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Perceptions of Teachers Regarding Needs and Barriers for Adaptation of Gamification in Teaching at Elementary Level in Mirpur AJ&K

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Abstract

The aim of this research was to investigate elementary school teachers' perspectives of the knowledge, need for adaptation and barriers in adaptation of gamification into teaching at the basic level in Mirpur, AJK. The study also aimed to determine the difference in male and female teachers' perspectives. The study comprised a survey of elementary school instructors from several schools in the dist. Mirpur AJ&K. School's data was gathered from DEO male and female's offices. A quantitative study design was used. This design was followed by filling a close ended self-designed questionnaire containing three sections. Through Universal sampling technique 483 questionnaires were circulated, 254 questionnaires to male and 229 to female teachers and got 421 responses, 208 from male and 213 from female teachers and for those prior permissions were taken from school administration. Through analysis it is concluded that female teachers showed high mean in both sections' knowledge of gamification and its need for adaptation in their teaching where as in third section barriers in implementation both male and female equally perceived that in Mirpur AJ&K teacher faces barriers in implementation of gamification. Therefore, the major findings shows that male and female teachers' opinions of their knowledge and the necessity of gamification adaption varied significantly. There is no significant difference in male and female teachers' perceptions regarding barriers in implementation of gamification in teaching at elementary level in Mirpur AJ&K.

Keywords: Perceptions, Adaptation, Gamification.

Introduction

Gamification has gained considerable interest in the field of education. At elementary level, the integration of gamification approaches has become a possible approach to improve student involvement, motivation, and overall learning results by implementing game design ideas, such as competition, prizes, and interactive challenges, in non-game setting, to enhance participation and user engagement. Deterding et al 2011 describe gamification in several different ways. The application of game design elements to non-gaming contexts is known as gamification. Such as scoring, awards, and challenges, game-based learning, leader boards & ranking, collaborative & social learning tools, narrative & storytelling**,** to make activities more entertaining and involving, encouraging students to engage and achieve specified goals & learning experiences related to education. Martín-del-Pozo (2019) stated that Gamification and videogames in education enhance student learning at all levels, including primary and secondary education. Acevedo (2020) & emphasizes the potential of gamification to enhance learning experiences in elementary school grades 1–8. Furthermore, Chan and Lo (2022) investigate the viewpoints of instructors and students regarding the implementation of gamification at elementary level emphasizing its importance in both traditional and virtual settings.

Gamification offers a platform for pupils to actively involve in their learning process, promoting the growth of analytical reasoning, problem-solving skills, and creativity. Kaimara et al (2021) identify obstacles that may hinder the adaptation of digital game-based knowledge as seen by In-service instructors. Despite its potential, gamification in education has major obstacles in achieving adaptation. Another obstacle is that educators have varying opinions of gamification. Zainuddin et al.

(2020) found that while some teachers perceive gamification as a useful technique for engaging pupils, others see it as a distraction from real learning. The obstacles can be divided into three categories: technical limits, unwillingness to change, and socioeconomic challenges.

Statement of the Problem

Since gamification has the ability to increase student motivation, engagement, and learning, it has drawn a lot of attention in today's educational environments. Regardless of the acknowledged benefits and expanding discourse surrounding its efficacy, there is still a sizable hole in the mainstream adaptation of gamification across diverse educational institutions at Mirpur AJ&K. In the AJ&K research arena, the problem is that Comprehensive research is lacking at elementary-level instructors' perspectives on the necessity and obstacles associated with applying gamification in their classrooms at elementary level in Mirpur AJ&K.

Research Objectives

1 To identify the perceptions of male & female teachers regarding knowledge, needs and barriers for adaptation of gamifications in teaching at elementary level in Mirpur AJ&K.

2 To compare the perceptions of male and female teachers regarding knowledge, needs and barriers for adaptation of gamification in teaching at elementary level in Mirpur AJ&K.

Research Question

1. How do male & female teachers perceive the adaptation of gamifications knowledge, needs and barriers in teaching at elementary level in Mirpur AJ&K?

Hypotheses

H_{01} There is no significant difference between perceptions of male & female teachers regarding knowledge of gamifications in teaching at elementary level in Mirpur AJ&K.

H_{02} There is no significant difference between perceptions of male & female teachers regarding need for adaptation of gamifications in teaching at elementary level in Mirpur AJ&K.

H_{03} There is no significant difference between perceptions of male & female teachers regarding barriers in the implementation of gamifications in teaching at elementary level in Mirpur AJ&K.

Significance of the Study

The present research will be valuable in the field of education, helpful for the students, teachers & school administrations by highlighting the factors & barriers occurring in adaptation of gamifications in teaching at elementary schools of Mirpur. The results of the research will also help the administration & policy makers to provide education system with the action plan in order to improve the flaws in adaptation of gamifications in teaching learning process at Mirpur AJ&K. This study will also provide help & guidance for the future researchers in the same area.

Delimitation of the Study

Only students in grades 1 through 8 at LA-3 public schools are included in this study.

Literature Review

Gamification is becoming increasingly important in ensuring the success of the upcoming generation of educators in the classroom. Teachers nowadays are required to effectively educate a wide range of student groups while maintaining a wide range of personalities, skill levels, and preferences. According to Dadheech (2019) One of the primary issues in modern education is how to keep learners involved in learning while utilizing various kinds of activities, games, rewards, surprises, comedy, and digitalization. Multiple factors influence teachers' awareness of gamification, including professional development opportunities, resource availability, and the notion of an encouraging educational environment. According to Liu, Ho, and Song (2021). Adukaite et al (2017) investigate the viewpoints of teachers in South African secondary schools, with a specific focus on digital gamified learning. An et al. (2021) presents an investigation into the viewpoints of instructors regarding the implementation of gamification in elementary schools.

According to Armstrong & Landers, (2017) and Roig et al, (2018), narratives are stories given in gamified educational environments to enhance instructional outcomes, and they both agreed with other researchers' statements. According to Benedetti, et al, 2018 Students feel accomplished when they use various badges in the classroom, badges might be utilized for initial evaluation and to improve the learner portfolio, as well as to present students with goals to work towards, which keeps their interest high. According to Garnett and Button (2018), learners who are driven by digital badges may perform better in class since they are prepared for the subject. While Becker and Nicholson

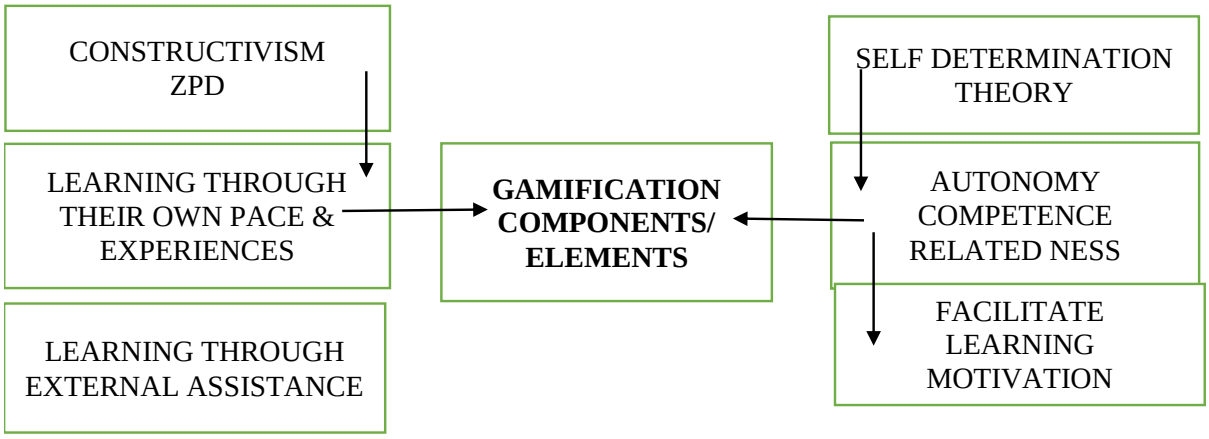
(2016) focus on leaderboards, which are often connected with video games are also employed in non-gaming scenarios, as for boosting records and teaching in the world or celebrating accomplishments in schools

Theoretical Framework for the Study

The study's conceptual framework is built on and constructivism by Vygotsky (1978) and self-determination theory. According to Vygotsky (1978), learners acquire information while seeking to achieve externally defined goals. According to Vygotsky (1978), learners participate in internal processes while interacting with classmates and others in their surroundings. As the teenager adopts these practices, they gain confidence and regulate their knowledge of cultural norms. Over the last half-century, Richard M. Ryan and Edward L. Deci developed self-determination theory (2000a). Satisfying basic human wants, as defined in the SDT, promotes individual growth and mental health. According to Ryan and Deci (2000a), each individual seeks for as much influence over their behaviors and choices as possible. Similarly, humans desire competency in their activities and environments.

This study's conceptual framework combines constructivist ideas with the concept of gamification, with an emphasis on understanding teachers' opinions of the need for and challenges to using gamification in education. Vygotsky (1978) and following researchers developed Constructivist learning theory places a strong emphasis on how knowledge is created by contextual experiences, teamwork, and social interaction. A fundamental idea in this theory is the Zone of Proximal Development (ZPD), which makes a distinction between what students can accomplish on their own and what they can accomplish under supervision. Finally, this conceptual framework integrates constructivist ideas, self-determination and motivation, and the application of gamification in the classroom. It lays the groundwork for investigating how teachers view the need for and impediments to gamification, with a focus on the relationship between constructivist pedagogy and contemporary educational practices.

CONCEPTUAL FRAMEWORK



Methodology

The present study was quantitative in nature. The study was conducted using a cross-sectional survey design. The purpose of this study was to determine the perceptions of teachers regarding needs and barriers for adaptation of gamifications in teaching at elementary level in Mirpur AJ&K. For this research work all the elementary level teachers of Mirpur AJ&K were the population of the study. The teacher's roster was obtained from the elementary by securing permissions from the elementary board through a systematic process, the office of the District Education Officer Male and Female (DEO-2024) in Mirpur served as the source of population. The sample was consisted of elementary level teachers from different schools In Mirpur AJ&K. Data collection process was followed by filling a close ended self-designed questionnaire containing three sections, 8- items for section A was about knowledge of gamification, 11-items for section B which was about need for adaptation of gamification and 11-items for section C was about barriers in implementation of gamification. Through Universal sampling technique 483 questionnaires were circulated, 254 questionnaires to male and 229 to female teachers and got 421 responses, 208 from male and 213 from female teachers and for those prior permissions were taken from school administration. To rate the responses of participants, using a five-point Likert scale, Strongly Disagree = 1. Agree = 4, Strongly Agree = 5,

Neutral = 3, and Disagree = 2. To get the outcomes data was entered into SPSS. To analyze the tendency of responses, mean scores & Standard Deviation were tabulated. To Analyze the difference in perspectives of male and female teachers regarding knowledge, need and barriers in adaptation of gamification t-test was applied.

Validity and Reliability

For the validation of the questionnaire, Feedback from the supervisor, peers and experts served as validity testing, specifically questionnaire was reviewed by two experts of the Mirpur University of Science and Technology MUST,

1. Dr. Razia Rizve (Assistant Professor)
2. Ms. Kiran Saleem (Lecturer Education) department of Education and the refinements were used to enhance the instruments' effectiveness before full-scale data collection.

For reliability, the questionnaire was circulated to 25 randomly selected participants. Reponses were later entered into SPSS to check the reliability of the questionnaire. The Cronbach's alpha of 25 sample size was tested and it was found that alpha value was .941 and therefore, the measures were found that all the statements were highly reliable.

Results and Discussions

This study searched to find out perceptions of teachers regarding needs and barriers in adaptation of gamifications in teaching at elementary level and difference in perceptions of male and female teachers.

Table 1 Mean and Standard Deviation of Knowledge of Gamification

Sr. No	Statements of Knowledge of Gamification	Mean	STD
Statement 1	I understand the idea of gamification in the context of education.	3.9549	.94886
Statement 2	I have an ambiguous idea about it.	3.0665	1.11712
Statement 3	I am familiar with a few gamified platforms or software that are applicable for elementary education.	3.6152	1.01613
Statement 4	Gamification has the ability to boost classroom engagement and involvement among pupils.	4.2613	.91451
Statement 5	Gamification offers opportunities for students' learning experiences to be personalized.	4.0309	.90842
Statement 6	I feel that gamification can help pupils become more efficient at solving problems.	4.0926	.88558
Statement 7	I think that gamification makes learning more engaging for students.	4.1924	.88562
Statement 8	Gamifications are the biggest drivers of learner's attention in classroom activities.	3.9976	.94491

Table 2 Mean and Standard Deviation of Need for Adaptation of Gamification

Sr. No	Statements of Need for Adaptation of Gamification	Mean	STD
Statement 10	Integrating gamification in elementary education can make learning more enjoyable for students.	4.133	0.94435
Statement 11	I believe that using gamification in my elementary school classes is necessary.	4.2423	0.81546
Statement 12	Students' varied learning styles can be better accommodated by gamification.	4.1639	0.73305
Statement 13	I feel Gamification, can help students retain more information.	4.2185	0.76204
Statement 14	Implementing gamification in classroom can help in reducing students' boredom during lessons.	4.2138	0.79994
Statement 15	Gamification can serve as a tool to promote self-paced learning among students.	4.0689	0.81796
Statement 16	In my opinion, gamification fits quite well with Pakistan's present educational requirements.	3.5 511	1.09561
Statement 17	I believe that in order for educators to successfully incorporate gamification in classroom, they must work together.	4.1591	0.81407
Statement 18	Integrating gamification into lessons can encourage higher levels of student involvement in class.	4.0594	0.86398
Statement 19	I can adopt gamification elements in my classroom.	3.8314	0.89046
Statement 20	My school administration may facilitate me on using	3.5416	1.0807

gamification elements in classroom.

Table 3 Mean and Standard Deviation of Barriers in Implementation of Gamification

Sr. No	Statements of Barriers in Implementation of Gamification	Mean	STD
Statement 09	There's a big lack of availability & access of gamified material in classroom.	4.0974	1.06794
Statement 21	One of the obstacles to gamification implementation is a lack of appropriate training and resources.	4.1259	0.96896
Statement 22	The integration of gamification is hindered because of poor technology infrastructure.	4.0594	0.96549
Statement 23	One problem is that there is a lack of knowledge about how gamification integrates (aligns) into the curriculum.	3.8527	0.95726
Statement 24	Gamification activities in the classroom are time consuming.	3.6105	1.03753
Statement 25	Insufficient support and guidance from educational authorities hinder the implementation of gamification	4.0618	0.94918
Statement 26	Teachers' perceptions about the complexity of incorporating gamification influence its adaption.	3.6223	0.99397
Statement 27	Extra workload is also a major barrier in adaptation of gamification.	3.8812	0.96123
Statement 28	Limited access to suitable technological devices impedes the adaption of gamification.	3.9786	0.9497
Statement 29	During classroom sessions Potential distractions caused by gamified elements during classroom sessions are barriers.	3.7126	0.95397
Statement 30	Insufficient time for planning and implementing gamification activities poses challenges.	3.9192	0.95276

Table 4 Group Statistics for Knowledge of Gamification

	Gender	N	Mean	Std. Deviation	Std. Error Mean
01. Knowledge	Male	214	26.8528	5.01975	0.34314
	Female	207	28.6033	3.26434	0.22689
02. Need	Male	214	39.8997	6.05473	0.41389
	Female	207	42.0628	4.14287	0.28795
03. Barriers	Male	214	39.3305	6.30338	0.43089
	Female	207	39.3878	5.98625	0.41607

Table 4 section 1 shows that the The average knowledge score for male participants was 26.85 with a standard deviation of 5.02, while the average score for female participants was 28.60 with a standard deviation of 3.26. Female educators appear to have a stronger understanding of gamification concepts compared to their male counterparts. Section 2 indicates that Male participants reported a mean score of 39.90, while females scored higher and perceive higher need for integrating gamification strategies with a mean of 42.06. Female educators not only demonstrate greater knowledge but also perceive a higher need for integrating gamification. Section 3 shows that Male participants had a mean score of 39.33, closely aligned with female participants' mean score of 39.39. Both male and female educators face comparable challenges in implementing gamification in education.

Table 5 Independent Samples Test for Knowledge of Gamification

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	T	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Knowledge	Equal variances assumed	19.575	0	-4.227	419	0	-1.75046	0.41416	-2.56455	-0.93637
	Equal variances not assumed			-4.255	367.355	0	-1.75046	0.41137	-2.55939	-0.94152

Table 6 Independent Samples Test for Need for Adaptation of Gamification

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	T	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference Lower	Upper
Need	Equal variances assumed	14.506	0	-4.264	419	0	-2.16306	0.50726	-3.16014	-1.16597
	Equal variances not assumed			-4.29	377.618	0	-2.16306	0.5042	-3.15446	-1.17166

Table 7 Independent Samples Test for Barriers in Implementation of Gamification

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	T	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference Lower	Upper
Barriers	Equal variances assume	3.313	0.069	-0.096	419	0.924	-0.05729	0.5995	-1.23569	1.12111
	Equal variances not assume			-0.096	418.86	0.924	-0.05729	0.59899	-1.23468	1.1201

Table 5 shows the findings of an t-test comparing male and female teachers' opinions of their understanding of gamification adaption. the p-value (.000) is below than the 0.05 alpha level, indicating that the null hypothesis is rejected and that the two groups—male and female—have a statistically significant difference in their understanding of how gamification has been adapted at the elementary level in Mirpur AJ&K.

Table 6 shows results from an t-test to compare the perceptions of male and female teachers regarding the need for adaptation of gamification. The p-value (.000) is less than the actual alpha level of 0.05, The null hypothesis is rejected by the researcher, and there is a statistically significant difference between the two groups male and female regarding the need for the adaptation of gamification at elementary level in Mirpur AJ&K.

Table 7 shows results from an t-test to compare the perceptions of male and female teachers regarding the need for adaptation of gamification. Since the P-value (0.069) exceeds the standard alpha threshold of 0.05, the null hypothesis that the variance is equal cannot be ruled out. This shows that the two groups—male and female—do not significantly differ in how gamification has been adapted at the elementary school level in Mirpur, AJ&K.

Discussions on Findings

Teachers demonstrated higher knowledge of gamification compared to their male equals. This could be said attributed to female teachers often having personal experiences with their kids and also urge to explore and do something new. Both male and female perceived the need for adaptation of gamification in elementary education. However, female teachers perceived the need of gamification more than male teachers. This high perception may be influenced by their experiences and desire to adapt new trends that could give positive effects of gamification on children's learning and engagement. And lastly, both genders showed similar rating on barriers to adapting gamification in their teaching practices with the multiple barriers they experienced around, common barriers included lack of resources, trainings and time constraints. However, the study also highlights significant gaps in knowledge and familiarity with specific gamified platforms and the practical application of gamification strategies. This points to a critical need for targeted professional development programs

that can bridge these gaps and empower teachers with the necessary skills and resources to implement gamification effectively.

Conclusion

On Basis of Null Hypotheses

H01: is rejected as there is statistically significant difference in teacher's perception regarding knowledge of gamification in teaching at elementary level between both groups' male and female.

H02: is rejected as there is statistically significant difference in teacher's perception regarding need for adaptation of gamification in teaching at elementary level between both groups' male and female.

H03: is accepted as there is no statistically significant difference in teacher's perception regarding barriers for adaptation of gamification in teaching at elementary level between both groups' male and female.

On Basis of Objectives

1. Perceptions of Teachers Regarding Knowledge Need and Barriers in Adaptation of Gamification

Overall, the research objective reveals teachers' overall knowledge of gamification is moderate, with the clear understanding of its basic concepts and potential benefits. How so ever, there is some ambiguity and a lack of familiarity with specific gamified platforms and how they ca be effectively utilized in the classroom. This indicates for the need of more comprehensive training and professional development to enhance teachers' understanding of using gamifications. 2nd part of objective indicates that perceived need for gamification is high, teachers have varied in terms of its alignment with current educational requirements of Mirpur Azad Kashmir. And also, Teachers identified several significant barriers to the adoption of gamification, including insufficient training, lack of technological infrastructure, and the additional workload it may impose. These barriers are exacerbated by partial access to suitable resources and a lack of administrative support.

Recommendations

Based on the study results the study recommends,

1. Schools and District Education officers may focus on including practical and online courses that motivate and encourage teachers in adaptation of gamifications elements in their classrooms.

2. Schools may ensure that the teachers have access to the necessary digital tools and resources required for implementing gamification in the classroom.

3. The management of schools may ensure to make sure that they have the resources and equipment needed for the teachers, including dependable internet connectivity and funding.

4. Instructors may also be given the tools they need to successfully incorporate gamifications within the limits of the curriculum and class period.

5. This study recommends to the future researches to assess the impact of gamifications on students' engagement and learning outcomes & their improvement.

6. The DEO or concerned educational authorities may conduct tailored workshops/training sessions for male teachers in order to improve their knowledge regarding need for adaptation of gamification at elementary level.

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