

**Gamification: Impact On Writing Among Students with Autism**

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## **Introduction**

Technology has grown significantly over the past centuries (Mitchell, 2007). We can use the positive change that technology has made to allow more peer-to-peer interactions and hands-on activities through the use of gamification with all students (Thomas & Brown, 2011). Growing up having an autistic spectrum disorder (ASD), I have found it really difficult and time-consuming to complete writing tasks. As a child that had difficulty communicating her wants and needs verbally, it was even more difficult for me to respond with paper and pencil. According to Mays and Calhoun's (2008) study on students with (ASD), 65% of these students show evidence of having writing difficulty. Every subject in education requires some type of writing task. There has been limited data on the impact that gamification can have on ASD students' learning. This literature review will explore how gamification can positively and negatively impact engagement and participation among students with diverse needs.

## **Review of Literature**

### **Definition of Gamification**

Educators can include a variety of characteristics that you will find in video games, board games, and many other types of games in their educational settings (de la Cruz et al., 2018). As Murillo-Zamerno, et al. (2021) mentions, we can think of the most common characteristics of gamification with points, badges, and leaderboards. Combining points, badges, and leaderboards (PBL) with other types of media such as videos, pictures, avatars, and many more that increase student engagement and participation in learning is called gamification (Zolkipli et al., 2023).

**The Approach that Gamification Uses**

The technique of Gamification is surrounded by the Universal Design for Learners (UDL) approach. The UDL approach focuses on three main areas, including engagement, representation, action, and expression (Hunt et al., 2022; Stylianidou et al., 2020). Within the UDL, they have come up with a horizontal alignment to lead educators to identify that all students are retrieving, constructing, and building on the new knowledge (Hunt et al., 2022). The UDL approach provides multiple ways for the information that is being provided to be accessible and understood by learners with a variety of learning styles and needs (Hunt et al., 2022; Stylianidou et al., 2020). The UDL approach allows gamification and education to be a positive and enjoyable experience for learners of all talents and abilities (Stylianidou et al., 2020; Hunt et al., 2022).

**Advantages of Gamification**

As reminded by Zolkipili et al. (2023), in today's society children are growing up learning how to manipulate electronic devices such as tablets, iPads, and computers prior to comprehending the skills that are needed to be able to read. Gamification allows teachers to adapt tools into their teaching methods which in turn allows their students to master new knowledge in skills (Tilli et al., 2022). Within Gamification, students can increase a variety of skills including gross and fine motor, collaboration, critical thinking, and self-learning (Hunt et al., 2022; Murillo-Zamerno et al., 2021; Stylianidou et al., 2020; Tilli et al., 2022; Zolkipili et al., 2023).

There are some specific skills that gamification offers that are important to have when it comes to the development of language and writing. According to Hunt et al. (2022), within

Gamification, students can plan, monitor, and reflect, while building an explanation and rephrasing arguments, by seeing and responding to their understanding of the knowledge and skills they are learning. Murillo- Zamerno et al. (2021) mentions that gamification allows students to enhance their collaboration skills by playing the role of a receptive listener when talking, reflecting, and listening to others. Overall, gamification is a fun, engaging, motivating, and independent way to keep students participating in their learning process (Dela Cruz, 2018; Manuel Trinidad, 2021; Stylianidou et al., 2020; Zolkipili, 2023).

### **Challenges of Implementing Gamification**

Gamification is a newer term in the world of education, and with this there was little research done on the challenges of the topic. Due to the lack of research, one can find theoretical challenges in finding studies on the topic of gamification that include both advantages and barriers on the topic (Trinidad et al., 2021). Some of the more specific challenges that educators see inside the classroom include technological challenges and challenges to student response when implementing the gamification technique (Baalsrud Hauge et al., 2016; Demirbilek et al., 2022; Trinidad et al., 2021).

Demirbilek et al., 2022 conducted a study with 16 teachers, with 14 of them implementing some sort of gamification in their environments. According to Demirbilek et al., 2022, there has been research that educators have seen an increase in the volume of classroom conversations and noises when implementing the gamification technique. They have also seen that gamification can lead to a negative environment that is more competitive causing an increase in disciplinary issues and addiction to gameplay (Demirbilek et al., 2022).

There are a few technological challenges that have been observed by gamification

implementers (Baalsrud Hauge et al., 2016; Demirbilek et al., 2022; Trinidad et al., 2021). These challenges are inside the games and environments in which the games are being played (Baalsrud Hauge et al., 2016; Demirbilek et al., 2022; Trinidad et al., 2021). The first challenge includes finding games that address the learning objectives that the educators are teaching when the game is planned to be used (Demirbilek et al., 2022). Another challenge includes the technology and internet access required to engage in the games (Demirbilek et al., 2022). Technological devices can be costly, and some districts may have a difficult time providing a class set of each of the devices for all classrooms in the school district (Hauge et al., 2016). It is important to have access to technology to implant gamification in all classrooms, and without it, gamification may not get valid and reliable results from the overall implementation.

### **The Challenge of Self-Regulation Among Individuals with Autism**

Most individuals with ASD grow up with challenges including analytical processing and linguistic skills (Asaro-Saddler, 2016; Pennington et al., 2012). These individuals often struggle with conversations and writing about emotion, but overall they have a hard time with self-regulation (Asaro-Saddler, 2016). An individual must have self-regulation when completing writing tasks (Asaro-Saddler, 2016). This is as you will see later in the review the writing intervention that is most popular in benefiting for students with ASD. The challenges that individuals face are related to the overall performance of their success in expressing their thoughts, ideas, and feelings in writing (Accardo et al., 2019; Pennington et al., 2012). One of these challenges includes the understanding that others have different views than they may have, and that it is ok to have different views (Asaro-Saddler, 2016; Pennington et al., 2012). Another barrier that these individuals have that makes it challenging to write is that they have the impulse to understand things literally (Accardo et al., 2019). Due to this, individuals with ASD have a

hard time understanding idioms, metaphors, and comedy (Accardo et al., 2019). Overall, the challenge of self-regulation can negatively impact the outlining, constructing, and reflecting of writing tasks among individuals with ASD (Accardo et al., 2019; Asaro-Saddler, 2016; Pennington et al., 2012).

### **Interventions to Assist in Writing Among Individuals with Autism**

There have been several interventions that have been researched as being beneficial in assisting students with ASD in their writing tasks (Accardo et al., 2019; Asaro-Saddler, 2016; Pennington et al., 2012). According to Accardo et al. (2019), it is important for these individuals to have a variety of environments and settings to rehearse the practice of their writing skills. Working with these individuals, educators can use organizational techniques such as graphic organizers and writing maps to assist them in their writing tasks (Accardo et al., 2019; Pennington et al., 2012). According to Accardo et al. 2019, on average 62% increased their writing outcome using an intervention of positive prompting with computer support. Another way to help improve individuals with ASD by participating in writing tasks includes providing them with an assortment of ways to answer the questions that are being asked (Pennington et al., 2012).

### **The Self-Regulation Strategy**

Over multiple research articles, one of the most beneficial strategies that have been used to assist individuals with ASD includes the strategy called the Self-Regulation Strategy (SRSD) (Accardo et al., 2019; Asaro-Saddler, 2016; Pennington et al., 2012). SRSD focuses on three goals in mind (Asaro-Saddler, 2016). The three goals include helping students reach mastery in high-order thinking and planning, being in charge of and reflecting on their personal writing, and

providing them with support for their self-confidence and their confidence in writing (Asaro-Saddler, 2016).

### **Summary**

There are many characteristics related to gamification and research intervention that have been proven to increase writing among individuals with ASD (Accardo et al., 2019; Asaro-Saddler, 2016; Hunt et al., 2022; Murillo-Zamerno et al., 2021; Pennington et al., 2012; Stylianidou et al., 2020; Tilli et al., 2022; Zolkipili et al., 2023). There were limited studies on gamification and the challenges writing has on students with Autism. There is a need for further study on the effectiveness of how gamification could positively impact motivation and participation with individuals with ASD in their writing skills. This researcher will explore the effectiveness of the combination of gamification and the interventions proven to increase writing skills among individuals with ASD to motivate these individuals to participate and complete writing tasks. This action research study will focus on using gamification to increase the motivation, engagement, and participation of individuals with ASD writing skills.

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