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Original Research

The Consequences of Gamification in Teaching Sport Skills in Virtual Education

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ABSTRAC

This study aimed to identify the consequences of gamification in teaching sport skills in virtual education. This study was a qualitative and exploratory research conducted using a thematic analysis method. The participants included faculty members with experience in teaching practical courses and using gamification in physical education and sport sciences. Given the nature of the research, semi-structured interviews were used as the research instrument. Twelve experts were interviewed as a research sample through snowball sampling to reach the theoretical saturation. The validity and reliability of the study were evaluated and confirmed by using Guba and Lincoln (1989) method. The thematic analysis of the data by Braun and Clarke's (2006) method led to the extraction of 168 codes, thirteen sub-themes, and five main themes. The findings indicated that "Learner Management", "Skill Dimension", "Emotional Dimension", "Teaching Method and its Quality", as well as " Communications" were the main themes of the research. Some sub-themes were extracted for each main theme according to their semantic and conceptual similarity. The findings of this study can be considered by professors and students of physical education and sports sciences as a basis for promoting the efficiency and effectiveness of teaching sport skills in a virtual learning environment. Having a clear understanding of the various aspects of this method helps teachers and administrators to make the most of the opportunities of this educational method.

Keywords: Gamification, Virtual Education, Sport Skills, Consequences.

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INTRODUCTION

Today, technology is deeply intertwined with nearly every aspect of daily life. Its influence is evident across various fields, including education, which has experienced significant transformations due to technological advancements [1]. Traditional teaching methods have evolved, driven by the goal of enhancing educational practices and outcomes. Virtual education represents one of the latest advancements in teaching and learning methods, encompassing subcategories such as e-learning, web-based, and computer-based education. It serves as both a process and a tool for knowledge transfer, utilizing information and communication technology (ICT) [2]. As a modern method, virtual education has gained significant popularity in recent years.

Its adoption expanded rapidly during the COVID-19 pandemic when face-to-face education in schools and universities was suspended to adhere to health protocols and practices like social distancing. In response, various solutions were introduced to ensure the continuity of teaching and learning. Among these, virtual education emerged as one of the best and most widely implemented methods [3]. Virtual education undoubtedly comes with its advantages, disadvantages, and limitations. Among its benefits, virtual education lowers the cost of education and enables a wide range of students to learn from different locations without time constraints [4]. However, this method also has drawbacks, including increased distraction, reduced interaction, and diminished motivation for learning. Research indicates that fostering motivation in virtual learning environments during the pandemic can enhance satisfaction and contribute to successful learning outcomes [5].

There are a variety of fields of study in universities, one of them is physical education. This field comprises both theoretical and practical courses. The practical component involves teaching students various sports and skills. According to sports, these skills refer to "the ability to perform the required techniques at the right time and place." Teaching practical physical education courses in a virtual environment has consistently posed challenges for students and instructors. Delivering practical courses in virtual education is notably more difficult than theoretical courses. Consequently, there has been a growing emphasis on employing creative solutions and effective strategies to address these challenges. Educators and decision-makers have actively sought innovative approaches to mitigate the limitations and difficulties associated with virtual education [6].

One approach to address the challenges and limitations of virtual education is gamification [7]. Sports educators have adopted gamification as a modern method for teaching. Gamification involves incorporating game elements into non-game contexts to achieve specific goals related to a subject. It utilizes game design techniques, game thinking, and mechanics to enhance engagement and effectiveness in non-game content [8]. Various frameworks have been developed for gamification, with the MDA (Mechanics, Dynamics, Aesthetics) framework being one of the most widely used in education. This framework highlights the importance of three key dimensions; mechanics, dynamics, and aesthetics that they are essential for designing meaningful and engaging learning experiences.

Mechanics are related to the game’s components, control, and courses. The elements of this dimension allow the game designer to control and direct the player's behavior. Player progress,

tasks, game contents, and additional features are for game mechanics. Dynamics describes how mechanics run in a game based on player input and its relationship with other mechanics. The types of game dynamics include rewards, badges, role-playing, non-linear progression, real exploration, in-game exploration, puzzle solving, difficulty adjustment, hints, management–simulation, turn-based, adaptation system, and quiz system. The aesthetics of the game (feelings) describe the feelings of players during the game. Emotion, challenge, discovery, participation, expression, fantasy, Submission, and Narrative are some elements of this aspect [9].

Kusuma et al. (2018) highlighted that gamification is applied across various subjects, including mathematics, languages, physical education, and higher education [9]. As mentioned, different subjects have been taught through gamification, and depending on their content, the amount of use and application has not been the same. Strmecki et al. (2015) observed that learners engaged in gamification-based virtual education demonstrated success in learning. Since learning requires motivation, Integrating game elements into e-learning systems is engaging and effective. This is because the primary goal of gamification is to enhance user motivation, experience, and interaction [10].
Another study found that gamification increased learners' motivation, successfully engaging them and encouraging active participation in learning [11]. Malas and Hamtini (2016) investigated the application of gamification in e-learning environments and concluded that gamification can enhance learning with increasing participation and engagement [12]. Interactive learning methods like gamification evoke a wide range of emotions in learners, such as curiosity, frustration, and happiness. Even failure within a gamified context can serve as a valuable learning experience. Studies have shown that e-learning with gamification is more effective than non-gamified and traditional methods. Gamification positively impacts students' academic engagement [13]. Todor and Pitic (2013) highlighted that incorporating game elements—such as avatars, feedback, badges, points, and rewards—into e-learning platforms significantly increased learners' interest and enthusiasm for educational courses [14].

The positive impact of gamification has led to attention being paid to its use in physical education. Most of the studies have focused on motivation and performance. Liu and Lipowski (2021) applied gamification to teach specific tennis skills and examined its effect on learners' motivation and behavior. The results indicated that gamification had a positive impact on the experimental group [15]. In another study, Ferriz-Valero et al. (2020) mentioned that students achieved better academic performance with gamification, but their internal motivation did not change [16]. González et al. (2018) indicated that gamification and computer games compensate for the lack of motivation to do aerobics, and learners get motivated to do activities and get involved in learning. Finally, they are encouraged to continue the courses [17].

Other issues like interaction, participation, fun, and enjoyment of the learning environment have been discussed in research. For example, increasing interest in learning leads to more interaction and participation, and all these cases are due to the emotions created during gamification [18]. Fernandez-Rio et al. (2020) concluded that gamification altered students' perspectives on learning physical education, making it an enjoyable and fun experience, though it remained a challenging approach. However, the teachers believed that they needed plenty of time [19]. Gamification had created an enjoyable environment for learners, but the complete absorption of the learner, which

separated it from the learning environment, was not seen. Gamification made it possible for learners to think creatively [20].

According to the research literature regarding the gamification and teaching of sport skills and the practical courses of physical education in higher education, it shows that limited research has been done on the consequences of gamification in the teaching of sport skills, especially in the e-learning environments and the studies have not provided complete and sufficient results. Recent studies showed that gamification in education has various potentials. If educators apply gamification in teaching and learning, it will positively affect some factors such as satisfaction, motivation, interaction, and so on. Some suggest that educators and educational institutions integrate gamification strategies into their traditional education [21]. In addition, Jaberi and Barkhordar (2023) believed that using gamification can help the effectiveness of teaching practical courses of physical education in a virtual learning environment [22]. Other research results also emphasized that it is better to use gamification in higher education to increase learning and learner engagement.

Undoubtedly, gamification can have the most significant impact when its consequences are fully understood, particularly in the context of teaching sport skills. However, the research literature highlights a lack of comprehensive information regarding its effectiveness, revealing a clear research gap. Teaching sport skills is both critical and sensitive, requiring a thorough understanding of any new methods before their implementation. Moreover, innovative approaches like gamification must complement, rather than detract from, the teaching and learning process. The importance and necessity of this study lie in identifying the consequences of gamification in teaching sport skills within virtual education. By doing so, it provides maximum awareness of gamification for learners, educators, and administrators in physical education and sports sciences. Additionally, this research enables users to discern which gamification elements are most effective for teaching. Understanding these outcomes allows for the optimal application of gamification as a novel method for teaching.

According to these explanations, this study aims to identify the consequences of gamification in teaching sport skills in virtual education; the main question of this research is, based on the views of experts of physical education who were experts in the subject of gamification, what are the consequences of gamification in teaching sport skills in virtual education?

MATERIAL AND METHODS

This study was a qualitative, exploratory research conducted through a thematic analysis approach. The aim was to examine the impact of gamification on teaching sport skills in virtual education. The participants included faculty members with experience in teaching practical courses in physical education, as well as those who had utilized gamification in their teaching. Considering the purpose of the research, a theoretical sampling approach was deemed the most appropriate method. According to the nature of the study, the study tool was a semi-structured interview. Twelve experts were interviewed as a research sample through snowball sampling to reach the theoretical saturation. Due to the dispersion of the participants and the limitations of access, a combination of face-to-face and virtual methods was used to conduct interviews. The time of the interviews was between 25 and 35 minutes and the average of the interviews was estimated to be 30 minutes. For data analysis, the thematic analysis method based on six phases introduced by Braun and Clarke (2006) was used [23]. The first phase was familiarity with the raw data, the second phase involved generating initial codes, and in the third phase, main themes were explored. In the fourth, the themes were reviewed, and the fifth phase was followed to define and name the identified themes. Finally, in the sixth phase, the interpretation of the themes was developed based on the main research question. Therefore, Guba and Lincoln's (1989) concept of Trustworthiness was used to ensure validity and reliability. This criterion consists of four concepts: Credibility, Transferability, Consistency, and confirmability [24]. In this research, to ensure the validity of the analysis in different stages, codes, themes, and sub-themes, for the accuracy of the obtained findings, the member checking method (interviewees) was used, and after the interviews, the researcher sent the extracted codes to interviewees by email and asked them to review the extracted codes and confirm that this is what they said in the interview. Out of 12 interviews, 11 interviewees provided feedback on the extracted codes. Based on their comments, necessary adjustments and modifications were made, and most of the codes were validated. To ensure transferability, the researcher has provided a detailed description of the research context, including a comprehensive depiction of gamification in virtual education and its elements, as well as the demographic characteristics of the participants. This information allows readers and researchers to assess whether the findings of this study can be applied to similar settings. To ensure the reliability of this research, the test-retest reliability method was employed. The recommended approach for assessing reliability involves comparing the researcher's coding at two separate intervals, ensuring consistency through the constant index.

$$Re-test\ reliability\ percent = \frac{Number\ of\ agreement\ on\ codes\ \times 2}{Total\ number\ of\ codes} \times 100$$

To calculate the test-retest reliability of this research, the researcher selected three interviews and coded them twice, with a 20-day interval between each coding session. The total number of codes across both intervals was 112, with 50 agreements and 27 non-agreements, as summarized in Table 1. Using the specified formula, the test-retest reliability of the interviews was calculated to be 89%. Considering that this reliability rate is more than 60% [24], the reliability of the coding of the interviews in this research is confirmed. Additionally, to enhance confirmability and verify the findings, the researcher has retained all audio recordings, transcripts, and notes from the interviews. If necessary, those can be made available to relevant parties for further review.

Table 1. Retest reliability

	Interviewee code	Total codes in two phases	Agreement on codes	Disagreement on codes	Re-test reliability (percent)
1	P7	35	15	7	85%
2	P2	37	17	9	91%
3	P9	40	18	10	90%
	Total	112	50	27	89%

RESULTS

For this research, 12 faculty members from physical education and sport sciences participated in the interview process. These participants were experienced in teaching practical courses in physical education and had utilized gamification in their teaching methods. All of them held Ph.D. degrees in various subfields of physical education. The demographic status of the participants in the interview and research process is shown in Table 2.

Table 2. Demographic status of the participants

Personal characteristics of the interviewees		Number	Percent
Gender	Female	1	8.3 %
	Male	11	91.7 %
Employment status	Faculty member	Assistant Professor: 4	33.3%
		Associate Professor: 7	58.4%
		Professor: 1	8.3%
Experience in face-to-face teaching	Less than 5 years	1	8.3%
	Between 5 to 10 year	3	25%
	More than 10 years	8	66.7%

Field of study	Sport Management	3	25.06%
	Sport Biomechanics	3	25.0%
	Corrective Exercises and Sport Injuries	3	25.04%
	Motor Behavior	1	8.3%
	Sport Physiology	1	8.3%
	Sport Psychology	1	8.3%
Virtual teaching experience	Less than 2 years	1	8.3%
	Between 2 to 5 years	10	83.4%
	More than 5 years	1	8.3%

The results of the data analysis process, using a qualitative-inductive approach, are presented in Table 3. Table 3 includes the findings of the research (Main themes, sub-themes, and codes) based on the thematic analysis of the data by Braun and Clarke's (2006) method.

Table 3. Main themes, sub-themes and codes

Main theme	Sub-themes	Codes
Learner Management	**Planning**	Planning practical courses based on students' needs and abilities [Non-linear progression, Optional missions], Planning courses in a student-centered manner [Tasks, Challenges, In-game exploration, Role-playing, Puzzle solving], Comprehensive planning for sports skill development [Additional features, Leveling up, Quizzes, Puzzles], Fostering creativity within the instructional program [Role playing, Simulations, Additional features], Creating an engaging and enjoyable instructional program for virtual environments [Story, Challenge, Sense of curiosity, Role-playing, Leveling up], Providing the opportunity to include additional content in the instructional program [Quizzes, Puzzles, Quiz system, Additional features], Considering learners of all ability and knowledge levels (weak, medium, strong) [leveling up, Difficulty adjustment], Repeating educational content

		as part of the learning process [Leveling up, Additional features, Quiz system, Puzzle, Quizzes], Reducing deficiencies in instructional programs [Additional features, Leveling up], Creating a purposeful and targeted instructional program for students [Story line, Leveling up], Providing opportunities to address deficiencies and weaknesses in the program [Freedom to fail], Varied instructional programs [Additional features], Designing a flexible and dynamic instructional program, rather than a monotonous one [Challenges, Curiosity, Additional features, Non-linear progression, Puzzle solving, Difficulty Adjustment], Comprehensive and multi-dimensional planning for teaching sports skills [Additional features], Supportiveness and effectiveness of the instructional program [Hints, Opportunities, Adaptation system], Teaching sports skills in a more sustainable manner, [Story, Additional features], The potential to design and implement sports skills teaching in a creative, step-by-step ladder method [Leveling up], Planning the program in a flexible, non-traditional way that allows more freedom of action [Storyline, Challenges, Missions (Tasks), Role-playing], Adaptation of the time allocated for practicing sport skills based on the student's ability [Adaptation system], Having a voluntary and non-compulsory instructional program [In-game exploratory, Non-linear progression], Minimizing the emphasis on outcome-oriented goals in the instructional program [Freedom to fail, Tasks], Taking the learning process into account during the planning phase [Tasks, Curiosity, Challenges, Puzzle solving, Exploration], Planning the courses to minimize diverse and scattered behaviors among students [Rules and Regulations, Leveling up], Increasing the responsiveness of students in the instructional program [Quiz system, Tasks, Puzzle solving, puzzles, Quizzes], Making suitable opportunities in the program to express side notes about sport skills [Additional features].
	Motivational Factors	Encouraging students to enhance their sports skills [leveling up, Rewards, Badges, Achievements, Opportunities, Leaderboards], Providing incentives to encourage assignment submission [Rewards, Badges, Achievements], Enhancing motivation to memorize educational content [Puzzle, Quiz system, Quizzes, Puzzle solving], Increasing motivation to be more active in class [Challenges, Sense of curiosity], Helping to reduce anxiety caused by poor performance and low scores, Helping to reduce anxiety caused by poor performance and low scores [Freedom to or Opportunities], Interest in completing the learning course [Player progression, Leveling up], Encouraging students to gain more knowledge and information related to sports skills [Quiz system, Difficulty Adjustment, Puzzle,

	Feedback	Quizzes, Puzzle solving], Motivating students to engage in additional practice outside the classroom [Player progression: points, achievements or badges, leaderboards, Leveling up], Increasing learners' enthusiasm and interest in succeeding and achieving educational goals [Player progress: points, achievement or badges, leaderboards, Leveling up], Encouraging students to practice the sport movements and utilize their learned skills [Player progress: points, achievements or badges, Leaderboards, Leveling up], Boosting learners' enthusiasm and interest in learning [Player progress: points, achievement or badges, Leaderboards, Leveling up], Motivating students with different abilities to engage in sports skills [Difficulty adjustment, Adaptation system, Opportunities, Non-linear progression], Engaging and motivating learners who have reached a learning plateau to continue practicing sports skills [Difficulty adjustment, Non-linear progression], Encouraging students to perform and persist in practicing the sports skill [Rewards, Badges, Achievements], Fostering hope and motivation to achieve success and victory by the end of the course [Leveling up, Progress], Increasing interest and desire to complete tasks [Player progression: points, achievement or achievement of badges, Leaderboards, Leveling up], Promoting greater autonomy and independence [Tasks, Adaptation system, Non-linear progression, Exploration].
	Assessment	Facilitating the learner's easy acceptance of negative feedback on their performance of sports skills [Opportunities], Informal feedback [Additional features], Remembering negative feedback to address weaknesses and positive feedback to maintain progress [Leveling up], Preparing learners to receive detailed and formal feedback from the coach [Additional features: feedback], Minimizing ambiguity in the feedback process [Additional features], Providing timely and immediate feedback [Additional features: feedback], Multiple feedback opportunities are provided to inform students about the learning process [Quiz system, Feedback]. Ongoing multi-stage assessments are conducted during the learning period [Quiz system, Quizzes, Puzzles, Leveling up, points], A positive attitude from students toward assessments [Opportunities, Rewards, Achievements], Considering assessment criteria based on the students' level [Adaptation System], Ensuring assessments are valuable and beneficial for learners [Progress: badges, achievements, rewards, points], Rapidly assessing the strengths and weaknesses of learners in the subject matter [Quiz system, Quizzes, Puzzles, Leveling up, Points], Constructive assessments

		[Opportunities, Difficulty adjustment, Adaptation system], Employing multi-faceted assessments to monitor student progress by the instructor [Additional features, Quizzes, Quiz system, Scoreboard], Monitoring the student's learning progress in a non-intrusive manner [Additional features, Puzzle, Puzzle solving], Providing maximum clarity regarding assessment criteria [Additional features hints, rules and regulations], Increasing the frequency of formative assessments [Quiz system, Quizzes, Puzzle, Leveling up, points], Enhancing the quality of formative assessments[Quiz system, Quizzes, Puzzles, Leveling up, points], Ensuring students are informed of their academic status during the learning process [Quiz system, Quizzes, Puzzles, Leveling up, Points], Clarifying the class expectations for the learner [Additional features: hints, rules and regulations], Reducing the influence of the instructor's personal opinions in assessments [Quiz system, Quizzes, Puzzles, Leveling up, Points], Making the assessment more fair [Quiz system, Quizzes, Puzzles, Leveling up, Points, Adaptation system], Allowing the learner to take control of their learning process [Progress, Achievements, Leveling up, Leaderboard].
Skill Dimension	**Performance of Sport Skills**	The opportunity to perform and practice sports skills multiple times [Opportunities], Attempting to perform the skills correctly [Leveling up, Progress], Creating the necessary conditions to assess one's abilities in performing sports movements [Feedback, Progress], Enhancing the ability to self-correct [Leveling up, Challenge, Curiosity, Progress], Assisting the student in self-examining and accurately evaluating their sports skill performance [Leveling up, challenge, sense of curiosity, Progress], Maximizing efficiency in education [Challenge, Curiosity, Exploration, Puzzle solving, Non-linear development], Increasing the amount of learning sport skills [Opportunities, Additional features, Quiz system], More effort to perform the skill better due to competition with each other [Score board, Leveling up, Progress], Increasing efforts to achieve the best performance in sports skills [Leveling up, Opportunities, Progress, Leaderboard], Making it possible to perform motor skills at lower ability levels [leveling up, Adaptation system, Difficulty adjustment], Making gradual progress in performing sports skills [Leveling up], Extended practice time [opportunities, Missions, Mini-games], Enhancing the quality of the student's mental preparation [Additional features: story, Tutorials (audio, video, animation)], Developing students in self-assessment skills [Challenge, Curiosity, Exploration], Accelerate learning [Curiosity].

	Cognitive and Intellectual Factors	Improving comprehension and awareness of the taught sports skills [Additional features: story, Tutorials (audio, video, animation)], Preparing students to make accurate predictions in real-life situations when performing sports skills [Challenge, Puzzle solving, Additional features: Tutorials (audio, video, animation)], Help to analyze technical skills more precisely [Additional features: Tutorials (audio, video, animation)], Enhancing decision-making ability [Puzzle solving, Exploration, Difficulty adjustment], Improving problem-solving abilities [Puzzle solving, Challenges], Increasing focus on performing sports skills [Getting badges and achievements, Additional features: Tutorials (audio, video, animation)], Achieving greater accuracy in performing sports skills [Badges and Achievements, Additional features: Tutorials (audio, video, animation)], Increasing the time for processing the sports skill before performing it [Additional features: Tutorials (audio, video, animation), Game content: simulations], Enhancing the ability to analyze problems and think logically[Puzzle solving, Exploration, Fellowship, Curiosity, Challenges], More realistic perception of weaknesses and strengths in doing learned skills and knowledge [Feedback, Quiz system, Mini-games], Strengthening the power of visualization and spatial analysis[Additional features: story, Tutorials (audio, video, animation), Game content: simulation)], Assisting with the visualization required in the mental phase of learning sports skills [Additional features: Tutorials (audio, video, animation), Game content: simulations], Maintaining the student's awareness of the learning process [Challenges, Curiosity, Quiz system, Mini-games, Tasks], Fostering greater creativity in the student [Challenges, Curiosity, Role-playing, Character, Story], Creating an environment for the development of creative thinking [Challenges, Curiosity, Puzzle solving], Engaging students and enhancing their involvement in the learning process [Tasks, Leveling, Exploration, Challenges, Curiosity, Puzzle solving, , Quiz system, Mini-games], Developing quick reaction time [Timing].
	Creating and Expressing Emotions	Increasing the sense of competition in learners [Scoreboard, Badges, Rewards, Leveling up, Social sharing], Experiencing joy and satisfaction in the learning process [Storyline, Challenges, Curiosity, Progress], Enhancing the student's sense of alertness [Exploration and Discovery, Puzzle solving, Difficulty adjustment, Mini-games], Boosting the sense of curiosity to seek more educational information [Progress, Leveling up, Challenges, Quiz system with rewards], The sense of satisfaction from learning sports skills in a virtual environment [Additional features, Challenges, Curiosity, Tasks, Progress], Enhancing positive emotions during the learning process [Challenge, Curiosity, Mission, Discovery, Exploration, Puzzle solving], Increasing the sense of responsibility for teaching [Team working], The student's sense of enjoyment and ownership in learning

Emotional Dimension	**Emotional Management**	[Non-linear progression, Optional tasks and Missions, Exploration and Discovery, Progress], Enhancing the sense of success and achievement [leveling up, Progress], Strengthening the sense of competence after successfully performing a challenging sports skill [Challenges, Progress], Fostering a sense of risk-taking [progress, Challenge, Curiosity, Exploration and Discovery], Strengthening friendship and intimacy [Team working, Social sharing]. The ability to manage a student's anger after receiving negative feedback [Freedom to fail or Opportunities], Guiding and channeling learners' emotions into the learning process [Challenge, Curiosity, Mission, Discovery, Exploration, Puzzle solving], Minimizing the fear of assessment related to the performance of learned sports skills [Feedback, Quiz system with rewards, Freedom to fail, Points, Quizzes, Puzzle], Aligning the student's curiosity with the learning process [Challenge, Curiosity, Discovery and Exploration], Puzzle solving], Minimizing the fear of assessment related to the performance of learned sports skills [Feedback, Quiz system with rewards, Freedom to fail, Points, Quizzes, Puzzle], Aligning the student's curiosity with the learning process [Challenge, Curiosity, Discovery and Exploration], Minimizing feelings of confusion and helplessness in learning [leveling up, Additional features: hints, Tutorials (audio, video, animation)], Decreasing resistance to changing learning methods [Variations of dynamics and mechanics], Reducing the sense of obligation in education [Non-linear progression, Optional tasks and Missions, Exploration and Discovery], Eliminating feelings of fatigue and boredom in the learning process [Additional features, Challenges, Curiosity, Puzzle solving, Exploration].
	Skill Learning Style	Enabling the simultaneous application of all learning styles (Visual, Auditory, and Kinesthetic) [Additional features: Tutorials (animation)], Taking into account students' diverse learning styles [Additional features: Tutorials (audio, video, animation)], Minimizing rote learning in students [Simulations, Puzzle solving, Tasks, Challenges], Enhancing active learning [Tasks, Puzzle solving, Exploration and Discovery], Incorporating fun into the learning process [Additional features, Curiosity, Challenges, Exploration and Discovery], A more effective and efficient learning approach in the virtual environment [participations, Tasks, Puzzle solving, Exploration, Quiz system], Enhancing the self-directed learning style [Tasks, Non-linear progressions], Reducing passive observation in students within this learning style [Tasks, Puzzle solving, Exploration], Promoting and advancing problem-based learning [Tasks, Puzzle solving, Exploration], Making the learning style deeper and more stable [Story, Quiz system, Mini-games], Game-based

Teaching method and its Quality		learning in serious content [Variations of dynamics and mechanics], Making the learning style more relaxed and informal for students [Challenge, Non-linear progression, Fantasy], Supporting individualized learning [Tasks, Non-linear progression], Making learning more interactive [Team working, participation, Leaderboards, Social sharing], Enhancing group learning [Team working].
	Skill Content	Teaching the content of sport skills with a focus on thinking [Exploration, Puzzle solving, Curiosity, Discovery], Presenting educational content in a creative and engaging way [Additional features, challenges], Adapting the content to suit the learners' conditions [Adaptation system, Difficulty adjustment], Minimizing boring, monotonous, and formal content [Storyline, Additional features, Challenge, Curiosity, non-linear progression], Simplifying complex skills and challenging tasks in the learning process [Leveling up, Hints], Making learning content more impactful [Participation, Tasks, Puzzle solving, Exploration], Making content exciting and fun in e-learning [Storyline, Additional features, Challenge, Curiosity, Puzzle solving progress, Difficulty adjustment], Increasing content attractiveness [Additional features], Making the content more challenging and thought-provoking [leveling up, Challenges, Curiosity, Puzzle solving, Exploration and Discovery, Difficulty adjustment], Continuity and chaining of educational content in learning a sport skill [Leveling up], Enhancing the clarity of the content [Leveling up, Additional features: hints, tutorial with animation], Adapting the content to the time required for teaching and learning [Time, Adaptation system], Providing more common goals for students in learning content [Team working].
	Skill Transfer	The presence of more various simulators in the transfer of education [Additional features], Easy and convenient use of visual tools in skill transfer [Additional features], Facilitating the step-by-step and phased approach in the skill transfer process [Leveling up], The ability to convey more detailed aspects of the sport movement [additional features: Hints, Quiz system, Quizzes, Puzzle], Transferring the rules and regulations of the sport subjects and their philosophy creatively and attractively [Additional features], Enhancing the process of teaching a sports skill by incorporating beauty and creativity Enhancing the process of teaching a sports skill by incorporating beauty and creativity [Additional features], Creating diversity in the transfer of sport skills [Non-linear Progression, Leveling up, Additional features], Conveying sports skills in a clearer and more understandable manner [Additional features, Puzzle solving, Exploration and Discovery, Curiosity], Deliver educational content in a way that leaves a lasting

		impression [Additional features, Challenges, Curiosity, Puzzle solving, Puzzle].
Communications	**Socialization Process**	Helping to make social groups [Social sharing, Team working], Enhancing the sense of community and public spirit among learners [Social sharing, Team working], Assisting students in developing their identity [Role playing, Badges, Character], Increasing the spirit of role-taking and socialization in real society [role-playing, Character, Team working], Assisting in recognizing the classroom as a social subsystem [Team working, Role-playing, Social sharing], Enhancing a sense of belonging to a group and fostering the spirit of collectivism [Team working].
	Interaction and Participation	Encouraging students' involvement in achieving the educational and classroom goals [Tasks, Puzzle solving, Exploration, Challenges, Level up, Badges], Engaging students in choosing educational content [Non-linear progression], Engaging the student in every step of the educational process [Tasks, Puzzle solving, Exploration, Challenges, Levels and stages, Quiz system, Quizzes, Puzzle], Increasing interaction between the student and instructor in the learning environment [Sense of curiosity, Challenges, Puzzle solving], Promoting greater interaction among students and their peers [Social sharing, Team working, Scoreboard], Creating teacher-student interaction outside the classroom [Leveling up, Puzzle solving], Increasing participation in group activities [Team working].

According to the findings of Table 3, 168 codes were extracted during the coding stage. After extracting the codes, "Learner Management ", "Skill Dimension", "Emotional Dimension", "Teaching Method and its Quality", and "Communications" were classified as the main research themes (five main themes). By reviewing the codes and investigating the proximity of meaning to the main themes, the research sub-themes (13 sub-themes) were extracted from data analysis. For each of the main themes, some sub-themes were extracted according to their semantic and conceptual similarity. "Planning ", "Motivational Factors", "Feedback", and "Assessment" were defined as sub-themes of the learner management theme. "Performance of Sport Skills" and "Cognitive and Intellectual Factors" were defined as sub-themes of the skill dimension theme. For the emotional dimension theme, sub-themes included "Creating and Expressing Emotions" and "Emotional Management". "Skill Learning Style", "Skill Content", and "Skill Transfer" were sub-themes of the teaching method and its quality theme. Finally, "Socialization Process" and "Interaction and Participation" were sub-themes of communications. Presentation of the results, output, and summary of analyses in the form of a visual model is defined as a basic pillar in inductive studies, including thematic analysis. Therefore, in Figure 1, the output of the current study is visualized [23].

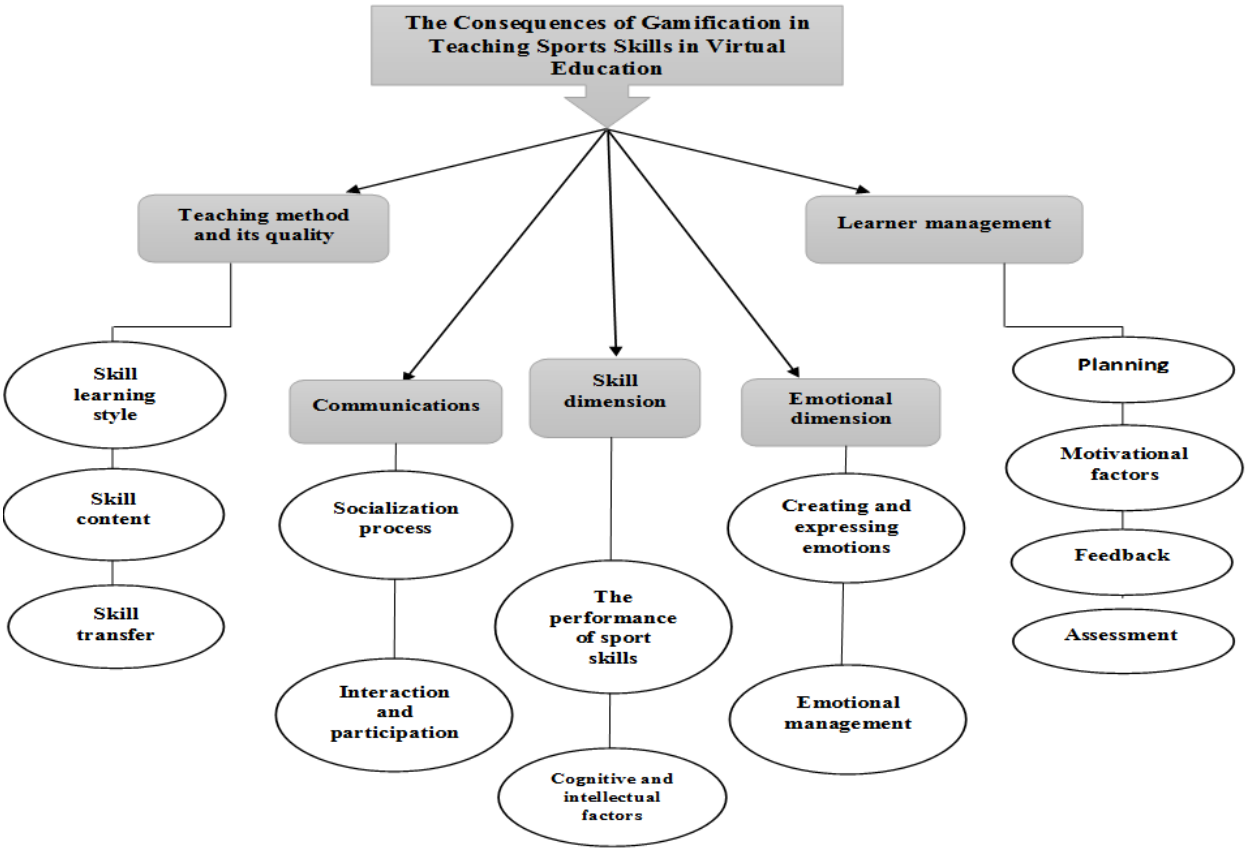

Figure 1. The graphic model of the consequences of gamification in teaching sport skills in virtual education

Figure 1 represents the research model based on the thematic analysis of data, which includes five main themes and thirteen sub-themes in the form of a model of the consequences of gamification in teaching sport skills in virtual education.

DISCUSSION

Because of technological advancements, teaching methods have evolved, with gamification impacting learning outcomes, participation, and motivation. While it's applied across various subjects, its effectiveness varies, particularly in practical physical education courses taught virtually. Exploring the outcomes of gamification in this context is crucial. This section presents and discusses the themes and sub-themes identified through thematic analysis.

Learner Management: The findings highlight "Learner Management" as a key theme in the impact of gamification on teaching sports skills in virtual education. Effective management is essential, especially in physical education courses, to ensure quality education and positive learning outcomes [25]. Learner management includes feedback, planning, and creating a motivating environment. Sub-themes like "Planning," "Motivational Factors," "Feedback," and "Assessment" are influenced by gamification. Research shows gamification improves planning, helping educators design flexible, engaging, and student-centered programs. The instructional program should be tailored to learners' needs, with clear goals and an engaging, challenging design for effective virtual sports education [25]. Oslin and Mitchell (2006) found that student-centered, game-based plans improve performance [26]. Gamification supports these instructional designs, as shown in other studies. Gamification creates student-centered, individualized instructional programs, as shown by Li et al. (2019), Acosta-Medina et al. (2011), and Pourheidari (2021) [21, 27-29]. It also makes e-learning more engaging and enjoyable, as noted by Bernik et al. (2018), Pappas (2014), and Morovati Sibani (2019) [2, 7, 30]. Killi (2006) and Toda et al. (2018) suggested that gamification clarifies educational objectives [31, 32]. Other research mentioned that gamification can improve retention, essential for performing sports movements [33, 34].

Another crucial sub-theme is "Motivational Factors". Lack of motivation is challenging in virtual sports education [34, 35]. Research showed that gamification boosts motivation, with studies by Ferriz-Valero et al. (2020), Liu and Lipowski (2021), and González et al. (2019) confirming its positive impact on student motivation in physical education [15-17]. The students may have plenty of anxiety because of evaluation and monitoring (12); This research supports previous studies, showing gamification boosts motivation, improves sport skills, and reduces anxiety. However, it contradicts Hanus and Fox's (2015) finding that gamification doesn't impact motivation [36]. Anxiety can hinder learning, but gamification increases interest and reduces anxiety in virtual sports education [34]. Recent studies showed that gamification improves learners' interest and reduces anxiety, as it helps students overcome the fear of mistakes [34, 37].

Feedback is another key aspect of learner management in gamification, essential for teaching sports skills. When learners practice sport skills, they need feedback on their performance [34]. Research highlights that timely, appropriate feedback is crucial for effective virtual physical education courses [25, 38]. Gamification enables timely, clear, and accepted feedback in virtual sports education. It also makes feedback informal, prepares learners for formal feedback, and reduces ambiguity. Recent studies confirmed these results too [31]. Frequent and continuous feedback helps learners to gain insight into their goals and control their progress [39]. Feedback in educational environments is limited then sometimes all learners can't receive feedback at the same time. Gamification can provide a combination of immediate and frequent feedback for virtual education [40].

"Assessment" is also one of the sub-themes of learner management. Rezapour and Moharramzadeh (2021) reported that assessment plays an important role in the effectiveness of teaching physical education courses and sport skills in virtual education; it should be taken into consideration and the evaluation criteria should be clear and communicated to the learners [25]. Jaberi and Barkhordar (2023) believe that flexibility in evaluation contributes to the effectiveness of teaching physical education practical courses in virtual education and should pay attention to this [22]. The research shows that gamification in virtual sports education courses provides clear assessment criteria and enables bilateral assessment. Elements like points, badges, and rewards increase participation and offer varied assessment methods [41].

The findings of this research show that education with gamification has some positive consequences for assessment. These consequences are the multi-stage and constant assessments during the learning period, the positive attitude of the student towards assessment, considering the assessment criteria based on the student's level, making the assessment helpful for the learner. The results of previous research also indicated that gamification has positive effects on evaluation. Menezes & De-Bertolli (2018) stated that with gamification in the evaluation system, differentiation is created [42]. Saleem et al. (2022) and Zainuddin et al. (2020) believe that with gamification, assessment becomes constructive, two-sided, and appropriate [39, 43].

Emotional dimension: Emotional states such as anger, a sense of competition, fear, and a desire for curiosity appear during learning, and in teaching sport skills, teachers should pay attention to emotions [34]. In learning sport skills in virtual education, students may lose control and management of their emotions partly. In virtual education, emotions such as happiness and a sense of responsibility decrease, and the feelings of fatigue and boredom increase in learners [35]. Creating, controlling, and managing different emotions are required for learning. However, the process of creating, controlling, and managing emotions in teaching sport skills in the virtual education environment faces challenges and is not implemented appropriately.

Using gamification for teaching sport skills in virtual education is one of the solutions to remove these challenges Therefore, gamification can have consequences on the emotional dimension aspect. The emotional dimension is the main theme and "Creation and Expression of Emotions" and "Emotional Management" are sub-themes of this aspect. Montesinos et al. (2019) pointed out that gamification does not pay attention to what lacks emotion and does not bring emotional experiences to learners; it relies on elements and items that evoke emotions [18].

The findings of this research show that gamification in teaching sport skills in virtual education leads to the emergence of different emotions and helps to manage the learners' emotions. Recent studies showed that different feelings occur in the learner with the gamification method and are in line with the findings of this research. Alhammad and Moreno (2018) mentioned that feelings such as curiosity, happiness, and excitement increased with gamification [44]. The results of Alabbasis's research (2017) showed that the sense of competition is created by gamification [34]. Ferriz-Valero et al. (2020), Hamzah et al. (2015), and Fernandez-Rio et al. (2020) in the field of physical education and learning sport skills concluded that with a game-based educational method, the feeling of satisfaction and enjoyment of learning increased in students [11, 16, 45]. Among the conflicting results, we can refer to Hanus & Fox's article (2015), which concluded that gamification creates negative competition and satisfaction was not created from learning [36]. Andrade et al. (2016) concluded that this learning method increases dependency [46].

Skill dimension: Every skill is a combination of perceptual-cognitive and motor factors [34]. All efforts in teaching sport skills are aimed at enabling the student to perform the learned skills correctly. Perceptual-cognitive skills such as visualization, attention, stimulus control, decision-making, situation identification, information processing, and concentration are among the things that athletes need in performing complex movement situations [47]. The quality of performance of sport skills and cognitive skills decreases in virtual education. Teaching these skills in virtual education with gamification can improve the quality of performance and create positive consequences for cognitive and intellectual skills. "The performance of Sport Skills" and "Cognitive and Intellectual Factors" are sub-themes of the skill dimension theme.

Gamification in teaching sports skills in virtual education positively impacts students' performance. It enables repeated practice, skill refinement, self-correction, assessment of abilities, and performance at various skill levels. Liu and Lipowski (2021) and Ferriz-Valero et al. (2020) stated that learners' skills improved with gamification-based education [15, 16]. In research in the field of sports, the element of the scoreboard, which is one of the elements of gamification, was used for the training of taekwondo athletes. The results showed that using this element increased the competition and stimulated the athletes to improve their skills. In addition, it motivated athletes [28]. Recent research results also showed that gamification has positive effects on Cognitive and intellectual factors. For example, Lee and Hammer (2011) believed that gamification has positive effects on the cognitive domain [48]. Gamification helps learners think about what they should do [44].
This study concludes that gamification in virtual education enhances cognitive factors, such as improved understanding, accurate skill analysis, better decision-making, and problem-solving. While recent research supports these findings, most focus on non-sport subjects, with limited attention to sports skills and physical education. Teaching sports with games can help learners develop their logical thinking skills [15]. Gaming-based learning approaches have a positive role in understanding complex learning concepts and help to understand these complex contents [16]. Through gamification, students' understanding and progress in math lessons increased [49]. Gamification can be a valuable tool for acquiring knowledge and improving skills such as decision-making and thinking power [39].

Teaching method and its quality: The teaching method should also be considered for the effectiveness of teaching practical physical education courses in virtual education [16]. The high quality of content and teaching methods can make virtual courses more attractive [22]. Teaching sport skills with the gamification method has consequences for these components; for instance, "Skill Learning Style" is one of the sub-themes of teaching and its quality and the findings of this research show that the learning style in virtual education changes with the gamification method and becomes more effective and qualitative.

This study concludes that gamification supports skill learning by integrating visual, auditory, and kinesthetic styles, promoting active and self-directed learning, and accommodating diverse student learning preferences. For example, in gamification-based education, educators can use different learning styles [50]. In gamified learning, learning does not take place in only one style. There are different learning styles, so students can choose their learning style or take advantage of all styles [13]. Teaching with the help of game elements directs learning toward active learning [37]. Gamification is used as one of the active methods of learning [40]. Saleem et al. (2018) reported

that new learning methods like gamification provide an environment that makes learning more effective and helps make learning more problem-based [39].

“Skill Content” is another sub-theme of teaching method and its quality. By applying gamification, positive consequences for the skill content are obtained. Based on the findings of this research, these consequences include providing educational content creatively and engagingly, changing the content according to the students' conditions, simplifying difficult skills and complex educational information, etc. The results of recent studies also pointed to the effect of gamification on educational content and are consistent with the findings of this research. For example, Taspinar et al. (2016) reported that making the content exciting and entertaining in e-learning is possible through gamification [51]. Some educational subjects that are not attractive in terms of content or are not easy to learn can be more attractive with the help of gamification. In addition, gamification can make learning easier for students [52].

"Skill Transfer" is also one of the sub-themes of teaching and its quality. Positive consequences are achieved for this sub-theme. Based on the findings, these consequences include having more diverse simulators in transferring skills, using visual features to transfer skills easily, facilitating the laddering and phasing of the skill transfer process, the possibility of transferring more details about the movement, transferring the rules and regulations of the sport field and its history creatively and attractively, etc. The results of recent studies also pointed to the effect of gamification on the transfer of educational information and are consistent with the findings of this research. For example, using game elements and game-based teaching methods reduces the boring moments [49]. If simulators are used in teaching, teaching becomes more effective [53]. In the process of transferring educational content through gamification, there will be more simulators compared to the traditional method [54]. With the gamification method, educational information can be presented and transmitted excitingly and practically [37].

Communications: Communication is remarkable in the learning and teaching process. One of the disadvantages of virtual education is the reduction of interactions between instructors and learners. This obstacle impacts the quality of instructor education and student learning. Communication is needed for teaching physical education and sport skills [55]. Jaberi and Barkhordar (2023) mentioned that Strengthening interaction and communication can be one of the requirements for the effectiveness of virtual education to moderate the problem of interactions in virtual education [22]. Recent studies showed that the use of gamification in education can improve the quality of communication.

"Socialization Process" and "Interaction and Participation" are sub-themes of communication, and the use of gamification in teaching sport skills in virtual education has consequences related to these sub-themes; for example, Recent studies have indicated that the use of gamification has positive effects on the social dimension of learners. Lee and Hammer (2011) pointed out that gamification in the social sphere creates positive effects [48]. Research stated that using gamification and game videos helps in cognitive development, intelligence, visualization, creativity, and social relations [18]. This study aligns with recent research, showing that gamification in virtual education positively impacts the social dimension. Benefits include fostering social groups, enhancing socialization, and shaping student identities, driven by elements like teamwork, role-playing, social sharing, characters, and badges. Kaufmann (2018) also stated that using avatars (characters) can help learners to identify themselves [56]. Costello (2017) also

pointed out that socialization enables learners to gain important information about their progress toward aims; social sharing as an element of gamification makes this important possible [57].

"Interaction and Participation" is another sub-theme of communications. The role of interaction and participation in learning and education is meaningful, it is also principal in teaching sport skills and practical courses of physical education. Some results showed that this method increases communication, participation, and interaction and creates fun in educational activities [39]. Segura-Robles et al. (2020) also believe that educational innovations such as gamification in the new millennium have caused the emergence and continuous development of educational activities focused on the participation of learners [58]. Pappas (2014) pointed out that increasing student participation and fun and mutual interaction during the process are among the advantages of this educational method [7]. Recent studies showed that the potential of this teaching method is that it helps to improve various educational indicators such as motivation, participation, and satisfaction of learners. This method can improve participation [58]. Johnson (2016) believes that if sports coaches want to increase participation, interaction, and performance for athletes, they should use strategies that motivate them, and game-based teaching can be one of these strategies [59]. Another research pointed out that the benefits of gamification are improving the interaction and participation of learners in the learning process [39]. The findings of this research about interaction and participation are in line with the results of recent studies. This study shows that gamification in teaching sports skills in virtual education enhances interaction and participation. Elements like curiosity, puzzles, challenges, social sharing, and leaderboards boost student-teacher and peer interactions, both in and outside the classroom. Gamification also encourages active participation in goals, classroom activities, and content selection through features like exploration, leveling, feedback, quizzes, and tasks.

CONCLUSION

In general, the consequences of gamification in teaching sport skills in virtual education are not limited to the satisfaction and motivation of learners. Gamification can create various consequences; the findings of this research showed this fact. The difference in this research is that it has paid attention to various aspects of gamification in teaching sport skills. This research also has limitations and conducting other research in this field can help to cover these limitations. Identifying the consequences of gamification in teaching sport skills in virtual education from the point of view of experts in physical education who had experience in using gamification for teaching practical courses of physical education was one of the limitations of this research; therefore, conducting more research by studying different statistical populations like learners, educational managers, and so on can provide a deeper understanding of the consequences of gamification in teaching sport skills and practical physical education courses. This study was done without considering the obstacles and challenges of gamification in teaching sport skills in virtual education, which is another limitation of the research; therefore, addressing the challenges and obstacles of gamification in teaching sport skills in virtual education in future studies can provide a better understanding for users. In this research, the consequences of gamification in virtual education were identified, which can be part of the limitations of this research, so studying the consequences of gamification in face-to-face education or blended learning can also contribute to the richness of research in this field.

Also, it is necessary to conduct more research on gamification in physical education. The results of this research can provide sufficient and ideal knowledge to professors, students, and administrators of physical education and sports sciences. Having a clear understanding of various aspects of this method helps teachers and administrators to make the most of the opportunities of this educational method. In addition, this research helps to develop and improve the teaching-learning process. Conducting more research in this field can make it possible and facilitate the use of new educational methods like gamification for teaching sport skills and practical physical education courses.

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REFERENCES

1. Soltaninejad M, Jaberi A, Sharifian E. Development of Technology in Sport Setting: Consequences and Results. Sport Management Journal. 2024;16(4):201-184.
2. Morovati-Sibani S. Design and Build Educational Game based on the Principles of Gamification and its Application in E-Learning: Thesis for the degree of M.Sc, Raja University 2019.
3. Khavari B. Investigating the quality of virtual education during the corona outbreak and its relationship with student empowerment: Thesis for the degree of M.Sc, Payame Noor University Qazvin center; 2021.
4. Hiranrithikorn P, editor ADVANTAGES AND DISADVANTAGES OF ONLINE LEARNING. International Academic Multidisciplinary research conference in Berlin 2019; 2019.
5. Baber H. Determinants of students' perceived learning outcome and satisfaction in online learning during the pandemic of COVID-19. Journal of Education and e-learning Research. 2020;7(3):285-92.
6. Ghasemi H, Mataruna-Dos-Santos LJ, Jaberi A, Rasekh N, Izadparast L. Sport Management Education. 2021. Andisheara press, Tehran.
7. Pappas C. The science and the benefits of gamification in eLearning. Retrived from https://elearningindustry com/science-benefits-gamification e-learning. 2014.
8. A M. Gamification: A Simple Introduction and a Bit More. (self-published on Amazon Digital Services, Kindle edition, Loc, 1405.2013.
9. Negara GPK, Wigati EK, Utomo Y, Suryapranata LKP, editors. Analysis of Gamification Models in Education Using MDA Framework. International Conference on Computer Science and Computational Intelligence; 2018.
10. Strmecki D, Bernik A, Radosevic D. Gamification in E-Learning: Introducing Gamified Design Elements into E-Learning Systems. J Comput Sci. 2015;11(12):1108-17.
11. Hamzah WMAFW, Ali NH, Saman MYM, Yusoff MH, Yacob A. Influence of gamification on students' motivation in using e-learning applications based on the motivational design model. International Journal of Emerging Technologies in Learning (iJET). 2015;10(2):30-4.
12. Malas RI, Hamtini TM. A gamified e-learning design model to promote and improve learning. International Review on Computers and Software. 2016;11(1):8-19.
13. Dehghanzadeh H, Fardanesh, H., Hatami, J., & Talaee. Effectiveness of gamification-based E-Learning environment on Students' Academic Engagement in English Language learning. Studies in Learning & Instruction. 2020;12(1):277-96.
14. Todor V, Pitica D. The gamification of the study of electronics in dedicated e-learning platforms. Proceedings of the 36th International Spring Seminar on Electronics Technology. 2013:428-31.
15. Liu T, Lipowski M. Sports gamification: Evaluation of its impact on learning motivation and performance in higher education. International journal of environmental research and public health. 2021;18(3):1267.
16. Ferriz-Valero A, Østerlie O, García Martínez S, García-Jaén M. Gamification in physical education: Evaluation of impact on motivation and academic performance within higher education. International Journal of Environmental Research and Public Health. 2020;17(12):4465.
17. González-González CS, Gómez-del-Río N, Navarro-Adelantado V. Exploring the Benefits of Using Gamification and Videogames for Physical Exercise: a Review of State of Art. Int J Interact Multim Artif Intell. 2018;5:46-52.
18. Montesinos CH, Madrona, P. G., López, Y. G., & Martín, I. P. GAMIFICATION IN PHYSICAL EDUCATION: THEORETICAL AND PRACTICAL CONCRETION. PROGRESS IN EDUCATION, 59.2019.
19. Fernandez-Rio J, de las Heras E, González T, Trillo V, Palomares J. Gamification and physical education. Viability and preliminary views from students and teachers. Physical education and sport pedagogy. 2020;25(5):509-24.
20. Parra-González ME, Segura-Robles A, Gómez-Barajas ER. Assessing gamified experiences in physical education teachers and students. IJERI: International Journal of Educational Research and Innovation. 2020;13:166-76.
21. Acosta-Medina JK, Torres-Barreto ML, Cárdenas-Parga AF. Students' preference for the use of gamification in virtual learning environments. Australasian Journal of Educational Technology. 2021;37(4):145-58.
22. Jaberi A, Barkhordar Z. Identifying the Effectiveness Requirements of Virtual Education in the Field of Sport Sciences. Research on Educational Sport. 2023;10(29):185-222.
23. Braun V, Clarke V. Using thematic analysis in psychology. Qualitative research in psychology. 2006;3(2):77-101.

24. Kvale S. Interviews: An introduction to qualitative research interviewing. . Sage Publications, Inc.1994.
25. Rezapour F, Moharramzadeh M. Developing an efficiency model for virtual educational plan of physical education in schools (Case study: COVID-19 Pandemic). Research on Educational Sport. 2021;9(23):99-128.
26. Oslin J, Mitchell S. 5.5 Game-centered approaches to teaching physical education. Physical Education. 2006;627.
27. Li S, Yamaguchi S, Sukhbaatar J, Takada J-i. The influence of teachers' professional development activities on the factors promoting ICT integration in primary schools in Mongolia. Education Sciences. 2019;9(2):78.
28. Sevinç D, Çolak M. The effect of electronic body protector and gamification on the performance of taekwondo athletes. International Journal of Performance Analysis in Sport. 2019;19(1):110-20.
29. Pourheidari M. investigation the relationship between gamification and improvement of educational level in schools, : Thesis for the degree of M.Sc, Iran University of Science and Technology Industrial Department.; 2021.
30. Bernik A, Bubaš G, Radošević D, editors. Measurement of the effects of e-learning courses gamification on motivation and satisfaction of students. 2018 41st International Convention on Information and Communication Technology, Electronics and Microelectronics (MIPRO); 2018: IEEE.
31. Kiili K. Evaluations of an experiential gaming model. Human Technology: An Interdisciplinary Journal on Humans in ICT Environments. 2006.
32. Toda AM, Valle PPH, Isotani S, editors. The Dark Side of Gamification: An Overview of Negative Effects of Gamification in Education. Higher Education for All; 2017.
33. Bell K. Game on!: Gamification, gameful design, and the rise of the gamer educator: JHU Press; 2017.
34. Wrisberg CA. Sport skill instruction for coaches: Champaign, IL : Human Kinetics; 2007.
35. Hajizadeh A, Azizi G, Keyhan G. Analyzing the opportunities and challenges of e-learning in the Corona era: An approach to the development of e-learning in the post-Corona. Research in Teaching. 2021;9(1):204-174.
36. Hanus MD, Fox J. Assessing the effects of gamification in the classroom: A longitudinal study on intrinsic motivation, social comparison, satisfaction, effort, and academic performance. Computers & education. 2015;80:152-61.
37. Yaftian N, & Abdi, H. . The Effectiveness of Teaching by Using Gamification on Mathematical Anxie-ty and Mathematical Motivation of Ninth Grade Students. Research in School and Virtual Learning. 2021;9(1):27-36.
38. Abdollahi MH, Gholami Torksaluye S, Abbasian M. Developing a model of effective factors in the effectiveness of virtual education in general physical education lessons in corona pandemic conditions. Research on Educational Sport. 2022;9(25):89-110.
39. Saleem AN, Noori NM, Ozdamli F. Gamification applications in E-learning: A literature review. Technology, Knowledge and Learning. 2022;27(1):139-59.
40. Kapp K. The gamification of learning and instruction: Game-based methods and strategies for training and education: Pfeiffer; 2012.
41. YANES N, BOUOUD I, editors. Using gamification and serious games for English language learning. 2019 International Conference on Computer and Information Sciences (ICCIS); 2019: IEEE.
42. Menezes CCN, De Bortolli R. Potential of gamification as assessment tool. Creative Education. 2016;7(4):561-6.
43. Zainuddin Z, Shujahat M, Haruna H, Chu SKW. The role of gamified e-quizzes on student learning and engagement: An interactive gamification solution for a formative assessment system. Computers & education. 2020;145:103729.
44. Alhammad MM, Moreno AM. Gamification in software engineering education: A systematic mapping. Journal of Systems and Software. 2018;141:131-50.
45. Brophy JE. Fostering student learning and motivation in the elementary school classroom. Learning and motivation in the classroom: Routledge; 2017. p. 283-306.
46. Andrade FR, Mizoguchi R, Isotani S, editors. The bright and dark sides of gamification. Intelligent Tutoring Systems: 13th International Conference, ITS 2016, Zagreb, Croatia, June 7-10, 2016 Proceedings 13; 2016: Springer.
47. Fadde PJ, Zaichkowsky L. Training perceptual-cognitive skills in sports using technology. Journal of Sport Psychology in Action. 2018;9(4):239-48.
48. Lee JJ, Hammer J. Gamification in education: What, how, why bother? Academic exchange quarterly. 2011;15(2):146.
49. Mohammadi M, Khoshneshin Z, Mohammadhasani N. Gamification with leaderboard: Effect of educational tools based on competition and cooperation in learning and approach motivation of math lesson. Technology of Education Journal (TEJ). 2022;16(2):237-48.
50. Campbell AA. Gamification in higher education: Not a trivial pursuit: St. Thomas University; 2016.

51. Taspinar B, Schmidt W, Schuhbauer H. Gamification in education: A board game approach to knowledge acquisition. Procedia Computer Science. 2016;99:101-16.
52. Batooli Z, Fahimnia F, Naghshineh N, Mirhosseini F. The Analysis and Review of the Literatures in the field of Gamification in e-Learning. Technology of Education Journal (TEJ). 2019;13(3):700-12.
53. Janighorban M, Allahdadian M, Haghani F. Simulation, a strategy for improving clinical education. 2013.
54. López-Belmonte J, Segura-Robles A, Fuentes-Cabrera A, Parra-González ME. Evaluating activation and absence of negative effect: Gamification and escape rooms for learning. International journal of environmental research and public health. 2020;17(7):2224.
55. Shafiei M. Teaching Method in Physical Education: Tehran: Shahid Rajaee Teacher Training University; 2018.
56. Kaufmann DA. Reflection: Benefits of gamification in online higher education. Journal of Instructional Research. 2018;7:125-32.
57. Costello R. Gaming Innovations in Higher Education: Emerging Research and Opportunities: Emerging Research and Opportunities. 2017.
58. Segura-Robles A, Fuentes-Cabrera A, Parra-González ME, López-Belmonte J. Effects on personal factors through flipped learning and gamification as combined methodologies in secondary education. Frontiers in Psychology. 2020;11:1103.
59. Johnson CP. Gamification in Adventure and Wilderness Sports: A literature review of game-based mechanic's ability to increase attraction, engagement, and retention in outdoor sports. The Sport Journal [Internet]. 2016;20.

پیامدهای بازیوارسازی در آموزش مهارت‌های ورزشی در آموزش مجازی

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چکیده

در سال‌های اخیر آموزش مجازی به عنوان یکی از کاربردهای مهم فناوری و شیوه‌های جدید آموزش مورد استقبال جمع کثیری از مردم در سراسر جهان قرار گرفته است و در پی آن ابزارهای کمک آموزشی متفاوتی برای این شیوه آموزشی شناسایی و مورد استفاده قرار گرفته‌اند تا بتوان از آن در آموزش حداکثر کارایی را کسب کرد و می توان اشاره کرد بازیوارسازی در آموزش مجازی یکی از این ابزارهای کاربردی می‌باشد. با توجه به موارد ذکر شده، هدف کلی این تحقیق شناسایی پیامدهای استفاده از بازیوارسازی در آموزش مهارت‌های ورزشی در آموزش مجازی است. این تحقیق یک مطالعهٔ کیفی اکتشافی بوده است که با استفاده از روش تحلیل تماتیک انجام گرفت. مشارکت کنندگان در این پژوهش، اعضای هیئت علمی با تجربهٔ آموزش دروس عملی رشتهٔ تربیت بدنی و علوم ورزشی بودند که به حوزه بازیوارسازی در آموزش نیز اشراف داشتند که با توجه به ماهیت پژوهش، 12 نفر به صورت هدفمند به عنوان نمونهٔ آماری انتخاب شدند و تا رسیدن به مرحله اشباع نظری با آنها مصاحبه شد. ابزار مورد استفاده در فرایند تحقیق، مصاحبه نیمه ساختارمند بود و جهت بررسی پایایی و روایی از مفهوم قابلیت گوبا و لینکن (1989) استفاده گردیده شد. تحلیل تماتیک داده‌ها با روش شش مر حله ای برون و کلارک (2006) منجر به استخراج 168 کد، سیزده مقوله و پنج مضمون اصلی شد. یافته‌ها نشان داد، «مدیریت فراگیر»، «بُعد مهارتی»، «شیوه تدریس و کیفیت آن»، «بُعد عاطفی» و «ارتباطات» به عنوان مضامین اصلی پژوهش (پنج مضمون اصلی) هستند. یافته‌های این پژوهش می تواند به عنوان مبنایی برای بهبود اثربخشی و کارآمدی آموزش مهارت‌های ورزشی در آموزش مجازی و نیز مبنایی برای استفاده از روش‌های نوین آموزشی، مدنظر استادان، دانشجویان و متولیان آموزش مهارت‌های ورزشی قرار گیرد.

کلمات کلیدی: بازیوارسازی، آموزش مجازی، مهارت‌های ورزشی، پیامدها

نویسنده مسئول: اکبر جابری، دانشیار گروه مدیریت ورزشی، دانشکده تربیت بدنی و علوم ورزشی، دانشگاه شهید باهنر کرمان، کرمان، ایران.
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