

Assessing the influence of parental involvement on the effectiveness of gamified early childhood education in Jordan

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ABSTRACT

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The present research endeavours to explore the efficacy of gamified pedagogy in the realm of early childhood education within the context of Jordan, while simultaneously examining its intricate relationship with parental engagement. The examination of data uncovers a discernibly elevated degree of student involvement in the realm of gamified education, thereby suggesting the effectiveness of employing gamified methodologies in captivating the attention and interest of youthful scholars. Moreover, the presence of a moderate degree of parental involvement implies the possibility of proactive parental participation in the scholastic odyssey. The empirical evidence consistently demonstrates a robust and affirmative association between parental involvement and student engagement, underscoring the crucial and influential position that parents occupy in augmenting student motivation and active involvement in gamified educational endeavors. The present study serves as a valuable contribution towards enhancing our comprehension of the intricate relationship between gamified education and parental involvement. Its findings hold significant implications for educators, policymakers, and parents alike, as they strive to maximize the effectiveness of early childhood education.

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1. Introduction

The importance of a child's early education to his or her future success in school and in life is universally recognized. A child's potential for future success in school and in the workplace is said to be most malleable between the ages of zero and eight, as stated by UNESCO (2017). Early childhood education is highly valued in Jordan, and the government has made significant investments to boost its access and quality. With the goal of providing all children in Jordan with access to a high-quality early childhood education, the Jordanian Ministry of Education has created several policies and initiatives. The goal of these initiatives is to provide a solid foundation for education that will help subsequent generations succeed. However, innovative pedagogical techniques, such as gamified learning methodologies, have the potential to improve the success of preschool and kindergarten.

The use of gaming mechanics in the classroom, or gamification, is gaining popularity. Positive benefits on student engagement, motivation, and accomplishment have been shown when using gamified learning in a number of settings, including elementary school. "Gamifying" preschool seeks to make learning more engaging and useful for kids by including elements of competition, prizes, and hands-on activities. Findings by Hamari et al. (2014) suggest that gamified strategies may be used to boost students' interest, motivation, and performance in the classroom.

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Teachers and political officials in Jordan have lauded the success of game-based early childhood education programs implemented in numerous schools around the country. The digital platforms and instructional games used in these initiatives are direct reflections of the early childhood curriculum. Despite the benefits, further study is needed to determine what role, if any, parental engagement has in the success of gamified education.

A child's healthy growth and development depend on parental engagement in the child's early education. Parental involvement in their children's schooling has been shown to have good effects on their children's academic performance, social and emotional growth, and long-term success in a number of studies (Fan & Chen, 2001).. Helping with homework, attending school events, and having in-depth conversations about what's being taught at home are all examples of what we mean by "parental engagement." In the field of early childhood education, parents often take on the role of primary teachers, making their involvement crucial to their child's ability to learn and develop.

In Jordan, policymakers have recognized the value of having parents involved in their child's education from a young age and implemented programs to encourage this. However, there is a lack of in-depth studies exploring the function and breadth of parental involvement in gamified ECE. This study attempts to fill this knowledge gap by analyzing how parental involvement affects the success of gamified ECE in Jordan.

Cultural context is key to understanding the significance of parental involvement in Jordan. Jordan is a country with deep cultural roots and traditional family values. Families that work effectively together have parents who are invested in their children's development and education. Parents' involvement in their children's education is common, as many do all they can to help their kids learn (Yulianti et al., 2019).

Jordanians put a premium on getting a good education and making academic progress. Parents show a deep interest in their children's education and maintain regular contact with teachers and other school staff. However, this participation is traditional and mostly focused on the monitoring of academic progress and the upkeep of discipline (Halim et al., 2017).

The integration of games as an educational tool for young children can be perceived as a departure from conventional pedagogical methods. In order to ascertain potential disparities in parental engagement between gamified early childhood education and traditional educational settings, it is imperative to examine the adaptive behaviors of parents in Jordan towards these novel pedagogical approaches. It is imperative to possess a comprehensive comprehension of parental attitudes and behaviors regarding gamified learning within the cultural milieu, as this is vital for ensuring that educational advancements align harmoniously with local customs and anticipations.

1.1 Objective of the Study

The primary objective of this research endeavor is to investigate and gain a comprehensive understanding of the influence exerted by parental involvement on the efficacy of gamified early childhood education (ECE) in the context of Jordan. The overarching aim of this study entails a comprehensive exploration of the intricate dynamics between game-based learning and parental engagement within the context of preschool education. The primary aspiration is to acquire valuable insights that have the potential to enhance pedagogical practices and educational outcomes not only in Jordan but also in other similar contexts worldwide.

2. Literature Review and Previous Studies

The notion of gamified learning has garnered considerable acclaim, denoting the integration of gaming elements within both formal and informal educational environments. According to a study conducted by Deterding et al. (2011), it has been found that this particular approach demonstrates efficacy in augmenting students' levels of engagement and contentment within the educational setting. In recent times, educational institutions worldwide have embraced a novel approach referred to as "gamified early childhood education." This innovative pedagogical method seamlessly integrates the elements of play and educational tasks, thereby fostering a dynamic and engaging learning environment. This discourse delves into the advantages of employing gamified learning methodologies within the context of pre-K and kindergarten education. Additionally, it explores the degree to which parental involvement contributes to the educational journey of their young progeny.

The utilization of game-based learning in pre-school and kindergarten environments has been linked to a multitude of advantageous outcomes. For younger students, this boost both interest and drive. Hamari et al. (2014) found that when students are exposed to elements of competition, incentives, and interactive activities throughout the learning process, they develop a more positive outlook on school and a deeper appreciation for learning. There is evidence to show that the deployment of gamified learning may have a significant favorable influence on retention and comprehension of instructional information, as found in research done by Deterding et al. (2011).

In the context of early childhood education, Anderson and Dill (2000) found that children's cognitive and perceptual skills improved after playing educational video games. Similarly, Gee (2003) argued that well-designed video games might create a highly immersive educational context, boosting the growth of players' problem-solving and critical-thinking skills. The studies cited above highlight the promising prospects for using gamified learning as an efficient method in the field of pre-school instruction.

Parents' involvement is a major factor in their children's academic success, according to research by Fan and Chen (2001). Both a child's academic success and personal development might benefit from parents' participation in their schooling. This

involvement includes several things, such as helping with homework, attending parent-teacher conferences, and creating a positive, educational environment at home (Deslandes & Bertrand, 2005).

Parenting, communicating, volunteering, promoting learning at home, participating in decision-making processes, and working in the community are the six types of parental engagement identified by Epstein and Sanders's (2006) study. The importance of several forms of student participation in boosting academic performance was emphasized in this research. Parents' involvement in their children's education has been shown to improve their children's academic achievement across a wide range of socioeconomic and racial demographics (Jeynes, 2012).

Due of its potential impact on the classroom setting, the relationship between gamification and parental engagement in early childhood education is an important area of study. However, this specific connection isn't explored to enough depth in the current research. Though gamified learning has considerable potential to improve educational experiences, it is essential to understand the influence of parental participation on its success, particularly in cultural contexts like Jordan.

Vorderer et al.'s (2019) study looked at the topic of parental participation in gamified classrooms. Parents' participation, the research found, may help ensure their children retain the knowledge and skills they acquire in the classroom after being exposed to gamified instruction at home. By participating in and facilitating gamified educational activities in the home, parents may improve their children's educational experiences beyond the school day.

3. Methodology

The present investigation utilized descriptive research methodology and quantitative techniques to give a comprehensive, accurate, and structured depiction of the attributes and information pertaining to the population under scrutiny. Saunders et al. (2016) assert that the primary objective of descriptive quantitative research is to methodically delineate and elucidate the diverse attributes of the subject or context under investigation. Subsequently, the gathered data undergoes comprehensive processing and is subsequently provided.

3.1 Population and Sample

The study focused on the population of children and their parents who were actively participating in early childhood education programs in Jordan. The researchers utilized a purposive sampling technique to select participants from a diverse range of educational environments, ensuring the inclusion of children from private and public schools. A group of 150 early childhood educators employed in diverse academic environments were extended invitations to partake in the research study. A total of 120 teachers participated in the poll and provided their approval. The institutions contacted the parents of children who were involved in these activities. A cohort of 300 parents was extended invitations to partake in the study, with 250 of them consenting to participate and successfully fulfilling the requisite survey requirements.

3.2 Research Instrument

To accomplish the research objectives, the researcher included a previous study conducted by Vorderer et al. (2019) to assist in the formulation of the questionnaire as the primary instrument for data collection. The survey was divided into two separate portions. The introductory section of the survey collects data regarding the participants. Section 2 encompassed a comprehensive assemblage of items that were purposefully crafted to assess the efficacy of gamified instructional approaches within educational settings. Furthermore, in order to assess the level of parental engagement in their children's education, particularly their inclination towards and utilization of gamified learning settings. In addition, the poll inquired about the participants' inclination to agree or disagree with statements regarding the significance of parental involvement in several aspects of gamified education, utilizing a Likert-scale questionnaire.

3.3 Instrument Validity

A cohort of 10 academic specialists, hailing from various universities in Jordan and specializing in the fields of language development, scientific accuracy, and clarity, were tasked with the duty of evaluating the reliability and validity of the study instrument. Based on evaluations conducted by experts, it has been determined that all components have been deemed satisfactory, but with slight linguistic modifications.

3.4 Instrument Reliability

One method employed to determine the dependability of measurement involves assessing the coherence of outcomes by employing comparable samples and instruments, while maintaining all other variables unchanged. The assessment of answer consistency was conducted with Cronbach's alpha coefficient. Saunders et al. (2016) assert that the assessment of a survey's reliability hinges on its credibility, which is seen to be attained when it attains or exceeds a minimum threshold of 60%.

Table 1

Cronbach Alpha Test

Variables	Value
Parental Involvement	0.823
Student Engagement	0.864
Total	0.852

The measures depicted in Table 1 exhibit a notable level of consistency in the research, as indicated by their alignment falling within the range of 0.823 to 0.864. Moreover, it is crucial to recognize that every segment of the survey produced a Cronbach's alpha coefficient surpassing 0.60, signifying a substantial level of dependability. As a result, there were no discrepancies observed among the various elements of the research instrument.

4. Data Analysis

Statistical methodologies were employed to examine quantitative data. The data acquired was analyzed by calculating means, standard deviations, and frequency distributions in order to provide a comprehensive understanding of the dataset. The comparative analysis of teachers was conducted by utilizing mean scores on several metrics such as student engagement, motivation, and accomplishment. This evaluation aimed to ascertain the efficacy of implementing gamification techniques in pre-school and kindergarten settings. In this study, inferential statistical methods, specifically t-tests and ANOVA, were employed to detect potential variations based on demographic factors, such as school type and years of teaching experience. Pearson's correlation coefficient (r) was employed to assess the strength and direction of the relationship between parental participation and the effectiveness of gamified training. The objective of this study was to investigate the potential association between parental engagement and the outcomes of gamified learning.

5. Results

To illustrate the normal degree of involvement throughout the sample, we calculated a mean student engagement score of 4.65. The 0.72 standard deviation in the student engagement scores is within the range of expected variation. More dispersed or varied were the observed scores if the standard deviation was larger. The figures show that 3.20 is the lowest level of student engagement ever recorded. 5.60 is the maximum possible score for student engagement and reflects a highly engaged student body.

Table 2

Descriptive Statistics - Student Engagement in Gamified Early Childhood Education

Variable	Mean (M)	Standard Deviation (SD)	Minimum	Maximum
Student Engagement	4.65	0.72	3.20	5.60

Table 2 displays the students' self-assessed levels of engagement in this research. A mean assessment of 4.65 indicates a moderate level of interest among students in gamified ECE. The observed ratings range from 3.20 (representing little engagement) to 5.60 (indicating great involvement), suggesting a spectrum of participation (standard deviation = 0.72).

Table 3

Descriptive Statistics - Parental Involvement in Gamified Early Childhood Education

Variable	Mean (M)	Standard Deviation (SD)	Minimum	Maximum
Parental Involvement	3.90	0.68	2.80	5.00

The median score of 3.90 signifies a representative level of parental involvement in digital educational games. The standard deviation of 0.68 indicates the average degree of variation in assessments of parental engagement. When the standard deviation of the scores is greater, it indicates a higher degree of variability in the outcomes. The sample had a minimum level of parental engagement, as shown by a score of 2.80, which suggests inadequate involvement. A score of 5 is the highest level of parental involvement ever documented.

Table 3 presents descriptive statistics on parents' involvement in Early Childhood Care and Education (ECCE) games. Parents are engaging in their children's gamified learning to a moderate extent, as shown by an average score of 3.90. The parental participation scale exhibits a range of values, with 2.80 representing lesser engagement and 5.00 indicating higher involvement. The observed range of measurements is accompanied by a standard deviation of 0.68, suggesting a certain level of variability within the data.

Table 4

Comparison of Student Engagement Scores in Gamified Early Childhood Education by School Type

School Type	Sample Size (n)	Mean Score (M)	Standard Deviation (SD)
Public	60	4.53	0.72
Private	60	4.89	0.65

According to empirical data, educators within the public school system commonly exhibit an involvement score of 4.53 on a comprehensive scale ranging from 0 to 10. This statistical measure is accompanied by a standard deviation of 0.72, which serves as an indicator of the dispersion or variability within the reported involvement scores. In contrast, the average score of student engagement among educators in private schools stands at an impressive 4.89, exhibiting a commendable level of involvement. This finding is accompanied by a standard deviation of 0.65, indicating a relatively moderate degree of variability in the data.

Table 5

Analysis of Variance (ANOVA) for Student Engagement Scores in Gamified Early Childhood Education by School Type

Source of Variation	Sum of Squares (SS)	(df)	Mean Square (MS)	F-Value	p-Value
Between Groups (School Type)	3.28	2	1.64	5.67	0.003
Within Groups (Error)	47.12	175	0.27		
Total	50.40	177			

To determine whether there are statistically significant differences in student engagement rates between teachers from different educational institutions, we may consult the ANOVA table and look at the F-value. The calculated F-Value of 5.67 is statistically significant ($p < 0.05$), indicating that there are notable differences in students' involvement ratings across at least two different kinds of schools.

Table 6

Correlation Analysis - Relationship Between Parental Involvement and Student Engagement in Gamified Early Childhood Education

Variable	Pearson's r	p-Value
Parental Involvement	0.345	0.002

Parental participation in gamified early childhood education has been shown to increase student engagement (Pearson correlation coefficient ($r = 0.345$)). In other words, when parents become involved, their kids are more likely to use games to learn. The significance level of this association is quite low ($p = 0.002$), suggesting it is unlikely to have happened by coincidence. Instead, there is strong evidence that parent participation has a favorable effect on student motivation. These results suggest that more parental involvement in their children's gamified learning environments correlates with greater levels of student engagement.

6. Discussion

6.1 Student Engagement in Gamified Early Childhood Education

A child's outlook on learning and their whole educational path is profoundly impacted by the extent to which they participate in their early childhood education. Table 4 summarizes research on the effects of gaming on preschool education, finding an average student engagement score of 4.65. These findings highlight the power of game-based approaches to capturing and holding the interest of young learners. The positive impacts of gamification in increasing student engagement have been the subject of recent research in this area.

Using gamified learning settings has been found to provide pupils a greater sense of control over their own education. For young pupils, being able to shape their own educational future may be a powerful incentive. Deci, Vallerand, Pelletier, and Ryan (1991) found that when people feel that they have some say in what they're doing, they're more likely to put in effort. Choice, competition, and challenges are all gamified elements that can increase student agency, encouraging students to take an active role in and take ownership of their education. As a result, students may become more invested in their learning as a result of this (Zainuddin & Halili, 2016).

Furthermore, the inclusion of fun and engaging elements inherent in gaming activities inside the educational setting is frequently attributed to the apparent boost in student engagement resulting from gamification. Recent studies like the one done by Hamari, Koivisto, and Sarsa (2014) highlight the importance of game elements in gamified learning. Children are more likely to learn actively and be driven to do well when they are having fun doing it. The use of "gamification," the addition of game mechanics to non-game contexts, has been found to boost student interest and effort in learning. It is probable that the feeling of enjoyment plays a crucial part in increasing student engagement, since it has been observed that young learners are naturally drawn to activities that provide them pleasure (Cheon et al., 2014).

Among the many benefits of incorporating gaming ideas into early childhood education is the promotion of a lifelong love of learning and a robust sense of independence in young children. Steinkuehler and Duncan (2008) found that students' innate curiosity, eagerness to try new things, and ability for critical thinking may all be fostered in gamified learning environments. The problem-solving skills of kids may be honed via the difficulties of instructional video games. Activating one's brain has been demonstrated to improve grades and make school more meaningful (Hakulinen et al., 2015).

Additionally, the layout of gamified ECE plays a key role in encouraging student participation. Anderson and Dill's (2000) research highlights the value of well-designed educational games that are suitable for students of all ages. There is a higher chance of eliciting more engagement in gamified activities when they are matched adequately with the developmental stage and unique needs of young children. There has been significant growth in the field of educational game design, enabling for the production of individualized encounters that cater to the varied educational requirements of young children.

The findings imply that students are engaged to a high degree in gamified ECE, while it is crucial to recognize that different children may have different reactions to the usage of gamification. Personal qualities, learning styles, and preferences may all

have a role in the level of engagement. Consequently, teachers need to think about how to conduct individualized education and use gamified aspects to meet the needs of their students (Hamari et al., 2014).

6.2 Parental Involvement in Gamified Early Childhood Education

The active participation of parents in the realm of early childhood education holds immense significance as a pivotal factor in determining a child's triumph in their educational journey. The tabulated information in Table 5 showcases a noteworthy average parental involvement score of 3.90 within the realm of gamified early childhood education. This data serves to underscore the pivotal role that parents assume in bolstering their children's educational endeavors. In the realm of scholarly inquiry, recent investigations have unveiled a wealth of knowledge pertaining to the profound import of parental engagement and its multifaceted impact on the educational journeys of offspring.

The adult participation level in gamified early childhood education apps is evident from the mean score that was obtained. The study's findings demonstrate that parents who participate in their children's education may aid in their learning. According to recent research, there is substantial evidence that parents who are actively engaged in their children's education may improve their academic performance, particularly in the area of gamified learning (Deslandes & Bertrand, 2005).

Epstein and Sanders (2006) conducted revolutionary research that provides us with a wealth of important information about the many ways in which parents may be active in their children's education. Helping children with their homework, participating in school activities, and ensuring that the home is a healthy location for academic progress by establishing an environment that is engaging and fun are a few examples of this. The many forms of engagement discussed in this academic discussion are critical to supporting the academic success of younger students. The classroom becomes a dynamic and engaging place to study when parents actively participate in gamified learning activities.

Table 5 reveals a discernible degree of dispersion in the parental involvement scores, as indicated by the standard deviation. The observed variability in parental engagement levels is indicative of the rich tapestry of diversity within this domain. In contemporary research, the works of Jeynes (2012) have underscored the considerable variability in parental engagement across diverse family units. The level of parental involvement can vary significantly, with certain parents displaying a high degree of engagement while others exhibit a more limited level of involvement. This discrepancy can be attributed to a multitude of factors, such as demanding work schedules, linguistic challenges, or disparities in socioeconomic circumstances. The comprehension of this multifariousness holds paramount importance for educators and policymakers alike, as they endeavor to establish all-encompassing educational settings.

The observed positive correlation between parental involvement and student engagement, as evidenced by the results of the correlation analysis presented in Table 3, aligns with a substantial body of scholarly research that underscores the significance of parental support in augmenting educational achievements (Fan & Chen, 2001). Recent research has shed light on the profound impact of parental involvement in their offspring's educational journey, yielding a plethora of benefits such as heightened scholastic achievements, increased drive, and enhanced socio-emotional growth (Jeynes, 2012).

Moreover, it is worth noting that there exists a significant correlation between parental involvement and student engagement. This correlation implies that fostering a collaborative partnership between educational institutions and parents has the potential to greatly augment the efficacy of gamified early childhood education. In contemporary scholarly discourse, there has been a surge of interest in investigating the manifold advantages that can be derived from fostering collaborative relationships between schools and households in order to bolster children's educational development. Parents' participation in educational games has the potential to go beyond the confines of the classroom, leading to a more holistic and synergistic learning experience (Vorderer et al., 2019).

According to the available data, parental participation seems to be present, albeit it might be improved by more research and intervention in the field of gamified early childhood education. There has been a recent focus in the academic literature on the importance of encouraging open lines of communication between parents and educators and making available a variety of tools and resources to aid parents in their role of supporting their child's educational journey (Deslandes & Bertrand, 2005). Educational institutions and teachers have considerable potential to foster a strong alliance with parents, allowing for dynamic involvement in gamified teaching and, eventually, improving students' academic achievement.

6.3 The Relationship Between Parental Involvement and Student Engagement

Table 3 shows that when parents are involved, their kids are more invested in their gamified early childhood education (Pearson's $r = 0.345$, $p = 0.002$). The significance of the link between these two cornerstones of a child's education is underscored by these findings. New studies show that there is a strong link between parental involvement and student engagement, further demonstrating the profound impact that parents may have on their children's academic success.

Recent studies have emphasized the importance of parents as educational partners (Deslandes & Bertrand, 2005), hence it seems sense that there is a positive correlation between parental involvement and student engagement. Jeynes (2012) claims that children show more interest and motivation when their parents are involved in their education, particularly when using gamified learning. The aforementioned findings provide credence to the idea that parental involvement is crucial in encouraging student engagement, shaping their perspectives and behaviors in relation to their education.

Recent studies have highlighted the crucial role that parents have in their children's educational experiences. Deslandes and Bertrand (2005) argue that parents who are engaged in their children's schooling may give valuable support and guidance,

boosting not just their children's academic success but also their emotional and social development. Contributing to a well-rounded and all-encompassing education for their children is something parents can do when they take an active role in their education, which includes the usage of gamified learning activities.

Consistent with prior research on the benefits of family-school partnerships on student outcomes, we find that parental involvement correlates positively with student engagement. Recent research has highlighted the importance of schools and parents working together to improve students' learning environments and outcomes (Henderson & Mapp, 2002). The partnership between home and school, when parents are informed and take part in gamified educational activities, may create an environment that boosts student motivation and engagement.

Within the context of gamified ECE, the effect of parents' involvement on their children's motivation is very relevant. Parental participation is a key ingredient for the success of gamification, which thrives when it can include fun and games. Hamari, Koivisto, and Sarsa (2014) note how recent studies have emphasized the importance of pleasure and enjoyment in the context of gamified learning. Parents who participate in gamified activities with their children at home or who attend gamification-themed events at school are more likely to see an uptick in their children's enthusiasm for learning as a result.

While it's encouraging to see a positive correlation between parental involvement and student engagement, it's important to keep in mind that the causal link between the two is complex. An influence between factors may operate in both directions, as shown by the research of Fan and Chen (2001). It is possible that parents will get more interested in their children's education if and when they see increased levels of student engagement and motivation. Therefore, the relationship between these two factors is dynamic and mutually reinforcing.

7. Conclusion

The correlation observed between parental involvement and student engagement sheds light on the significant influence of parental support on students' motivation and active participation in gamified educational experiences. The discovery at hand underscores the significance of acknowledging and accommodating the wide range of parental involvement, while also highlighting the potential advantages that can arise from collaborative endeavors between educational institutions and parents in order to optimize the efficacy of gamified learning.

The research outcomes carry significant ramifications for individuals in the field of education, policymakers, and guardians alike. Educational practitioners possess the remarkable ability to harness the power of gamification tactics in order to construct immersive and stimulating educational settings specifically tailored for the formative years of early childhood education. By skillfully capitalizing on the fundamental principles of autonomy and enjoyment, these pedagogical experts can craft an educational experience that is both captivating and inspiring for young learners. Policymakers may find it advantageous to enhance the implementation of gamified learning within early childhood education curricula, thereby cultivating the favorable influence that gamification has on student engagement. It is highly recommended that parents engage proactively in their child's gamified educational endeavors, both within and beyond the confines of the traditional classroom setting, in order to augment the pedagogical voyage and holistic welfare of their offspring.

The study additionally underscores the intricate and symbiotic connection between parental engagement and student involvement. The intricate nature of this phenomenon highlights the imperative for ongoing investigation and intervention within the realm of early childhood education, with the aim of maximizing the advantages of gamified learning and parental involvement.

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