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Teachers' Knowledge, Skills and Attitudes on Game–Based Approach Towards Student Engagement

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Abstract

The study aimed to determine the teachers' knowledge, skills and attitudes on game-based approach towards student engagement among public school teachers of Baungon District, during the School Year 2023-2024. Specifically, it examined the teachers' level on knowledge, skills, and attitude on the game-based approach; the level of student engagement in terms of behavioral, emotional and cognitive and the significant relationship between the teachers' level of knowledge, skills and attitudes on game – based and the level of student engagement. This study involved one hundred fifty (150) public elementary school teachers using universal sampling procedure.

Findings revealed that the teachers have positive outlook towards game-based approaches in education. It indicates readiness and willingness to incorporate game-based learning into their teaching practices. The teachers perceive a high level of student engagement on behavioral, emotional and cognitive domains. The relationship between teachers' level of knowledge, skills and attitudes on game-based learning and the level of student engagement across three dimensions: behavioral, emotional, and cognitive indicate a very strong significant relationships.

Keywords: knowledge, skills and attitudes, game-based approach, student engagement

1. Introduction

Game-based learning is a teaching approach that integrates games into the learning process to enhance student engagement and understanding of the subject matter. It can be applied to various subjects and genres of games, including digital games, board games, and physical activities. The key elements of game-based learning include defined learning outcomes, a balance between subject matter and game play, and the use of game elements such as leader boards, rewards, and quizzes to motivate and reinforce learning. Game-based learning has been shown to improve student performance, increase motivation, and foster the development of 21st-century skills like teamwork, problem-solving, and creativity (Smith & Johnson, 2020.)

Gamification promotes active learning, as students are actively involved in problem-solving, decision-making, and critical thinking. It also enhances student motivation by making learning enjoyable and fostering a sense of achievement and progress. Gamified learning environments can improve student retention and transfer of knowledge by providing repetitive practice and reinforcement of concepts. Additionally, gamification can create a collaborative and social learning environment, encouraging teamwork and peer interaction (Khabibullaev & Alijonov, 2024.)

Thus, it turns out that the CMSS (Curriculum Management Support System) results for SY 2023-2024 show poor academic performance in the following learning areas among learners of Baungon District. The researcher then had been challenged to conduct the study for the purpose of assessing the knowledge, skills and attitude of the elementary public-school teachers of Baungon District on a game-based approach to improve student engagement, critical thinking, problem-solving, creativity and retention of information, develop essential skills and real-world application of knowledge. The necessity also highly encourages updating teachers' teaching-learning approaches by incorporating a Game-Based Approach to regain learning interest, fill in the learning gaps, and encourage learning engagement among learners to create a productive, motivated, and meaningful learning environment.

Student engagement is a complex and multifaceted concept that refers to the degree of attention, curiosity, interest, optimism, and passion that students show when they are learning or being taught, which extends to the level of motivation, they have to learn and progress in their education. It is a critical measure of long-term student success and can be influenced by various factors, including the quality of engagement, the context of learning, and the emotional, social, and intellectual readiness of students (Aker & Ellis, 2019). Student engagement has three dimensions: behavioral, emotional, and cognitive. Behavioral engagement refers to student's participation in academic and extracurricular activities. Emotional engagement refers to students' positive and negative reactions to peers, teachers, and school. While cognitive engagement talks about student's thoughtfulness and willingness to master difficult skills (Delfino, 2019).

Literature and Related Studies

Game-Based Approach

Game-based learning is a teaching approach that integrates games into the learning process to enhance student engagement and understanding of the subject matter. It can be applied to various subjects and genres of games, including digital games, board games, and physical activities. The key elements of game-based learning include defined learning outcomes, the balance between subject matter and game play, and the use of game elements such as leaderboards, rewards, and quizzes to motivate and reinforce learning. Game-based learning has been shown to improve student performance, increase motivation, and foster the development of 21st-century skills like teamwork, problem-solving, and creativity (Kodable, 2023). Gamification of education makes it possible to achieve high motivation and involvement of students in the educational process (Alimova, 2023).

Teachers Knowledge in Game-Based Approach

Teachers' knowledge and competencies regarding game-based approaches are crucial for the successful integration of this innovative teaching method into classrooms. By developing skills in pedagogy, technology, collaboration, and creativity, educators can create engaging learning environments that not only motivate students but also enhance their critical thinking and problem-solving abilities. As educational institutions continue to embrace digital tools, ongoing professional development will be essential in equipping teachers with the knowledge necessary for effective game-based learning implementation (Subhash & Cudney, 2018).

Teachers Skills in Game-Based Approach

Teacher skills in a game-based approach include the ability to design and facilitate engaging learning ex

periences using games, both digital and non-digital, to teach academic concepts. They should be able to incorporate game elements such as feedback, choice, and collaboration to enhance student engagement and motivation. Teachers should also be able to manage classroom dynamics during gameplay, ensuring that students uphold classroom norms and that the game remains a part of the critical learning process. In addition, they should be able to design game-based assessments that can test a broader range of skills, including creativity, collaboration, and socioemotional skills (Moeller et al., 2018).

Teachers Attitude Towards Game-Based Learning

A study on teacher perceptions of game-based learning in Trinidad and Tobago found that teachers generally have positive views of game-based learning, with 50% strongly agreeing that it can be highly effective in simplifying concepts for primary students, 60% strongly agreeing that it can make it easier for primary school students to learn any subject, and 40% strongly agreeing that the use of game-based learning in primary school classrooms should be increased over time (Pinder, 2021).

Student Engagement

Student engagement in a game-based approach highlights the significance of game-based learning in enhancing student engagement and academic performance. Various studies emphasize the importance of student engagement as a predictor of academic success at Higher Education Institutions (HEIs). The behavioral, emotional, and cognitive dimensions of student engagement are crucial and can be enhanced through effective teaching practices, internal processes, sociocultural contexts, and holistic perspectives (Videnovik et al., 2023).

Objectives

The main objective of the study was to determine the level of teachers' knowledge, skill and attitude on a game-based approach towards student engagement for School Year 2023 – 2024. Specifically, this aimed to to find the teachers' level of knowledge, skills and attitudes on the game-based approach, assess the level of student engagement, and determine the significant relationship between the teachers' knowledge, skills, and attitudes on game-based and student engagement.

Theoretical Framework

This study is anchored on the Constructivism Theory of the concept of "learning by doing" by John Dewey. The researcher used it as a starting point to investigate the level of knowledge, skills and attitude of teachers on the game-based approach towards student engagement. This can be implemented in this digital era through game-based learning, where individual students can learn how to solve problems and make decisions through games. The interactive tasks are also customizable. With game-based learning tools, engaged students and workers can embrace learning rather than view it as a disruptive burden.

Conceptual Framework

It has independent variables, which consist of the teacher's knowledge, skills and attitudes on the Game-Based Approach. The dependent variables consist of student engagement in behavioral, cognitive, and emotional areas.

Teachers' knowledge of GBL is crucial in creating game-based learning procedures and enhancing learning and motivation. Teachers should choose appropriate games based on students' interests and

abilities and prepare carefully in advance to ensure that the games are multi-leveled and suitable for their ages and contemporary literacy (Balaskas et al., 2023).

Figure I shows the schematic presentation of the study, which involves the variables used. The figure presents the roles of a sequence of the conceptual paradigm in the determination of the inquiries of this study. It focuses on teachers' knowledge, skills, and attitudes toward game-based approaches to student engagement.

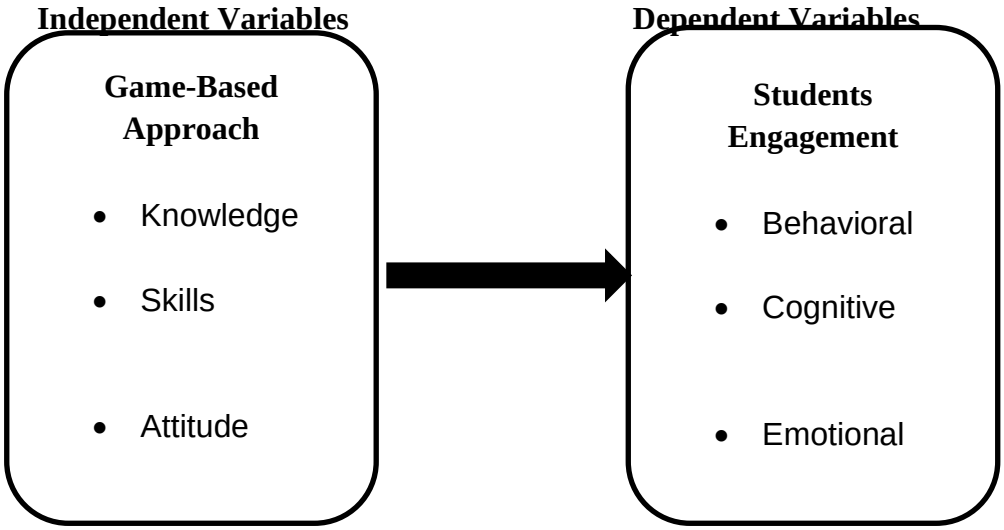

Figure 1. A Schematic Presentation Showing the Interplay between the Independent and Dependent Variables of the Study

Statement of the Problem

The study aimed to determine the level of teachers' knowledge, skills and attitudes on game-based approach towards student engagement in Baungon District during the School Year 2023-2024.

Specifically, the study sought to answer the following questions:

1. What is the teachers' level of knowledge, skills and attitudes on the game-based approach?
2. What is the level of student engagement in terms of behavioral, emotional and cognitive?
3. Is there a significant relationship between the teachers' knowledge, skills and attitudes on game-based and student engagement?

Hypothesis

Problems 1 and 2 are hypotheses-free. On the basis of Problem 3, the null hypothesis was tested at a 0.05 level of significance.

H0. There is no significant relationship between the teachers' knowledge, skills and attitudes on game-based and student engagement.

Significance of the Study

The findings of the study would be beneficial to the different groups, organizations, and stakeholders in education.

The DepEd, as a government entity in charge of the educational needs of local communities, would benefit from this study because they will use the result as the basis for proposing more faculty

development programs for their teachers to upgrade them with skills and knowledge in incorporating game-based approach in the teaching process. This would be used as a basis for establishing a program for the professional development of teachers in the whole school of the Division of Bukidnon.

The school administrators of Baungon District would inform them about the advantages of incorporating a game-based approach in the teaching process. Such information might entail a need for in-service training on game-based approaches to cope with the increasing need for relevant and upgraded approaches in teaching. More in-service training means more development for 21st-century skills teachers.

The study's results would inform the elementary teachers of Baungon District of the need for effective game-based approaches so that quality learnings are attained for better academic achievement. This would inform them of the extent of the use of certain game-based approaches that contribute to the academic achievement of their learners. With such knowledge, they can assess the effectiveness of certain approaches to the lessons that enable the pupils to learn more easily. Through these game-based approaches, they could have more interactive learning sessions with each other and achieve high academic achievement.

The study's results would inform the pupils of Baungon District of effective game-based approaches so that quality learning is attained for better academic achievement.

The future researchers, this study would serve as a source of literature or reference to conduct studies related to game-based approaches.

Scope and Limitations

This study focused on the level of knowledge, skills and attitude of teachers on a game-based approach towards student engagement in Baungon District 1 and 2, Division of Bukidnon SY 2023-2024.

The respondents were one hundred fifty (150) public elementary school teachers in the districts mentioned. The independent variables are limited to teachers of Baungon District 1 and 2 on their level of knowledge, skills and attitudes on the game-based approach. Further, the dependent variables are also limited to students behavior, cognitive and emotional in terms of game-based approach towards student engagement.

Definition of Terms

For a common frame of reference, the following terms are hereby operationally defined:

Attitudes. This refers to assessing the beliefs, perceptions and behaviors related to integrating games into their teaching practices, which might include measuring the enthusiasm for using games in the classroom, the willingness to invest time and resources into implementing game – based learning, the openness to try new instructional methods and the perceptions of the effectiveness and relevance of games for student learning.

Behavioral. This refers to students' observable actions and behaviors such as active participation in class activities, asking questions, staying on task, completing assignments and, demonstrating enthusiasm for learning and collaborating with peers during group activities.

Cognitive. This refers to students' observable cognitive processes such as problem-solving abilities, critical thinking skills, memory retention, comprehension of academic content, ability to make connections between concepts, and creativity in generating ideas or solutions and could also include measuring students' engagement in higher – order thinking tasks and their ability to apply knowledge to

the new situations.

Emotional. This refers to the behavior of the students that encompasses observable manifestations of emotions such as expressions of happiness, sadness, frustrations, anxiety, or excitement during learning activities and may also involve measuring students' self -regulation skills, their ability to manage and express emotions appropriately and the overall emotional well-being within the learning environment.

Game-Based Approach. This refers to the systematic integration of structured games, simulations or gamified activities into teaching p[practices to enhance student learning, engagement, and retention of educational content that has clear objectives, rules, challenges, and feedback mechanisms aligned with educational goals.

Knowledge. This refers to the teacher's ability to integrate games into lesson plans effectively, proficiency in selecting appropriate games for specific learning objectives and the capacity to assess student engagement outcomes within a game- based environment.

Skills. This refers to an observable behavior such as the ability to create engaging game-based learning activities, proficiency in facilitating discussions around the game experiences, adeptness in managing classroom dynamics during game play, and effectiveness in providing constructive feedback to students within the gaming context.

Student Engagement. This refers to a meaningful engagement throughout the learning environment that is an observable and measurable degree of student's active participation, focus, interest, and enthusiasm in academic tasks, discussions and interactions during class time.

Research Design

This study used the descriptive correlation method since it is the appropriate method to achieve the study's objective. According to Panda (2023), descriptive correlational research is a research design that tries to explain the relationship between two or more variables without making any claims about cause and effect. It includes collecting and analyzing data on at least two variables to see if there is a link between them. Teachers' level of knowledge, skill and attitude on game-based approach towards student engagement were measured numerically using a rating scale. Also, this method of research is a fact- finding study with adequate and accurate interpretation of the findings. With this, it could determine the teachers' level of knowledge, skill and attitude on game-based approach towards student engagement among the elementary public-school teachers of Baungon District of Bukidnon.

Study Setting

This study was conducted in Baungon, the second-class municipality in the province of Bukidnon, Philippines. According to the 2020 census, it has a population of 37,111 people. It is located in the northern part of Bukidnon, about 132 kilometers (82 mi) north of Malaybalay City via Cagayan de Oro, which is about 30 kilometers (19 mi) from Imbatug, the town's poblacion. It is bounded on the north-east by the Libona, at the south by the Lantapan, and on the west by Talakag. It has a land area of 328.34 square kilometers based on the cadastral survey made by the DENR. It is politically subdivided into 16 barangays. Each barangay consists of puroks while some have sitios. The municipality of Baungon was converted from a municipal district to a municipality through Executive Order No. 272, signed by President Carlos P. Garcia on October 4, 1957; the conversion took effect on July 1, 1956. In 1757.

Research Respondents

The respondents of the study were the one hundred fifty (150) elementary public school teachers of the Baungon District. There were seventy (70) from Baungon I and eighty (80) from Baungon II. They were given survey questionnaires regardless of their demographic profile.

The distribution of the respondents per school is shown in table A.

Table A
Distribution of Respondents

Name of School	Respondents
BAUNGON DISTRICT I	
San Vicente Elementary School	10
Salimbalan Integrated School	10
Patpat Elementary School	9
Mabunga Primary School	6
Liboran Elementary School	11
Imbatug Central Elementary School	24
BAUNGON DISTRICT II	
Buenavista Elementary School	6
Danatag Elementary School	24
Mabuhay Elementary School	7
San Miguel Elementary School	12
Nicdao Elementary School	8
Lingating Integrated School	23
Total	**150**

Sampling Technique

To get the desired respondents, the first step was to determine the different schools in Districts 1 and 2, where the study was conducted. All the elementary teachers were the respondents, considering the universal sampling or complete enumeration was used in this particular study.

The researcher gathered data through a universal sampling technique from the entire elementary teachers of each of the schools in two districts of the area.

Research Instrument

The research questionnaire was divided into two parts to gather valuable insights into the teachers' knowledge, skills and attitudes on game-based approach towards student engagement.

Part 1 is a researcher-made questionnaire that deals with the level of teachers' knowledge of the game-based approach. It is a four-point scale that would determine the level of the teachers' knowledge, skills in game-based approach and student engagement with descriptions and interpretations of 4 – At All Times/ Very High, 3 – Most of the Time/ High, 2 – Sometimes/ Low and 1 – Never/ Very Low and teachers attitude on game-based approach with descriptions and interpretations of 4- Strongly Agree/ Very Positive, 3- Agree/Positive, 2 – Disagree/ Negative and 1 – Strongly Disagree/ Very Negative.

Part II of the questionnaire on student engagement was patterned and modified from the study of Delfino (2019) on Student Engagement and Academic Performance of Students of Partido State University. It is

a four-point scale that would determine the level of the teacher's knowledge, skills in game-based approach and student engagement with descriptions and interpretations of 4 – At All Times/ Very High, 3 – Most of the Time/ High, 2 – Sometimes/ Low and 1 – Never/ Very Low.

Validity and Reliability of the Instrument

The teachers' knowledge, skills and attitudes on the game-based approach was a researcher-made questionnaire, and the student engagement questionnaire was patterned and modified from the study of Delfino (2019). These questionnaires were evaluated by three (3) master teachers in the District of Baungon. Afterward, their recommendations were considered and incorporated into the formulation of the final draft. The research instrument was pilot-tested on the thirty (30) teachers who were not covered in the study but had the same characteristics.

On the other hand, the reliability of the test questionnaire, had a reliability rating of Cronbach's Alpha scores ranges from 0.841 to 0.857 measured. The questionnaire on Teachers' Knowledge, Skills and Attitudes on Game-Based Approach demonstrated good internal consistency. The scores for the different areas were as follows: Teachers' Knowledge on Game-based Approach: 0.844; Skills: 0.841; and Attitudes: 0.857.

Similarly, the questionnaire on Student Engagement showed good internal consistency. Behavioral scored 0.899, Emotional scored 0.872 and Cognitive scored 0.857.

System of Scoring

To facilitate the analysis and interpretation of the data, the scoring procedure for the independent and dependent variables is as follows:

Part l. Knowledge, Skills and Student Engagement Level

Scale	Range	Description	Interpretation
4	3.26 – 4.00	At all Times	Very High
3	2.51 – 3.25	Most of the Time	High
2	1.76 – 2.50	Sometimes	Low
1	1.00 – 1.75	Never	Very Low

Part ll. Attitudes to Game-Based Approach

Scale	Range	Description	Interpretation
4	3.26 – 4.00	Strongly Agree	Very Positive
3	2.51 – 3.25	Agree	Positive
2	1.76 – 2.50	Disagree	Negative
1	1.00 – 1.75	Strongly Disagree	Very Negative

Data Gathering Procedure

The questionnaire was used to gather most of the primary data in the study. Upon the approval of the proposal by the Dean of Graduate Studies of PHINMA Cagayan de Oro College, permission to conduct was secured from the school's division superintendent to allow the researcher to distribute the questionnaires in the different public elementary schools in the two districts of Baungon, Bukidnon. Permission was granted to conduct the study.

The researcher personally administered the questionnaire to the teacher respondents with the assistance of the school principals and staff of the respective schools in the first week of June 2024. Proper instruction in vernacular was resorted to ensure a proper understanding of all items in the questionnaire. Before the actual distribution of the questionnaire to the respondents, the researcher explained the purpose of the study and why it be conducted to them to get their utmost support for the study considering the large number of respondents. The completed questionnaires were collected in the second week of June as well.

Statistical Treatment of Data

The analysis and interpretation of the gathered data will be facilitated through the use of the following statistical tools:

Descriptive statistics such as mean, percentage, frequency and standard deviation were used relative to Problems 1 and 2.

Inferential statistics such as Pearson Correlation was used to test the significant relationship between the teachers' knowledge, skills and attitudes on game-based approach and student engagement.

Ethical Considerations

Before commencing the research, the proposal underwent an ethics review process by the Office of the Graduate School. The researcher earned clearance. A letter to conduct a study was submitted to the division office for the approval of the Office of the Schools Division Superintendent within the Division of Bukidnon. It was essential to emphasize that respondents who were selected and those who were not chosen to participate for any reason did so voluntarily, without any form of coercion or intimidation. They retained the right to abstain from answering questions if they felt uncomfortable in doing so.

Conclusions

In conclusion, the elementary public school teachers of Baungon District have demonstrated a foundation in game-based learning, but there is a clear need for targeted professional development to strengthen their skills and enhance cognitive engagement among students. By addressing these gaps, teachers can create more effective and enriching learning environments that not only capture students' interest but also significantly contribute to their intellectual growth and academic success.

Thus, the integration of game-based learning into educational practices is contingent upon teachers' knowledge, skills, and attitudes. While there is a growing recognition of the benefits of Game-Based Learning for student engagement, addressing gaps in teacher training and fostering positive attitudes towards this approach is critical for its successful implementation. Ongoing professional development and support are essential to empower educators to effectively utilize game-based strategies in the classroom.

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