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Enhancing the Thinking Skills of Geography Education Students Through a Case-Based Learning Approach

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Abstract: This study aims to analyze the level, relationship, and effect of the case-based learning approach on the thinking skills of Geography students at Universiti Pendidikan Sultan Idris (UPSI). The study employed a quantitative methodology, using a survey design and a Google Form questionnaire. The sample consisted of 164 male and female students in their fourth, fifth, sixth, and seventh semesters, selected according to Krejcie and Morgan's table. Descriptive analysis (mean, percentage frequency) and inferential analysis (Pearson correlation) were used to answer the research questions. The findings show a high level of knowledge (M = 4.67), indicating a strong mean value. Pearson's correlation analysis reveals a moderate relationship between the level of knowledge and the learning type, comparing case-based learning and conventional learning, with a Pearson correlation value of r = 0.599 and p = 0.000. Additionally, the case-based learning approach had a significant effect on the thinking skills of both male and female Geography students, yielding a high mean value (M = 4.64). In conclusion, this study shows that male and female students possess a strong level of knowledge about the case-based learning approach applied in Geography education at the university level. The implications of this study may benefit those looking to investigate the influence of learning approaches on thinking skills, students' knowledge, attitudes, and motivation.

Keywords: Geography; education;; Cased-based Learning; thinking skills

1.0 Introduction

The education system plays a vital role in the formation of a nation and its people. The true strength of a country is reflected in the level of knowledge and skills possessed by its population. This system serves as a platform to showcase the progress of a country. Education is one of the most important benchmarks in determining the quality of human life, as it can pave the way for achieving desired employment (Samian et al., 2017). This is because industries and job markets require a skilled workforce with extensive knowledge. However, constraints and weaknesses in applying knowledge and skills holistically often limit individuals from expanding their capabilities and competencies. In this regard, today's society is urged to enhance knowledge, skills, and abilities starting from early education (Benedic & Sumayyah, 2022). A focus on holistic education ensures that students are not only proficient in their respective subjects but are also equipped with critical thinking and problem-solving skills (Munna & Kalam, 2021).

Case-Based Learning (CBL) is a teaching method that involves students in discussions about issues and problems that arise in practical applications or real-life situations. This method provides students with information about a situation and requires them to resolve issues or problems related to that situation (Sumayyah et al., 2020). The real-world context fostered by CBL promotes a deeper understanding and retention of knowledge, as students actively engage with the material (Saleh et al., 2022). According to Fatimah et al. (2017), equipping students with oral skills is a challenge for teachers. Therefore, oral instruction should not solely focus on demonstrating how to speak well but should also provide students with opportunities to integrate knowledge and skills learned from other subjects.

The use of the case-based learning approach is not impossible, as its focus is to facilitate learning through real interactions among students who share their knowledge and collaborate in groups. The teacher's instructional approach can create a positive learning environment, or the opposite (Abdullah et al., 2021). The role of the facilitator or instructor is to help students work together to analyze and solve problems that do not have clear solutions. Recent studies indicate that a supportive learning environment, characterized by positive relationships and collaborative group work, significantly enhances student outcomes. Implementing CBL not only enhances critical thinking skills but also prepares students for the dynamic challenges of the workforce. As educators, it is imperative to adapt and innovate our teaching strategies to make learning relevant and engaging for the next generation (Alisoy & Babazade, 2024).

The subject of Geography is one of the subjects offered in Malaysia's education system. It was introduced at the primary school level in 1927 and at the university level in 1959. Previously, Geography was a core subject for both lower and upper secondary levels. However, with the introduction of the New Secondary School Curriculum (KBSM) in 1989, Geography was shifted from a core subject to an elective one (Ministry of Education Malaysia, 2015). This "downgrading" of the subject has led to some schools no longer offering Geography to Form Four students, citing a lack of interest among students in taking the subject (Mahat et al., 2017). At this juncture, the study of Geography needs to be repositioned to align with these changes and re-establish its relevance. The process of elevating the field of Geography requires a thorough examination of the content that is considered foundational to the field and how its fundamental elements contribute to the development of local communities as well as the world (Shah et al., 2013)

Students' lack of interest in learning Geography is attributed to the broad content of Geography education, compounded by a lack of learning materials and infrastructure such as geography laboratories, libraries, weather stations, and other necessary facilities to make learning more meaningful (Nuratu, 2014; Sumayyah et al., 2020). Conventional learning, often referred to as traditional learning, is commonly described as "chalk and talk." This term reflects the fact that conventional learning has long been used by teachers in their teaching and learning sessions. In this study, traditional learning involves teachers fully delivering the subject matter through lectures, while students listen to explanations and follow the teacher's instructions (Fauziah et al., 2017). Havice (1999), in Ishak et al. (2009), classifies traditional teaching as relying solely on textbooks and lecture methods. Meanwhile, Neo & Rafi (2007) describe traditional teaching and learning as the "chalk and talk" method or the use of transparencies (OHP), with the media used being printed books

Case-Based Learning (CBL) is one of the pedagogies recommended by the Ministry of Education Malaysia (KPM) for implementation in classrooms. CBL is often defined as a teaching method that requires students to actively participate in real or hypothetical problem situations, reflecting the types of experiences commonly encountered in the discipline being studied (Ertmer & Russell, 1995). A case is essentially a story with a message that needs to be analyzed by students, who must then consider potential solutions to the issues presented.

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CBL helps facilitate the transfer of knowledge and align students' expectations with their learning experiences. Teachers and students collaborate during the process, with students taking control of analyzing the case (Danucha et al., 2012). This learning method promotes the transfer of knowledge at a higher level, particularly by developing critical thinking skills. The use of cases in teaching and learning offers several advantages, including the ability for students to apply theoretical knowledge to real-world contexts, critically analyze complex situations, and propose courses of action. It also helps students develop self-awareness, identify assumptions, clarify personal beliefs about teaching, compare and evaluate their own perspectives with those of others, and foster reflective practice. Case-based teaching and learning is considered a constructivist-oriented approach, as it encourages active student engagement, allowing students to shape their own learning (Sudzina, 1997).

2.0 Study Area

This study is conducted at Universiti Pendidikan Sultan Idris (UPSI), located in Tanjong Malim, Perak (Figure 1). UPSI is the first education university established in Malaysia. It has two campuses: The Sultan Abdul Jalil Shah Campus (KSAJS), located in the town of Tanjong Malim, and the Sultan Azlan Shah Campus (KSAS), situated in Proton City. The choice of this area as the research site is due to the availability of the necessary respondents for the study. The location also facilitates the collection of the required data. By selecting UPSI, this study aims to conduct a deeper examination of how Case-Based Learning (CBL) can be effectively implemented in teacher training programs, ultimately preparing educators to adapt to contemporary educational challenges. The specific experiences of the students at UPSI provide valuable insights that can contribute to broader discussions on pedagogy and student engagement in similar educational contexts.

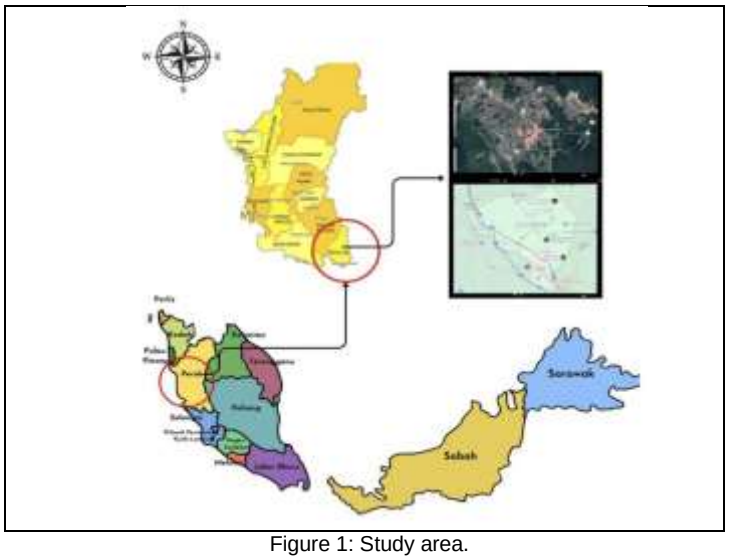

Figure 1: Study area.

3.0 Materials and Methodology

The data for this study is quantitative. It uses quantitative research as the primary approach to analyze the findings obtained through a questionnaire. Quantitative research is associated with numerical data and precision, derived from positivist inquiry using experimental studies and statistical tests (Chua, 2006). The quantitative methods applied in this study include descriptive statistics and inferential statistics. Inferential statistical tests are used to identify and explain significant relationships between the dependent and independent variables in the study.

The design of this study is non-experimental, and data was collected using a survey method. A questionnaire was chosen as it facilitates quicker data gathering and offers a broad overview of the research questions. A questionnaire is a set of written questions or items, and in this study, it is used to explore the Case-Based Learning approach's effect on the thinking skills of geography education students. This research involved a sample of 273 respondents, including both male and female geography education students at Universiti Pendidikan Sultan Idris (UPSI). These respondents were selected because their experiences align with the study's focus on the Case-Based Learning approach and its impact on the thinking skills of geography education students. The population for this study includes students in their fourth, fifth, sixth, and seventh semesters, who have been exposed to various learning strategies implemented by instructors in their geography courses. This group was chosen as they possess relevant experiences that directly inform the research objectives.

The questionnaire instrument is characterized by specific scientific traits and can represent a wide population through a small, logical sample (Elangkumaran, 2009). The use of this instrument allows efficient data collection from a large number of respondents. Thus, the questionnaire was chosen as the primary tool to obtain research results based on the responses from geography education students at UPSI. Two main analytical techniques were employed to evaluate the data collected from the questionnaires. First, Average Score Comparison Analysis was used to compare the mean scores between two groups of respondents. This analysis aimed to identify significant differences in responses related to the Case-Based Learning approach and its impact on thinking skills. The results were presented in tabular form for clear interpretation and comparison. Second, correlation analysis was used to examine the strength and direction of relationships between the variables of interest. Specifically, the Pearson correlation coefficient was applied to measure the degree of association between the independent and dependent variables in the study. This method helped assess the extent to which changes in one variable correspond with changes in another, providing deeper insights into the dynamics influencing the research outcomes.

4.0 Results & Discussion

4.1 Level of Knowledge Among Geography Education Students About Case-Based Learning

Figure 2 shows the mean score of students' knowledge about case-based learning. According to the findings for the first objective, which assesses students' knowledge of case-based learning in geography education, the results indicate a high level of knowledge (M = 4.67). This suggests that geography education students at UPSI have a strong understanding of case-based learning. They also gain new insights

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through the case-based learning approach in their university geography education. The knowledge acquired includes thinking skills, communication skills, students' understanding of specific topics, information technology, problem-solving, new experiences, increased student engagement, idea generation, improved learning quality, and the application of that knowledge. Knowledge can be enhanced through exposure to new information via lectures, classes, media, seminars, and other scholarly activities (Nor Kalsum, 2016). The implementation of case-based learning can foster a deeper level of knowledge in geography education at both the university and secondary school levels. Therefore, this approach helps improve knowledge and develop the thinking skills of geography education students.

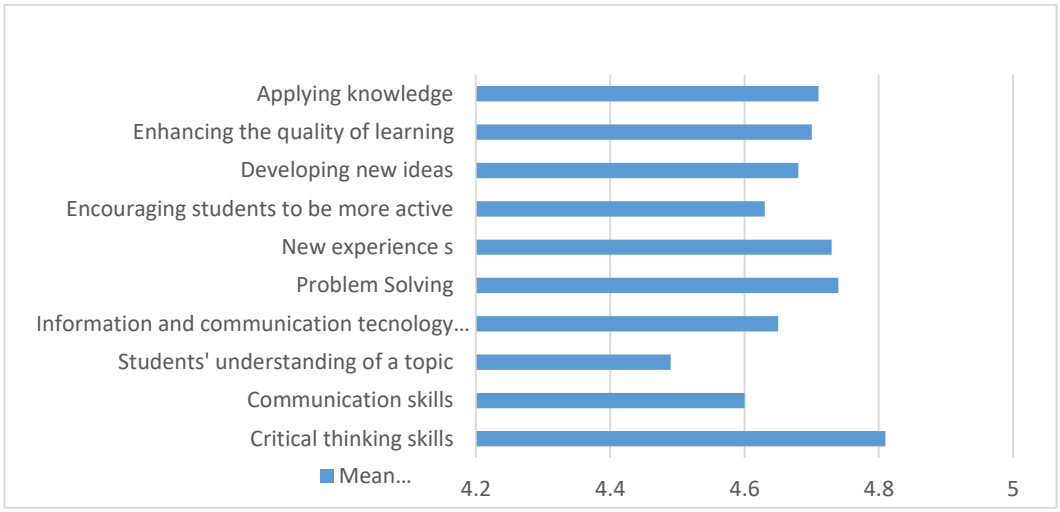

Figure 2: Mean scores of students' knowledge about case-based learning in geography education

4.2 The Impact of Case-Based Learning on the Thinking Skills of Geography Education Students

Figure 3 illustrates the impact of case-based learning on students' thinking skills. The findings for the third objective show that the impact of case-based learning on the thinking skills of geography education students is high, with a mean score (M = 4.64). The data analysis for this section utilizes descriptive analysis, displaying the frequency and mean scores for each question included. The study findings indicate that this case-based learning approach positively influences the thinking skills of geography education students. Among its effects are improvements in communication skills, a deeper understanding of topics, support for student discussions, assistance in problem-solving, the development of critical thinking skills, and improvements in assignments and the ability to find reference materials (Ahamad et al., 2022). Overall, the study concludes that case-based learning is an effective method for enhancing students' thinking skills (Shah et al., 2013). Students tend to prefer this approach as one of the learning strategies that helps improve their thinking skills (Saleh & Rosli, 2019). Therefore, teachers or instructors should be more creative and innovative in applying this method to create a positive classroom environment and foster a competitive spirit among students.

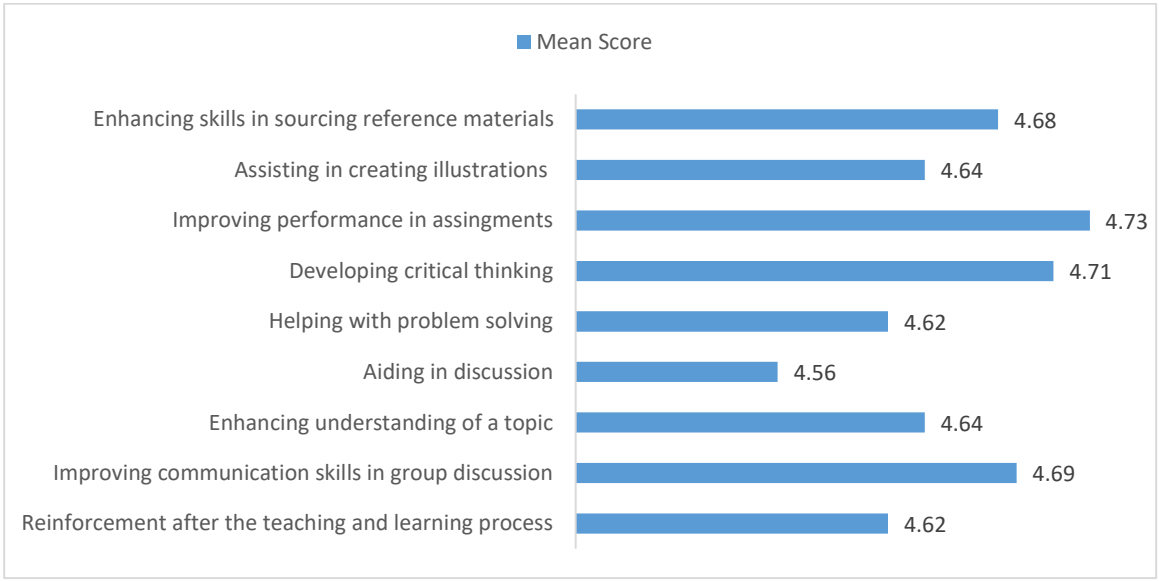

Figure 3: The impact of case-based study learning on the critical thinking skills of university students

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4.3 Relationship Between Case-Based Learning and Conventional Learning Used in Geography Education for Students

The findings of the study regarding the second objective, which examines the relationship between the level of students' knowledge and Case-Based Learning as well as Conventional Learning used in geography education, indicate a moderate relationship, with a correlation value of r = 0.6. This suggests that a correlation exists, but it is moderate (Table 1). Additionally, Swan et al. (2020) highlight the importance of fostering functional expertise through educational practices, which aligns with our findings supporting the effectiveness of Case-Based Learning in developing essential skills. The data collected from the questionnaire were analyzed using SPSS version 22, employing Pearson correlation analysis to assess the relationship between students' knowledge levels and the types of learning, specifically Case-Based Learning and Conventional Learning. The results from the analysis demonstrate that a relationship exists between these two variables; however, the relationship is moderate according to the correlation scale used. The findings also indicate that the hypothesis, which states, "Is there a relationship between the level of knowledge of students and the type of learning, namely Case-Based Learning and Conventional Learning?" has been accepted. Therefore, it can be concluded that there is a relationship between students' knowledge levels and the types of learning, with students preferring Case-Based Learning as a more effective learning strategy compared to Conventional Learning (McCarthy & Anderson, 2000). In line with this, Alisoy & Babazade (2024) emphasize that active learning strategies significantly enhance student engagement and achievement, further supporting the notion that interactive learning methodologies, such as Case-Based Learning, can lead to better educational outcomes. Their research illustrates that approaches involving active student participation contribute positively to learning experiences and knowledge retention.

Table 1. *Pearson Correlation Results*

	Student knowledge level (Aggregate mean score)	
Type of learning approach (case-based learning and conventional learning)	*r*	Nilai *p**
Aggregate men score	0.6	0.000

**Significant at p<0.01 (2-tailed)

5.0 Conclusions

In conclusion, the effectiveness of case-based learning on the thinking skills of geography education students at Sultan Idris Education University (UPSI) has shown positive results. Based on the study conducted, students are engaged with the case-based learning approach used in several geography education subjects they are taking. Conventional learning, which is outdated and primarily relies on the "chalk and talk" method, has become less relevant. Therefore, educators need to choose appropriate learning methods or strategies that align with current trends and scenarios. Additionally, this study can assist teachers or instructors in planning more creative and innovative learning methods by incorporating features of 21st-century learning (PAK-21) as emphasised by the Ministry of Education Malaysia (KPM). Consequently, changes in the teaching and learning system (PdP) need to be prioritised to develop students who are competitive and of high quality at an international level. The use of the case-based learning approach also indirectly helps foster new knowledge and positive behaviours among students, enabling them to utilise the skills they acquire to face challenges in the real world, whether in the workplace or in community-related matters. To further enrich the understanding of the impact of case-based learning, it is recommended that future research includes studies with a more diverse range of participants from different educational backgrounds and fields of study to assess the adaptability and effectiveness of case-based learning across various disciplines.

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Conflicts of Interest: The authors declare that there are no conflicts of interest.

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