

Gamification in Education: The Motivation-Exploration-Implementation Theory

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Abstract

Gamification is an emerging trend in the educational context. It is embedded in the instructions anchored with game design elements in non-game context. It further amplifies the way how learners are hooked and attached with different technologies entailed with various online games and applications making them more motivated and engaged. This study sought to generate a theory in gamification in education. With this purpose, this paper will utilize the deductive axiomatic approach in theory generation following the steps provided by Padua (2012). There are five axioms construed, namely; (1) Gamification is universal in terms of its application to different topics discuss in the academe; (2) Gamification provokes the learners to think critically; (3) Gamification sustains the learner's motivation and engagement in a classroom discussion; (4) Gamification creates no boundaries among the students since it is widely used in different schools in the country; and (5) Gamification provides a convenient way of teaching and learning from each other as students also share their expertise in manipulating gadgets and different high-end technologies. From these five axioms, ten propositions were formulated; Gamification should (1) make the game-designs and applications friendly, (2) have more interesting and thought-provoking activities online, (3) provide a clear and simple instructions in performing the activities; (4) formulate activities and tasks that are locally contextualized, (5) create learning and behavioral goals attainable; (6) provide a reward system right after each milestone in the activity; (7) make all learning activities fun and interactive; (8) have the applications supported by the government to make it accessible to all learners; (9) create a competitive learning environment; and (10) encourage learners to provide their feedback about the game designs and its applications for the improvement of the activities. With these propositions, the Motivation-Exploration-Implementation Theory for Gamification in Education was generated. This theory emphasizes the importance of gamification in the teaching-learning process whereby motivation, exploration, and implementation are important elements in achieving a competitive, contextualized, and conducive learning environment.

Keywords: Deductive axiomatic, gamification in education, Motivation-Exploration-Implementation Theory, teaching-learning process, conducive environment

Introduction

In education, gamification has become one of the most notable technological developments for learner's engagement (Majuri et al., 2018). In the early 2010, gamification has gained its popularity and has been tried,

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explored, and assessed its effectivity especially in the realm of education (Sardi et al., 2017). This was used to augment common issues of motivation, limited attention span, decreased classroom attendance, and low academic performance (Dichev & Dicheva, 2017). Although gamification creates new and exciting ways to increase learner's engagement, Kim & Werbach (2016) stated in their study on ethical issues in gamification that there are still blind spots and challenges in utilizing, exploring, and implementing gamification in the area of education.

Gamification, in its sense as a design approach of using various elements of game designs for different contexts, induces meaningful learning experiences among all learners (Alsawaier, 2018). The application of gamification in the pedagogical context provided a venue for increased learning capacity and developed remedies in addressing learners' challenges who find themselves alienated by traditional methods of learning modality (Loos & Crosby, 2017). Gamification enhances the educational system by bringing meaningful experiences with motivational affordances in the attempt to influence positively the behavior and cognitive processes of the learners (Huotari & Hamari, 2017). According to Kapp (2012), gamification means the utilization of game-play mechanics, aesthetics, game design elements, and game thinking for non-game contexts and applications to engage learners in the teaching-learning process.

The concept of gamification influences the growing trend in the educational platforms and learning management systems whereby a number of universities around the globe is taking advantage of in delivering quality and equitable education for all (Kheirkhahzadeh et al., 2016). Tsay et al. (2018) added that all applications and different ways in gamifying the learning experiences of the students are evolving such as new plug-ins that have been developed for the purpose of allowing teachers to utilize content-rich materials accorded with game designs and mechanics (Ke et al., 2019) to make the discussion substantial and interactive. With this, traditional pedagogies, practices, and methods in teaching have been revised and enhanced in order to make a more contextualized and personalized way of delivering classroom instructions (Kim et al., 2018).

Gamification reinforces different skills in the teaching-learning process such as collaboration, communication, and the ability to solve problems (Subhash & Cudney, 2018), however, there are also detractors of gamification (Rabah et al., 2018). These detractors derail learning with unnecessary competition stress, aimless distractions, and fails to consider certain learner's pedagogical needs (McCashin et al., 2020). These will prevalently supersede if the games are not properly construed such that, it creates confusion among all the learners (Hulsey, 2019). Arif et al. (2019) added that the level of difficulty of every learning activity should also match and parallel to the students' capacity in completing the tasks. Thereby, gamifying learning should always boil down to knowing the learners and the content it needs to be incorporated (Halloluwa et al., 2018).

Although there are many related surveyed materials and studies conducted regarding gamification in order to explicitly understand and explore the different ways to enhance and better the teaching-learning process (Zainuddin et al., 2020), what remains to be the gaps are (1) the level of implementation in different educational levels, (2) the utilization and exploration of the game design elements in motivating students to be hooked in the activities, (3) scarcity of specific assessment and evaluation tools, and (4) the general reports among scholars that more studies should be initiated in assessing and evaluating the implementation of gamification in education (Hamari et al., 2014).

In this time of pandemic, the concept of gamification is very essential in every online class (Seidlein et al., 2020). The different applications and designs that will make the students engaged and motivated should be manifested (Rapp et al., 2019). Teachers should explore the ways on how to make the virtual class lively and full of fun (Nambiar, 2020). The proper and appropriate implementation of the various game designs should be observed (Landers et al., 2018). Thus, this paper will look into the relevance of the utilization of gamification in education by formulating the Motivation-Exploration-Implementation Theory which will make a learning environment conducive.

Literature Review

Gamification has grown largely and rapidly because of its ability to solve the pressing issues in the educational realm – making learning experience interesting and engaging (Jain & Dutta, 2019). With the

different devices such as smartphones and gadgets, the advancement of online tasks and activities are compromised because the students are challenged with time management and setting of priorities which will end up to series of pending assignments, missed quizzes and deadlines (Papadakis, 2018). The increased students' intrinsic motivation is driven from the various game design elements which will make the learning experience meaningful (Adams & Dormans, 2012). The nature of the game itself promotes maximized students' engagement in the teaching-learning process, thereby it supports experiential learning, problem-based learning, and active learning (McDonald, 2019).

Some of the researches highlight the impact of gamification in the students' motivation and engagement to the teaching-learning process (Discheva et al., 2015; Faiella, 2015; Bell, 2017; Alsawaier, 2018; Bevins & Howard, 2018). Discheva et al. (2015) specifically identified and elaborated the concept that gamified course as perceived by the students, are more absorbing, motivating, and conducive to learning than any other courses. Faiella (2015) stipulated in their study that gamifying the learning transforms the boring tasks and activities into interesting ones. Although gamification increases the level of attention span, engagement, and motivation of the student, scholars still highly recommended that further researches should be conducted such as longitudinal studies to examine and explore how game design elements stimulate the intrinsic motivation of the students (Alsawaier, 2018).

Many scholars reported that in terms of cognitive learning outcomes, gamification impact a positive effect to the learners (Hamari et al., 2014; Kim et al., 2018; Bevins & Howard, 2018). Further, procedural and declarative knowledge, learning environment, and higher order thinking skills were enriched by supplementing game designs elements (Kim et al., 2018). Gamification appears to increase learning outcomes on practical activities and quizzes but does not necessarily influence the learning outcomes during final examination (Bevins & Howard, 2018). Therefore, the exploration and implementation of gamification would depend on the various conditions in the teaching-learning process (Day-black, 2015).

According to Rabah et al. (2018), in the higher education courses, the effectiveness in terms of cognitive learning outcomes is closely related and aligned to gamification. However, literature reviews presented a disproportionate of low learning outcomes to these constructs. Rabah et al. (2018) suggested pertinent reasons regarding this discrepancy, these are (1) the alignment of the effectiveness of gamification to the learning outcomes and its target (Landers 2014); (2) the appropriateness of the game design elements that will deliver an impact to the teaching-learning process (Subhash & Cudney, 2018); (3) the ineffective learning activities will always contribute to low academic performance even if the gamified learning is essential (Pechenkina et al., 2017); and lastly (5) the impact of gamification and its complexity in learning outcomes demands contextualization (Chen et al., 2019). Jia et al., (2016) concluded that, nevertheless, the discrepancy emphasizes on cognitive outcomes which pervasively affect the students' perception and its affordance towards motivation and engagement in gamification.

The positive results brought about the utilization of gamification in education provided an increased poor time management (Garland, 2015). However, it is cardinal to note that in the study of Sitzmann et al. (2011), they disclosed that gamification in education promotes self-efficacy and helps in boosting knowledge retention. The interrelationship of emotional, cognitive, and behavioral outcomes are likely complex and nuanced. Gamification in education revealed that it helps lower anxiety level and increase self-confidence (Faiella et al., 2015). Further, gamification in education establishes rapport wherein students collaborate and share techniques and tips in accomplishing small victories and milestones (Battershill & Ross, 2017).

Meta-analytic studies showed that gamification in education might be beneficial to the students' learning outcomes when certain identified elements in game design are present (Garland, 2015). Lastly, the utilization of gamification in education pertains to an unending process of exchanging feedback to purposely align the needs of the 21st century learners and to address the pressing issues in delivering excellent and quality learning outcomes (Faiella et al., 2015).

These review of related literature and studies would provide a substantial understanding of why a theory in gamification should be construed. The different articles would give an analysis that although gamification in education promotes positive effect and impact to the learners' motivation, engagement, and academic

performance, there are still gaps that need to be addressed such as the game design elements that would vary depending on the need of the learners and its novelty. Another concern that needs to be addressed in this study is on how we can sustain the motivation as a primer positive effect of gamification, the exploration of gamification which anchors on the current need of the learners in sustaining their attention, and on how this gamification be implemented in a way that it suits to the learners' skills in order to acquire a better academic performance. Thus, the theory in gamification in education which is the Motivation-Exploration-Implementation Theory is hereby construed.

Statement of the Problem

This study sought to establish and formulate a theory in gamification in education, which is the Motivational-Exploration-Implementation Theory for the purpose of making the teaching-learning process and the educational environment conducive to learning.

Research Design and Framework

This study utilized the deductive approach in theory development. Deductive approach starts with the formulation of general ideas down to specific conclusions (Gilgun, 2019). Bayne (2018) dubbed this approach as top-down thinking which usually starts with different axioms. These axioms are called primitive assumptions or propositions (Delaram & Valilai, 2018).

As discussed in Marciszewski (1981), axioms are postulates or basic theorems. These are statements that can be accepted in the theory in question without any demonstration from all other statements that the theory was deduced (Lehrer, 2018). These axioms are being processed and assimilated into propositions (Zhang et al. 2019). Propositions are the results or product of different axioms. The propositions are tested utilizing the appropriate methods. When these propositions are accepted, these will be the basis for the formulation of the theory (Zalaghi & Khazaei, 2016).

In this study, the process in formulating the Motivation-Exploration-Implementation theory is anchored on the deductive axiomatic approach illustrated below following the steps in generating a theory adapted from Padua (2012).

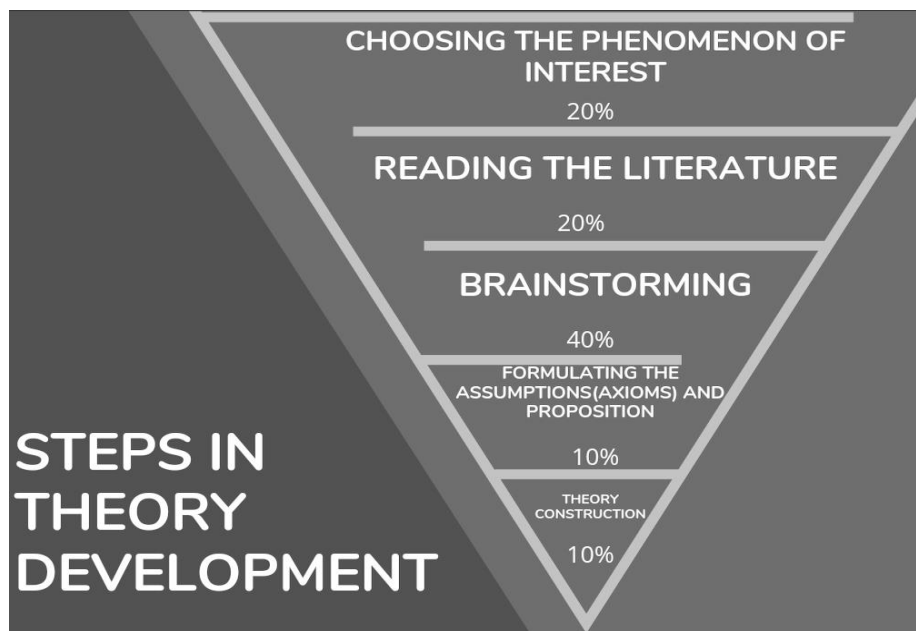


Figure 1. Deductive Axiomatic Approach in Theory Development

(Adapted from Padua, 2012)

Choosing the Phenomenon of Interest. Choosing the point of interest is very important as this will serve as the focus of the theory development which may have different underlying ideas (George, 2019). Choosing the phenomenon of interest is the first step in formulating a theory utilizing the deductive axiomatic approach.

Reading the Literature. Having a focus or point of interest in developing a theory is essential in looking for materials that can substantiate its importance. With this, the reading of the different surveyed materials should be the next step that a theorist should consider as vital (Selden, 2016). This is where the phenomenon can be explicitly discussed, the substance of the point of interest is pervasively elaborated, and lastly, this is where the details are comprehensively laid down in order to broaden the knowledge base of the phenomenon (Bennett & Royle, 2016). The most important reason why reading the literature is necessary because broadening of knowledge base will help contextualize the meaning of the nature of why the theory is being developed. With this, finding solutions and recommendations in addressing the gap would be easy and construing the different axioms and propositions will be strengthened (Mintzberg, 2017).

Brainstorming. The process of eliciting pertinent information that will connect other ideas and presents different perspectives which highlights various factors that may contribute in generating the axioms and propositions (Paulus & Kenworthy, 2019). This stage promotes coherence and cohesiveness of information to be used in the process of developing the theory (Henningsen & Henningsen, 2018). Having brainstorming is vital in convergently align facts and related articles to the exemplifying the importance of the phenomenon (Seeber et al., 2017).

Formulating the Axioms and Propositions. After gathering and analyzing all related literature and studies, substantially elaborating the significance of all of those surveyed materials, and aligning these facts and ideas convergently, the formulation of axioms and propositions commences (Prasad et al., 2018). Formulating the axioms and propositions are essential phase in theory development. Axioms are basic theorems and primitive assumptions that govern the proposition, while propositions are statements the resulted from the axioms (Novikov, 2011). These axioms and propositions are essential elements in generating a theory.

Theory Construction. The final step in developing a theory using a deductive axiomatic approach is the alignment of all the propositions to identify and conclude a theory (Stergiou & Airey, 2018). Theory is composed of interrelated facts and ideas, propositions, concepts, and definitions that pave way in presenting a systematic view of predicting and explaining a phenomena (Kivunja, 2018).

Results and Discussions

Phenomenon

The phenomenon investigated in this paper is the gamification in education. Gamification is widely used in the realm of education. Scholars and researchers published different articles to highlight how effective gamification is in terms of students' engagement and motivation. Further, gamification in education is not just about increasing learners' engagement and motivation but also improves self-efficacy and enhance knowledge retention. However, these positive results are still in question for there are detractors of gamification. These detractors are discrepancies in which teaching-learning process is compromised. With this, the researcher would like to develop a theory that will sustain the positive impact brought by gamification in education, a continued exploration of the essential game designs elements, and proper implementation of the utilization of gamification in the educational process. Thus, this paper develop the **Motivation-Exploration-Implementation Theory in Gamification in Education**.

Axioms

After collating all the related literature and studies, the researcher draw out some statements which are accepted, established, and proven to be self-evidently true. The following axioms are: (1) Gamification is universal in terms of its application to different topics discuss in the academe; (2) Gamification provokes the

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learners to think critically; (3) Gamification sustains the learner's motivation and engagement in a classroom discussion; (4) Gamification creates no boundaries among the students since gamification is widely used in different schools in the country; and (5) Gamification provides a convenient way of teaching and learning from each other as students also share their expertise in manipulating gadgets and different high-end technologies.

Axiom 1 Gamification is universal in terms of its application to different topics discuss in the academe

The different game design elements speak of the same language. It has a common application where it is easy to learn and understand by the teachers and the learners. The common denominator of what learning outcomes should be gauged are established. It has the same intent in making an increased leap of learning in the students' academic performance. The different central elementary schools, national high schools, colleges, and universities notice that the application use in gamification is applicable across all disciplines. There are some game design elements that are applicable in English, Mathematics, Science, Computer class and even History. The content of the activities are not singular in nature, it is multidisciplinary. The activities weave all the applicable subject matters and coined them in one game. With this, time was utilized well while students are learning in a topic connected to different discipline. Hence, it is concluded that **gamification is universal in terms of its application to different topics discuss in the academe.**

Axiom 2 Gamification provokes the learners to think critically

All the activities and tasks in a gamified learning are designed in a way that it will let the learners think critically. The most effective way of challenging the skills and intelligence of the learners is to get their attention, let them engage and puzzle them in a way that they will think outside of the box. Gamification finds its way to be creative while measuring the learning capacity of the students. Since students react very well especially if the lessons are incorporated with games, it is important to provide means of allowing them to discover the concept before revealing it. Allowing the learners to discover something is one of the most effective way to conclude that there's learning. Gamification can be suited to the level of the learners' capacity, its creativity and how they think critically. With this, **gamification, indeed, provokes the learners to think critically.**

Axiom 3 Gamification sustains the learner's motivation and engagement in a classroom discussion

Most of the surveyed materials would always provide a positive effect of gamification in education especially in terms of motivation and engagement. In gamification, the traditional way of presenting and discussing the topics are now converted into an interesting and exciting way. This will provide an avenue for the learners to learn more while having fun. Gamification does not only promote fun and enjoyment, one study revealed (Suh et al., 2016) that gamification improves engagement through meditation of psychological needs satisfaction such as autonomy, competence, and relatedness between the game dynamics. It is the recommendation of this study that gamification encourages healthy competition, self-expression, altruism, and diverse game dynamics such as rewards which will satisfy the psychological needs of the students. With this, gamification can sustain learners' activity when the activities are align to the needs of the students. Therefore, **gamification sustains the learner's motivation and engagement in a classroom discussion.**

Axiom 4 Gamification creates no boundaries among the students since gamification is widely used in different schools in the country

The implementation of gamification penetrates in the entire world since 2010. The different elementary school, high schools (junior and Senior), colleges and universities are taking advantage of

the positive impact that gamification can influence to the academic performance of the learners. Since, there are applications and online activities that are not accessible to all especially those in the poverty line, the government such as the Department of Education (DepEd) and Commission on Higher Education (CHED) initiated some programs that will address this concern. Some public schools are doing their best to secure a computer room or laboratory for the students to engage in the various game design elements and software applications that can be assist student's challenge of learning. There are universities and colleges around the country that incessantly utilize gamification in their classroom instructions as they see this as important tool in elevating the quality of Philippine education. Therefore, it assumed that **gamification creates no boundaries among the students since gamification is widely used in different schools in the country.**

Axiom 5 Gamification provides a convenient way of teaching and learning from each other as students also share their expertise in manipulating gadgets and different high-end technologies

The capacity of students to learn new technologies is incomparable. Commonly, they even learn faster than the teachers. Most of the teachers are also not inclined with the technologies especially if they are in the late boomers generation. The challenge of the teachers in the senior citizens' seat is not more on the subject matter content but on how to navigate and explore various computer-based instructions, online games, and activities. With the challenge posed, it is vital that there should be an exchange of knowledge regarding the content and on how to operate gadgets. Thus, constant feedbacking is very important. In this generation where gamification is utilize widely in the country, the teachers and students should continuously provide an avenue to share insights and reflection on the learning experiences so that, there will be an effective way of implementing gamification in education. With this, a conclusion may be construed that **gamification provides a convenient way of teaching and learning from each other as students also share their expertise in manipulating gadgets and different high-end technologies.**

Propositions

The formulation of the five axioms led the researcher to construe ten propositions. These propositions are as follows: Gamification should (1) make the game-designs and applications friendly, (2) have more interesting and thought-provoking activities online, (3) provide a clear and simple instructions in performing the activities; (4) formulate activities and tasks should be locally contextualized, (5) create learning and behavioral goals attainable; (6) provide a reward system right after each milestone in the activity; (7) make all learning activities fun and interactive; (8) have the applications supported by the government to make it accessible to all learners; (9) create a competitive learning environment; and (10) encourage learners to provide their feedback about the game designs and its applications for the improvement of the activities.

Proposition 1 Gamification should make the game-designs and applications friendly

There are myriad of game design elements available in the Information Technology (IT) world. The game design elements are used in the educative process in order to increased motivation and engagement among learners. The game design elements includes the instruction on how to use it, accomplish the activities, and provide an easy way of understanding the intended learning outcomes of the different subject matter (Axiom 1). Making the instructions friendly in every activity or game application will aid the learners to maximize their time in playing while learning. Studies show that when learners are sometimes stuck in the instructions part on how to play the game because it is not friendly- user application, the learners tend to be demotivated. This may result to increased absenteeism and truancy. Moreover, the perennial effect of this mistake would make learners confused, loss their attention span and engagement to participate, and lastly, they take this as one of the stressors which would cause detrimental effects in their psychological aspect. With these possible negative effects, this paper proposes that **gamification should make the game-designs and applications friendly.**

Proposition 2 Gamification should have more interesting and thought provoking activities online

Gamification is known to have different playful activities that will certainly hook the attention of the students. These activities are designed to meet the competencies and desired learning outcomes of a specific topic. Since gamification can incorporate different disciplines (Axiom 1), it is important to challenge the learners' critical analysis. The activities crafted congruent to the level of the learners' capacity should vary from easy to difficult in order to challenge the learners to think critically (Axiom 2). Although students may find it challenging, the important thing to note here is to indicate that this gamification in education sustains the motivation and engagement (Axiom 3) of the learners in participating classroom discussion. If the activities are set to be boring and the graphic designs are not attractive, the learners will feel frustrated especially those fast-learner students. To avoid this from happening, it is vital to choose interesting activities that will sharpen the analytical abilities of the students. Further, Therefore, this paper proposes that **gamification should have more interesting and thought provoking activities online.**

Proposition 3 Gamification should provide a clear and simple instructions in performing the activities

In every gamified activity or online game, instructions on how to play or accomplish the task is very essential. Setting the instructions simple and easy to understand will aid the different learners of different levels (Slow, Average, and Fast) to highly participate in the gamified activities. Making the instructions clear to everyone denotes the nature of gamification as universal in terms of its application (Axiom 1). The time allotted in following the instructions should not take and eat so much of the learners' time in reading and understanding the instructions. Providing a clear and definite directions will establish a sense of excitement and motivation (Axiom 3) to be engrossed in the activities. Further, it is necessary that in the development of game design elements, simple terms in a conversation English should be utilized. Translating English language (Axiom 4) into the students' mother tongue (which is locally appropriate to the user) would add sufficient evidence that learners will continue to patronize the application because of its added value – nationalistic and sense of ownership. Thus, this paper proposes that **gamification should provide a clear and simple instructions in performing the activities.**

Proposition 4 Gamification should formulate activities and tasks that should be locally contextualized

When gamified activities and tasks are created, the common concern of everyone would be the way how it will be presented. The language to be used, the observance of different cultural influences, and the level of sensitivity that the game should be in order to be accepted for general audience are necessary in making the formulated activities effective. The reason behind why gamified activities and tasks are locally contextualized is because learners, while playing and learning, they also would like to take into consideration the impact of its significance to their attitude and behavior that may be influenced or affected. Since the nature of gamification would entail different learning disciplines interjected into a game (Axiom 1), encourage sustained motivation and engagement (Axiom 3), and can be applied in the different kinds of learners (users) (Axiom 4), it is vital to make the instructions on how to play the game locally contextualized. If the gamified activities are not locally contextualized, the tendency would be (a) the learners will be confused, thus, losing the focus of the game; (b) learners will find no meaning of what they are doing; and lastly, (c) learners will have a bad experience in using the gamified activities. The after effect of these detractors would be a derailment of learning. Thus, it is proposed in this paper that **gamification should formulate activities and tasks that should be locally contextualized.**

Proposition 5 Gamification should create learning and behavioral goals attainable

Some literature review and studies would recommend further study about the attainment of learning outcomes and behavioral goals of gamification. Although, this premise is true, however, gamification is still widely used to achieve the desired learning and behavioral outcomes in every learning area. Behavioral outcomes are measurable terms. These measurable terms provide direction to the learner's experiences which, in turn, will serve as basis for student evaluation. Considering the formulation of the gamified activities and tasks, the established different subject areas as content of the gamified activities (Axiom 1) are combined with different methods and techniques that is accessibility to all learners (Axiom 4). The learning goals and desired outcomes of the gamified activities should align to the competencies stipulated in the curriculum guide. If the learning objectives and behavioral goals are not attainable, the learners will end up disappointed, frustrated, and most of all, demotivated because of the high standards set in the gamified activities. The essence of gamification in education as means to elevate the academic performance of the learners will not be attained. Therefore, this paper proposes that **gamification should create learning and behavioral goals attainable.**

Proposition 6 Gamification should provide a reward system right after each milestone in the activity

Completing an activity is a milestone that every educator should not take for granted. It is important to provide rewards to those learners who excel in accomplishing the activity. Reward is not due to the students alone, it is also important to provide compensating rewards to the teachers (Aini et al., 2019). Although gamification is more on targeting the intrinsic motivation of the learners, it is also important to provide extrinsic motivation (Axiom 3) such as points and badges as rewards (Deterding et al., 2011). The reward system is not just to motivate the learners to finish the tasks or the game but also to boost their self-confidence and self-efficacy in doing their tasks or in finishing the game with flying colors. The construct of self-efficacy is generally pointing towards a particular tasks or context. Bandura describes numerous incentives in playing the games. By exploring different environments and possible change elements, games encourage people to play and play again (Bleumers et al., 2012). The integration of incentives, points (levels and rankings), and badges as part of the reward system in gamification encourage learners (game users) to incessantly repeat the games, establish game users' reputation, and encourage others to play the game as well. Thus, this study would like propose that **gamification should provide a reward system right after each milestone in the activity.**

Proposition 7 Gamification should make all learning activities fun and interactive

With the intent of making the learning experiences of the students meaningful and promote sustained motivation (Axiom 3), gamified activities and tasks are crafted with the highest degree of creativity. Creative game design elements are helpful in reassuring and maintaining the attention span of the learners. Given the diverse learners of various ages would have different number of minutes or length of time to stay connected, gamified activities should deliver varied techniques and strategies along with attractive graphics and designs to be embedded in the activity itself. These creative game design elements should be appropriate to the level of the learners' capacity in accomplishing the tasks (Axiom 1). In every gamified activity, the involvement of the user is very essential. If the user is the one playing in the game, the user will be hooked and stay connected until the game is over. The kind of adrenaline or excitement they feel when they are playing is the same as what they feel while playing. Studies show that this may impact the psychological needs of the students. If the learners are not part of the game, they lose their appetite of staying connected because they cannot feel and understand the role of the one playing in the game. Thus, this paper proposes that **gamification should make all learning activities fun and interactive.**

Proposition 8 Gamification should have the applications supported by the government to make it accessible to all learners

The different game design elements anchored on the gamified activities are made possible through a programmed software application. This programmed software application is generated by IT experts wherein they are paid with decent amount. With this, gamification in education comes with a price. The government is making sure to uphold quality and equitable education accessible to all (Axiom 4) as stipulated under Republic Act 9155 also known as the “The Governance of Basic Education Act of 2001”. Further, in the DepEd Order No. 39 series of 2016 under research agenda theme 1: Teaching and Learning, educators are encourage to utilize different teaching pedagogies and instructional materials. With these provisions in the Department of Education (DepEd), the Philippine government continuously making initiatives in providing and allocating budget for instructional materials for the purpose of making the learning experiences of the students meaningful imbued with critical analysis (Axiom 2) and sustained motivation (Axiom3). If the gamified activities are set only for the students who belong to the upper class in the socio-economic status, then, quality and engaging education is not for all. It is the intent of this paper to prose that **gamification should have the applications supported by the government to make it accessible to all learners.**

Proposition 9 Gamification should create a competitive learning environment

Learners nowadays are digital natives in which they grew up together with the digital technologies such as smartphones, tablets, and computers. With this, technology becomes a necessity in their everyday life even in their schooling. The use of gamification in education establishes a competitive learning environment wherein learners are thinking of the common understanding that they should not be left behind (Axiom 4). Plainly, the main purpose of why gamification in education should have a competitive environment for the purpose of maximizing engagement and sustained motivation (Axiom 3). It is in a competition way wherein learners will think critically (Axiom 2) since all information is just at the tip of the fingers. The challenge remains as these activities involve the plurality of disciplines (Axiom 1) which will connect from one subject matter to another – it is broad, comprehensive and bolstered with substance. In making a competitive learning environment, gamified activities must go through with constant assessment and evaluation wherein the students can play a significant role in providing their feedback about the activity (Axiom 5). If gamification in education will not have a competitive learning environment, it is just the same with some boring traditional methods that most of the students will not pay attention with. With this, the paper proposes that **gamification should create a competitive learning environment.**

Proposition 10 Gamification should encourage learners to provide their feedback about the game designs and its applications for the improvement of the activities

Constant feedback and assessment of the gamified activities reiterate the importance of effective teaching-learning process (Axiom 5). Since the 21st century learners are known to be born with technology and its advancement, it became an integral part of their lives. Technologies are learners partners. With this premise, learners are vital instrument or component in the process of refining effective gamified activities that will contain thought-provoking inquiries and tasks (Axiom 2). Gamification in education penetrates the entire educational system (Axiom 4), wherein diverse learners can contribute and provide suggestions in making the gamified activities (1) relevant, (2) can truly assess the 21st century skills of the learners, (3) can sustain the level of motivation and engagement from the start of the activity until its last part (Axiom 3), (4) can connect to the different branches of knowledge (Axiom 1), and (5) can transform the lives of many. If gamification in education will have a stagnant state – no feedback, no consultation, and no changes – gamified activities are useless and such a waste of resources. Therefore, it is the last proposition of this paper that **gamification**

should encourage learners to provide their feedback about the game designs and its applications for the improvement of the activities.

THEORY

Gamification in education (1) sustains **motivation** and engagement among the learners, (2) provides an avenue for further **exploration**, and (3) evaluates the **implementation** process for a constant improvement of its effectivity in enhancing teaching pedagogy. Motivation, exploration, and implementation are important elements in making gamification in education attains universal application in terms of its topics and content, provokes critical thinking, sustains learner's motivation and engagement, creates no boundaries among students, and provides a convenient way of exchanging feedbacks from the teacher to the students and vice versa. Thus, this theory is developed and shall be called **Motivation-Exploration-Implementation Theory in Gamification in Education**.

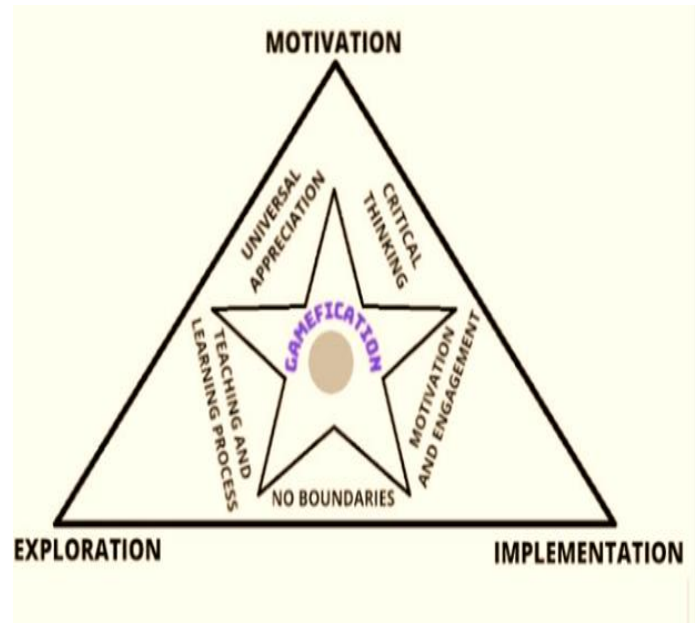


Figure 2. Motivation-Exploration-Implementation Theory in Gamification in Education.

Future Direction: Theory Validation

As part of the general protocol of validating the Motivation-Exploration-Implementation Theory in Gamification in Education, the following tools and processes will be utilized: Survey questionnaire (Propositions 1, 2 and 4), Interview and Focus Group Discussion (all propositions). The informants for the theory validation would be the students, teachers, parents, and administrators of central elementary schools, national high schools, SPED centers, colleges and universities in the country wherein gamification is used as strategy or method of teaching. The collection of data will be done using the validated instruments such as the survey questionnaire and interview guide questions. The data obtained will be analyzed through appropriate statistical tools. The 10 principles of Ethical Consideration by Bryman & Bell (2007) will also be utilized. Results and discussion for each proposition will be discussed in the succeeding chapter.

References

- [1] Adams, E., & Dormans, J. (2012). *Game mechanics: advanced game design*. New Riders.
- [2] Alsawaier, R. S. (2018). The effect of gamification on motivation and engagement. *The International Journal of Information and Learning Technology*.
- [3] Arif, F. K. M., Zubir, N. Z., Mohamad, M., & Yunus, M. M. (2019). BENEFITS AND CHALLENGES OF USING GAME-BASED FORMATIVE ASSESSMENT AMONG UNDERGRADUATE STUDENTS. *Humanities & Social Sciences Reviews*, 7(4), 203-213.
- [4] Battershill, C., & Ross, S. (2017). *Using Digital Humanities in the Classroom: A Practical Introduction for Teachers, Lecturers, and Students*. Bloomsbury Publishing.

Gamification in Education: The Motivation-Exploration-Implementation Theory

- [5] Bayne, T. (2018). On the axiomatic foundations of the integrated information theory of consciousness. *Neuroscience of consciousness*, 2018(1), niy007.
- [6] Bennett, A., & Royle, N. (2016). *An introduction to literature, criticism and theory*. Routledge.
- [7] Chen, S. W., Yang, C. H., Huang, K. S., & Fu, S. L. (2019). Digital games for learning energy conservation: A study of impacts on motivation, attention, and learning outcomes. *Innovations in Education and Teaching International*, 56(1), 66-76.
- [8] Day-Black, C. (2015). Gamification: An Innovative Teaching-Learning Strategy for the Digital Nursing Students in a Community Health Nursing Course. *ABNF Journal*, 26(4).
- [9] Delaram, J., & Valilai, O. F. (2018). An architectural view to computer integrated manufacturing systems based on Axiomatic Design Theory. *Computers in Industry*, 100, 96-114.
- [10] Dichev, C., & Dicheva, D. (2017). Gamifying education: what is known, what is believed and what remains uncertain: a critical review. *International journal of educational technology in higher education*, 14(1), 9.
- [11] George, A. L. (2019). Case studies and theory development: The method of structured, focused comparison. In Alexander L. George: A pioneer in political and social sciences (pp. 191-214). Springer, Cham.
- [12] Gilgun, J. (2019). Deductive qualitative analysis and grounded theory: Sensitizing concepts and hypothesis-testing. *The SAGE handbook of current developments in grounded theory*, 107-122.
- [13] Halloluwa, T., Vyas, D., Usoof, H., & Hewagamage, K. P. (2018). Gamification for development: a case of collaborative learning in Sri Lankan primary schools. *Personal and Ubiquitous Computing*, 22(2), 391-407.
- [14] Hamari, J., Koivisto, J., & Sarsa, H. (2014, January). Does gamification work?--a literature review of empirical studies on gamification. In 2014 47th Hawaii international conference on system sciences (pp. 3025-3034). Ieee.
- [15] Henningsen, D. D., & Henningsen, M. L. M. (2018). Does brainstorming promote cohesiveness? How the rules of brainstorming mirror symbolic convergence. *Communication Reports*, 31(2), 103-114.
- [16] Hulsey, N. (2019). *Games in Everyday Life: For Play*. Emerald Group Publishing.
- [17] Huotari, K., & Hamari, J. (2017). A definition for gamification: anchoring gamification in the service marketing literature. *Electronic Markets*, 27(1), 21-31.
- [18] Jain, A., & Dutta, D. (2019). Millennials and gamification: guerilla tactics for making learning fun. *South Asian Journal of Human Resources Management*, 6(1), 29-44.
- [19] Jia, Y., Xu, B., Karanam, Y., & Voids, S. (2016, May). Personality-targeted gamification: a survey study on personality traits and motivational affordances. In *Proceedings of the 2016 CHI Conference on Human Factors in Computing Systems* (pp. 2001-2013).
- [20] Kapp, K. M. (2012). *The gamification of learning and instruction: game-based methods and strategies for training and education*. John Wiley & Sons.
- [21] Ke, F., Shute, V., Clark, K. M., & Erlebacher, G. (2019). *Design of Game-based Learning Platforms*.
- [22] Kheirkhahzadeh, A. D., Sauer, C. S., & Fotaris, P. (2016, October). Practice Makes perfect- Gamification of a Competitive Learning Experience. In *European Conference on Games Based Learning* (p. 327). Academic Conferences International Limited.
- [23] Kim, S., Song, K., Lockee, B., & Burton, J. (2018). What is gamification in learning and education?. In *Gamification in learning and education* (pp. 25-38). Springer, Cham.
- [24] Kim, T. W., & Werbach, K. (2016). More than just a game: ethical issues in gamification. *Ethics and Information Technology*, 18(2), 157-173.
- [25] Kivunja, C. (2018). Distinguishing between theory, theoretical framework, and conceptual framework: A systematic review of lessons from the field. *International Journal of Higher Education*, 7(6), 44-53.

- [26] Landers, R. N. (2014). Developing a theory of gamified learning: Linking serious games and gamification of learning. *Simulation & gaming*, 45(6), 752-768.
- [27] Landers, R. N., Auer, E. M., Collmus, A. B., & Armstrong, M. B. (2018). Gamification science, its history and future: Definitions and a research agenda. *Simulation & Gaming*, 49(3), 315-337.
- [28] Lehrer, K. (2018). *Theory of knowledge*. Routledge.
- [29] Loos, L. A., & Crosby, M. E. (2017, July). Gamification methods in higher education. In *International Conference on Learning and Collaboration Technologies* (pp. 474-486). Springer, Cham.
- [30] Majuri, J., Koivisto, J., & Hamari, J. (2018). Gamification of education and learning: A review of empirical literature. In *Proceedings of the 2nd international GamiFIN conference, GamiFIN 2018*. CEUR-WS.
- [31] Marciszewski, W. (1981). Deductive Method. In *Dictionary of Logic as Applied in the Study of Language* (pp. 82-84). Springer, Dordrecht.
- [32] McCashin, Q., Adams, C., & Carbonaro, M. (2020, October). Adding Gamification to a Teacher Education Course. In *SITE Interactive Conference* (pp. 657-659). Association for the Advancement of Computing in Education (AACE).
- [33] McDonald, B. (2019). *Improving Teaching and Learning Through Experiential Learning*. Cambridge Scholars Publishing.
- [34] Mintzberg, H. (2017). Developing theory about the development of theory. In *Handbook of Middle Management Strategy Process Research*. Edward Elgar Publishing.
- [35] Nambiar, D. (2020). The impact of online learning during COVID-19: students' and teachers' perspective. *The International Journal of Indian Psychology*, 8(2), 783-793.
- [36] Novikov, PS. (2011). Axiomatic method. *Encyclopedia of Mathematics*. Retrieved from https://www.encyclopediaofmath.org/index.php/Axiomatic_method
- [37] Padua, R. (2012). Teaching theory development. Training presentation from Cebu Normal University, Cebu City, Philippines
- [38] Papadakis, S. (2018). The use of computer games in classroom environment. *International Journal of Teaching and Case Studies*, 9(1), 1-25.
- [39] Paulus, P. B., & Kenworthy, J. B. (2019). Effective brainstorming. *Handbook of Group Creativity: Innovation Through Collaboration*, 287-386.
- [40] Pechenkina, E., Laurence, D., Oates, G., Eldridge, D., & Hunter, D. (2017). Using a gamified mobile app to increase student engagement, retention and academic achievement. *International Journal of Educational Technology in Higher Education*, 14(1), 1-12.
- [41] Prasad, N., Reddy, N., & Nizami, N. (2018). Block-1 Research Methodology: Issues and Perspectives.
- [42] Rabah, J., Cassidy, R., & Beauchemin, R. (2018, November). Gamification in education: Real benefits or edutainment. In *17th European Conference on e-Learning*, Athens, Greece.
- [43] Rapp, A., Hopfgartner, F., Hamari, J., Linehan, C., & Cena, F. (2019). Strengthening gamification studies: Current trends and future opportunities of gamification research.
- [44] Sardi, L., Idri, A., & Fernández-Alemán, J. L. (2017). A systematic review of gamification in e-Health. *Journal of biomedical informatics*, 71, 31-48.
- [45] Seeber, I., De Vreede, G. J., Maier, R., & Weber, B. (2017). Beyond brainstorming: Exploring convergence in teams. *Journal of Management In*
- [46] Seidlein, A. H., Bettin, H., Franikowski, P., & Salloch, S. (2020). Gamified E-learning in medical terminology: the TERMINator tool. *BMC medical education*, 20(1), 1-10.
- [47] Selden, R. (2016). *Practising theory and reading literature: an introduction*. Routledge.
- [48] Stergiou, D. P., & Airey, D. (2018). Understandings of tourism theory. *Tourism Review*.

Gamification in Education: The Motivation-Exploration-Implementation Theory

- [49] Subhash, S., & Cudney, E. A. (2018). Gamified learning in higher education: A systematic review of the literature. *Computers in Human Behavior*, 87, 192-206.
- [50] Tsay, C. H. H., Suh, A., Wagner, C., & Liu, L. (2018).
- [51] Enhancing user engagement through gamification. *Journal of Computer Information Systems*, 58(3), 204-213.
- [52] Kofinas, A., & Luo, J. (2018). Enhancing student learning experience with technology-mediated gamification: An empirical study. *Computers & Education*, 121, 1-17.
- [53] Zainuddin, Z., Chu, S. K. W., Shujahat, M., & Perera, C. J. (2020). The impact of gamification on learning and instruction: A systematic review of empirical evidence. *Educational Research Review*, 100326.
- [54] Zalaghi, H. and Khazaei, M. (2016). The role of deductive and inductive reasoning in accounting research and standard setting. *Asian J Finance Account*, 8(1), 23-37
- [55] Zhang, Y., Peng, L., Shen, J., Zhinan, Z., & Tao, F. (2019). Development of a Process for Perceptual Index Establishment based on Axiomatic Design. In *MATEC Web of Conferences* (Vol. 301, p. 00020). EDP Sciences.