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Level of Implementation of Game-Based Learning Tools in Teaching Physical Education

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Abstract — The Enhanced Basic Education Act of 2013, or R.A. 10533, is the flagship program of the Department of Education that provides quality and accessible education for all. This program is equipped with 21st-century skills needed by every learner. With technological advancement, educational institutions have implemented several mechanisms to ensure the integration of information communication technology (ICT) in the primary education curriculum. One of the main thrusts of education is innovation- to create something unique and put creativity into teaching. Game-based teaching is one of the innovative strategies in the teaching-learning process. The maximization of available educational technology reinforces the creation of game-based learning materials and pedagogical teaching strategies. Hence, the teacher should leverage the use of different ICT and educational technology to address the needs of the learners. This study aimed to determine the level of implementation of game-based learning tools in teaching Physical Education. Specifically, it seeks to identify the profile of the P.E. teachers and the level of implementation of game-based learning tools in teaching P.E. in the following domains: Engagement, Interaction, Motivation, and Dynamism.
Identify the problems encountered by the teachers in the implementation of game-based learning tools in teaching P.E. This study used a descriptive-survey research design. The population of the study was 117 PE teachers. The instrument used was a questionnaire. The results of the study show that the profile of the P.E. teachers varies in terms of age, sex, years of teaching experience, available gadgets, and training attended related to ICT. Most of the population have an age range from 20-40 years old, comprising almost 90%, more than half are male P.E. teachers, and nearly 90% of them have served in the service from 0-20 years. They all have cell phones, educational devices that are relatively enough to implement game-based learning tools. They have adequate ICT-related training from the school level to higher levels. The level of game-based learning tool implementation in Physical Education is generally highly implemented, with an overall weighted mean of 3.26. Each variable has a different level of implementation. Most of the problems the P.E. teachers encounter in implementing game-based learning tools are highly technical and human factors. Internet connection is identified as lacking and intermittent, while insufficient educational tools are also available. Moreover, technological skills need to be developed as well. The researcher suggests that teachers must undergo capability building that will ensure the development of technical skills in terms of using available educational tools for teaching.

Keywords — Game-Based Learning Tools, Physical Education, ICT, PE Teachers, Technological skills

I. Introduction

Worldwide, the implementation of game-based learning varies from different geographical locations. While game-based learning is still relatively uncommon or only used in specific subject areas or with certain age groups in some places, it is actively encouraged and integrated into curricula. Sometimes, game-based learning is implemented by developing custom-designed games tailored to meet educational objectives. In other cases, commercial off-the-shelf games are being adapted for educational use or as supplementary classroom materials. The level of implementation may also vary based on the level of education. Game-based learning is more commonly used in primary and secondary education than in higher education. However, this is changing as more universities explore game-based learning in their curricula. While the implementation of game-based learning is yet to be universal, there is growing recognition of its potential benefits and increasing interest in its use as an effective instructional and learning tool (Panskyi & Rowinska, 2021). According to UNESCO, game-based learning refers to "the use of games and play-like elements in learning environments" to enhance learning outcomes. This approach involves integrating games and game design principles into educational contexts to make learning more engaging, interactive, and effective. Game-based learning can apply various types of games, including digital and non-digital games, and can be utilized across a broad range of subjects and levels of education. Game-based learning has been found to increase student motivation, engagement, and knowledge retention and promote the development of a range of skills, including critical thinking, problem-solving, and collaboration (Duraiappah et al., 2020).

According to the U.S. Department of Education (2020), technology brings fundamental structural changes that can significantly increase productivity. Used to support both teaching and learning, Digital learning tools like computers and handheld devices are infused with technology into classrooms, expanding the variety of courses taught, experiences, and educational materials; provide 24-hour learning support, seven days a week; develop 21st-century skills; improves student interest and motivation; and accelerates learning. Technology also can transform teaching by ushering in a new model of connected teaching. This strategy connects teachers with their students and professional information, resources, and systems, allowing them to improve education and modify learning.

Nowadays, students who are under generation are yearning for digital-based learning opportunities and desire educational purposes that are technologically strengthened teaching methods that appeal to the eyes.

The International Organizations such as the UNESCO supports its Member States' efforts to design and enforce effective, research-based ICT in education strategic plans and policies. The Organization ensures activities on the ground respond to the unique needs of countries and local communities alike and are guided by collaborative and consensus-driven approaches. Special care is taken to support the most disadvantaged populations and guarantee the equity, quality, and relevance of education for all.

Through its network of institutes and field offices and in partnership with public and private sector organizations, UNESCO ensures that ICT - from radios to cutting-edge mobile devices - catalyzes and opens opportunities for people across life, especially in contexts where education needs are most urgent.

UNESCO believes universal access to high-quality education helps to promote peace, sustainable social and economic growth, and intercultural exchange. Information Communication Technology, including Open Educational Resources, provides a strategic opportunity to improve education quality, policy dialogue, knowledge-sharing, and capacity-building.

The term "gamification" refers to combining interactive games and learning material that is both engaging and effective for enhancing the retention of knowledge by learners—presenting knowledge through interactive games results in high engagement, which leads to higher retention. Game-based learning is compelling because it expresses information through doing rather than telling. Through game-based strategy, the learning environment becomes active. It creates a positive competitive environment- the chance for team play encourages individuals to strive for their best and use teamwork to achieve more. Stimulates participant focus- real-time discussion and analysis of learning topics through interactive games strengthen participants' attentiveness. Increases participation- participants will be more willing to provide honest feedback and overcome the "shyness factor." Enhances meaning and boosts retention- offers better focus and awareness, which leads to more excellent memory recall in participants. An engaging experience- games boost the room's energy to catch participant's attention and provide opportunities for interaction (Davis, 2020).

A group of research supports the potential of utilizing games as an interactive teaching strategy (Anetta et al., 2020) and complementing traditional lectures to enhance students' learning (Kiili, 2020). Past research demonstrates that games can bring students into a more interactive learning process. Games can provide teachers with an interactive and meaningful way to impart knowledge necessary for teaching cause and effect. Finally, as a teaching strategy, Games could interact with and engage students, and learning gained using games is more significant and likely to be retained (Paraskeva et al., 2020).

The study by Bado (2022) entitled "Game-Based Learning Pedagogy: A Review of the Literature" elicited insights into pedagogical practices about integrating digital games into teaching and learning. Based on the reviewed journal over the past ten years, game-based learning uncovered common pedagogical themes categorized into pre-game, game, and post-game taxonomy. The findings indicated that teachers implemented various instructional activities at the pre-game, game, and post-game stages. Pre-game activities mainly consisted of lectures and gameplay training. At the game stage, teachers engaged in content scaffolding, performed classroom management activities, and provided technical assistance to students during gameplay. At the post-game stage, teachers organized debriefing sessions to ensure that gameplay translated

into student learning outcomes. Recommendations are made for integrating games into teaching and learning to maximize student engagement and learning outcomes.

The study by Hartt et al. (2020), titled "Game On: Exploring the Effectiveness of Game-Based Learning," investigates the efficacy of game-based learning in planning education and its impact on planning students' perception of learning, engagement, and teamwork. Specifically, the researchers delivered two lectures in an undergraduate planning course using two teaching methods (one traditional lecture style and one game-based). They collected feedback through an online questionnaire and semi-structured interviews. The results indicate that students preferred and engaged more in the game-based lecture. The researchers argue that gamification is particularly well-suited for planning education.

Literature Review

This study is anchored in Social Constructivist Theory founded by Russian psychologist Lev Vygotsky in the early 1900s. This theory emphasizes that learners construct their world understanding through experiences and interactions with their environment. Game-based learning aligns with this theory by allowing learners to engage with the subject matter and build their knowledge actively.

Constructivism is the theory that argues that learners generate knowledge rather than simply taking in information. As people encounter the world and reflect on their experiences, they develop their representations and incorporate new information into their pre-existing knowledge. Constructivism posits the need to provide students with the necessary tools to build their procedures to solve a problem. This suggests a participatory process in which students engage with their environment to address the challenge.

The theory posits that the formulation of knowledge is best constructed if learners use the input of others and do not rely solely on themselves. The sociocultural theory of Lev Vygotsky emphasizes the cognitive development of children. Cognitive development happens when there is social interaction, and community plays a central role in "making meaning." Individual development can only be understood by referencing its social and cultural context. Individuals' higher mental processes originate in social dynamics. Vygotsky focuses more on how culture influences cognitive development. Vygotsky builds a far greater emphasis on social aspects that contribute to cognitive development. Vygotsky places more (and different) focus on the role of language in cognitive development. According to Vygotsky, adults are an essential source of cognitive development.

The Sociocultural Theory is connected to Early Childhood Development as foundational learning on developing cognition. It also emphasizes the role of More Knowledgeable Others (MKOs) in children's knowledge acquisition through scaffolding. Acknowledging the role of adults in developing learners is a necessary step toward the new average education. In implementing the game-based learning tools in teaching physical education to learners, game-

based learning materials like Kahoot, kotobee, gamified PowerPoint, Minecraft education, and Flickers served as scaffolding for learning. The teacher facilitates the learning through the help of game-based learning tools.

Statement of the Problem

The study aims to determine the level of implementation of game-based learning tools in teaching P.E. in the Schools Division Office of Urdaneta City.

1. What is the demographic profile of the P.E. teachers, in terms:
    a. Age;
    b. Sex;
    c. Years in Teaching Service;
    d. Availability of devices, gadget
    e. Training Related to ICT-Based Learning?
2. What is the level of implementation of game-based learning tools in teaching P.E. in the following domain;
    a. Engagement;
    b. Interaction;
    c. Motivation; and
    d. Dynamism
3. What are the problems encountered by the teachers in the implementation of game-based learning tools in teaching P.E.?

II. Methodology

This study used the descriptive-survey research design to determine the level of implementation of game-based learning tools in teaching P.E. in SDO Urdaneta City. The descriptive research design is a method of science in which a subject's behavior is observed and described without influence. Prior to the data gathering, a permit to conduct the study was submitted to the Schools Division Superintendent for approval and endorsement. A copy of the questionnaire was attached to the printed survey questionnaire for the perusal of the respondents. The manner of distribution of the questionnaire was in-person to accommodate possible questions to be raised by the respondents. A printed copy was given to the respondents during their vacant

period to maintain the regular conduct of classes. After administering the required responses, the researcher tabulated, computed, and analyzed the data using the Excel file. The researcher used the available literature and studies to interpret the data to corroborate the results.

III. Results and Discussion

Table 1 shows the tabulated data on the respondents' profiles in terms of age as the variable. Frequency counts and percentage rates were used to establish the profile of the respondents.

Table 1. Profile of Respondents in Terms of Age N=117

Age	Frequency	Percentage
20-25 years old	13	11.1%
26-30 years old	35	29.9%
31-35 years old	13	11.1%
36-40 years old	26	22.2%
41-45 years old	14	12%
46-50 years old	7	6%
51-55 years old	4	3.4%
56 and above years old	5	4.3%
Total	**117**	**100%**

According to the Philippine Statistics Authority (PSA) (2021), the 2021 projected population in the Philippines is male-dominated, with a 55.6 million population compared to a 54.6 million female population. The table shows that most MAPEH/PE public secondary school teachers are 20-30 years old, which is the entry age among neophytes. All teachers possess the minimum requirements based on the qualifications of secondary school teachers.

Years of Teaching Experience

Table 2 shows the years of teaching experience of MAPEH public high school teachers of the Urdaneta City Division. Based on the supplied data, it can be inferred that the teachers' service length varies among the sample group. Out of the 117 teachers surveyed, 82 (70.1%) have been in service for 0-10 years, 22 (18.8%) have served for 11-20 years, and 11 (9.4%) have served for 21-30 years, with years of service. The remaining 2 teachers (1.7%) have served for 31-40 teaching years.

Table 2 Profile of the Respondents in Terms of Years of Teaching Experience N=117

Years of Teaching Experience	Frequency	Percentage
0-10 years	82	70.1%
11-20 years	22	18.8%
21-30 years	11	9.4%
31-40 years	2	1.7%
Total	**117**	**100%**

The data suggests a relatively even distribution of teachers with 11-20 years of service, while a more significant percentage of teachers have served for 0-10 years. It is worth noting that a small percentage of teachers have served for 31 years or more, which could indicate a trend of teachers leaving the profession earlier than in previous years. Overall, teachers' service length can vary greatly, and schools and education systems need to understand the trends to provide appropriate support and professional growth and development opportunities to all teachers, regardless of their experience level. Teachers with more years of service likely have extensive experience teaching MAPEH subjects. Their deep understanding of pedagogy, curriculum, and student needs can facilitate the effective integration of game-based learning tools into their teaching methods. The study of Adipat et al. (2021) entitled *"Engaging Students in the Learning Process with Game-based Learning: The Fundamental Concepts"* proved that the contribution of game-based learning is further linked with mindset improvement and growth. However, their experience might also make them more accustomed to traditional teaching approaches, leading to potential resistance to adopting new methodologies.

Available Devices or Gadgets

Table 3 presents the devices or gadgets the MAPEH teachers in SDO Urdaneta City use. It can be gleaned from the table that all teachers have cellphones with 117 or 100%, followed by desktops with 91 or 77.78%, camera with 83 or 70.93%, pocket wifi with 76 or 64.96%, projector with 42 or 35.90%, television with 34 or 29.06%, laptop with 22 or 18.80%, and printer with 14 or 11.97%.

Table 3 Profile of the Respondents in Terms of Gadgets N=117

Device/ Gadgets	Frequency	Percentage
Cellphone	117	100%
Laptop	22	18.80%
Desktop	91	77.78%
Television	34	29.06%
Projector	42	35.90%
Camera	83	70.94%
Printer	14	11.97%
Pocket wifi	76	64.96%

Technology is inextricably connected with education. In 21st-century learning, education 4.0 promotes using technology in the teaching-learning process. The available devices and gadgets of the teachers will help improve the quality of learning delivery. However, the successful implementation of technology is significantly affected by the appropriate use of it by the teachers. The study of Taghizadeh and Hasani (2020) revealed that most teachers needed more pedagogical and technological competence to employ technology in teaching young learners. The results showed that many teachers must be given training courses on utilizing technology in young learners' classrooms. Yet, they were willing to engage in technology-based professional development programs.

Level of Implementation of Game-Based Learning Tools in Teaching Physical Education along with Engagement

Table 4 presents the level of implementation of game-based learning tools in teaching physical education along with engagement. Based on the table, the level of implementation of game-based learning tools in PE, along with engagement, is highly implemented with a 3.28 average weighted mean. Specific data shows that using game-based learning tools ignites students' active participation through the interactivity element of the games, with a 3.41 mean score interpreted as highly implemented. This is supported by claims that game-based learning tools encourage students to actively engage in physical activities, such as running, jumping, throwing, and kicking, and actively participating in the game rules and objectives with a 3.34 mean score. Moreover, they promote collaboration and communication among students by actively discussing strategies, giving feedback to each other, and working as a team towards a common goal, with a 3.32 mean score. On the other hand, game-based learning tools are aligned with physical education's curriculum and learning objectives, with a 3.16 mean score interpreted as implemented. They incorporate assessment and feedback mechanisms to measure students' progress and give timely feedback for improvement, with a 3.21 mean score interpreted as implemented.

Table 4 Level of Implementation of Game-Based Learning Tools in Teaching Physical Education along with Engagement

Engagement	Mean	DE
1. Game-based learning tools encourage students to actively participate in physical activities, such as jumping, running, throwing, and kicking, as well as actively participating in the game rules and objectives.	3.34	Highly Implemented
2. Game-based learning tools promote collaboration and communication among students where they are actively discussing strategies, giving feedback to each other, and working as a team towards a common goal.	3.32	Highly Implemented
3. Game-based learning tools ignite students' active participation through the interactivity element of the games.	3.41	Highly Implemented
4. Game-based learning tools provide opportunities for students to develop and master physical skills where students demonstrate improved skills, apply strategies and techniques learned in the game to real-	3.29	Highly Implemented

life physical activities, and show progress in their physical abilities over time.		
5. Game-based learning tools promote intrinsic engagement, which refers to students' internal motivation and interest in the game rather than relying solely on external rewards or incentives.	3.23	Implemented
6. Game-based learning tools incorporate assessment and feedback mechanisms to measure students' progress and provide timely feedback for improvement.	3.21	Implemented
7. Game-based learning tools are aligned with the curriculum and learning objectives of physical education.	3.16	Implemented
8. The role of the teacher in facilitating game-based learning is crucial. Indicators of effective teacher facilitation include teachers actively guiding and supporting students during the game, providing clarifications on game rules and objectives, offering feedback and reinforcement, and creating a safe and inclusive learning environment.	3.30	Highly Implemented
9. Game-based learning incorporates the cognitive, affective, and psychomotor domains of learning	3.29	Highly Implemented
10. Game-based learning is grounded on the philosophy of education which is learner-centered.	3.28	Implemented
Average Weighted Mean	3.28	Highly Implemented

Legend	Mean scale	DescriptiveEquivalent
4	3.26-4.00	Highly Implemented (HI)
3	2.51-3.25	Implemented (I)
2	1.76-2.50	Slightly Implemented (SI)
1	1.00-1.75	Not Implemented (NI)

The results suggest that in implementing game-based learning tools in teaching physical education, the primary purpose is still physical activity and collaboration and communication as a form of engagement. The teacher and the curriculum both contribute to the quality of education. As the prime movers to attain the curriculum goals, teachers must desire to improve their teaching pedagogy through different strategies, methods, and approaches- one is game-based learning. In a highly technologically advanced society, the utilization of applicable technology relative to the learners' level of understanding requires the teacher's appropriate level of knowledge. PE is one of the subjects that regards play as an essential component of learning. Integration of technology in education aims to enhance the student learning experience. Utilization of various forms of technology in the classroom, including a virtual classroom, engages learners actively with the learning competencies. According to Rodrigues, Machado-Taylor, and Alves (2021), balanced development of students' technical abilities is critical for their personal, social, and professional quality of life, with digital technology being significant in the transformation of academic job organization and new ways of teaching and learning.

Level of Implementation of Game-Based Learning Tools in Teaching Physical Education along with Interaction

Table 5 presents the level of implementation of game-based learning tools along with interaction in teaching physical education. It can be gleaned from the table that the level of implementation of game-based learning tools along with interaction is 3.15, which is the average weighted mean interpreted as implemented. The result suggests that integrating games in the teaching-learning process does not provide 100% interaction between the students and teacher-student interactions. Specific findings show that game-based learning tools allow students to develop and enhance their interpersonal abilities, such as communication, teamwork, and leadership. Indicators of successful interpersonal skills include students demonstrating effective communication, collaborating with peers, showing leadership qualities, and positively resolving conflicts, with a 3.34 mean score interpreted as highly implemented. With a similar level of implementation, using game-based learning tools will provoke the learners' critical thinking skills while doing physical education activities as game rules.

Table 5 Level of Implementation of Game-Based Learning Tools in Teaching Physical Education along with Interaction

Interaction	Mean	DE
1. often requires students to solve problems and make decisions to achieve game objectives. Indicators of effective problem-solving include students analyzing game situations, evaluating different options, making informed decisions, and adapting their strategies based on changing game dynamics.	3.13	Implemented
2. Peer feedback is an important aspect as it encourages students to provide constructive feedback to their peers. Indicators of successful peer feedback include students providing feedback to their peers on their performance, strategies, and techniques, and using feedback to improve their performance in the game.	3.09	Implemented
3. tools promote social interaction among students, fostering positive relationships and a sense of community. Indicators of successful social interaction include students engaging in positive social interactions, such as cheering for each other, showing empathy and respect towards their peers, and celebrating achievements together.	3.14	Implemented
4. provides opportunities for students to develop and improve their interpersonal skills, such as communication, teamwork, and leadership. Indicators of successful interpersonal skills include students demonstrating effective communication, collaborating with peers, showing leadership qualities, and resolving conflicts positively.	3.34	Highly Implemented
5. tools promote inclusivity, ensuring that all students are actively involved and included in the game regardless of their abilities or backgrounds.	3.17	Implemented
6. tools involve the physical and online interaction of learners.	3.04	Implemented
7. adheres to the integration of lessons which mainly focus on the utilization of educational technology.	3.13	Implemented

8. provides immediate feedback through scaffolding of learning.	3.08	Implemented
9. considers the time of interaction and ensures the game-based applications have a common access license.	3.16	Implemented
10. provokes the critical thinking skills of the learners while doing physical education activities as game rules.	3.21	Highly Implemented
Total	3.15	Implemented

Legend	**Mean scale**	**DescriptiveEquivalent**
4	3.26-4.00	Highly Implemented (HI)
3	2.51-3.25	Implemented (I)
2	1.76-2.50	Slightly Implemented (SI)
1	1.00-1.75	Not Implemented (NI)

The results prove that there is inclusivity in learning opportunities. However, the essential functions of communication, interaction, relationship, and collaboration are seemingly undermined and not highly implemented. The ultimate function of technology is to usher and help teachers facilitate learning without compromising the quality of education. The study results imply that interaction is vital in attaining the learning objectives of the curriculum in PE. It will improve not only the cognitive domain but also the affective and psychomotor skills of the learners. According to the US Department of Education (2020), t), technology brings fundamental structural changes that can significantly increase productivity. Used to support both teaching and learning, Digital learning tools like computers and handheld devices are infused with technology into classrooms, expanding the variety of courses taught, experiences, and educational materials; provide 24-hour learning support, seven days a week; develop 21st-century skills; improves student interest and motivation; and accelerates learning. Technology also can transform teaching by ushering in a new model of connected teaching. This strategy connects teachers with their students and professional information, resources, and systems, allowing them to improve education and modify learning. The interactive game-based learning tools help overcome specific barriers to learning physical education, such as lack of interest in traditional sports or fear of failure. By presenting content in a game format, students may feel less pressured and more willing to participate.

Problems Encountered by the Teachers in the Implementation of Game-Based Learning Tools in Physical Education

Table 6 presents the problems encountered by the teachers in implementing game-based learning tools in PE. The average weighted mean of 2.82 suggests that the teachers agree that the identified indicators are problems they encountered in the implementation of game-based learning tools. Among the listed problems by the teachers, the following garnered the highest mean score: *Intermittent internet connection required for game-based learning* with 3.09, *Lack of accessible internet connection at school* with 3.04, and *Lack of gadgets like laptops and cellphones to access gamified learning materials online* with 3.01. According to Amadora (2020), most problems that arise in conducting synchronous classes to guide learners in their study are technical.

The Philippines has the lowest internet speed in the Asia-Pacific region. This is the primary cause of delays in implementing remote learning in general.

Table 6 Problems Encountered by the Teachers in the Implementation of Game-Based Learning Tools in Physical Education

Problems Encountered	Mean	DE
1. Lack of accessible internet connection at school	3.04	Agree
2. An intermittent internet connection is required for game-based learning	3.09	Agree
3. Lack of gadgets like laptops and cellphones to access gamified learning materials online.	3.01	Agree
4. The computer laboratory is exclusive to other strands only.	2.76	Agree
5. The teachers lack general ICT-related training.	2.64	Agree
6. Poor skills level in integrating game-based learning.	2.64	Agree
7. The learners have poor level ICT skills to navigate online games or gamified learning resources.	2.83	Agree
8. Game-based learning is time-consuming.	2.50	Agree
9. Game-based learning reduces the chance of physical activity required in PE.	2.73	Agree
10. Game-based learning attracts learners to focus more on games than the learning content.	2.98	Agree
Total	2.82	Agree

On the other hand, the indicators with the lowest mean scores, which also indicates somehow considered a problem in the implementation of the game-based learning tools, are the following: *The teachers lack general ICT-related training* with 2.64; *Poor skills level in integrating game-based learning* with 2.64; and *Game-based learning is time-consuming* with 2.50.

Ferri, Grifoni, and Guzzo (2020), in their study "*Online Learning and Emergency Remote Teaching: Opportunities and Challenges in Emergency Situations"* revealed several technological, pedagogical, and social challenges. The technical issues stem primarily from the instability of Internet connectivity, and many students need more intelligent gadgets. The technological problems especially relate to the unpredictability of Internet connectivity, and many students need more required electronic devices. The pedagogical challenges are mainly associated with teachers' and students' lack of digital skills, the need for more structured content compared to the abundance of online resources, learners' lack of interaction and motivation, and teachers' lack of social and mental presence.

IV. Conclusion

Based on the results of the study, the following conclusions were drawn: The profile of the P.E. teachers varies in terms of age, sex, years of teaching experience, available gadgets, and training attended related to ICT. Most of the population has an age range from 20 to 40 years old, comprising almost more than half of male P.E. teachers, and most of them have served in the service from 0 to 20 years. They all have cell phones, educational devices that are relatively enough to implement game-based learning tools. They have adequate ICT-related training from the school

level to higher levels. The level of implementation of game-based learning tools in teaching Physical Education is generally highly implemented with an overall weighted mean of 3.26. Each variable has a different level of implementation. Most of the problems the PE teachers encounter in implementing game-based learning tools are highly technical and human factors. Internet connection is identified as lacking and intermittent, while insufficient educational tools are also available. Moreover, technological skills need to be developed as well. Based on the conclusions, the following recommendations are suggested: The researcher suggests that teachers must undergo capability building that will ensure the development of technological skills in terms of the use of available educational tools for teaching; School administrators must provide teachers with further enhancement on the use of ICT in education. They must provide necessary resources that can be used for game-based learning tools as well as allocate funds for faster internet resources. Future researchers need to see the connection between the maximization of time while using game-based learning to ensure the non-overlapping of activities and, at the same time, the integration of assessment tools in game-based learning.

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