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# GAME-BASED LEARNING ENHANCING LEAST LEARNED COMPETENCIES IN APPLIED SOCIAL SCIENCES

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***Abstract:*** In the rapidly evolving landscape of education, incorporating innovative and engaging teaching methods is crucial for fostering effective learning outcomes. Teacher needs to ensure that learners can cope up with classroom challenges especially in a class composed of learners with heterogeneous level of understanding for a particular subject is strenuous to handle since they have different expectations and abilities. By leveraging the power of gamification, the study aims to investigate the effectiveness of game-based learning in facilitating the acquisition and retention of critical competencies that have historically proven to be more challenging for learners. The game-based learning intervention will consist of interactive and immersive educational games specifically designed to address the identified least learned competencies. The games will be implemented as supplementary learning tools, integrated into the existing applied social sciences curriculum. Through an extensive review of existing literature and empirical evidence, the study aims to provide insights into the impact of game-based learning on enhancing skill development, critical thinking, problem-solving, teamwork, and other competencies specific to the applied social sciences domain. Hence, the findings of this study will contribute to the existing body of knowledge on game-based learning and its effectiveness in enhancing least learned competencies in applied social sciences. In addition, it will inform educators, policymakers, and curriculum developers on the potential benefits and implications of integrating game-based learning approaches within the applied social sciences domain. Ultimately, this study aims to promote more engaging and effective pedagogical strategies that foster comprehensive skill development in students, preparing them to excel in the dynamic and complex world of applied social sciences.

***Keywords:*** Applied social sciences, game-based learning, gamification, least learned competencies, retention

## I. INTRODUCTION

Learning happens everywhere but where and how you learn make all the difference. With increasingly ubiquitous technology in schools, it is imperative that educational leaders must select the right device for teaching and learning. The right learning framework suitable for student's grade level will activate their new pedagogical priorities and create their own artifacts of learning [1].

In the modernized society with advance technology, the use of Internet becomes so popular that the popularization of the Internet has greatly changed people's lifestyles and an option for talent cultivation or education studies, e-learning, is included. Such learning method applying network delivery and extracting learning information and content could break through the restriction of time and space for learning of knowledge and skills [2].

Analyzing students' performance and finding remedies on problems of failing and dropouts are prevalently the concern of every educational institution nowadays. Curriculum designs and unceasing seminars have particularly become concerned with developing new innovative teaching strategies in the field. Strategies and materials just like developing software and using Information Communication Technology (ICT) that facilitate an interactive learning environment are empower mostly today. Students in contemporary culture deal more with interactive technology. Predominantly educational games have been a significant part of students' culture.

Game-based learning (GBL) is an e-learning platform that can encourage a learner to improve his learning motivation through game playing experience [3]. GBL can be defined as the use of a computer game- based approach to deliver, support, and enhance teaching, learning, assessment and evaluation [4]. GBL covers applications using the characteristics of video and computer games to create engaging and immersive learning experiences for delivering specified learning goals, events and experiences [5].

Online Game-based platform is one of the great tools for building the foundation skills that today's school curriculum requires. Integrating online games in teaching-learning process increases flair and student engagement to more tedious, yet necessary tasks for the development of learners' skill. Also, adding element of competition motivates and energizes students.

The passing of R.A. 10533 also known as the Enhanced Basic Education Act of 2013, which added two years to the ten years national basic education program, meant that a number of subjects under the higher education GECs governed by CMO No. 59, S. 1996 also known as the New General Education Curriculum had to reorganized and taught at the senior high school. One of its features is the offering of Humanities and Social Sciences strand wherein Disciplines and Ideas in the Applied Social Sciences is maintained in the curriculum guide (February 2014), as well as that of implementing the subject in a manner that is

characterized by an interdisciplinary approach to help the students see the human being as an integral person living in both a national and a global community [6].

Disciplines and Ideas in the Social Sciences discusses various concepts, theories, and principles in the social sciences to enable students to analyze social problems and issues, propose solutions, and identify ways to take action in service of their community and country. Each lesson includes discussion questions and performance tasks which challenge students to put their knowledge into practice and employ critical thinking skills in understanding relevant issues and problems in Philippine society [7].

Learning Discipline and Ideas in Applied Social Sciences as a Specialized Subject for Grade 11- Humanities and Social Science Learners is not just rote memorization. Learners would not be able to gain any information and skills out of a dull learning process yet they have to understand the application of skills and knowledge to solve real-life problems with help of an effective learning process.

In response to this, the research will focus on the development of a validated digital game-based learning instruction for Disciplines and Ideas in the Applied Social Sciences (DIASS) that will aid the learners to actively engage with the different learning activities in exciting and enjoyable technique that will result to memory retention in order to address the least learned competencies

## II. RELATED WORKS

The use of multimedia for teaching and learning could be in a various form, but how video and digital games could be integrated into existing education system remains as an important issue and trend in the academia. Game-based learning has emerged as a promising approach to enhance least learned competencies in various educational settings. It has gained popularity due to their ability to engage learners and provide an interactive and immersive educational experience.

Khan et al. (2017), in their study, worked to identify the impact of digital game-based learning has in secondary science classrooms. Participants in the study were 72 (ages 12-15) 8$^{th}$ grade students from a low-cost private school in Pakistan. Participants were randomly assigned to one of four sections. Two sections were control groups and received conventional science instruction, which involved a teacher-centered teaching approach and rote learning. Two sections were experimental groups that received the same science content as the control sections in a digital game-based learning instructional environment that was more student-centered and focused on application of skills and concepts. Four engagement factors were analyzed to determine the effect of digital game-based learning on student engagement. Researcher looked at positive body language, consistent focus, student confidence and fun and excitement. The researchers found through observations, interviews, and assessments that digital- game based can have a positive impact on student engagement.

Eseryel et al. (2014), conducted an experimental study at a rural high school in the midwest with ninth grade students (88 students in total. 50 females and 38 males). The participants played a multiplayer online game that involved them taking on a researcher role in a survivor story. They explored an uninhabited and unexplored island on a distant Earth-like planet. The game's objective was to successfully colonize the planet and be the winning team. In order to measure engagement, the researchers had participants respond to an inventory, with a subscale for engagement. Study found that the participants' engagement was negatively related to their interest and competence during the game. They found that participants' engagement was positively related to their change in self-efficacy while playing the game. Additionally, the researchers found that social interaction during game play can have a significant effect on student engagement.

Liao et al. (2019) developed and conducted a study that investigated how collaboration and using instructional videos impacted intrinsic motivation as students were learning Newtonian mechanics while engaging in a digital game-based learning environment. The participants in this study were 109 seventh grade students (59 males and 50 females), who were randomly assigned to four experimental groups. There were 25 participants in the video, game, and collaboration condition, 28 participants in the video and game condition, 30 participants in the game and collaboration condition, and 26 participants in the game only condition. The participants' age range was 10-12 years old.

Giannakas et al. (2017), found that a lack of instructional frameworks for educators to use along with mobile game-based learning, can result in not enough support for learners, particularly those who struggle academically. As a result, when students struggle or face challenges and there is not an instructional framework in place to support them; engagement can decrease. Including an instructional framework in teaching means instruction is designed using research strategies and resources that can meet the individual needs of students (Marzano, 2007). Using an instruction framework with digital game-based learning also allows for a connection to be made between the game students are playing and academic content.

Schrier (2016) contended the increasingly popular flipped classroom model of instruction, where students engage with a digital learning experience outside of classroom time so that collectively the class can then build on that experience during classroom time, offers possibilities for game-based learning as well. Digital revolution thereby gives birth to Digital Game-Based Learning (DGBL) which has been used as part of the flipped classroom.

## III. METHODOLOGY

### 1.0 Software Development

Game-based learning is an innovative approach that combines educational content with interactive gameplay to enhance students' engagement and knowledge acquisition. When it comes to developing such educational games, the Agile methodology has emerged as a powerful framework. Agile is an approach to software development that seeks the continuous delivery of working software created in rapid iterations [12]. Agile methodology focuses on iterative development, collaboration, and flexibility, which align perfectly with the dynamic nature of game development. The system development of game-based learning using Agile methodology involves breaking down the development process into small, manageable tasks or iterations known as sprints. Each sprint typically lasts for a

few weeks and involves a cross- functional team of developers, designers, and educators who work closely together. The application will be developed using the Agile development approach, which will ensure efficiency and precision in meeting the requirements of Senior High School in Dr. Panfilo Castro National High School. The following stages are as follows: (1) Plan, wherein the researcher will perform data gathering by conducting open-ended survey to the respondents and then solicited answers will be used in the development of the application; (2) Design, in this phase the researcher will create models to be used in the development of the application. that will aid the researcher in recognizing the key features that will constitute the foundation of the entire application; (3) Develop, After the requirements and design were established, the researcher will proceed with the development of the application. Different software and programming languages will be utilized in the development of offline mobile application; (4) Test, in this specific phase, the researcher will carry out a sequence of tests such as functional, regression, Alpha, Beta and Gold to detect glitches and determine if the created application has fulfilled the client's requirements; (5) Release: During this phase, the researcher will endorse the developed application to target audience which is the Specialized Teacher in the Senior High School Department at Dr. Panfilo Castro National High School. A proper procedure will be adhered upon the implementation of the application; and (6) Feedback, the researcher will receive input and recommendations from the two main end-users; the Specialized Teacher and the learners. Their evaluations of the application's development will enable the researcher to enhance its features prior to its ultimate launch. This collaborative approach ensures continuous feedback, allowing for frequent adjustments and improvements.

Agile's iterative nature enables the development team to test and refine the game's mechanics, learning objectives, and user experience throughout the development cycle. It also facilitates the incorporation of new ideas and features as they emerge, keeping the game adaptable and responsive to evolving educational needs. By employing Agile methodology in the system development of game-based learning, educators and developers can create engaging, effective, and learner- centered experiences that promote active learning and enhance educational outcomes.

### 2.0 Data Collection and Data Gathering Procedure

Data collection is an extremely important aspect of this research endeavor. The researcher will pay close attention to every aspect of the data collection process. To gather relevant information, the researcher will conduct interviews with the specialized teachers, utilizing open-ended questionnaires to allow for in-depth responses. Additionally, direct observations will be made to gather valuable insights. Furthermore, a post-test will be administered to identify the areas of competency that have been least mastered by the participants.

In evaluating the application, the ISO25010 standard will be employed within the application evaluation department. This standard will be applied to all participants in the study, ensuring a consistent and comprehensive evaluation process.

The researcher plans to implement the Agile approach when developing the application. The diagram provided below illustrates the sequential steps that will be followed to create an educational game application that is both efficient and effective.

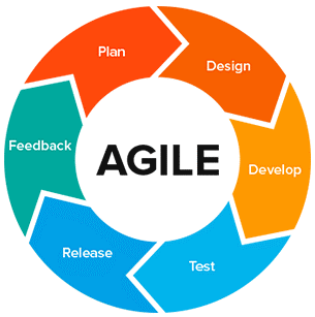


Figure 1. Agile Methodology

The primary goal is to tailor the application to specifically meet the requirements and needs of the Senior High School department at Dr. Panfilo Castro National High School in Candelaria, Quezon.

## IV. RESULTS AND DISCUSSION

During the conduct of the research, a sample of eighty-eight (88) learners which consists of forty-two (42) male and forty-six (46) female under the Humanities and Social Sciences (HumSS) strand who were taking up the specialized subject Disciplines and Ideas in the Applied Social Sciences (DIASS) were selected. The research employed a pre-test design to measure the learners' competencies before the intervention. Additionally, both qualitative and quantitative data were collected to gain a comprehensive understanding of how the game-based learning application will be developed. Based on the analysis of the pre-test, the mean pre-test score (M=20.92, SD=6.05) which shows that learners have difficulties in learning the concepts and ideas of the subject. Difficulties such as, learners lack interest with the subject, learners have low level in terms of critical thinking, lack of real- life experiences in such topic like, counselling, social work and communication, learners have short term memory and lastly learners do not take the subject seriously. While for the subject teacher, difficulties were also identified such as there are topics that are too broad and only requires a limited time for learners to absorb; the subject itself is boring for it includes mostly concepts about the skills the learners need to master; requires the use a wide range of teaching strategies in order for learners to show their feelings, problems and thoughts and lastly, the final task which requires learners to conduct a case study but learners lack knowledge to undertake.

Furthermore, least learned competencies were also identified namely: (1) explain the principles and core values of counseling; (2) discuss the roles and functions of counseling, social work and communication; (3) identify specific work areas in which counselors work; (4) value rights, responsibilities and accountabilities of counseling; (5) distinguish between ethical and unethical behaviors among counseling; (6) illustrate the different processes and methods involved in counseling; (7) Explain the principles and core values of social work; (8) explain the roles and functions of social workers; (9) identify specific work areas in which social workers work: (10) value rights,

responsibilities and accountabilities of social work; (11) distinguish between ethical and unethical behaviors among social work; (12) illustrate the different processes and methods in social work; (13) explain the principles of communication; (14) explain the roles and functions of communicators and journalists and (15) explain the rights, responsibilities and accountabilities of communication.

## V. CONCLUSIONS

In conclusion, the research on "Game-Based Learning Enhancing Least Learned Competencies in Applied Social Sciences" highlights the potential of utilizing game-based learning approaches that will address and enhance the least learned competencies in the field of Applied Social Sciences. By leveraging the engaging and interactive nature of educational games, the game-based learning platform will offer a promising solution to promote active learning and improve the mastery of challenging concepts and skills as well as ultimately fostering the development of well-rounded professionals in the field of Applied Social Sciences.

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