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## Exploring Using Game-Based Learning and Gamification in a Secondary Classroom to Increase Engagement

Mandee Lynn Thiell

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Exploring Using Game-Based Learning and Gamification in a  
Secondary Classroom to Increase Engagement

By

Mandee Thiell  
December 2022

Master's Project

Submitted to the College of Education  
and Community Innovation

At Grand Valley State University

In partial fulfillment of the  
Degree of Master of Education



The signatures of the individuals below indicate that they have read and approved the project of Mande Thiell in partial fulfillment of the requirements for the degree of Master of Instruction and Curriculum – Secondary Education Program.

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Mandee L. Thiell

## **Abstract**

Research has connected the importance of student engagement and student experience within the classroom but continue to use teacher directed traditional teaching methods. This project explores the use of gamification and game-based learning and how it promotes student engagement. The use of games and game-elements provide a relevant approach that focuses on student autonomy and experience, and ultimately use fun engaging ways to motivate students to learn. This project provides an entry level learning in-service opportunity for secondary educators to discover and create their own lessons that implement gamification and game-based learning in their classrooms in hopes to increase student engagement.

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## **Chapter 1: Introduction**

### **Problem Statement**

Many secondary students are not engaging with traditional methods of teaching. Consequentially, this causes educators to question the quality and effectiveness of their pedagogy. Historically it also has been known to affect student satisfaction and the overall school climate (Appleton et al., 2008). Ultimately, this could lead to higher dropout rates and lower academic performance (Lei et al., 2018). Academic success and student learning are a balance of many different factors and are described as a “partnership” between the students and the educator (Rawle, 2017, p.12). Moreover, students should feel part of their educational process and connected to what they are learning. Although traditional teaching methods are adapted in many classrooms, this lack of engagement creates a need to implement an engaging curriculum and pedagogy supported by current research and considered relevant to students in this present age.

### **Importance and Rationale of the Study**

Student engagement has been found to promote academic achievement as well as encourage the development of overall students’ sense of belonging and identity (Lei et al., 2018). Helping students feel comfortable within the learning environment and having them be able to interact with academic content is the goal for many schools. Students are expected to achieve in school by completing assignments, participating in classroom activities and discussions, as well as be assessed on what they learned through the process. After the completion of those tasks, students are then encouraged to take their knowledge and skills and apply them either in continuation of their learning in higher-education, or in



the work force. Due to the academic achievement being an indicator of success of an effective system (Lei et al., 2018), student engagement plays an important role in how well students achieve and compare to the rest of the world.

Consequences of low engagement in schools may resort to negative outcomes like higher drop-out rates. According to the National Center for Education Statistics (2022), the overall dropout rate for secondary students increased between 2010 and 2020 in the United States. Sixteen-year-old students saw a 3.6% increase, and seventeen-year-old students experienced a 2.3% increase (Table 219.73). These statistics raise concerns about the overall quality of the education system and call for direct action on strategies to foster engagement and increase graduation rates.

Additionally, with consideration of evolving educational research and the expanding technology and resources, teachers are encouraged to stay informed about recent practices and be willing to implement new strategies and applications to help prepare students with the skill sets they need today. In the past, Kaiser & Wisniewski (2012) argued that teachers have a responsibility to “reinvent and redesign learning environments that are responsive to the needs of 21st century learners” (Kaiser & Wisniewski, 2012, p.145). Due to the COVID pandemic, a strict shift into online school commenced and teachers were forced to adjust and reconfigure learning. Hanif & Imran (2022) discuss this shift and how students were already establishing collaborative spaces online and have been using technology prior to the pandemic. Hanif & Imran (2022) also address a gap in research around effective teaching practices using technology due to the forced nature of online learning during this time. Students are engaged with technology and will continue to be whether it is inside the classroom or outside the classroom. Overall, the education system should promote

pedagogy that focuses on students, engagement, and using relevant tools to support learning.

### **Background of the Problem**

Many scholars question traditional lecture-based teaching and its effectiveness. In lecture-based classrooms, “Learners tend to remain inactive and their devotion becomes extinct approximately fifteen-twenty minutes after the academic lecture” (Zafar & Akhtar, 2021, p. 154). This lack of motivation and engagement has raised concerns about academic achievement. In the past, Johnson (2008) high school students engaged with traditional lecture-based teaching methods and collaborative learning and found that students had a higher engagement rate with non-traditional/collaborative learning modes. Historically, the act of student engagement is considered dynamic and broad (Krause & Coates, 2008). Krause & Coates (2008) discovered engagement can be categorized into seven categories/types: student transitions, academic, peer, student-staff, intellectual, online, and beyond the classroom. With these classifications, administrators and educators can understand the dimensions of engagement and how they pertain to the overall student experience.

Within the technological age and the rise in online learning, student engagement continues to be a topic of importance. Online platforms enhanced creative and intriguing lessons for students comparably to traditional methods of teaching (Subramaniam et al., 2018). The development of teaching supports, like the “ACE framework” (Borup et al., 2020), addresses the support that students need to be academically engaged within an online learning environment. Borup et al., (2020) stress the importance of implementing and promoting active behavioral and cognitive engagement within the online classroom.

Students have more access to technology than ever before. Hanif & Imran (2022) found that 80% of their students owned smartphones and were willing to use relevant technology like social media in the classroom. Hanif & Imran (2022) also argue that students are more familiar with technology and less training is needed to implement the use of educational technology. Students are eager to use technology because they are accessing it every day. Despite these findings, student disengagement is reported to be the most significant issue for online learning platforms (Alsubhi et al., 2020).

Although this area of study continues to be the topic of research, by experimenting with new teaching strategies and resources, educators can measure engagement levels and strive to find ways to peak student interest. For instance, Game-based learning and gamification are pedagogy techniques to promote motivation, engagement, and achievement. Subramaniam et al. (2018), discuss the use of game elements and cooperative learning within a lesson and how it increased student engagement and cooperation as well as increased enjoyment and positive social skills. Dabbous et al. (2022) also found game-based learning to be associated with higher learning outcomes and increased motivation. Popular genres of games used in game-based learning education involve strategy, simulations, puzzles, role-playing, and discovery/adventure (Hailey et al., 2016). While the concept of gamification is a different concept. Chapman & Rich (2018) state, "Gamification does not mean turning assignments into games; rather, gamification seeks to distil from games the principles of how and why they motivate, and then apply those principles as a layer of interaction to non-game environments. Its intent is to influence motivation, ability, attitudes, and performance" (Chapman & Rich, 2018, p.316). Some features of gamification include levels, score points, and leaderboards (Daehli et al., 2021). These learning

techniques continue to be studied and evaluated for their effectiveness but contribute to the discussion of promoting non-traditional teaching methods in the classroom.

### **Statement of Purpose**

The purpose of this study is to increase student engagement. This may be done by developing and presenting a teaching in-service program that incorporates non-traditional teaching methods and strategies into a curriculum that will increase student engagement within a secondary classroom. The in-service will model the use of games and game elements within the classroom and allow teachers time to use and create lessons to show the application of their learning. Educators will obtain and apply their knowledge from the in-service opportunity into creating lessons that encourage student engagement within the classroom with the intention of increasing academic achievement and overall student well-being.

### **Objectives of the Project**

The main objectives of this project are to inform, create, and implement a lesson that incorporates teaching strategies and elements that engage students in content and pique their interest. This project is designed specifically for secondary level teachers but can be used and adapted for other grade levels. Participants will first learn about the elements of the non-traditional teaching practice of gamification and game-based learning in the classroom and interact with lesson examples. Regarding the application of game-based learning in the classroom, participants will learn and engage with lesson examples and classroom management strategies. Game-based learning may be new to some educators participating, so there will be time to ask questions and practice their learning. Participants will then apply their learning and create or modify a lesson that integrates game-based

learning and/or gamification qualities. Using Learning Forward The Professional Learning Association's standards for professional learning (2022), teachers will learn, access resources, design, and develop their overall quality of teaching within this in-service project to increase student engagement. Moreover, teachers will be informed and encouraged to continue to branch out from traditional modes of teaching and try different elements within their lessons in the future to continue to foster student learning and success.

### **Definition of Terms**

*Digital Game-Based Learning (DGBL)*: use of digital gaming in a learning environment. These include games with learning goals and objectives, exploratory games, and commercialized games that support learning outcomes. (Breien & Watson, 2021)

*Extrinsic motivation*: "The performance of an activity in order to attain some separable outcome" (Ryan & Deci, 2000, p. 71)

*Game-Based Learning (GBL)*: Restructuring curricular activities with conflict and rules of play to increase engagement and interest (Plass et al., 2015)

*Gamification*: Applying game-playing elements into non-game systems to influence user motivation and engagement (Chapman & Rich, 2018).

*Intrinsic motivation*: "Doing an activity for the inherent satisfaction of the activity itself" (Ryan & Deci, 2000, p. 71).

*Lecture-Based Teaching*: A pedagogy that employs teacher-led classroom instruction and/or presentation (Johnson, 2008).

### **Scope of Project**

The goal of this project is for teachers to design or modify a lesson that implements gamification elements and/or uses game-based learning. To be able to achieve that goal,

teachers will participate in an in-service opportunity that informs educators on game-based learning and gamification teaching strategies. This includes definitions, examples, and modeling. It is desired that teachers use this opportunity to expand upon their practice and try new techniques to engage students in the classroom in place of traditional teacher-led lecture pedagogy.

Factors that limit this project include presenting and receiving administrative support to implement a teacher in-service and designating time and money for teachers to be provided substitutes to attend the in-service. Other factors include overall teacher buy-in for utilizing and integrating their learning from the in-service within their own pedagogy. Due to limited secondary education studies and statistics on game-based learning and gamification, as well as relevant district student data to work with, teachers will have to use the research and strategies they learn and be willing to adapt it for their individual subjects and students. Ultimately, teachers will need continuous support and resources available to ensure non-traditional teaching methods like game-based learning are being understood and implemented.

## **Chapter Two: Literature Review**

### **Introduction**

In today's technologically driven society where students are engaging with different kinds of media and learning opportunities, students are not engaging with more traditional teacher-directed pedagogy, especially without technology (Subramaniam et al., 2018). Research and literature are becoming more prevalent in strategies to employ more engaging styles of teaching. Among those strategies are gamification and game-based learning (GBL). This literature review covers the theory and rationale behind the pedagogy of gamification and game-based learning as well as analyzes what they are and what scholars are discussing about them. The review is categorized by an overview of both pedagogies, the importance of student autonomy, planning & preparation, connections to learning theories, and implementing debriefing strategies within the lesson/unit design. Overall, the research reviewed explains how game-based learning and gamification are effective teaching strategies that can help improve student engagement in the classroom.

### **Theory/Rationale**

To address possible solutions to the lack of student engagement in the classroom, educators must address the background and research that drives the need for a solution. Foremost, student engagement is described as, "a collection of mindfully goal-directed behaviors and reflections demonstrated to indicate a meaningful and deep involvement in learning activities" (Ke et al., 2016, p. 1183). This participation is supported by objectives and time to reflect and interact with classroom content. Although game-based learning is only one proposed solution to student engagement, the concept of having objectives and goals align. Game-based learning is driven by objectives, frameworks, and theories that support learning and engagement.

The first foundational education theory that supports GBL is B.F. Skinner's behaviorist theory. The behaviorist theory revolves around conditioning and observing behaviors through the interaction with outside stimuli (Elsattar, 2017). This theory can be embedded within the use of GBL in the classroom by using game elements such as matching, reward, and practice that emphasize student interactions with the environment (Elsattar, 2017).

The second theory that supports student engagement and the use of GBL is Jean Piaget's constructivist theory. The constructivist theory highlights that learning is something that is built from personal experience as well as interactions (Elsattar, 2017). Within game-based learning, the constructivist theory allows student-focused activities that collaborate and work toward solving problems within a game environment. By relating these well-known educational theories to GBL, educators can develop and design curricula incorporating these elements with knowledge of how they affect engagement, motivation, and overall learning.

Another topic related to student engagement is student motivation. The Self Determination Theory breaks down two different parts that makeup motivation: Intrinsic and extrinsic motivation. Within intrinsic motivation, students are intrigued and motivated by their curiosity and enjoyment of what they are engaging with. While extrinsic motivation is determined by outside factors driving an individual (Ryan & Deci, 2000). Overall, students who are extrinsically motivated will complete tasks to receive recognition or avoid consequences. These types of motivation described in the Self Determination Theory help determine what motivates a student to be engaged with the content and how designing lessons with them in mind is important. According to Turkay et al., (2014) Self-



Determination theory can also explain why students find playing games to be fun and motivating due to intrinsic motivation. Turkey et al., (2014) also argue that the study of intrinsic motivation has affected all game-based learning research in some way.

The last theory that is commonly referred to when discussing game-based learning is Csikszentmihalyi's Flow Theory. Elsattar (2017) describes this theory as, "the mental state of operation in which a person performing an activity is fully immersed in a feeling of energized focus, full involvement, and enjoyment in the process of the activity" (Elsattar, 2017, p. 36). The use of game elements and games through game-based learning and gamification are tools for students to reach this flow state.

## **Research/Evaluation**

### ***Game-Based Learning***

Game-based learning is not learning to play games, but rather to learn by playing them (Elsattar, 2017). Many scholars have discussed the possibilities and advantages of implementing game-based learning (Grinias, 2017; Hailey et al., 2016; Kangas et al., 2017; Maguth et al., 2015; Plass et al., 2015; Sailer et al., 2017). Game-based learning is a way to engage and motivate students in collaborative play (Plass et al., 2015). For example, within a secondary social studies classroom, students engaged with the video game *Age of Empires II: The Age of Kings* and created a "virtual playground" where students could explore and discuss historical concepts and events (Maguth et al., 2015, p. 35). By engaging students with video games that discuss academic content, students were able to connect and interact in an interesting and meaningful way. According to Qian & Clark (2016), using collaboration is the most targeted game design. Game-based learning also allows students "graceful failure" (Plass et al., 2015, p. 268) and is considered part of the learning process and design

of many games. Although, some scholars have questioned the effectiveness of game-based learning due to the wide range of game designs, elements, instruction, and experimentation (Yu, et al., 2021; Dischev & Dicheva, 2017; Sailer et al., 2017), Yu et al (2021) still suggests that educators use educational games to aid instruction and promote student motivation by purposeful lesson design and pedagogy. Ultimately, game-based learning is reviewed as showing potential for increasing student motivation, engagement, and interest while providing playful learning places for students to explore and collaborate.

### ***Gamification & Game-Elements***

Incorporating game elements and gamification is a common tactic in many of the studies that were reviewed (Chang & Wei, 2016; Chapman & Rich, 2018; Daehli et al., 2021; Faiella & Ricciardi, 2015; Huang et al., 2019; Mert & Samur, 2018; Pham et al., 2021).

Gamification and game-based learning are different because gamification aims to use the game concepts and design elements within instruction versus turning assignments into games themselves (Chapman & Rich, 2018). Sajinčič et al (2022) disclosed that more than half of the teachers that participated in a gamification in-service reported using gamification within the past year, but many of them could not differentiate between gamification and game-based learning. So, it is important to understand what gamification is to be able to implement it in the classroom.

Gamification is a tool that has been used to increase motivation and engagement. Chang & Wei (2016) developed a study that measured student engagement with game mechanics within a massive online open course (MOOCs). Within the study, the 5 most engaging game elements are virtual goods, redeemable points, team leaderboards, where's Wally game, and trophies and badges. Firstly, virtual goods challenge students to engage

with content to earn virtual objects. Secondly, Redeemable points are adaptable to course content with rules and ways to accumulate them to earn rewards. Thirdly, team leaderboards are a way to make comparisons that are easily seen to motivate student participation. Fourthly, the Where's Wally game is a problem-solving game that involves "recognition, critical thinking, and sense-making skills" (Chang & Wei, 2016, p. 184-185). Lastly, trophies and badges are immediate rewards for achievement that increase student motivation to collect more. The gamification mechanics that are found to be the most popular in this study is virtual goods because participants are rewarded for their achievement and therefore are more motivated to engage with content (Chang & Wei, 2016). Thus, the design and implementation of specific game elements can be used to enhance student motivation and engagement.

Gamification also increased student engagement within a flipped learning environment (Huang et al., 2019). Within a flipped learning environment, students learn content outside of the classroom first and use class time to solidify concepts and practice (Huang et al., 2019). In the Huang et al (2019) study, students were either in a traditional flipped classroom or a gamified flipped classroom. This method was applied to the out of school activities that are part of the flipped learning experience. Within the gamified group, participants engaged with badges that encouraged students to participate with the content. Huang et al (2019) found that the gamified flipped classroom resulted in higher achievement than the traditional classroom as well as higher engagement. Therefore, the effects of gamification on student engagement and motivation can be concluded to be adaptable to various learning situations.

### ***Fun & Competition***

An explanation for increased engagement in a classroom environment using gamification is expressed through fun and competitive motivation (Chang & Wei, 2016; Daehli et al., 2021; Mert & Sumar, 2018). These fun and competitive settings created through gamification can have other uses besides content instruction. For instance, Mert & Samur (2018) used the gamification application, ClassDojo, for classroom management and saw a positive effect on student behavior and morale. Through the ClassDojo application students engaged with several gamification tools like a point system, leaderboards, avatars, badges, and virtual goods. Mert & Samur (2018) found that by using the application, students experienced increased interest and motivation which also resulted in positive effects on achievement. Similarly, Subramaniam et al (2018) examined traditional and gamification teaching strategies and concluded that students found the class with the game elements more enjoyable and entertaining. Additionally, 85% of students in the study exclaimed that using a gamified lesson made them learn more effectively as well as engage them in content (Subramaniam et al., 2018). Subramaniam et al (2018) explain that the game is a way to “encourage healthy competition among the students through attempting to get the highest marks and attempting to answer before the specified time limit ended” (Subramaniam et al., 2018, p.37). Thus, gamification can be a dynamic tool that can be used to motivate students in a fun and competitive manner to achieve desired goals.

In addition to the element of competition being an active role in what makes a game fun and engaging, emotion and overall student experience is a key factor in how students perceive their learning outcomes (Gallego-Duran et al., 2019). Games are used as a tool to achieve an “experience” (Gallego-Duran et al., 2019, p. 9) that enables the usage of emotions to unlock fun and meaningful learning. This can be achieved by finding ways for

learners to create characters/roles, designing groups, and achieving common goals (Gallego-Duran et al., 2019). By adapting to game elements that promote emotional development and attachment, students can find enjoyment in learning.

### ***Autonomy***

Some scholars address involving students in the process and allowing them more autonomy in their learning. According to Bawa et al (2018), having autonomy made participants feel highly motivated by being able to choose to interact with instructional content with or without games. Autonomy allows students to own their learning and be able to have a choice. Bridges et al (2019) applied game strategies in a study to improve student achievement and perceptions of educational content. The study found by implementing game strategies that participants had increased autonomy and engagement with class content. Pham et al (2021) also saw increased autonomy as well as increased academic achievement within a classroom using gamification and mobile learning compared to a traditional model classroom. Further, autonomy is also seen to be a part of gameplay and design (Chapman & Rich, 2018). Therefore, student autonomy is motivating, engaging, and important for implementing game elements into the classroom.

### ***Planning, Preparation, and Support***

For many researchers, preparing students and supporting them to use game-based learning, especially when it is a new concept, is an important step for successfully implementing gameplay into the classroom (Sailer et al., 2017). Considering teachers may be already familiar with standards and objectives while creating lessons and units, the planning and preparation is a process vital to create effective pedagogy within game-based lessons (Bado, 2022; Elsattar, 2017; Faiella & Ricciardi, 2015; Gallego-Durán et al., 2019;

Huang et al., 2019; Ke, 2016). Students need to be directed and supported through the learning process and before a teacher can assist in that, teachers need time to assess what needs to be learned and how it will be learned. Bado (2022) found that 60.9% of teachers in their study provided instructional activity supports such as scaffolding, classroom management tactics, and technical support during gameplay lessons. Within 87% of the cases studied, there were pre-game instructional activities to support students to engage with the games. Additionally, Huang et al (2019) discussed student preparation and pre- and post-classroom activities. The study concluded that teachers should create and emphasize specific rules and knowledge on what is entailed in a gamified classroom.

Considering the need for instructional support and preparation, researchers discuss different tactics and elements to guide this preparation process. A professional game-design approach to game-based learning is discussed by Gallego-Durán et al (2019) to focus on and implement ten specific characteristics of games within a gamification lesson including open decision space, challenge, learning by trial and error, progress assessment, feedback, randomness, discovery, playfulness enabled, automation. These characteristics were formed into a rubric to allow educators to assess the elements of a lesson and how it aligns with a gamified design. Gallego-Durán et al (2019) concluded that the rubric is a successful tool to reduce barriers to creating game-design-based gamification and a great step to prepare for successful implementation. Faiella & Ricciardi (2015) support having clear expectations and goals for gamification learning, and add that lessons should have challenging tasks, social elements, and authentic stories that students can relate with. Therefore, teachers should be prepared to integrate games and game elements within the planning of their lessons with

careful consideration of successful gamification criteria and implementation, as well as providing continuous support during and after the lesson.

### ***Connection to Educational Learning Theories***

Many studies are seen to be deeply connected to educational theory and emphasize the importance of tying theory into designing engaging games for the classroom (Elsattar, 2017; Plass et al., 2015; Pham et al., 2021; Sailer et al., 2017). According to Qian & Clark (2016), game designs that are connected to learning theories are more effective in learning. Learning theories often inform different game designs by the challenges, responses, and feedback they provide, but is dependent on the content, genre, and the purpose of the game within your educational setting (Plass et al., 2015). By using Self-Determination Theory (SDT) researchers can look at the effects of gamification (Sailer et al., 2017). For instance, Pham et al (2021) argued that educators were able to gauge where students are and know how to address their extrinsic and intrinsic motivation. Hence, teachers can apply learning theories to planning, implementing, and assessing lessons involving gamification.

### ***Debriefing***

Some scholars reviewed to address the importance of reflection and questioning when using game-based learning in the classroom (Bado, 2022; Bilgin et al., 2015). This is also known as debriefing. Bado (2022) discusses the use of post-game debriefings in the form of discussion and reflection. Students were able to engage in student discourse and discuss their experiences and what they learned after using game-based pedagogy. According to Biligin et al., (2015), allowing time for students to debrief is the most important first step to implementing educational games in the classroom. Bilgin et al., (2015) ensures that this time to reflect allows students to make relevant connections to their lives and gives

space to have questions answered and mistakes clarified. Bilgin et al., (2015) clarify and analyze different times and ways of debriefing before, during, and after game playing as well as debriefing as a group or on your own. Bilgin et al., (2015) found team debriefing was most effective to increase self-efficacy and motivation. Overall, allowing time to reflect and apply student learning is a vital part of preparing students to learn effectively with game-based pedagogy.

### **Summary**

Using gamification and game-based learning as a pedagogical strategy to improve student engagement is supported by several learning theories. Skinner's Behaviorist Theory and Piaget's Constructivist Theory support the use of gamification and game-based learning within the classroom (Elsattar, 2017). Both traditional learning theories set a foundation for improving engagement and overall learning. The other two theories that drive this project are the Self Determination Theory (Ryan & Deci, 2000), and Csikszentmihalyi's Flow Theory (Elsattar, 2017). These theories highlight the importance of student curiosity and enjoyment and their positive effect on motivation and engagement.

In addition to describing the theories discussed, the interpretations and research behind gamification and game-based learning are analyzed throughout this chapter. For instance, in the first section about game-based learning, the research explored the benefits of motivating and engaging students in collaborative play (Plass et al.,2015; Maguth et al., 2015; Qian & Clark, 2016). In addition, Yu & Wang (2021) encouraged educators to plan for educational games in the classroom through purposeful design with game elements that will promote engagement.



In the second section about gamification, Sajinčič et al (2022) disclosed that teachers failed to identify between game-based learning and gamification. Therefore, studies identified the gamification tactics that encompass gamification including the use of virtual goods and achievements (Chang & Wei, 2016) as well as competitive experiences (Chang & Wei, 2016; Daehli et al., 2021; Mert & Sumar, 2018). Moreover, gamification is seen to be used in different environments including a flipped classroom (Huang et al., 2019) and a massive online open course (Chang & Wei, 2016). As a result, the research in these first sections is informing educators on how to adapt gamification and game-based pedagogy appropriately within their specific content and environment.

Lastly, the following sections within the chapter discuss the importance of preparation and the implementation of gamification and GBL as well as what is included within this planning. For instance, using student autonomy within gamification and GBL to increase motivation, achievement, and engagement (Bawa et al., 2018; Bridges et al., 2019; Chapman & Rich, 2018; Pham et al., 2021). Moreover, gamification and GBL promote healthy competition and fun environments that promote engagement (Gallego-Duran et al., 2019; Subramaniam et al., 2018; Mert & Sumar, 2018). Research also emphasized the importance of preparation and support for implementing game-based learning and gamification by planning things like scaffolding, pre- and post-activities, and providing technical support when needed (Bado, 2022; Huang et al., 2019).

In addition to supports and activities, there are also specific game designs, goals, theoretical connections, and expectations that are established during planning for gamification and game-based learning implementation (Gallego-Durán et al., 2019; Faiella & Ricciardi, 2015). Overall, scholars agree that to be able to utilize and implement gamification

and game-based pedagogy, there are things to consider when planning and implementing a successful curriculum that promotes motivation and engagement in the classroom.

## **Conclusion**

Throughout this chapter, the implications that scholars have is that gamification and game-based learning can be a tool for increasing engagement in a fun and meaningful way. Whether it be having educators create collaborative and exploratory games that promote students to engage with academic content through a strategically planned and designed learning opportunity, or by using specific game-design elements that integrate into an already established lesson. Students are at the center of their learning, and by creating autonomous opportunities using games and gamification, there is potential to create engaging lessons that promote a sense of self and achievement. Although this area of study is broad and highly dependent on the specifics of game elements and proper planning/integration, it provides an alternative pedagogical strategy to promote student engagement.

For this project, teachers participating will have the opportunity to create or modify lessons to incorporate game-based learning and/or gamification with consideration of the importance of purposeful planning and implementation. With clear expectations and goals, teachers will become familiarized with scholarly work and theories supporting this design as well as strategies to promote student engagement using games and game elements.

## **Chapter 3: Project Description**

### **Introduction**

Students are not engaging with traditional styles of pedagogy that lack student involvement. Students need to thrive off autonomous and fun learning opportunities that pique their interest and engage them with classroom content. Incorporating game-based learning and gamification within the curriculum can provide a motivating tool that increases student engagement within the classroom (Subramaniam et al., 2018). For this project, educators will participate in an in-service learning opportunity to explore and create/modify a lesson to implement in their classrooms. In the following sections the project components, plans for evaluation, and plans for implementation are discussed as well as the overall conclusions about the project.

### **Project Components**

This project is driven to address the lack of student engagement with traditional pedagogy, particularly in districts that may not have direct access to a variety of learning materials and curricula. This project does not have a specific localized scope but serves as a learning tool for educators to learn and explore pedagogy that is different from more traditional methods. The objectives of this project are to engage educators in a one-day in-service learning opportunity to educate, model, explore, and create lessons that implement gamification and game-based learning. The reason to create this project is to address lack of student engagement in the classroom. This project aims to bring a fun approach to learning that is relevant to students in an increasing technology/game culture.

The appendix first comprises the Google Slide presentation. The presentation includes a detailed step-by-step of the entire in-service opportunity. By using Google Slides,

teachers can have access through a link and be able to follow along as well as keep the information for their records for later use. An agenda, as well as objectives and professional learning standards, are included in the presentation as well as all activities, links to pre- and post-evaluation surveys, lesson checklists, and learning material. The activities include polls, a point system to gain rewards for participation, a snowball conversation, a team character brainstorming game, and a game menu including a Jeopardy-style game. A word search is also included within this game menu and can be found in the appendix. This presentation makes up the entirety of the content of the project. Through this presentation, teachers can experience gamification and game-based learning firsthand. The activities created in this project mirror many of the strategies and game elements that were discussed in Chapter Two. By using modeling and gamification strategies, teachers can be engaged and motivated to create lessons that will use similar concepts. Lastly, the Learning Forward Standards for Professional Learning (2022) that were used in this project to guide the in-service opportunity and create learning goals for educators. These standards were given permission to be used and the letter can be found in the appendix B.

### **Project Evaluation**

To consider this project to be successful, teachers must gain knowledge of gamification and game-based learning through the in-service and increase the creation and implementation of lessons using this type of pedagogy. The use of pre-and post-surveys will be used to gauge understanding and answer questions about gamification and game-based learning to ensure teachers understand the content of the in-service opportunity to feel confident enough to implement what they learned in the classroom. The surveys can be found in Appendix A (p.48-49). The surveys will help educators reflect on their learning and

provide time for extra clarification and insight to successfully implement the concepts they learn in the in-service within their classroom.

In addition, by using Learning Forward Standards for Professional Learning (2022) to guide the purpose and direction of this project, educators will have time to strengthen their expertise and adapt new concepts into their teaching. Learning Forward Standards are designed to guide educators in meaningful professional development learning that is grounded in goals that foster quality leadership and teaching for students and other educators. In this project, the standards will frame how the in-service is designed and executed to allow educators to take part in a lesson and implement their learning into creating lessons that will engage students using the knowledge they gained through the in-service opportunity. Teachers are encouraged to use these standards as goals for their learning to improve their practice and enhance their knowledge about different pedagogy.

### **Project Conclusions**

In Chapter One of this project, the issue of student engagement with traditional methods of teaching is addressed. Student engagement has historically been connected to the effect of overall student morale and school climate (Appleton et al., 2008). Student engagement is also connected to academic achievement (Lei et al., 2018). Moreover, students are exposed to a variety of information and technology and are already active participants in a more advanced society than ever before. Hanif & Imran (2022) supports this by explaining the use of smartphones and students' consistent access to technology. Yet, student engagement continues to be an issue even on online platforms (Alsubhi et al., 2020). Therefore, school districts

and educators are in need to explore new ways to engage students whether in the classroom or online.

Through the research conducted in Chapter Two, gamification and game-based learning are considered useful tools to increase student engagement and motivation (Chang & Wei, 2016). Additionally, the research suggests that games can boost morale and create a fun learning environment (Mert & Samur, 2018). Ultimately, Gamification and game-based learning provides a dynamic and student-focused approach to learning that allows students to have meaningful experiences (Gallego-Duran et al., 2019). Therefore, this project aims to provide resources and space for educators to explore and implement a game-focused pedagogy that increases student engagement as well as provides an enriching learning environment.

Considering that game-based learning and gamification are still understudied and researched, there are many questions still left unanswered about the long-term effectiveness and proper implementation of this type of pedagogy. Through the research in this project, the importance of planning, connecting to learning theories, and the careful selection of games and game elements are addressed. But, due to the nature of this in-service, the information presented as well as the scheduled time to explore and create only allows an entry level into this method of teaching. Further research, support, data collection, and professional learning would be

needed to measure the effectiveness of implementing game-based learning and gamification.

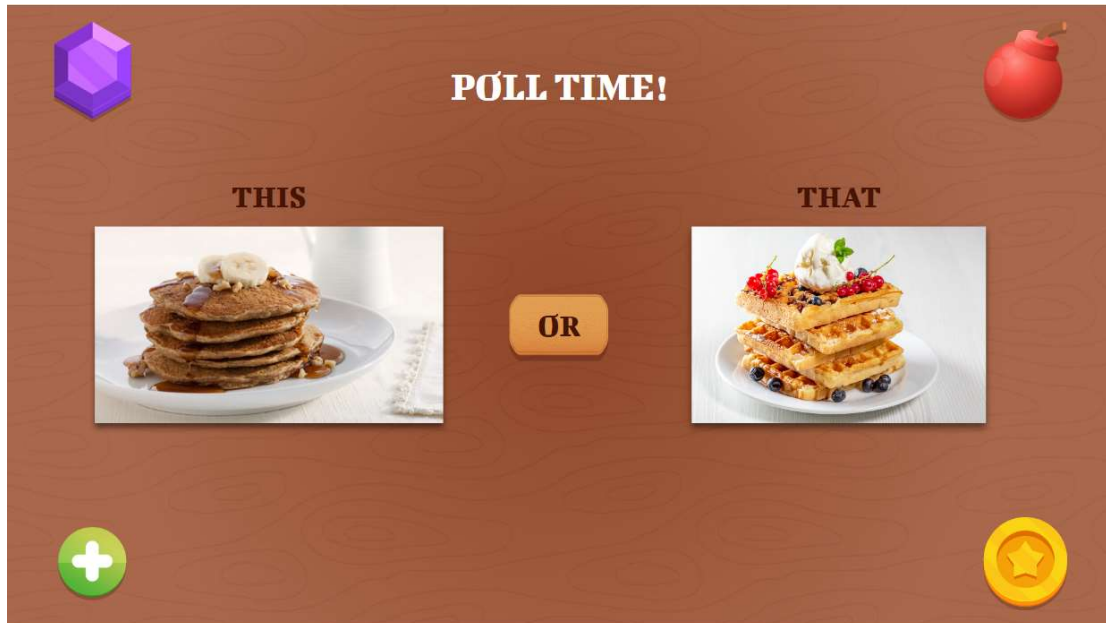
### **Plans for Implementation**

This project is to be used in an in-service learning opportunity and shared by administrators or teacher leaders. It is an introduction to gamification and game-based learning for secondary educators of all subjects but can be adapted for elementary levels as well. The presentation can also be modified to accommodate specific school needs. Teachers are encouraged to try new things and explore the use of games and game elements in their lessons to increase student engagement. The creation of lesson plans that incorporate gamification and game-based learning will help teachers understand how to start making lessons that implement a new and fun way of teaching that engages students. To increase the effectiveness of this project, support and follow-up learning opportunities to aid implementation and further learning are likely needed.

Teachers should be given time to engage in this learning opportunity within their scheduled work time by providing substitutes, half-days, online learning, or integrating this learning time within an already scheduled in-service day. The agenda within this project is easily adaptable to how districts would like to use it. Ultimately, this project aims to allow teachers a risk-free space to play, discover new ways of teaching, and connect with new concepts and new resources that promote student engagement.

## Appendix A- Gamification & Game-Based Learning In-Service Learning

### Gamification & Game-Based Learning In-Service Google Slides Presentation & Resources





# Agenda

9:00-9:30am: Check-ins, Instruction, Rules, Agenda, Standards & Goals

9:30-9:45am: Pre-survey

9:45-11:15am: What is gamification & game-based learning?

11:15-12:00pm: Game time!

12:00-1:00pm: Lunch

1:00-1:10pm: Answer Questions, Participation Leaderboard

1:10-1:45pm: Subject/Grade level Brainstorm Activities

1:45-3:00pm: Create or Modify Lesson

3:00-3:30pm: Wrap up, Post Survey, Winners, and Questions



## “Game” Rules

All Players will be given points for participation and engagement with today's in-service learning opportunity.

**1 point:** Answer a question or provide examples

**5 points:** Volunteer to Read

**10 points:** Complete the pre and post survey

**15 points:** Complete a game on the “Game Menu” (more points for additional games played)

**20 points:** Create or modify a lesson

**INSTANT WIN!** Implement a lesson you created today in your classroom by the end of the month





# Standards for Professional Learning

## Rigorous Content for Each Learner

### Curriculum, Assessment, and Instruction

Educators understand curriculum and implement through instruction.

### Professional Expertise

Educators strengthen discipline-specific expertise.

### Equity Practices

Educators embrace student assets through instruction.

## Transformational Processes

### Implementation

Educators implement and sustain professional learning.

[Learning Forward The Professional Learning Association Standards Webpage](#)



# Specific Goals for In-service



## Respect

- Be mindful of the schedule
- Listen to all voices

## Inform

- What is gamification & game-based learning?
- What are some examples?
- How is it implemented?

## Participate

- Engage with learning activities
- Complete pre & post survey

## Create

- Create or modify lesson to include gamification and/or game-based learning

## Implement

- Teach created or modified lesson in your classroom
- Reflect on lesson



## What do you know already about gamification & game-based learning?

Complete today's pre-survey by clicking the Google Form link below

### Gamification & Game-Based Learning In-service Pre-Survey

## What is your favorite game? And what about it makes it fun?

Write down the answer to this question and your name on a slip of paper and crinkle it up into a ball

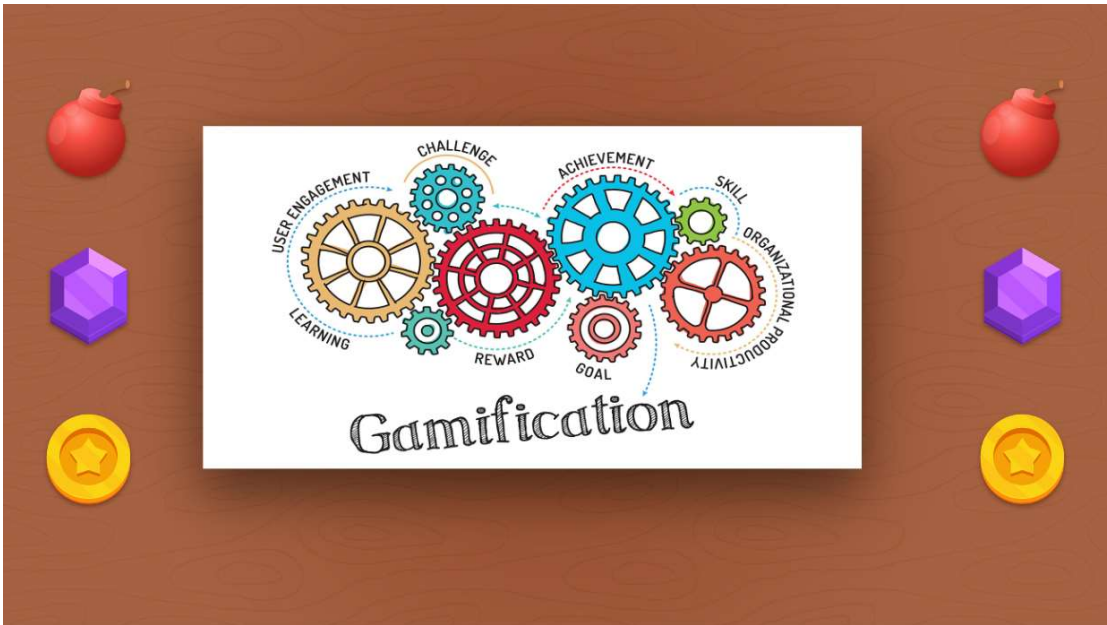
**Now throw it across the room!**

Pick up a paper ball closest to you... **AND THROW IT AGAIN!**

Pick up one paper ball and unravel it and read it. You have 1 minute to find the person it belongs to, **GO!**



You have 2 minutes to discuss your answers with your partner. After timer is up, share out with the whole group for points!



## What is Gamification?

**Gamification: Applying game-playing elements into non-game systems to influence user motivation and engagement (Chapman & Rich, 2018).**



Goals



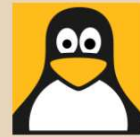
Badges



Standings/Leaderboards



Teamwork



Avatars



## Why implement Gamification?

### Increased student motivation and engagement

- Competitive motivation (Chang & Wei, 2016)
- Positive student behavior and morale (Mert & Samur, 2018)
- Increased interest and motivation (Mert & Sumur, 2018)
- Learning is more effective (Subramaniam et al., 2018)
- Higher student engagement and achievement within a flipped classroom structure (Huang et al., 2019)
- Increased student autonomy (Pham et al., 2021)





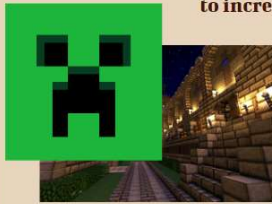
## Why implement Game-Based Learning?

- Higher learning outcomes and increased motivation (Dabbous et al., 2022)
- To engage and motivate through collaborative play (Plass et al., 2015)
- To create a "virtual playground" (Maguth et al., 2015, p. 35)
- To allow students "graceful failure" with a low risk teaching strategy (Plass et al., 2015, p. 268)

## What is Game-Based Learning?

Game-Based Learning (GBL): Restructuring curricular activities with conflict and rules of play

to increase engagement and interest (Plass et al., 2015)



Digital Gaming



Board Games/Trivia/Puzzles



Role-Playing/Movement



# Game Menu

Choose 1 or more to play to earn points!

<b>Teams</b> <b>Game Jeopardy</b>	<b>Individual</b> <b>Game-Based Learning &amp; Gamification Word Search</b>
<b>Online/Digital</b> <b>Search for games to play online or an app</b>	<b>Multi-Player</b> <b>Board Game (Your choice from the selection)</b>

After you are done, think and write down how you can incorporate these game types in your content area. Be prepared to share after the break.

**GAME  
TIME!**

# ★ GAME JEOPARDY ★

Gamification	Game-Based Learning	Board Games & Puzzles	Video Games & Apps
<u>200</u>	<u>200</u>	<u>200</u>	<u>200</u>
<u>300</u>	<u>300</u>	<u>300</u>	<u>300</u>
<u>400</u>	<u>400</u>	<u>400</u>	<u>400</u>

## Gamification 200 pts

**What is gamification?**

**Answer:** Applying game-playing elements into non-game systems to influence user motivation and engagement (Chapman & Rich, 2018).



## **Gamification**

**300 pts**

**What type of motivation does gamification promote?**

**Answer:** Competitive motivation

## **Gamification**

**400 pts**

**Name two gamification elements that were used in this presentation?**

**Answer:** Points, leaderboards, avatars, teamwork, timers

## **Game-Based Learning**

**300 pts**

**What are the positive outcomes of game-based learning?**

**Answer:** Increased student motivation, achievement, and engagement

## **Game-Based Learning**

**200 pts**

**What is game-based learning?**

**Answer:** Restructuring curricular activities with conflict and rules of play to increase engagement and interest (Plass et al., 2015)

## **Board Games & Puzzles**

**200 pts**

**This board game requires money management, strategy, and avoidance from jail**

**Answer: Monopoly**

## **Game-Based Learning**

**400 pts**

**What is the game type in game-based learning that involves movement and reenactments?**

**Answer: Role-Play**

## **Board Games & Puzzles**

**300 pts**

**This type of puzzle is on a grid and gives players clues to words that complete it**

**Answer: Crossword Puzzle**

## **Board Games & Puzzles**

**400 pts**

**This famous strategic board game is about gaining and trading resources to build settlements, roadways, and strong armies.**

**Answer: Catan**

## **Video Games & Apps**

**200 pts**

**This video game involves construction, crafting and exploration**

**Answer: Minecraft**

## **Video Games & Apps**

**300 pts**

**This game-based learning online platform involves creating, sharing, and playing trivia quizzes**

**Answer: Kahoot!**

## Video Games & Apps

400 pts

This educational online tool lets students study with flashcards, quizzes, and games

Answer: Quizlet



**BREAK**



## Leaderboard



**1st**

\*Insert name & Points Earned



2nd

\*Insert name & Points Earned



**3rd**

\*Insert name & Points Earned



4th

\*Insert name & Points Earned



**5th**

\*Insert name & Points Earned



6th

\*Insert name & Points Earned



## Share out!

**What did you learn from playing the games at game time? How could you fit those styles of games into your classroom?**

**If you found some cool online games or apps feel free to share!**





# READY, SET, BRAINSTORM!

1. Meet with your grade level/subject teachers
2. Choose a mascot table for your group to meet at
3. Brainstorm specific ideas of how to implement gamification and/or game-based learning into the classroom (Write them down!)



Be prepared to share your ideas in the next activity!

## 6 Thinking Hats



Meet with the mascot team you are matched with on this slide



Use the chart paper provided to answer the 6 questions below with your groups

1. **Logic:** What are the activities your groups came up with?
2. **Optimism:** What are the value and the benefits to these activities?
3. **Devil's Advocate:** What are the difficulties and the dangers of implementing them?
4. **Emotion:** What feelings do you have about them? How do you think your students will feel when interacting with these activities?
5. **Creativity:** How can you make these activities more appealing and fun to students?
6. **Management:** What classroom management expectations and rules need to be in place to implement these activities?













# Gamification and/or Game-Based Learning Lesson Checklist



<input checked="" type="checkbox"/>	<b>Gamification</b>	<b>Game-Based Learning (GBL)</b>
	<b>Game Elements</b>	<b>Types of Games</b>
	<b>Examples:</b> Points, progress/feedback, teams, rewards/prizes, badges, discovery, quests/challenges, timers, virtual goods, polls, themes, avatars/characters, progress bars, competition, leaderboards	<b>Examples:</b> Memory, simulation, interactives, quizzes, puzzles, strategy, VR, board games, role-play, immersive, active games, digital games

- Goals/ rules of the game/expectations for the lesson
- Pre and post activities/feedback/debrief time
- Classroom management plan & Assessment/rubric

## Some, of MANY, Game-Based Digital Applications

Explore and use these helpful game-based applications to enhance your lesson

<p><b>Create Your Own Interactive Games</b></p> <p><a href="#">EduCandy</a></p> <p><a href="#">Oodlu</a></p>	<p><b>Gamified Trivia &amp; Review</b></p> <p><a href="#">Blooket</a></p> <p><a href="#">Kahoot</a></p> <p><a href="#">Quizlet</a></p> <p><a href="#">Quizizz</a></p> <p><a href="#">Gimkit</a></p>	<p><b>Science</b></p> <p><a href="#">Anatomy Game</a></p> <p><a href="#">Little Alchemy</a></p> <p><a href="#">Cells Alive</a></p>	<p><b>Language</b></p> <p><a href="#">Duolingo</a></p>
<p><b>Multimedia learning games made by teachers database</b></p> <p><a href="#">Baamboozle</a></p>	<p><b>ELA</b></p> <p><a href="#">Grammar Smash</a></p> <p><a href="#">Words With Friends</a></p> <p><a href="#">Typing</a></p>	<p><b>Math</b></p> <p><a href="#">Prodigy</a></p> <p><a href="#">Boat Coordinates</a></p> <p><a href="#">Trigonometry Minigolf</a></p>	<p><b>Civics</b></p> <p><a href="#">iCivics</a></p>
<p><b>Video Games</b></p> <p><a href="#">Minecraft Education Edition</a></p> 	<p><b>Technology Blog</b></p> <p><a href="#">Freetech4teachers</a></p>		<p><b>Geography</b></p> <p><a href="#">Geoguessr</a></p>



**Time to  
CREATE!**



**What have you learned about  
gamification & game-based learning?**

Complete today's post survey by clicking the Google  
Form link below

**Gamification &  
Game-Based Learning  
In-service Post Survey**

## Leaderboard



**1st**

\*Insert name & Points Earned



2nd

\*Insert name & Points Earned



**3rd**

\*Insert name & Points Earned



4th

\*Insert name & Points Earned



**5th**

\*Insert name & Points Earned

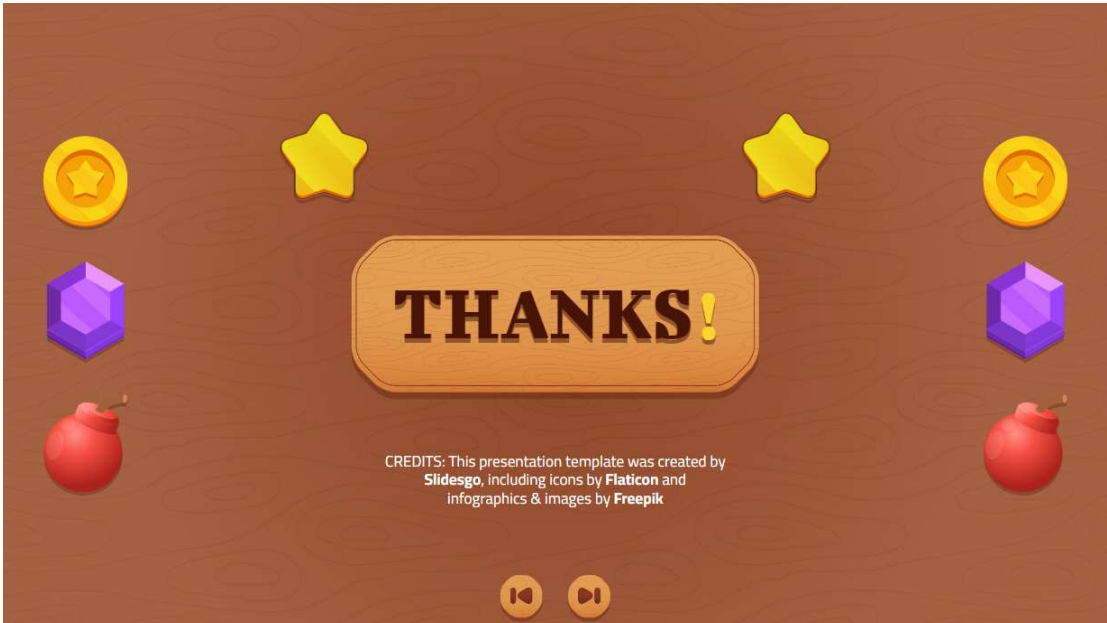


6th

\*Insert name & Points Earned

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## Game-Based Learning & Gamification

Find the words related to our in-service learning opportunity in the word search below.

Q J E N G Z P L Q Q Z C E I T Z G P L Q Z Y N P Y O W H Z V  
 E R I W W B K Y J L X L K O T L Q V O Q V B I A B L Z S H T  
 F S M Q H U M U N O E P R P F C R N A Z H F P I W Q Z F U E  
 B D R B B I R X J A P R I U C M R I M H P C N B F P A D R A  
 I V F P S Z X V D V R F N L K H E G L P D F Q A J J V P A M  
 S A B Y V W C E M K C W R Z U L L N J J O N Z Q N Z S L Q W  
 T T V Q L M R T K Q V P Q R Q Y K I F R F X C D E G Q D V O  
 G A L B Y B H S K H P X Q T Z T U N M U F M G T A P E R V R  
 U T R L O H T G O A L S G O V R Q R R M M W L M A W V M U K  
 W F M A E B U A L S G A B Q C L W A M C W L E R M D U A Q E  
 L T R Z C D F U J W M Q J T X X D E K B Q B T W A C I Q G O  
 M D Y W B Q I E B I C G D V S D S L B J E I F Q Y B Z F J Z  
 F R Q B D G U D F I Z T M Q R L Q D B Y C A V A T A R K E Q  
 F W U S U Z M I A G N S C I O U O E V I P U M H V D H J B H  
 U T Q T A O C W Z E C I R H V H P S P J X Q I C T G M H I S  
 D S E N G A G E M E N T X N G I J A N F J G B R S E O M G P  
 U I E Y T T R E S E N P R D P L T B U E D F A N S S F J U A  
 C Q B I M X L A A L S D N Q T E N E E Y Z Y B W D F X U Y F  
 H H O L F P Y Y L A O J Z Q W T X M F D K X G I R A H H D A  
 G N X N M K U V H D K U P A U C F A G S D H G D A G N D C X  
 Y C Z I B B Q H U K Z J G L G C P G N R H I R L T M I R E S  
 Q N K F Z V F R Q P U Z Z L E T J S U O T E L C X E E Q R P  
 Y C Y H U J S O K E S Z H I J G F L C A I A C A U A R C W L  
 N D M V D M P L R K C O Z T Q G E T L L E T V S T I A H I S  
 T T U L D B R E U S K T I Z H S P G K V I U A E B K T J O Z  
 E H B H R Y X P W D J C L F A K A B J F G U P V D T Y U P P  
 X N K X P F P L R M K E V G J M X U M G L C O G I E A M T C  
 K C S D U D K A T G D P F T I P E I I D K L I J Y T A U R R  
 I P H U O G K Y L O V S S N K V O B B Q J N N L Y W O O F U  
 Q J F W P J W P O S O E G U Y Q N U O N O I T I T E P M O C  
 H S Y V B T S D V W U R U V W V J A B H M C S Z A Y W F D G  
 N N J M L E J E K M X H Z E A J G C M V Z N J A M L Z W E F  
 S F E I C S M P B G E E A N G Q J K A C L X C I A E G Z W S  
 C B K G Z T E B I Z X T F E G P M A B A W G U V F P T N L X  
 G X M A T A Y J Y X G I M A N A G E M E N T I Y Y V Q C P S

GAMEBASEDLEARNING	GAMIFICATION	GAME	DIGITALGAMING
PUZZLE	ROLEPLAY	POINTS	GOALS
RULES	BADGES	LEADERBOARD	TEAMWORK
AVATAR	QUIZ	ENGAGEMENT	MOTIVATION
FUN	COMPETITION	MANAGEMENT	PARTICIPATE
IMPLEMENT	CREATE	RESPECT	INFORM

## Gamification & Game-Based Learning In-service Pre-Survey

Answer the following questions before engaging in today's in-service learning. This survey will help gauge where educators are, and plan for appropriate supports to aid the success of this professional learning opportunity.

thleilm@mail.gvsu.edu [Switch account](#)



Your email will be recorded when you submit this form.

\* Required

Do you know what gamification is? If so, explain it in your own words below. \*

Your answer

Do you know what game-based learning is? If so, explain it in your own words below. \*

Your answer

Have you used game-based learning or gamification in your classroom? If so, describe the lesson below. \*

Your answer

How comfortable are you with implementing game-based learning into your lessons? (1 being not at all comfortable and 5 being very comfortable)

- 1
- 2
- 3
- 4
- 5

How comfortable are you with implementing gamification into your lessons? (1 being not at all comfortable and 5 being very comfortable)

- 1
- 2
- 3
- 4
- 5

Do you have any questions to be addressed during the in-service regarding gamification or game-based learning? \*

Your answer

## Gamification & Game-Based Learning In-service Post Survey

Answer the following questions after engaging in today's in-service learning. This survey will help determine what knowledge was gained throughout this learning opportunity and determine further support for the implementation of game-based learning and gamification.

thiellm@mail.gvsu.edu [Switch account](#)



Your email will be recorded when you submit this form

\* Required

What is gamification? Explain it in your own words below. \*

Your answer

What is game-based learning? Explain it in your own words below. \*

Your answer

How comfortable are you implementing gamification in your classroom? (1 being not at all comfortable and 5 being very comfortable) \*

- 1
- 2
- 3
- 4
- 5

How comfortable are you implementing game-based learning in your classroom? (1 being not at all comfortable and 5 being very comfortable) \*

- 1
- 2
- 3
- 4
- 5

What method did you choose to modify or create a lesson for this learning opportunity? \*

- Gamification
- Game-based learning
- Both

Describe how you used gamification and/or game-based learning in your lesson below. \*

Your answer

What supports/resources do you need to help implement the lesson you modified or created? \*

Your answer

Are there any questions or clarifications you would like answered? \*

Your answer

What suggestions would you give to make this in-service opportunity more beneficial in the future? \*

Your answer



## Appendix B-Copyright Permission

Link to Learning Forward Standards for Professional Learning:

[https://standards.learningforward.org/?\\_ga=2.34024353.1284699496.1668453633-1058738129.1663702629](https://standards.learningforward.org/?_ga=2.34024353.1284699496.1668453633-1058738129.1663702629)

Dear LearningForward,

I am currently enrolled in the Grand Valley State University (GVSU), Advanced Studies in Education Program, and I am writing a Master's Project for the completion of my Master's Degree in Education. My project is entitled "Examining Student Engagement Using Non-Traditional Methods of Teaching in a Secondary Classroom" and I would like to design an opportunity for teachers to learn about new teaching strategies through an in-service opportunity. May I receive permission to include in the appendixes of my Master's Project a copy of the following item?

Standards for Professional Learning.

Your signature at the bottom portion of this letter confirms your ownership of the above item. The inclusion of your copyrighted material will not restrict your re-publication of the material in any other form. Please advise if you wish a specific copyright notice to be included on each page. My project may be cataloged in the GVSU library and will be available to other students and colleges for circulation.

Sincerely,

Mandee Thiel

10626 Woodbushe Dr.

Lowell, MI 49331

(989)-657-5765

[thielm@mail.gvsu.edu](mailto:thielm@mail.gvsu.edu)

PERMISSION IS GRANTED to you Mandee Thiel to include the requested material(s) in their GVSU Master's of Education Project.

Name of Company/Organization: Learning Forward

Permission granted by: Suzanne Bouffard

Title: Senior Vice President, Communications and Publications

Date: October 13, 2022



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