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Research Article

Fostering Pre-service Physical Educators' Retention of Concepts in a Professional Education Course using *Moneypoly* Game

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ABSTRACT

Diversified development of educational strategies has been increasingly growing in the field of teacher education to address the challenges in residential-based learning brought by the virtual classroom setting. Necessarily, the application of game-based learning (GBL) is viewed to significantly contribute to complementing the students' learning deficiencies. Hence, this study was conducted to increase concept retention among pre-service physical educators (PSPEs) through a game-based assessment strategy called *moneypoly* game. This descriptive-qualitative collaborative action research study comprised 48 student-participants enrolled in the professional education course, "Curriculum and Assessment in Physical Education and Health Education for K to 12", at a teacher education institution in Central Luzon, Philippines during the first semester of the academic year 2022-2023. Educational activities related to the *moneypoly* game were implemented multiple times during the face-to-face class sessions. Subsequently, open-ended reflective questionnaires were administered to obtain authentic and valid data to capture the increment of concept retention among the PSPEs. Adhering to Braun and Clarke's Thematic Analysis technique, students' responses were themed via qualitative analysis software powered by MAXQDA Analytics Pro 2022. Findings revealed three (3) emerging themes that helped learners retain long-term memory of the lessons' concepts. This includes (1) learners' experiences in the *moneypoly* game that strengthen their concept retention, (2) contributing factors to students' constant participation, and (3) significant recommendations to improve the game-based assessment strategy in the next cycle. These characteristics of the *moneypoly* game influenced the way that students learned and remembered information. This led to the perception that the intervention generated multiform driving forces for the

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learners' all-encompassing learning. The exploration and utilization of GBL could be applied to other areas of discipline to corroborate the findings made in this study.

Keywords: *Assessment strategy, Concept retention, Educational activities, Game-based learning, Pre-service physical educators*

Background

The hyper-complexity arena of the education system unceasingly generates effective application of multiple instructional strategies to ensure that learners are acquiring the concept of the lesson. The employment of different pedagogies has been found to have the largest influence on students' attention, learning, and long-term knowledge retention. It can also affect how much information students remember or forget as well as how enthusiastically they feel about learning the concept. However, the disparity in education brought about by the global pandemic (Miranda & Tolentino, 2023), and the transition from hybrid learning, led to poor academic performance, specifically in the assessment of the learning of the students. Consequently, students typically and frequently forget what they have learned in their studies. The bulk of the information that students appear to have mastered, as shown by their performance on summative assessments, is not maintained or sustained over time. Considering the short attention span of the students, it is exceedingly difficult to sit down in one place, continuously take in instructional material, and remain concentrated on a topic for hours because students are easily distracted in an environment filled with internet stimuli. Furthermore, keeping away from distractions on their mobile devices is a challenge for students today. Additionally, instead of just learning, today's students are also engaged in several other activities resulting in a lack of focus and attention in their academic courses (Ortega et al., 2022). Therefore, increasing students' long-term knowledge retention is a shared objective of all instructors. Using active and interesting teaching methods is one strategy to improve students' long-term memory of the subject matter. Cognizant of this, teachers can positively affect their students' long-term retention of knowledge provided they give them plenty of opportunities to apply it through higher-order cognitive processes. As stated by Dicheva et al. 2015, gamification in education helps students increase knowledge retention and overcome the lack of student interest in learning environments. As retention of concepts is marked to be one of the backbones of optimal learning experiences, it makes the students become successful and exposed to any undertaking of an educational institution (Sakurai & Pyhältö, 2018). Furthermore, it is worth noting that knowledge retention benefits students as this contributes to their academic standing (Carini et al., 2006), motivation and perseverance, and the ability to cope with psychological distress (Schaufeli et al., 2002).

Introduction

According to memory and retention research, usual educational practices, such as non-cumulative exams and an emphasis on final exams that encourage studying by cramming, are likely to result in improved short-term performance but poor long-term retention (Deslauriers & Weiman, 2011). Several approaches to teaching are being made by educators to support one of many students' problems which is knowledge retention, simulation is employed among learners to build knowledge acquisition, confidence, and retention (Tubaishat & Tawalbeh, 2015). More so, retention may be strongly affected by the total number of sessions to how many an item appears most of the time (Walsh et al., 2022). As stated by Tran (2014), results revealed that after roughly eight (8) weeks, students who had received instruction through cooperative learning had considerably greater accomplishment and information retention scores than those who had received instruction through lecture-based teaching. It was shown that while authentic instruction had an impact on student motivation, engagement, and subject matter retention, it had no bearing on students' aptitude for applying what they had learned. It was suggested

that more research be done on other facets of authentic learning and the outcomes that may be attained (Dreher, 2013).

Furthermore, how knowledge is acquired and the frequency with which knowledge is reviewed have a significant impact on how soon these memories are frequently forgotten once knowledge has been captured. Reintroducing the lesson in smaller chunks will help participants retain the information for a longer period, according to a large body of research that demonstrates that memory reactivations can prevent memory loss or forgetting (Shail, 2019). Moreover, cultivating an amusing and ambitious learning environment will assist students in artlessly demonstrating that acquiring knowledge is not as dull as they think. Likewise, a well-known Chinese proverb states "I hear, and I forget; I see, and I remember; I do, and I understand," which mainly defines how students can learn and retain the lesson easily. Murphy (2019) stated that to facilitate the learners' understanding of the material, teachers were constantly challenged to produce new and appropriate educational activities for the students. Furthermore, she also includes that to increase student understanding and encourage them to become even more motivated, facilitators of the classroom should design purposeful learning experiences (Murphy, 2019). Concurrently, to increase knowledge retention among students, educators should continue to produce their educational delivery methods to explore more opportunities to further engage students with the concept (Turner & Turner, 2017; Vázquez-García, 2018). According to Turner and Turner (2017), diverse educational methods in teaching lessons provide unique benefits to learners. In addition, to influence positive results in achieving test scores and retention of course content, student teamwork can also be a learning tool to master the content. Furthermore, Vázquez-García (2018) proves that the students who participated increased their knowledge retention, which also helps by including feedback centered on corroboration, addressing the answer, and discussing the fallacy.

Acquiring good comprehension of the possible factors that elevate engagement with the students drives teachers and policymakers to create a more engaging learning environment which could potentially bring higher-level knowledge acquisition to the learners (McCormick et al., 2013). However, there is still a present issue in the education sector that seems to challenge the learners and the teachers. As it was assumed that a higher level of learning engagement provides the capability to obtain knowledge and deeper understanding, it is now vital that schools should offer more interesting and enjoyable learning activities to obtain a quality education (Bayoumy & Alsayed, 2021). Moreover, Lekwa et al. (2019) reported that the students' memory retention in the lesson and their academic achievement depend on how the teacher possesses a large scale of critical content which they may apply to maximize classroom instruction and ensure students' active participation in the learning process.

As students are put at a premium rank in the school system, they need to be in touch with learning activities like attending classes, submitting outputs, and participating in school programs, among others (Sengsouliya, 2020). Subsequently, an evaluation of academic engagement among the learners was placed as a necessary factor for teachers to help resolve students' learning challenges such as poor attainment of long-term memory retention (Olson & Peterson, 2015). Similarly, the utilization of differentiated instruction by the teacher can significantly influence the learner's prolongation of knowledge and concepts in classroom activities (Harbour et al., 2015). This idea was supported by Lekwa et al. (2019) who reported that the promotion of sustaining learning information among learners can be enhanced through the application of effective instructional strategies such as methods of presenting various concepts, the style of teachers in exposing students to different actual projects, and the feedback to improve child's work. Relevantly, establishing positive learning relationships could also affect students' performance in school. If the atmosphere feels like students are welcome and wanted, they are more likely to be inspired and motivated to participate in class (Amerstorfer & Freiin von Münster-Kistner, 2021). Furthermore, Havik and WesterGard (2020) claimed that facilitators of the classroom play a significant role in the learners

through their mutual effort in which place of learning should also satisfy students to promote an inclusive environment at school. Accordingly, Pedler et al. (2022) recognized that higher education institutions must build harmonious relationships as it increases students' academic motivation and improves student retention which remarkably shows the students' sense of belonging to support them to attend, participate, and achieve learning. Likewise, it was affirmed by Bowden et al. (2021) that the sense of the students on their self-efficacy and self-esteem was driven by behavioral engagement, which also managed to strengthen students' faith in their ability to achieve their goals and generate positive assessments of their self-worth. In addition, cognitive engagement was a crucial factor for the learners, especially when it comes to giving access to the students in the advancement of their knowledge. More so, social engagement builds trust, confidence, and empowerment which significantly contributes to ameliorating educational and emotional commitment.

In addition, to make the course and the delivery learner-centered and interactive to increase student retention of concepts, Gamage et al. (2022) stated that higher education institutions should ensure an opportunity to access relevant courses while introducing effective strategies and techniques. As expected though, the influence of the teacher-student relationship on the student's academic engagement manifests a positive impact, and it was reported that a stronger relationship between the teacher and the learner shows a higher probability of student engagement in activities rather than those who have a weaker relationship. Furthermore, teachers equip students with the necessary tools to experience successful learning either inside the classroom or beyond and are responsible for the various pedagogies of teaching and instruction in the classroom, where maintaining personal effort and metacognitive skills are fundamental to achieving academic success, students need to take ownership of their learning process (Franklin & Harrington, 2019).

Common Problems Associated with the Lack of Knowledge Retention

Academic motivation and engagement among students have both been tied to a variety of desired educational results, including better academic achievement (Wu, 2019). Whereas it is typically believed, from a theoretical standpoint, that motivation precedes engagement (Skinner et al., 2009). To implement motivation and engagement properly and fully, one must be able to take into consideration their multidimensional structures and their sub-dimensions. Classroom management may be significantly effective if students are participating and showing positive engagement toward instruction. It has been seen that it is a great factor to see if learners are absorbing the knowledge and concept as well as the skills given to them. However, there might be an aspect that may contribute to their deficiency in academic standing. According to Baker et al. (2008), factors that may affect students' poor knowledge retention are both behavioral problems and classroom context. Therefore, teachers are allowed to use behavioral management and several instructional contexts to address the problem.

As stated by Lin et al. (2016), knowledge loss has something to do with the absorptive capacity of a learner in a particular concept, and having knowledge management mechanisms such as retention can serve as a tool to manage potential issues for academics. In addition, due to a lack of available management about knowledge retention, individuals may also increase the risk of automatic and objectified knowledge loss (Levallet & Chan, 2019). Moreover, several factors may arise affecting the knowledge retention of a learner, especially in the higher education institutions such as lack of structures, lack of affirming organizational policy, environmental factors, and lack of good reading facilities (Enakrire & Smuts, 2022). For this reason, reinforcement in the form of a review of new learning must consist of one (1) week to achieve longer-term retention, since it has appeared in education that immediate assessment without prior knowledge of the concepts may be associated with loss of recall (Bell et al., 2008). Poor motivation can affect the knowledge retention of a student, encouraging

educators to redesign their educational measures to build inspiring learning environments (Putz & Treiblmaier, 2019).

Custers (2010) reported that several tactics may increase retention skills among students, however, they will only manage to have short-term retention rather than long-term retention. In line with that, basic mathematical knowledge among engineering students showed a decline in their retention over two years. This provided teachers an emphasis on their teaching approach to provide improvements in their knowledge retention (Engelbrecht et al., 2007).

More so, students' intention to drop out may sometimes be associated with low-level grades. Similarly, academic engagement may be influenced by student-related variables such as personal motivation and interests, mental focus, involvement in extracurricular activities, self-directedness in learning, and students' sense of satisfaction with learning (Ghasemi et al., 2018). On the other hand, students who are gifted and academically inconvenienced show less long-term retention of concepts which includes poor study habits reading difficulties, and more behavioral issues (Lakin and Wai, 2020). New, fascinating material engaged students; repetitious, difficult material and subpar tutoring disengaged them. Most of the learners aim to be better in academic performance but are hindered by internal and external obstacles (Elliot and McErlain, 2021). Serious gaming in education sets out to be the newest development in learning, influencing even the student's behavior. This strategy can enhance goal setting, feedback, and challenge that is effective to make students more engaged in their learning. Results also indicated that serious gaming is more challenging than traditional presentation (Van Dijk et al., 2014).

Game-Based Learning Activity in Education

The predominant definition of game-based learning is that it is a form of gameplay with clearly defined learning objectives. This corollary highlights the distinction between gamification and game-based learning. Moreover, gamification can mean a lot of different things, but one thing that sets it apart is that it involves using game elements like incentive systems to get players to a task that they wouldn't normally find appealing (Plass et al., 2015).

Gamification as an instructional strategy and approach promotes active participation and learning among students. Engaging them through game-based activities and the integration of games through pedagogical practices can enhance their academic motivation and performance (Marcaida et al., 2022). According to Jääskä et al. (2022), the game-based learning method is strongly suitable to achieve positive learning experiences and improve academic engagement goals. In addition, these games can be integrated through lectures and activities ensuring to meet learning outcomes and maximizing student engagement (Bado, 2022). It is an effective way to employ a game-based learning environment as a motivation for elementary students as it engages learners in the learning process. Results showed that computer-based games are a necessity to be included in the teacher's lesson plan to have a huge impact on the academic achievement of a student (Partovi & Razavi, 2019).

Moreover, students from elementary mathematics impacted their attitudes toward the subject matter by acquiring problem-solving skills, a growth mindset, and positive engagement. Game-based learning significantly improves their behavior in math and achievement in ordered pairs (White & McCoy, 2019). Furthermore, middle school students who participated in game-based learning achieved higher self-efficacy, and a better understanding of the content, and performed well in the knowledge assessments (Wang & Zheng, 2021). Digital games can be a promising pedagogical method among science, technology, engineering, and mathematics strand students that can improve learning achievements, particularly in their subjects demanding them to be more digital natives (Wang et al., 2022). Gamification learning can be alluded to as gamified learning. Even though the research literature on gamified learning and game-based learning overlap, they share a toolkit of game design elements and a common focus on adding value beyond entertainment, which is using the entertaining quality of gamification interventions or (serious) games for learning (Sailer & Homner, 2020).

Serious gaming assists educators in offering a wide range of advantages to those who use traditional methods and allows teachers to modify assessments in the form of a game. Most students reported an increase in participation in a classroom set up with the use of a game identifying a friendly competition and a sense of fun as the factors contributing to their motivation. This approach became a flexible tool to embed a motivating learning environment with the use of a gamification technique. Lastly, it also deemed the required learning outcome using a point system on each activity being provided thereby fueling the game and learning of the student (Cronk, 2014).

Benefits of Employing Game-based Learning Strategies for Students' Retention of Concept

To fully identify the succession of teaching strategies, students' active participation is the key to employing learning. Most teachers tend to create several approaches just to cater to all learners' needs specifically through their academic engagement (Dizon et al., 2022). According to Khan et al. (2017), designing the course can be an important tool to actively engage students with the best practices through the delivery of the topic. Moreover, learning activities and multiple pedagogies can lead to lively discussions that can also produce collaborative engagement among students. The teaching-learning cycle of the engaging process-genre approach, as well as the teacher's kindness, patience, and wise counsel, were all cited by students as contributing factors to their continued involvement and accomplishments (Rahimi & Zhang, 2022).

Students' academic engagement and performance in times of COVID-19 directly affected their performances. As stated by Jolly Sahni (2019), a huge impact on the learner's participation during the implementation of blended learning is seen as fruitful compared to those who are just engaging in a Learning Management System (LMS) which was depicted on their online quizzes and contribution on their online meetings. On the contrary, based on the lack of quiet, distraction-free locations, a dependable internet connection, and time spent doing chores, the results show that the unexpected switch to emergency online learning has caused new discrepancies in reported levels of student participation (Oana & Mitrea, 2021). When compared to students who were given a higher proportion of face-to-face instruction days, students who were given a higher proportion of virtual instruction days showed higher rates of attendance but negative academic achievement progress (Darling-Aduana et al., 2022).

According to Horn (2022), the benefits of promoting activities for the active participation of students include enhanced task behavior, increased skill development, and opportunities to respond properly. The key points to achieve this positive engagement are outlined in planning and implementation. In addition, students' motivation and engagement in a lecture class had a considerable beneficial impact on their contentment, and they were also strong predictors of their satisfaction (Obiosa, 2020). Classroom feedback can lead to positive effects on students' engagement creating a higher level of behavioral engagement and a supportive classroom environment. This may also foster inclusivity and value student diversity as feedback from teachers may impact students' perceptions and behavior (Monteiro et al., 2021). Moreover, higher academic engagement and accomplishment are vital for college students to achieve, which has substantial ramifications for college students (Wu, 2019). Better processing of ideas can facilitate students' learning and maximizing the effectiveness of active learning derives from the teachers' actions (Hodges, 2020).

With the repositioning of learning modality from a virtual platform due to the adverse effect of the global pandemic up to going back to a residential face-to-face setup, there seems to be a challenge in the knowledge and concept retention with the students because online learning doesn't fully promote and engage students to take review sessions and revisitation of previous lessons. Therefore, teachers must use several strategies such as game-based learning activities to regain students' enthusiasm and find joy in learning to lead to more long-term concepts and knowledge retention. This study would complement the low level of knowledge retention among students resulting in getting low scores on their assessment tests. The

implementation of the intervention will satisfy the needs of both teachers and students and will result in a productive teaching and learning environment.

Objectives of the Study

The researchers aimed to utilize and implement the devised game-based assessment strategy called *Moneypoly* Game to increase the level of concept retention by the determined pre-service physical educators (PSPEs) in their professional education course, "Curriculum and Assessment in Physical Education and Health Education for K to 12" for the first semester of the academic year 2022-2023.

Specifically, the following questions were addressed in the study:

1. What insights and perceptions can be drawn from the learner's experiences in the *Moneypoly* game that contributed to their retention of concepts?
2. How may the devised game-based assessment activity be improved for the next cycle to assist students' retention of concepts in a professional education course?

Methods

Research Design

This study utilized a qualitative-descriptive action research design in describing the implications of a game-based assessment strategy in the retention of concepts in a professional education course among pre-service physical educators. In addition, qualitative-descriptive provides a comprehensive encapsulation of events experienced by individuals or groups of individuals (Doyle et al., 2020). Moreover, in the collection of data, the nature of individual occurrences under investigation will be the subject of the qualitative-descriptive study such as interviews, or through observation, examinations of records, and other relevant documents. In addition, this research design was purely data-derived where codes are generated from the data in the course of the study, and the informational contents of the data are presented in a descriptive summary that is organized logically. Therefore, qualitative descriptives are extremely useful when researchers want to know about the events, who was involved, what was involved, and where things took place, especially in implementing an intervention in the classroom using a game-based activity to increase the retention of concepts.

Intervention

Based on the observation that students lack knowledge retention from one of their professional courses, the researchers came up with a game-based activity intervention to cater to the lack of retention skills. According to Hilliard and Kargbo (2017), students were more motivated to learn and were able to memorize different concepts in a particular subject through game-based activities. Similarly, learners can connect to the world with real-life scenarios added to several activities.

Devising the Game-based Assessment Activity

Moneypoly came from a well-known board game called "*Monopoly''* which is an economic game. This game was structured as a market with a single seller authorized to run the game or the commodity or services as what they called in the board game. However, as there is a need to strategically make the game more engaging and applicable in the current residential class of students, the rules of the intervention that the researchers implied in the classroom were modified and the use of a board was not applied in the intervention program anymore. The *moneypoly* game was made to develop and enhance the "monopoly game" to make it suitable, relevant, and meaningful to the learners. As it was founded to create engaging, collaborative, and interactive learning experiences to increase retention of concepts among the students, the intervention entails and possesses its own philosophical and fundamental sense of definitions. The *moneypoly* was derived from two (2) words, "money" and "poly". The term "money" refers to the allotted token (unreal money) given to the players which will determine the group of students who will play and later continue the game and receive an incentive at the end of the activity. Materials in game-based learning are helpful as learning tools. It promotes further exploration of the topic, enhancing social skills, and balancing the play

aligned to the learning objectives. This approach provides a positive attitude among teachers and students that can improve their retention concerning the given topic (Cardinot & Fairfield, 2022).

Meanwhile, the word "poly" means "many" which derives from the number of players (students) who participated in the game or activity. A collaborative effort in a group revealed that it can solve problems and come up with better outcomes as students provide unique thinking styles (Belousova Alla, 2020). Conclusively, the term "game" pertains to the strategy of how the intervention would be conducted. It is worth noting that integrating different educational game-based activities, following the target content and learning outcomes of the course, as a form of assessment provides a shred of notable evidence on the student's learning process. As stated by Hartt et al. (2020), game-based learning was preferred and had higher levels of student retention of concept, therefore, gamification is ideally suited for educational planning. On the other hand, additional materials such as the "incentive card", and "sticker" were implied to represent the status of the students in the game. For instance, an incentive card was given to each group where they put the sticker they received - the sticker serves as proof of their winning standing and ranking. According to Rehman and Gazi (2018), rewards and incentives are used by teachers as a motivating strategy for learners' academic achievement in terms of their participation and involvement in class. Figure 1 displays the unreal money that was used in the intervention program. While Figure 2 shows the incentive card and Figure 3 displays the sticker for incentivizing learning.

Figure 1. Amounts of Money in the Moneypoly Game

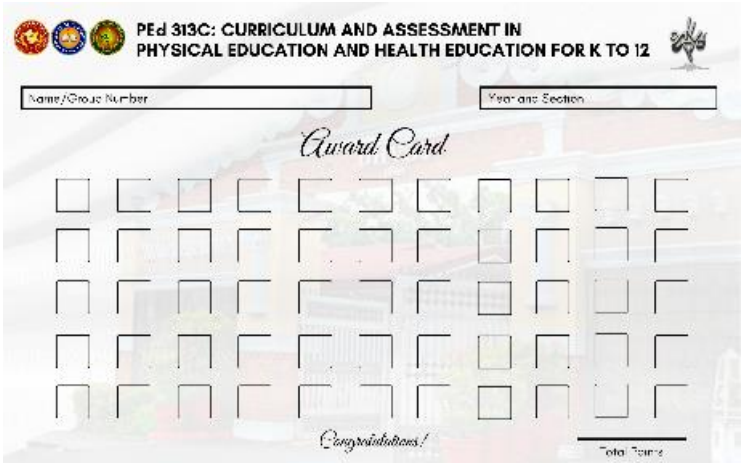

Figure 2. Incentive Card

Figure 3. Incentivize Sticker

Figure 4 represents the logo of the *moneypoly* game. As it was reflected, males and females constitute the learners' retention of concepts in academic undertakings. This also implies that the game is balanced between both sexes; a representation of a gender-sensitive classroom environment. The peso sign reveals the money that students need to protect. As the level of difficulty of the activities required them to do so, this sign provides them the eagerness to fight and receive the corresponding rewards that they acquired. In addition, this also serves as the award for the winner which they got at the end of the semester. Moreover, it is not just the value they need to prioritize but also the strategies, learnings, and collective efforts. Significantly, the hat symbolizes power and authority which means learners have the potential to win each activity and put themselves in the highest hierarchy. It is seen that hat is usually located on top signifying those groups who will attain victory are the ones who will also be placed as topnotchers; allowing them to develop knowledge acquisition and enhance excellency. Ultimately, the arrow-circle element, lifted by the male and female students, which surrounds the inner image epitomizes the continuous and consistent learning of the learners through the aid of various game-based activities, specifically the *moneypoly* game.

Figure 4. The Moneypoly Game Logo

Mechanics of the Moneypoly Game

In every game, each group was given the same amount of unreal money that they needed to secure to sustain their full participation in every activity. Students' money stays if they obtain a certain amount of standard in the given activity. On the other hand, the group receives demerit points if they do not attain the degree of requirement needed in the task. To assess the performance of the students, each activity that was anchored on the lesson or topic has corresponding conditions, criteria, and rubrics. For the group to not be deducted and maintain the provided money, they need to guarantee that their performance and presentation in various activities embody quality and encompass the instituted stipulation. As stated in the Reinforcement Theory, the reward system is used to influence the people in an organization like in education wherein it was used to influence students' learning outcomes with the use of rewards by the teacher (Javed & Muhammad, 2021). Further, in improving the students' retention of concepts, the reward is a good strategy, and as punishment, it could make the learners to be disciplined (Syarifuddin, 2021).

Participants

The participants of the study include the third-year pre-service physical educators (PSPEs) enrolled in the course, "Curriculum and Assessment in Physical Education and Health Education for K to 12" for the first semester of the academic year 2022-2023, from a teacher education institution (TEI) in a State University in Central Luzon, the Philippines. A complete enumeration (census) of the third-year Bachelor of Physical Education (BPEd) students in section B (N = 48) comprise the participants of the present study. The low level of retention of concepts was observed among these students, so they are best fit to compose the sampling frame because they are also the primary beneficiaries of this study. In addition, the application and implementation of the intervention in their class would assess how the *moneypoly* game helped them to increase their memory retention through assessment test results.

Instrument

Open-ended Reflective Questionnaire

Three (3) research-made reflective questions, validated by an educational research expert, were answered by the participants who participated and experienced the *moneypoly* game. The participants answered the open-ended questionnaires using a learning management system, particularly Google Classroom, that draws forth the significant experiences they had during the implementation of the intervention. The insights and perceptions of the learners that have been drawn related to their participation in the *moneypoly* game were queried, specifically the benefits of the game to the participants in remembering the concepts introduced in the course, Curriculum and Assessment in Physical Education and Health Education for K to 12. Moreover, the reflective questions also included data that perceived the recommendations they would like to improve the game-based assessment strategy. Hence, the following questions were asked:

1. In what ways did the *moneypoly* game help you in remembering the concepts introduced in the course, Curriculum and Assessment in Physical Education and Health Education for K to 12?
2. What do you find most exciting every time you participate in game-based learning?
3. What recommendations would you make to improve the game-based assessment strategy in the next cycle?

Data Gathering Procedures

A request letter to conduct the intervention and gather the needed data for the study with inclusive dates of the selected locality was presented to the Dean of the College of Education for approval. Detailed information and the aim of the study were also included in the request letter to provide a relevant and succinct description. The data-gathering procedure, following the qualitative process, commenced after permission was granted. The data were collected from the third-year Bachelor of Physical Education 3-B students who are enrolled in the course "Curriculum and Assessment for Physical Education and Health Education". Students were assigned to submit their answers regarding reflective questions posted in their Learning Management System. Students' responses were manually extracted for data analysis purposes.

Ethical Considerations

The researchers followed several ethical principles to ensure protection among human participants. The methods used to collect data complied with the requirements outlined in the international and national mandates for research, such as the National Ethical Guidelines for Health and Health-Related Research (Philippine Health Research Ethics Board, 2017), Belmont Report (National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research, 1979), and the Philippine Data Privacy Act of 2012 (Republic Act 10173). Respondents in this study provided their informed consent to protect and preserve their privacy, anonymity, and confidentiality. The consent form provided information about what details are required from the participants as well as how the data would be saved, recorded, reported, and disposed of. Participants' rights included their willingness to participate and their ability to withdraw for such reasons.

Data Analysis

The analysis of the data collection occurred in three phases with the use of MAXQDA, a software program intended for investigating the texts and identifying themes from the transcripts. Primarily, the researchers highlighted quotes or phrases that are significant for the study. Adhering to the study of Merriam (1998), in searching for recurring regularities, the transcripts of the reflective questions were reviewed several times. Furthermore, a thematic analysis will be applied in accordance with the study of Braun and Clarke (2006). The researchers employed the inductive data coding process, and the transcripts were deeply examined until consistent and distinct categories were identified (Marshall & Rossman, 2014). Each category was specified and placed in its designated folder. Tables were developed to visualize and contrast the various data collected. Finally, the categories were integrated and refined until themes were solidified and developed (Corbin & Strauss, 2014).

Findings and Discussion

Implementation of the Moneypoly Game

To provide support for the memory-retention deficiencies, several activities were made such as (1) Quiz Bee, (2) Fact or Bluff, (3) Jeopardy, and (4) Who wants to be a topnotcher? Each game has only one goal which is to provide the correct answers and protect the unreal money given to them prior to the conduct of the activities. Quiz Bee is simply a multiple-choice type of exam that only requires one correct answer. Another type of activity that was administered was the Fact or Bluff, students are required to lift a sign or placards of FACT if they believe that the situation or statement is correct, while BLUFF if it is incorrect. On the other hand, Jeopardy is another variety of *moneypoly* games in which groups are asked to pick among the amount posted on a board that corresponds to a particular topic and question. They must answer the question correctly or the money indicated on the question will be deducted from their remaining money. Lastly, Who Wants to be a Topnotcher is like the game show "Who Wants to be a Millionaire" in which there are participants on each question. If the students conclude that questions are difficult to answer, they can use a lifeline consisting of calling a friend; where they can tap their member to help answer the question, and fifty-fifty or the choices will be divided into two (2).

The intervention was implemented within one (1) month considering all the planned game-based activities. Each category of the *moneypoly* game was structured to cater for the lesson that was previously discussed to supplement the student's retention of concepts and provide them the opportunity to review the concepts and information while having an enjoyable, higher-order thinking assessment, and challenging learning experience. All categories of the *moneypoly* game require a similar group of students. In this case, eight (8) groups consisting of six (6) members were formed to equally divide the population of the class. Instructions and mechanics of the intervention, including each category, were initially discussed with the players (learners) to provide clear and adequate direction. Marking the start of the intervention's implementation was the quiz bee category which aims to supply sufficient long-term knowledge retention in the lessons "K to 12 Philippine Basic Education Curriculum", and the "Physical Education and Health Education Curriculum Models" (Figure 5). Subsequently, as shown in Figure 6, the Fact or Bluff was administered among the students to help them increase their memory retention in the "Measurement, Test, Assessment, and Evaluation in Physical Education", and the "Characteristics of a Good Test". As presented in Figure 7, the game-based activity associated with the *moneypoly* game is Jeopardy. This intervention category allows learners to engross the revisitation of the lesson in "Health Pedagogy". Moreover, depicted in Figure 8 is the "Who Wants to be a Topnotcher" category of the *moneypoly* game which desires to resolve the retention of knowledge about the "Fundamentals of Lesson Planning".

Theme 1: Learners' Experiences in the *Moneypoly* Game that Strengthen their Concept Retention

The implementation of the *moneypoly* game produced remarkable manners that manifested from the learners during their participation in the said intervention. Different experiences

were recognized by the participants on how the game-based activity assisted them in sharpening their skills in learning the lesson. In addition, through the recapitulation component of the activity, the learners gradually grasp the concepts on every occurrence of the session. Moreover, their engagement in the intervention truly shows the efficient response of the learners who receive diverse reactions that fabricates positive feedback in the amelioration of the retention of concept.

Subtheme 1.1: Helps the Learners to Recall their Lessons

Recapitulation of the previous sessions was such a norm for most of the educators inside the system, except by adding an exceptional element to it, understanding the lesson was more convenient for the learners. Furthermore, most of the students were fast learners, however, they have this short-term memory syndrome but the imposition of the *moneypoly* game allows them to reconnect to the lessons without any harm of straining themselves. Likewise, this game-based activity proves that the students were responsible for their learning by composing themselves to be attentive during the discussion to be prepared for the next meeting. The facilitators of this intervention were the teacher-interns who ensured that each question from the activity was repetitively explained, and queries from the students were answered to cater to their needs for their deeper understanding of the lessons. In addition, the questions that were used in each activity were relevant and sensible, which helped the students to remember the concept in each lesson and served as their advance review for their expected quizzes and exams. Consequently, through the continuous implementation of the *moneypoly* game, the learners were able to have an opportunity to learn more easily and joyfully (Punyasettro & Yasri, 2021). This indicates that the *moneypoly* game was a substantial activity for the learners to facilitate their course of action in reviewing, understanding, and remembering the lessons conveniently. Most of the following responses support this finding:

> *"The moneypoly game helps me to remember the concept in such a way that there is a set of questions." (P10)*
>
> *"Since we were stuck for almost 2 years because of the pandemic, my learning isn't that bright to remember all the lessons but when the money poly game was introduced in our class, I instantly recalled the previous discussion." (P12)*
>
> *"It helps me to review all our past lessons. It served as a reminder to me to all our lessons that will be present for our final exam. It refreshes all my stock knowledge." (P14)*
>
> *"The Moneypoly game helpful for me because I have a chance to review the subject of PED 313c to remember the previews lesson and have additional ideas to learn things that I don't understand much yet." (P21)*
>
> *"This became my review point to recall or recapitulate the past lessons. Moneypoly game is not a game that will serve as a joy to us learners, but it also became our guide and reviewer to understand the lesson and for us to easily answer the upcoming quizzes and examinations." (P44)*

Subtheme 1.2: Enable Students to Overcome Retention Difficulties

The recurrence of concepts has caught the attention of the learners by then they have become familiar with the made questions gradually analyzing the statements, and fully elaborating the lessons by themselves. Likewise, the case that happened in the implementation of the *moneypoly* game translates an approach, which is spiral progression, wherein the learners together with the teacher-interns revisit the same topics until the students master them by repeatedly studying the concepts that increase the complexity and reinforcement of previous learning. In addition, the more they encounter consistent topics, the further their comprehension of details will be refined. Moreover, questions were made deliberately in such a manner that the learners were able to remember and understand what the statements were trying to bridge into the knowledge of the students from the prior discussions. This spec-

ulates the study of Shail (2019) that with constant repetition of different concepts, the memory of each learner was enhanced and it's a matter of time until they remember the lessons by intermittently connecting to them through *moneypoly* game. Sample responses include:

"...there is a keyword that I've been remembering from the concept." (P10)

"It makes us remember all the questions and answers given because it was repeatedly dictated in front of us." (P16)

"All the questions in the moneypoly are helpful because the questions are concise so it's easy to remember." (P33)

"With the game moneypoly, the questions were memorable. Since we were given questions that most of the time, we don't know the answer, it stays in our memory because of how much we think about it." (P39)

Subtheme 1.3: Stimulates Critical Thinking

In accordance with the feedback of the participants from the *moneypoly* game, it clutches their chances to maximize their neurons to respond consummately to the flashed questions in front of them. Their skill in analyzing and synthesizing each statement was tested, and together the excitement of getting the correct answer energized them which intensified their stimulus that facilitated their level of performance in the class. Furthermore, their ability to think critically affected by their emotion was exercised and gradually developed throughout the implementation of the game-based activity. Moreover, it is mentioned that questions were made to be remembered and understood easily by the learners, however, each of them was deliberately created to make the students improve their reasoning, be able to consider different perspectives, or have cognitive flexibility. In addition, learners confessed that this intervention helped them not only in the course where it was implemented but also as a supplemental skill that they used outside of it. Thus, the *moneypoly* game served as a key principle in guiding most of the participants to be progressive and to have a perpetual thinking process (Zahra & Hin, 2022). Implementing this intervention unlocked the potential of the learners to surpass their limit in assessing their capabilities to support the group and help themselves to achieve their level of ruminating about their answers during the *moneypoly* game. Supporting this finding are the responses of the following participants:

"I tend to think critically which helped me a lot in many aspects not just in the curriculum assessment course." (P15)

"It helped me remember the past lesson where we used our critical thinking more to answer the question and to remember what we have learned." (P36)

"The moneypoly game helped us to recall our past lesson, and brainstorm with my groupmates to raise an answer." (P37)

"For me, the moneypoly game is helpful because of the given questions, for which we don't know we need higher-order thinking skills. The moneypoly game builds me more as a critical thinker." (P45)

Subtheme 1.4: Increases Students' Engagement

One of the many purposes of the *moneypoly* game was to fully engage the students in the lessons and produce a connection between them and the concepts that had been discussed. With the implementation of the intervention, other learners who were not participating in the class were transformed to be vocal inside their group and this helped it to move forward on each level. In addition, they're more plunged into the environment that they are in rather than they had before the occurrence of the game-based activity wherein they reach the level of awareness to enable themselves to have a good relationship and contribute to the group where they belonged to. Furthermore, their rights to participate throughout the intervention were recognized, and their freedom to share their ideas was not neglected which turned them on to continuously participate. Consequently, the competitiveness of each student was activated which also paved the way for them to have the opportunity to take control of their situation with care and support the individuality of the class to build their own identity and improve their self-esteem. In this way, the learners were unbothered to

incessantly participate because they felt valued, knew that they had their voice, and were able to influence the group (Hartt et al., 2020). The students displayed an astounding vitality along the academic pursuit that was implemented by the teacher-interns which showed that most of the learners were fully engaged. Some of the responses include:

"…the goal and mechanics of the game favorable to the activeness of the students." (P9)

"This helps us not just in academic purposes but also in cooperation and engaging ourselves in class." (P35)

"...the enjoyment with the group members, we have social interaction with the classmates." (P36)

"It caught our attention to engage and participate." (P43)

Subtheme 1.5: Provide Positive Feedback from the Learners

Positive feedback can lead to better understanding and retention of concepts. It can influence students' way of thinking and behavior through mastery of a particular topic. With the help of the constant administration of *moneypoly* game in a professional education course, students discovered other ways to increase the retention of concept skills through the integration of the game and positive feedback affiliated with the thinking process resulting in better understanding. With that, students found the *moneypoly* game fun, exciting, and interesting at the same time, providing them with ways to remember and memorize the lessons more. In addition, *moneypoly* game boosted students' minds and bodies as it was interactive where everyone could participate. Lastly, since the game encouraged students to be competitive, ways of students' learning styles become modified allowing them to successfully retain the concepts being taught. In this connection, it is noticeable that having positive feedback, interacting with game-based activities and repetitive actions can be a tool to recall several topics and concepts. It was also mentioned in the study of Carmona-Halty et al. (2021) that to promote higher academic performance, positive feedback can be a link to capitalize on good academic engagement that students, teachers, and principals can promote. Observable statements from the participants are:

"Since the moneypoly game is a fun and exciting game, it helps me to remember and memorize our lesson easily through being competitive." (P1)

"A fun memory, to be specific, would probably boost your mind and body." (P22)

"I really appreciate this game because it gives me motivation and starts with the learning style." (P28)

"We are fortunate because our student teachers have devised this strategy for this game, which is not only exciting but has taught us a lot that we can apply in the quiz or exam." (P31)

"It is an interesting game, all of us can participate in the game and at the same time we can enjoy it all the time because we are like playing while learning or recalling our past lesson." (P37)

"...it can motivate every student. It gives the discussion less boring and can make it lively." (P38)

Theme 2: Contributing Factors to Students' Constant Participation

Multiform factors that students have experienced during the *moneypoly* were likewise reported as contributing agents to their involvement and engagement. Considering the beneficial attributes of the game-based assessment strategy is one of the top priorities to ensure learners' constant participation while securing the increment of knowledge retention. While students were having their review through the aid of the intervention, it was evident in their responses that there were various reasons why they still participated, and this included collaboration with their classmates, healthy academic competition, the reinforcement of rewards, and an amusing classroom environment. All these congruently showed that *moneypoly* is a multi-faceted teaching technique to help students have long-term retention in different concepts of their lessons, and thus maintain their interest in the teaching and learning process. Relevantly, the devised game-based activity that makes the learners improve their memory retention proved that it offers a

variety of avenues as it gives students their needs in their study.

Subtheme 2.1: Collaborative Learning

The *moneypoly* game promotes collaboration between and among the learners and teachers. It was observed that all categories of the game were administered in a group of students because the intervention requires communication which makes pre-service physical educators share their knowledge with others. Importantly, the joint review sessions stimulate working and brainstorming to comprehend the concept of various questions and come up with the correct answer. This indicates that the *moneypoly* is a good and effective tool for building harmonious relationships, creating understanding with groupmates, developing confidence, and giving them the responsibility to deal with one decision. More so, collaborative learning was noticed as a contributing component to making learning smooth, comfortable, and productive. On this note, as it has a team-up, the concept can be easily shared and explained to others. As encapsulated by the pre-service physical educators in their responses, although challenging, they can learn from their members by exchanging ideas, investigating, and analyzing the questions. Relative to this, they also feel excited and happy as they get new information and acquire the concept of the lesson even in a complex and difficult context. Therefore, it is noteworthy that collaborative learning enhances positive interactions among learners, enabling them to formulate solutions to problems, and allowing them to develop cognitive, affective, and social skills (Van Leeuwen & Janssen, 2019). The following statements support this finding:

"... we can give each other knowledge about our lesson, and with that, I learn a lot." (P11)

"I'm excited to play with my classmates." (P12)

"I find it very challenging especially when you are in a group and you have to consider your groupmates' ideas and answers, on the other hand, groupings make it more exciting." (P15)

"The most exciting part of the game was when we collaborated to come up with an answer." (P24)

"The most exciting part is when we unite and collaborate to find answers to every question." (P33)

"Every time I participate in the game, I'm happy to share what I have learned with my groupmates and to make a decision not just for myself but also for others." (P37)

Subtheme 2.2: Healthy Competition

The academic competition in a friendly and healthy classroom environment was produced by the *moneypoly* game. On this note, the eagerness and determination of the students to win the game were observed. Furthermore, as they are continuously aiming to obtain scores, the learners manifest a continuous willingness to participate in the game-based assessment. Students also found *moneypoly* as an avenue to arouse autonomy that allows them to personally grow, particularly with their character and attitude in school. Similarly, a sense of self-fulfillment and excellence toward achieving something was able to be unlocked among the students. The pre-service physical educators draw more attention and focus during the class discussions which helps them to competently contribute answers with their group mates. In this manner, learners foster and value collective goals, and get to establish camaraderie to succeed in their academic studies. Necessarily, employing healthy academic competition motivates students to do better than their previous performances. Therefore, the *moneypoly* game is perceived as an acceptable source and a driving force of intrinsic motivation to attain triumph in students' assessment activities. Van Nuland et al. (2015) mentioned that game-based learning, governed by competitive interactions in an educational setting, enriches students' acquisition of knowledge and memory retention through repetitive practice of testing learners' understanding. Some of the responses in this subtheme include:

"I find the most exciting part when we are winning in every question." (P1)

"The most exciting part of the game for me is when I answer the question and also become a winner." (P10)

"The eagerness to win." (P23)

"This game made us become competitive since they expect our group to win." (P24)

"Competing with other groups on who makes more money is fun. It's the sense of achievement as well." (P39)

Subtheme 2.3: Incentivize Learning

The incorporation of rewards every time the *moneypoly* game is being played produces a more jolly and attractive learning setup. Students found that this game-based activity to boost their long-term memory retention has created not just mere participation but also a technique to earn new information and give them the corresponding incentive when winning the game. The obtained points of the players (students) were collected using the incentive card and the sticker. This serves as an inspiration for the learners to elevate themselves and be ready for the next conduct of the game to attain more scores. As a result of this, the rewards were given to the winning teams as their grand prizes, and the points earned were equally distributed among the members of the group and were recorded in their class recitations. This signifies that reinforcing academic rewards to students will make them more inclined, interested, and attentive in discussions and activities. Furthermore, it was remarkably noticed that learners tend to study greater because they know that they will be rewarded for their efforts and accomplishments. This was supported by Kamal et al. (2022) who reported that academic rewards have a higher influence on students' academic satisfaction which could help them improve their academic performances. Some of the responses are:

"*What I find the most exciting every time I participate in the game was that in every correct answer, there are always incentives, rewards, or points given to the creative thinkers." (P9)*

"...when we have a lot of money, we will win the game and have an incentive." (P18)

"...you can earn points in our recitation if we win this game." (P31)

"...we were given a task to protect the money for us to be able to have points or stickers." (P35)

"...if we win, it is equivalent to chips which can be exchanged for additional points." (P36)

Subtheme 2.4: Interactive Venue among the Learners

Aside from having collaboration, academic competition, and academic rewards, one of the significant results that *moneypoly* games generated is the interactive venue and classroom environment. Plentiful responses from the students proved that this game-based activity increases not only their memory retention but also their productivity in class. The confidence of the pre-service physical educators, their sense of belongingness, and self-development were notably seen during their participation in the intervention. Learners benefited a lot such as unleashing their abilities, stepping out of their comfort zone, and learning in a stress-free classroom environment. These factors aided the lack of potential of the physical education majors as future educators. Students also gained numerous experiences like performing in class, which boosted their self-esteem; speaking in front of their classmates, which developed their communication skills; and the characteristic of being humble when achieving something. This implies that *moneypoly* game complements the holistic learning of the students. Guardino and Fullerton (2010) specified that changing classroom management could build a well-organized interaction between and among students and teachers which may result in more positive behaviors of the learners. Participants' responses include:

"I am excitedly answering when I am participating in the game because I listen very well and read our lesson before we start that's why I am confident." (P3)

"The most exciting part of this game is when we have a chance to perform in front of our class. It makes me more confident because, as future educators, we need to practice public speaking." (P11)

"Well, I think the most exciting part in this game, is being less stress and fun at the same time." (P28)

"The most exciting part is when the teacher asks a question, and it has a corresponding amount of money, it gives me the motivation to answer the question correctly." (P29)

"...even if you lose the game, it's okay because the moneypoly game is fun." (P34)

"...this moneypoley game gives us a big smile in our faces whenever we play it." (P35)

"...the celebrations of the individual winners' achievements are all worth it." (P45)

Theme 3: Significant Recommendations to Improve the Game-based Assessment Strategy for the Next Cycle

The implementation of the *moneypoly* game made a huge impact on the retention skills of the students. Providing a stable way to enhance more cognitive aspects and further advancement of the learners' focus toward a topic materialized through this intervention. Using game-based assessment strategies during the discussion is viewed by the student as fun and exciting, however, there were several recommendations to improve the quality of assessment with the employment of the *moneypoly* game. Students pointed out inclusions to the rules employed for each category of the *moneypoly* game and to have a firm implementation of the mechanics during the duration of the game.

Subtheme 3.1: Inclusion of New Rules for each Category of the Game

The *moneypoly* game was anchored with several rules that made it more interesting for the students to play with. The rules were also identified based on the needed skill enhancement and category of each game. The nature of the game was always intended to protect the fake money and most importantly increase the students' knowledge or concept retention of a particular topic. However, there are still needed rules for each category of the game to fully comply with the required optimal development of their concept retention. Some students suggested having a yellow card as a lucky card to skip the question but can use it once. Moreover, learners wanted to have more physical activity, numerous stickers to receive, and fake money to bet. Lastly, students desired to have questions generated from different stages as easy to difficult. With that, rules are important to administer the game more effectively and achieve the desired goals included. As stated by Acquah and Katz (2020), several features are important in having a game-based activity which are identified as rewards and feedback, control or autonomy, and goal orientation that contribute to the context and outcomes of the game during the formal conduct in the learning environment. Sample responses under this subtheme are the following:

"I would suggest a yellow card luck. When a yellow card is raised by the players it means they have the chance to pass, but it's only one-at-a-time luck, so the players must think whether to use it or keep it." (P1)

"...my only recommendation is more physical activity and more stickers." (P20)

"The recommendation I would like to suggest or to make is to add more or to add different and creative games." (P32)

"Every question should have stages from easy to difficult." (P33)

Subtheme 3.2: Strict Implementation of Mechanics

The implementation of the *moneypoly* game was carefully planned and administered to the students. Since there are varieties of games, strict implementation was managed to polish the flow and strategy of the game. The delivery of instructions was also provided before administering the *moneypoly* game so that students are guided with the restrictions they are obliged to follow. Howbeit, there were suggested implementations to strictly supervise the game, particularly its mechanics. Conforming to the student's responses, they wanted to have confidentiality upon revealing the answers so that other groups could not copy their answers. Some were suggested to have strict compliance in showing their final answer, and alteration of answers should be prohibited. Therefore, implementation is an important aspect in generating a game-based activity thereby, students achieve what is desired to be

achieved. According to Coleman and Money (2020), designing game-based activity in the academic context should not neglect the implementation process, and must integrate educational experiences for the development of students' academic prowess to engage and prepare them more for their studies. Responses include:

> *"...the only thing I can recommend is that, before revealing the answer make sure that each group has already a final answer. I just observed in the previous game that some groups change their answer as soon they see others' answers, facilitators need to be strict in terms of that." (P15)*
>
> *"The only recommendation is that before revealing the answer, make sure they finalize their answers." (P45)*

Conclusions

Multiple categories of game-based assessment activities were conducted to strengthen and supply the various concepts in the lessons under the course, Curriculum and Assessment in Physical Education and Health Education for K to 12. Hence, learners' experiences in the *moneypoly* increased the retention of concepts in their lessons. Through the implementation of the intervention, students gradually aided their difficulty in retaining the discussed lesson over a long period. This brought them to have a high-level understanding of the concepts. Contributing factors to students' constant participation that influenced the increment of their concept retention were reported as one of the pillars of long-term memory retention. The implemented *moneypoly* game heightened the academic participation of everyone in the classroom. The utilization of technology and different types of games serve as an advantage to absorb the attention of the students and build their interest to connect them with the lesson easily. Besides the superiority of the acclaimed benefits of the *moneypoly* game, there are still elements in the intervention that should demand refinement to make the game-based activity better which will complement the expectations of the learners. Considering the recommendations of the students, it will be a useful resource to effectively utilize the intervention in a wide-range area and achieve its greater heights.

Recommendations

It is necessarily recommended that the intervention covers all topics discussed in the course, Curriculum and Assessment in Physical Education and Health Education for K to 12 to further broaden and increase the mastery of the concepts of the pre-service physical education students. It is highly suggested to utilize survey questionnaires as an instrument to gain quantifiable data regarding the effectiveness of the *moneypoly* game in the increment of concept retention and to additionally obtain reliable results in the study. An actual or face-to-face individual interview should be conducted with students who have observed low assessment performances or have short-term retention of concepts. New and unique categories of the *moneypoly* game may be added to further challenge the critical thinking skills of the students which may lead to more long-term memory retention. It is encouraged to conduct the *moneypoly* game in virtual platforms during online classes to determine its applicability and effectiveness and to integrate its academic benefits in the virtual classroom. It is strongly recommended to prolong the time of the intervention to further expose the students to various concepts relative to the topics. Lengthy-time *moneypoly* sessions could give more opportunities for students to ask questions, and thus better understand and acquire the necessary concepts of the lesson which may lead to longer memory retention.

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