotional Interests with PdPc Methods Conducted by the Lecturers

| Relationship | Emotional interests and the traditional learning method | Emotional interests andthe game-based learning method | Emotional interests and the flipped-based learning method | Emotional interests and the challenge-based learning method |
|---|---|---|---|---|
| Correlation coefficient (r) | -.41** | .77** | .72** | .71** |
| t value and df | | | | |
| Significance | p<0.01 | p<0.01 | p<0.01 | p<0.01 |
| Correlation Strength | Weak | Strong | Strong | Strong |

*Strength Indicator: .00= No Correlation, .01 to .30 or -.01 to .30= Very Weak, .31 to .50 or -.31 to .50 = Weak, .51 to .70 or -.51 to .70= Moderate, .71 to .90 or -.71 to .90= Strong, .91 to 1.00 or -.91 to -1.00= Very Strong

### *4.4. Relationship between Implementation Methods of PdPc and Students' Cognitive Interestsin Learning*

The analysis of the relationship between cognitive interests and the traditional learning methods confirmed a weak negative relationship between the students' cognitive interests and the traditional learning methods with a value of r=-0.34(p<0.01). It is evident that students' cognitive interests in learning Geography will lessen with the increase in the use of the traditional methods (Table 9).

The relationship between the students' cognitive interests and the game-based learning method was strong (r=0.79, p<0.01). This indicated that students have cognitive interests in the game-based learning method used by the lecturers in the Geography subjects. Besides, the findings indicated a relationship between students' cognitive interests and the flipped-based learning method. The analysis conducted indicated a strong relationship with a correlation value of r=0.71 (p<0.01) between students' cognitive interests and the flipped-based learning method. It clearly revealed that students have cognitive interests in the flipped-based learning method conducted by the lecturers. Additionally, there is a moderate relationship between students' cognitive interests and the challenge-based learning method with a correlation value of r=0.70 (p<0.01). It is evident that cognitive interests only have a moderate relationship with the challenge-based learning method conducted by the lecturers for the Geography subjects.

In conclusion, this study discovered that there is a relationship between cognitive interests and the learning methods conducted by the lecturers. The findings indicated that the relationship between cognitive interests and traditional learning methods is weak, while the relationship betweenthe game-based learning and flipped-based learning method is strong. Moreover, the findings also discovered that the relationship of cognitive interests with the challenge-based learning method is moderate.

**Table 9.** Correlation Test of Students' Cognitive Interests and PdPc Method Conducted By the Lecturers

| Relationship | Cognitive interest and the traditional learning method | Cognitive interest and the game-based learning method | Cognitive interest and the flipped-based learning method | Cognitive interest and the challenge-based learning method |
|---|---|---|---|---|
| Correlation coefficient (r) | -.34** | .79** | .71** | .70** |

| | | | | |
|---|---|---|---|---|
| t value and df<br>Significance | p<0.01 | p<0.01 | p<0.01 | p<0.01 |
| Correlation Strength | Weak | Strong | Strong | Moderate |

*Strength Indicator: .00= No Correlation, .01 to .30 or -.01 to .30= Very Weak, .31 to .50 or -.31 to .50 = Weak, .51 to .70 or -.51 to .70= Moderate, .71 to .90 or -.71 to .90= Strong, .91 to 1.00 or -.91 to -1.00= Very Strong

### *4.5. Influence of Implementation Methods of Pdpc on Students' Interests in Learning*

The multiple linear regression analysis was carried out to investigate whether PdPc methods could significantly influenced students' learning intetests in Geography. In this study, the dependent variable is students' interests in learning Geography, while the learning methods implemented by the lecturers such as the traditional methods, the game-based learning method, the flipped-based learning method, and the challenge-based learning are the independent variables. The results of the regression indicated that the model explained 70% ($R^2$=0.70) of the variance and that the model was a significant predictor of student interests in learning, F= 65.84, p <0.05. While, game-based (β = .531, p<0.05) and traditional learning (-0.18, p<0.05) contributed significantly to the model, flipped-based (β = .0.10, p>0.05) and challenge-based did not (β = .18, p>0.05) (Table 10).

The findings discovered that the game-based learning method influenced students' interests in learning Geography the most, with a percentage value of 64.5 percent. The analysis also discovered that the value of Beta (β) was high at 0.53, while the value of *t* was 5.26, and its significant value was p<0.05. This explains a positive relationship between students' interests and the game-based learning method, with every unit of the method gained students' interests at 0.53 units. It is also supported by a study conducted by Asliza (2018), in which the results showed that the use of game scenes in clarifying basic identities of programming can motivate and provide excellent learning experiences. Furthermore, she also stated that the game-based learning is what makes the PdPc process more interesting and effective as this approach brings life into the game activities prepared.

The traditional learning methods had a negative influence on students' interests in learning Geography. The analysis conducted discovered that the value of Beta (β) was -0.18, while the value of *t* was -3.27, and its significant value was p<0.05. This is evident that every unit of the traditional learning methods implemented by the lecturers lessen the students' interests by -0.18 units.

However, the analysis discovered that the flipped-based learning method and the challenge-based learning method conducted by the lecturers did not have direct influence on the students in learning Geography. It is evident that both results were insignificant at 0.42 and 0.09 respectively.

**Table 10.** The Influence of PdPc Methods Conducted by the Lecturers on Students' Interests in Learning

| No. | Independent Variables | Dependent Variables Students' Interests β | *t* | p | Contribution (%) |
|---|---|---|---|---|---|
| 1 | Constant | - | 1.42 | 0.16 | - |
| 2 | Traditional Method | -0.18 | -3.27 | 0.00 | 3.1 |
| 3 | Game-based Method | 0.53 | 5.26 | 0.00 | 64.5 |
| 4 | Flipped-based Method | 0.10 | 0.81 | 0.42 | No influence contribution |
| 5 | Challenge-based Method | 0.18 | 1.72 | 0.09 | No influence contribution |

R=0.83 F=65.84

R2=0.70 Sig F=<.001

*significantat p<0.05

## 5. Conclusion

In conclusion, this article discusses the students' interests in learning Geography, the PdPc methods conducted for the Geography subjects as well as the influence of implementation methods of PdPc towards the students' interests in learning. Students' interests were measured based on two aspects: emotional interests and cognitive interests. Based on the findings, the Geography students have high level of emotional and cognitive interests in learning. This high level of interestsis related to all the PdPc methods implemented by the lecturers. For an example, the flipped-based learning method is a student-centred teaching approach model in which students are more actively encouraged to participate in the classroom learning activities. Zheng et al. (2014) stated that teachers can make use of the time in the classroom for collaboration activities and reinforcement of learning on students and this will lengthen the discussion period. Hence, the students will indirectly become interested in learning using this method. Similarly, the implementation of the challenge-based learning method among the lecturers can gain students' interests in learning. It is because the challenge-based learning allows students to solve problems and work as a team while managing their time with the help of the lecturers. Therefore, it indirectly attracts students' interests in learning that uses such learning method.

However, the findings revealed that the game-based learning method influenced students' interests in learning Geography the most. This is because the method allows students to experience the PdPc process more interestingly and effectively. It is also supported by a study conducted by Asliza (2018), in which students agreed that game-based learning gave an excellent motivation and learning experience as well as attracted students' interests. The traditional learning methods, on the other hand, have a negative relationship and influence on students' learning interests in the Geography subjects. It means that this method should be reduced to gain students' emotional and cognitive interests in learning, especially in the Geography subjects. These findings supported a study conducted by Fauziah et al. (2017) stating that the traditional learning methods that involve too much use of textbooks and lecture method cause students to be passive and become less interested in learning.

Separate and more detailed studies of this PdPc implementation methods is highly recommended for the Geography subjects in the future. It is to overcome the limitations of this study using the general items suitable for the characteristics of this research that is also quite general by examining all methods in one study.

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