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# Formation of the Academic Performance and Cultural Values of Primary School Pupils Based on Online Supported Educational Games

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## Abstract

In this study, current issues related to Kazakh children's games were examined and the importance of games on Kazakhstan's culture was discussed. While determining the experimental and control groups in the study, 105 pupils from the 4th grade of two primary schools in Kazakhstan, who were determined by unbiased assignment, were assigned to 2 experimental and a control groups consisting of 35 pupils. In the study, online-based educational games in Experiment A group, online-based and face-to-face game activities in Experiment B group, and traditional teaching practice in control group were carried out. At the beginning of the study, "Traditional Kazakh Games Achievement Test", "Attitude Towards Traditional Games Scale" and "Cultural Value Perception Scale" were applied to all three groups for pre-test purposes. The data collected in line with the purpose of the study were analyzed using statistical analysis techniques appropriate to the characteristics of the data and a quantitative statistical program was used in a computer environment. The findings obtained were presented in tables. For this purpose, one-way analysis of variance (ANOVA) and Sheffe test were used. As a result of the research, pupils in experimental group A, in which online-supported educational games were applied, and in experimental group B, in which online and face-to-face educational games were applied together, achieved higher achievement levels and positive attitudes compared to the control group, which was applied traditional education.

## Introduction

Games have been used as a learning tool in education for centuries. Since ancient times, educational games and activities for both children and adults have helped develop different skills and provided a fun environment for individuals. Today, it is possible to utilize games to achieve learning goals in different fields (Dovey & Kennedy, 2006). Especially in subjects such as mathematics, science, language skills, native language etc., games not only attract pupils' interest and provide a motivating learning environment, but they can also contribute to the development of skills such as strategy development, problem solving and teamwork (Reuss & Gardulski, 2001).

Games can be social, sustaining friendship networks not only limited to virtual interactions but also in sharing hints and tips with each other for better progress, where they provide a safe environment for both winning and most importantly losing. This aspect of game-based learning to foster relationships between pupils as well as between pupils and their teachers, working together as 'partners in learning' is a key priority for developing young people's 'constructivist' learning and '21st century skills' (De Freitas, 2006; Eichenbaum, et al., 2014; Matıjanov, 2008).

Games create an environment that encourages and supports learning. They also provide opportunities for cooperation and collaboration, guarantee immediate feedback and self-reflection, and encourage competition (Marzano, 2007). Moreover, when pupils enjoy the game, they forget what they have learned because games encourage a kind of "unconscious learning". Thus, we can reduce the stress from learning and make our pupils better perceive the flow of information. Curiosity about the outcome of the game motivates pupils to the end and helps them to learn without any conscious effort on behalf of the player (Salies, 2002).

Games, which provide quick and specific feedback, have many benefits for pupils' personal development and other aspects. They help pupils learn from mistakes. Participation in games is encouraged; shy pupils can be motivated to speak up. Activities encourage cooperation, make learning more fun and pupils are more motivated. Games provide opportunities to build a bridge between school and home. They create a stress-free environment and reduce pupils' anxiety (Domínguez et al., 2013; Zeng, Parks & Shang, 2020). Games simulate various real-life situations, making pupils active in their learning. They add variety to learning situations and help teachers appeal to pupils' three different channels. Games also allow pupils to focus well enough to learn better. Games lighten more formal teaching and can help to re-energize pupils (Vukićević, et al., 2019). They help create a fun atmosphere for pupils and reduce the distance between teacher and student. Games can help improve attention span, concentration, memory, listening, speaking and reading skills. They also increase student-student communication, which allows practicing fluency and reduces the teacher's dominance over the classroom (Reinders & Wattana, 2012; Tinedi et al., 2018). Games should stimulate thinking, decision-making and actions that may or may not make the gameplay or a game enjoyable. Optimal games can engage pupils intellectually, physically and emotionally (Sharp, 2012; Yudha & Mandasari, 2021). On the other hand, educational games are games designed for both learning and entertainment. An educational game is a game in which the game experience should have an impact on people's senses, knowledge and skills. In short, an educational game can be said to be a game in which an educational content is embedded (Marzano, 2007; Krichevets et al., 1994).

In recent years, with the development of digital games and computer-based learning tools, the use of games in education has become more popular. With the advancement of technology, games have become powerful tools that can provide an interactive learning experience (Tapscott, 1998). Many educational institutions aim to enable pupils to learn more effectively and enjoyably by adopting game-based learning approaches. Such approaches encourage pupils' active participation, enable them to learn from mistakes, and support the application of learned knowledge (Anders, Briggs, Hai-Jew, Caby, & Werick, 2011).

However, there are also some important points about the use of games in education. The content of the games

should be carefully designed and support the learning objectives. Furthermore, games should only be used as a tool and should not fulfill the whole learning process. It is important that pupils have a balanced learning experience with games. For more than 20 years, video games have been developing as a source of entertainment. Clearly, major technological advances have enabled designers to create complex digital worlds with much better sound and graphics (Squire, 2003). As a result of these significant technological advances, games have been used in schools to engage pupils and make learning more interactive and fun. They are particularly effective in teaching subjects such as math and science as they can provide a hands-on and interactive way to learn complex concepts. Arts such as language and history are also presented in an engaging and interactive way through visual resources to complement the literacy-oriented aspect of these subjects (Noemí & Máximo, 2014; Schwartzman, 1997). Even though games in education have the potential to increase student engagement and motivation and improve learning outcomes, overuse of games can lead to negative side effects such as decreased attention span and lack of critical thinking, so a balanced and appropriate use of games in education is crucial to take full advantage of their advantages and minimize their shortcomings (Gee, 2003; Sharp, 2012; Imanbetov et al., 2010).

One of the key advantages of games in education is their effectiveness in increasing student motivation and engagement. Some disciplines may be perceived by many pupils as challenging, abstract and boring. Pupils are expected to learn while playing the games of the curriculum so that they can enjoy the learning experience. If fun is included in the learning process, the process will become fun, fascinating and successful. An important analysis of educational games includes the concepts of intrinsic and extrinsic motivation as two types of motivation. Extrinsic motivation is linked to rewards, but intrinsic motivation is the desire to do the activity for one's own sake because they find it fun and challenging. These two motivations can have different effects on pupils' learning outcomes; for example, pupils who play educational games are more likely to be engaged in the learning process and have a better understanding of the material compared to those who do not play games (Prensky 2003; Latypov, 2006).

Games integrate personalized learning experiences into the curriculum and through the use of adaptive learning technology, games can be tailored to the individual needs and abilities of each student. This can help to ensure that each student is working at the appropriate level and progressing at their own pace. With instant, real-time feedback from digital learning games on each player's performance, educators can use this information to modify teaching methods to better meet the unique needs of each individual student. This will lead to more targeted use of classroom instructional time and improved learning outcomes (Kirkland & O'Riordan, 2006; Peirce & Wade, 2010).

Games can also be used to teach problem-solving skills, critical thinking and collaboration; pupils understand teamwork better than those who do not play games. Games are fun and engaging, and pupils easily respond to this type of learning environment with high motivation to learn, which is integral to a beneficial education. When played in pairs or groups, games have the effect of giving pupils confidence in numbers. It is almost impossible to sit idly by and not get involved in the games. They are naturally drawn to each other and bond in the relaxed competitive environment of play - inspiring learning through games as a social need. Games can help integrate pupils and foster a collaborative and social learning environment. For example, strategy games can help pupils

learn to think ahead and plan for multiple outcomes, while role-playing games can teach communication and teamwork (Huitt, 2004; Krijn et al., 2004).

Although there are many positive aspects of gaming in education, there are also negative aspects. One of the main concerns is that excessive gaming can lead to addiction, negatively affecting the overall well-being of the student, including academic performance (Rooji et. al, 2011). Video games provide attractive, addictive features of competition and excitement that make them popular leisure activities for teens and young adults (Toto & Limone, 2022). Consequently, these players will stop at nothing to progress through the levels of the game. While in-game environments often make users feel valued, helpful and at home, there is a desire to participate in the game in order to feel important. This is often seen in people who lack social enjoyment; as a result, playing video games becomes the focal point of their social life and boosts their self-esteem. Research has shown that excessive gaming can lead to lower academic achievement as well as physical and mental health problems such as depression, anxiety and sleep disorders (Rooji et. al, 2011).

Educators can learn from video games on how to improve learning environments by giving pupils more say over the learning process, setting clear goals, challenging them, encouraging collaboration, using criterion-referenced assessments, and adding novelty to the environment. Well-designed learning environments utilize many of these design elements to put learners in a state of "flow". Educational strategies such as problem-based learning environments, case-based reasoning, learning through participation in communities of practice, or inquiry-based learning all put learners in active roles as they pursue goals that are important to them (Squire, 2003; Ke, 2008).
Online educational games have gained popularity in recent years and can play a role in shaping pupils' learning experiences and values. The formation of primary school pupils' academic performance and cultural values can be influenced by various factors, including online educational games (Prensky, 2001). There are several ways in which online educational games can influence primary school pupils' academic performance and cultural values:
Engagement and Motivation: Online educational games have the potential to engage and motivate pupils to learn. These games often contain interactive and immersive elements that make learning enjoyable and fun. When pupils are actively engaged in the learning process, they are more likely to perform better academically (Kunanbayuli, 2020).

*Skill Development:* Educational games can help develop various academic skills such as problem solving, critical thinking, logical reasoning, and mathematics. By presenting content in a game-like format, pupils can practice and apply these skills in a practical and engaging way. This can positively impact their academic performance and promote a growth mindset (Çeredniykova, 2002).

*Cultural Awareness:* Many online educational games are designed to introduce pupils to different cultures, traditions and perspectives. By exploring different content and interacting with characters from diverse backgrounds, pupils can develop a greater understanding and appreciation of different cultures. This can contribute to the formation of positive cultural values by promoting cultural sensitivity, empathy and respect (Akanov, 2004).

*Cooperation and Communication:* Some online educational games provide opportunities for cooperation and communication among pupils. These games often involve teamwork and collaborative problem solving and encourage pupils to work together and communicate effectively. By interacting with their peers, pupils can develop social skills, learn to respect others' opinions and appreciate the value of teamwork (Matıjanov, 2008).
Self-Directed Learning: Online educational games can promote self-directed learning as pupils often have the freedom to explore and make choices in the game environment. This can help them develop skills such as self-regulation, time management and independent problem solving. By taking ownership of their own learning, pupils can improve their academic performance and develop a sense of responsibility (Pokrovskiyy, 1994).

*Ethical and Moral Values:* Online educational games can also be designed to incorporate ethical and moral dilemmas by providing pupils with choices that require them to consider the consequences of their actions. By engaging in such scenarios, pupils can develop ethical reasoning, empathy, and honesty, which are important cultural values (Imanbetov et al., 2010). Although online educational games have positive effects on pupils' academic performance and cultural values, it is clear that they should be used in combination with other teaching methods and resources. The role of teachers and parents in guiding pupils' experiences with online educational games is crucial to ensure that these games are effectively integrated into the overall educational process (Akman, Tütünsatar, & Yetişen, 2022; Demirbilek et al., 2021; Lee, 2021; Millis & Cottell, 1998; Zeren-Akbulut, 2021).

The rapid development and reform of education and science in Kazakhstan is fully in line with global and international trends and national goals, and the development of science and education is closely linked to the need for greater global integration in these fields (Seitenova, 2014; Turebayeva et al., 2020). Kazakhstan's education system has already become an important part of the educational arenas both in Europe and in the world. On the other hand, in the background of the concept of games in the Kazakh people is the whole folklore, that is, not only oral literature, but also tradition, everyday life, beliefs. Games have served as social education for centuries. The famous scientist E. Sagındıkov, in his scientific researches, emphasized that games not only increase the physical strength of young people and give them qualities such as agility, agility, marksmanship, but also contribute to the mental growth and maturation of young people (Sagındıkov, 1991). Cultural value judgments can be taught to children and passed on to future generations through children's games. Children's games should be researched and the data obtained should be re-processed according to today's child structure. Considering that the power of the media is very effective on children today, this effect should be supported by children's games and values should be taught by reflecting them in cartoons. In order to prevent the next generation from gradually moving away from children's games, interesting games should be processed effectively in the media or educational institutions (Knissarina et al., 2016). Since children's games are an important part of social progress and development, these games should be brought into children's lives more by conducting interdisciplinary studies on games. The philosophical aspects of Kazakh children's games should also be re-examined and adapted to today's world of thought (Akanov, 2004). In this context, this study examines the current issues related to Kazakh children's games and discusses the importance of games on Kazakhstan's culture.

According to Asemkulov (2013), Kazakh children's games are divided into four groups:

*1- "Lullabies, Finger, Finger" (for children up to one-year-old):* This category includes games and

activities aimed at attracting the attention of babies and toddlers. Lullabies, finger plays and rhymes are commonly used to soothe and entertain babies. These activities often involve gentle movements, songs and interactions with the child, supporting their cognitive development and strengthening the bond between child and caregiver (Isabayeva, 2008).

*2- Play with a variety of toys:* As children grow older, they start to play with toys. This category covers a wide range of activities involving different types of toys such as dolls, stuffed animals, building blocks and puzzles. These games can encourage creativity, imagination, problem-solving skills and fine motor development. Children can play pretend play, build structures, solve puzzles or engage in storytelling with their toys (Asemkulov, 2013).

*3- Adolescent play:* As children enter their teenage years, their games and activities tend to become more complex and socially oriented. This category includes games played among peers, such as board games, card games, sports and various group activities. These games encourage social interaction, teamwork, strategic thinking and healthy competition. They also provide adolescents with opportunities to develop friendships, negotiate rules and learn to cooperate (Imanbetov et al., 2010).

*4- Outdoor games:* This category includes games played outdoors, typically in open spaces or playgrounds. These games usually involve physical activity, running, jumping and coordination. Examples of outdoor games include traditional Kazakh games such as "Kokpar" (a game played on horseback), "Togyzkumalak" (a board game played with stones), or other games such as tag, hide and seek, and various team sports. Outdoor games contribute to children's physical development, endurance and general well-being (Uali, 2007).

These categories are not exclusive and children may engage in games from different groups depending on their age, interests and cultural context. Moreover, the specific games played may vary across regions and individual preferences (Sultanova & Shaigozova, 2014). Kazakh children have a rich national tradition of games, especially when it comes to outdoor activities. The most common outdoor games are as follows:

*Equestrian Competitions:* Kazakhstan has a deep-rooted equestrian tradition and horse riding plays an important role in Kazakh culture. Equestrian competitions for children can include horse races where young riders showcase their skills and compete in speed and agility (Yelemanova, 2012).

*Kokpar:* Kokpar is a traditional Kazakh game involving two teams on horseback. It is often called "goat dragging" or "goat polo". In this game, participants compete to grab a goat carcass or a specially designed ball and try to score by throwing it into the opponent's goal. Kokpar is an exciting and fast-paced game that showcases horsemanship, strength and teamwork. Kokpar teams have been formed in Astana, Almaty and 14 regions of Kazakhstan among adults, youth and juniors. Republican kokpar championships and tournaments are held according to the annual calendar plan approved by the Ministry of Culture and Sports of the Republic of Kazakhstan (Mankeeva, 2008).

*Altybakan:* Altybakan is a traditional Kazakh game of tug of war. It involves two teams pulling a rope, each trying to force the other team to cross a designated demarcation line. This game tests participants' strength, coordination and teamwork (Kuznetsov et al., 2017).

*Audaryspak:* Audaryspak, one of the games of Asian peoples, is called "er alış", "er eniş" by Uzbeks, Tajiks and Kyrgyz. Two horsemen try to lower each other. Audaryspak is a national sport that requires

high endurance, strength, agility and courage. In traditional audaryspak, players compete in a dueling game regardless of their weight category (Kim-Kimen and Kuznetsova, 2018).

*Aigolek:* Aigolek is a traditional Kazakh game played with a long stick. Participants stand in a circle and take turns throwing the stick towards a target, typically a small hole or a designated spot on the ground. The aim is to land the stick as close to the target as possible. Aigolek encourages precision, accuracy and concentration (Dmitrieva and Mikhailova, 2015).

To sum up, there are several opportunities for incorporating games into education. Games can be a valuable tool to improve student engagement, motivation and learning outcomes in the classroom (Kuznetsov et al., 2017). However, it is important to note that overuse of games in education can lead to negative side effects such as addiction, lack of critical thinking, and poor academic performance. This can affect pupils' overall performance and progress in the long run (Gunter, et al., 2006; Uali, 2007). Therefore, it is important to use games in education in a balanced and appropriate way and to consider their possible negative effects when implementing them in the classroom. In this context, the study examined the effects of online supported educational games on pupils' academic achievement, attitudes and perceptions towards cultural values in the sample of 4th grade middle school pupils. In this context, answers to the following questions were sought in the study:

- Is there a significant difference between the academic achievement of the pupils in the groups in which online-supported, online + face-to-face educational games and traditional instruction were applied?
- Is there a significant difference between the attitudes of the pupils in the groups in which online-supported, online + face-to-face educational games and traditional teaching were applied?
- Is there a significant difference between the cultural value perceptions of the pupils in the groups in which online-supported, online + face-to-face educational games and traditional teaching were applied?

## Method

### Research Model and Study Group

In the study, using the experimental design of quantitative method with pre-test-post-test control group (McDonough, 2017), the effect of online supported educational games on the achievement, attitudes towards activities and cultural values of 4th grade middle school pupils was tried to be determined. While determining the experimental and control groups in the study, Cluster Analysis was performed according to the pupils' course grades one year ago. Cluster Analysis is used to classify grouped data. In other words, Cluster Analysis is a statistical method in which similar characteristics between individuals or objects are identified and classified accordingly. In this study, while determining the groups, the "k" set of averages method is used in non-hierarchical clustering, which is one of the types of cluster analysis. In this method, the number of clusters is decided first. In this clustering method, which stands out as a reliable method, clusters formed according to similar characteristics are reached

In this study, as a result of the clustering analysis performed with the triple assignment of the k-means cluster method, 35 of the 105 pupils were included in the first cluster, 35 in the second cluster and 35 in the third cluster. Accordingly, three equivalent groups were formed. Two of the groups were selected as the experimental group

and one as the control group. In this context, 4th grade pupils of a primary school in Yerkin Village were assigned to experimental group A. The 4th graders of a Gymnasium school in Taldykorgan settlement were selected as Experimental Group B, and finally, the other branches of the schools in Taldykorgan and Yerkin were selected as the control group. Afterwards, the number of pupils in the three groups was kept equal according to their attendance and participation in the lessons during the research process, and the research was carried out with 105 pupils in total. The characteristics of the experimental and control groups formed as a result of these studies and the functioning of the experimental process in the groups are as follows:

*Experimental Group A:* It is the group in which teaching with online-based educational games was applied. It includes 35 pupils from middle school 4 grades in Yerkin Village in Kazakhstan in the 2022-2023 academic year. Eighteen of the pupils were boys and 17 were girls. In Experimental Group A, educational games were taught through online education. In this context, pupils collected video recordings and information about Kazakh children's games and Kazakh National Games from Wikis, Web logs, other social networks such as YouTube, Web 2.0 environments and online websites. Pupils were allowed to form groups. In this context, groups were formed by the number of educational games (Outdoor games, Equestrian competitions, Kokpar, Altybakan, Aigolek, Intellectual game, Togyzkumalak and Asyks educational game groups). The groups were asked to compile Wikis, Web logs, social media and online video recordings for the online supported educational games they would create until the following week. In the following two weeks, the groups made online and computer-assisted presentations about their educational games. After the online presentations, in-class and inter-group discussions were held and feedback was provided. In the last week of the experimental application, the teacher of the course organized a discussion and question and answer activities in the classroom environment about the experiences experienced during the online and digital preparation of Kazakh educational games.

*Experimental Group B:* It is the group in which blended teaching with online education and face-to-face educational games was applied. It includes 35 pupils studying in the 4th grade of a Gymnasium primary school in Taldykorgan settlement in Kazakhstan in the 2022-2023 academic year. Seventeen of the pupils were boys and 19 were girls. In Experimental Group B, face-to-face game activities were carried out in addition to online supported applications. In this context, pupils collected video recordings and information about Kazakh children's games and Kazakh National Games from Wikis, Web logs, other social networks such as Youtube, Web 2.0 environments and online websites. In this context, groups were formed by the number of educational games. The groups of pupils first created internet research, web content and video recordings related to their game genre. Then, after the weekly digital game presentations, three different game activities, one warm-up game, one moving game and one relaxing game, were played in the classroom and in the school garden. These game activities were shaped in accordance with the learning outcomes.

*Control Group:* It is the group in which traditional teaching of educational games was applied. The activities in the control group consisted of a total of 35 pupils, 18 from the 4th grade of a Gymnasium primary school in Taldykorgan settlement in Kazakhstan and 17 from the primary school in Yerkin Village in the 2022-2023 academic year. The experimental design of the study is presented in Table 1. In the control group, Kazakh Children's Games and Traditional Kazakh Games were taught by the teacher with the method of teaching through

presentation. The experimental design of the research is given in Table 1.

Table 1. Experimental Design of the Study

| Groups | Before the experiment | | After the experiment |
|---|---|---|---|
| Experimental Group A | Traditional Kazakh Games Achievement Test<br>Attitude Scale towards Traditional Games<br>Cultural Value Perception Scale | Online Based Educational Game Activity | Traditional Kazakh Games Achievement Test<br>Attitude Scale towards Traditional Games<br>Cultural Value Perception Scale |
| Experimental Group B | Traditional Kazakh Games Achievement Test<br>Attitude Scale towards Traditional Games<br>Cultural Value Perception Scale | Online and Face-to-Face Game Activity Implementation | Traditional Kazakh Games Achievement Test<br>Attitude Scale towards Traditional Games<br>Cultural Value Perception Scale |
| Control Group | Traditional Kazakh Games Achievement Test<br>Attitude Scale towards Traditional Games<br>Cultural Value Perception Scale | Traditional Teaching | Traditional Kazakh Games Achievement Test<br>Attitude Scale towards Traditional Games<br>Cultural Value Perception Scale |

At the beginning of the study, "Traditional Kazakh Games Achievement Test", "Attitude towards Traditional Games Scale" and "Cultural Value Perception Scale" were applied to all three groups for pre-test purposes. At the end of the experimental procedures carried out throughout the research process, the scales were reapplied to all three groups for post-test purposes. The experimental procedures related to the research were completed in a total of 5 weeks. The subjects planned to be taught were carried out simultaneously and in parallel in all three groups and were completed at the same time.

**Data Collection Tools**

*Achievement Test*

The academic achievement test was prepared by the researcher to measure middle school 4th grade pupils' prior knowledge about "Traditional Kazakh Games" and their academic achievement at the end of the research. The trial form consisting of 30 questions was applied to a total of 120 pupils in two official primary schools in 2022, which were not included in the study but had similar characteristics with the study group. From the data obtained, the KR-20 reliability coefficient of the test was 0.71. As a result of these calculations, the items with low reliability were removed from the test and the 25-item academic achievement test was finalized. The KR-20 reliability coefficient of the 25-item academic achievement test was determined as 0.86.

*Attitude Scale towards Traditional Games*

The "Attitude Scale", in which pupils' attitudes towards the activities and traditional Kazakh games were evaluated, was developed and collected by the researchers. Consisting of 20 items, the Attitude Scale includes items related to traditional games and activities in the course. The construct validity of the scale was tested by exploratory factor analysis. As a result of the analysis, it was seen that the attitude scale had a unidimensional structure. This unidimensional structure explained approximately 53.9% of the variance in the attitude towards the course. The reliability coefficient of the scale was found to be 0.82 in the test sample. In this study, the reliability coefficient of the measurement tool was calculated by Cronbach Alpha method and the reliability coefficient of the test was found to be 0.88. The items in the Attitude Scale were evaluated with a five-point scale expressed as "strongly agree" (5), "agree" (4), "undecided" (3), "disagree" (2) and "strongly disagree" (1). Accordingly, in the data obtained, the options of the positive items were coded with a value from 5 to 1 respectively, and the options of the negative items were reversed and coded with a value from 1 to 5 respectively. "The high mean score obtained from the attitude scale was indicated as an indicator of positive attitudes, while the low mean score was indicated as an indicator of the most negative attitudes.

*Cultural Value Perception Scale*

In order to create the items of the Attitudes towards Cultural Values Scale, firstly, a literature review on the subject was conducted. In addition, the theoretical framework on the subject was examined in detail. The items of the Attitude towards Cultural Values scale were designed and written by taking into account the items of previously prepared attitude scales. Before the validity and reliability study, a draft form of the scale consisting of 25 items was created. Expert opinions were obtained from three field experts and one measurement and evaluation expert for the items in the draft form. According to the expert opinions, 7 items were removed from the draft form and a trial form consisting of 18 items was created.

The validity and reliability studies of the scale were carried out by applying the trial form to 168 people. Exploratory and confirmatory factor analyses were applied to examine the construct validity of the Attitude towards Cultural Values Scale used for the purpose of the study. Before the exploratory factor analysis, it was examined whether the sample size was sufficient and the data were suitable for factorization. In this direction, KMO (Kaiser-Meyer-Olkin Measure) value was calculated and Barttles Sphericity Test was performed. As a result, the procedures performed before factor analysis showed that the sample size was sufficient and factor analysis could be performed. After the necessary assumptions were met, exploratory factor analysis was conducted. With the application of factor analysis, 1 factor with an eigenvalue greater than 1 was formed. As a result of the factor analysis, 3 items were removed and it was understood that there were 15 items in the scale. Considering the common features of the items in the factor, the scale was named as attitude towards cultural values. The factor loadings of the items in the scale took values between 0.51-0.78, respectively. The variance explained by this factor was calculated as 56.5%. The internal consistency coefficient (Cronbach Alpha) of the scale was calculated as .86.

**Data Analysis**

The data collected in line with the purpose of the study were analyzed using statistical analysis techniques appropriate to the characteristics of the data and a quantitative statistical program was used in a computer environment. The findings obtained were presented in tables. For this purpose, one-way analysis of variance (ANOVA) and Sheffe test were used. The significance level was taken as .05.

## Findings

Comparisons of the pre-test scores of the experimental and control groups in the study are shown in Table 2-4, and the analyzes performed on the post-test scores are shown in Table 5-7.

Table 2. Analysis of Variance Results between the Pretest Achievement Scores of the pupils in the Experimental and Control Groups

| | Groups | N | Mean | Std. Deviation | F | p |
|---|---|---|---|---|---|---|
| Pre-Achievement | Experimental A | 35 | 9.86 | 4.33 | 0.012 | 0.989 |
| | Experimental B | 35 | 9.91 | 4.00 | | |
| | Control | 35 | 9.97 | 4.74 | | |
| | Total | 105 | 9.91 | 4.33 | | |

Table 2 shows the distribution of the scores obtained by the experimental and control groups from the achievement test applied as a pretest. The mean of Experimental Group A was 9.86 with a standard deviation of 4.33; the mean of Experimental Group B was 9.91 with a standard deviation of 4.00; and the mean of the control group was 9.91 with a standard deviation of 4.74. The fact that the means and standard deviations of the groups were very close to each other in the pre-test in terms of achievement proves the equivalence of the groups. The fact that the standard deviations are low and close to each other shows that the groups are homogeneous. The pre-knowledge levels of the middle school pupils participating in the study in terms of traditional Kazakh games are very close to each other. The variance analysis value (F) between the groups' pre-test achievement score averages was calculated as 0.012. According to this value, there is no significant difference between the groups in terms of pretest achievement ($p>0.05$). It is noteworthy that the result of the analysis of variance was very low.

Table 3. Analysis of Variance Results between the Pretest Attitude Scores towards Traditional Kazakh Games and Activities of the Pupils in the Experimental and Control Groups

| | Groups | N | Mean | Std. Deviation | F | p |
|---|---|---|---|---|---|---|
| Pre-Attitude | Experimental A | 35 | 3.06 | 0.87 | 0.086 | 0.918 |
| | Experimental B | 35 | 3.09 | 0.89 | | |
| | Control | 35 | 3.14 | 0.88 | | |
| | Total | 105 | 3.10 | 0.87 | | |

Table 3 shows the distribution of the scores obtained by the experimental and control groups from the attitude

towards activities scale applied as a pretest. The mean of the Experimental A group was 3.06 with a standard deviation of 0.87; the mean of the Experimental B group was 3.09 with a standard deviation of 0.89; and the mean of the control group was 3.14 with a standard deviation of 0.88. The fact that the means and standard deviations of the groups were very close to each other in the pre-test in terms of attitudes towards the activities proves the equivalence of the groups. The attitudes of the middle school pupils participating in the study towards the activities related to traditional Kazakh games before the experimental procedures were very close to each other. The variance analysis value (F) between the mean scores of the groups was calculated as 0.086. According to this value, there is no significant difference between the groups in terms of pre-test attitudes ($p>0.05$).

Table 4. Analysis of Variance Results between the Pretest Perception of Cultural Values Scores of the pupils in the Experimental and Control Groups

| | Groups | N | Mean | Std. Deviation | F | p |
|---|---|---|---|---|---|---|
| Pre-Value | Experimental A | 35 | 3.06 | 0.97 | 0.065 | 0.937 |
| | Experimental B | 35 | 3.00 | 1.00 | | |
| | Control | 35 | 3.09 | 1.07 | | |
| | Total | 105 | 3.05 | 1.00 | | |

Table 4 shows the distribution of the scores obtained by the experimental and control groups from the perception of cultural values scale applied as a pre-test. The mean of the Experimental A group was 3.06 with a standard deviation of 0.97; the mean of the Experimental B group was 3.00 with a standard deviation of 1.00; and the mean of the control group was 3.09 with a standard deviation of 1.97. The fact that the means and standard deviations of the groups were very close to each other in the pre-test in terms of perception towards cultural values proves the equivalence of the groups. The cultural perception levels of the middle school pupils participating in the study were very close to each other before the experimental procedures of the study. The analysis of variance value (F) between the groups' pre-test cultural value perception mean scores was calculated as 0.065. According to this value, there is no significant difference between the groups in terms of pre-test perception of cultural values ($p>0.05$).

Table 5. Analysis of Variance Results between the Posttest Achievement Scores of the pupils in the Experimental and Control Groups

| | Groups | N | Mean | Std. Deviation | F | P |
|---|---|---|---|---|---|---|
| Post-Achievement | Experimental A | 35 | 15.31 | 4.32 | 3.939 | 0.022 |
| | Experimental B | 35 | 15.51 | 4.26 | | |
| | Control | 35 | 12.94 | 4.21 | | |
| | Total | 105 | 14.59 | 4.38 | | |

Table 5 shows the distribution of the scores obtained by the experimental and control groups from the achievement test applied as a post-test after the experimental procedures of the research. The mean of the Experimental A group was 15.31 with a standard deviation of 4.32; the mean of the Experimental B group was 15.51 with a standard deviation of 4.26; the mean of the control group was 12.94 with a standard deviation of 4.21. In terms of

achievement in Kazakh traditional games, the mean and standard deviations of the groups in the post-test were quite different. The analysis of variance value (F) between the mean post-test achievement scores of the groups was calculated as 3.939. According to this value, there was a significant difference between the groups in terms of post-test achievement ($p<0.05$). As a result of further analysis with Scheffe test, it was seen that the pupils in Experiment A and Supervision B groups achieved a higher level of success in the post-test compared to their peers in the control group. According to this finding, we can say that Experimental Group A, which received online-supported instruction, and Experimental Group B, which received online + blended instruction, achieved high achievement levels at the end of the research experimental procedures.

Table 6. Analysis of Variance Results between Posttest Attitudes towards Traditional Kazakh Games and Activities Scores of Pupils in Experimental and Control Groups

| | Groups | N | Mean | Std. Deviation | F | P |
|---|---|---|---|---|---|---|
| Post-Attitude | Experimental A | 35 | 3.86 | 0.85 | 4.842 | 0.010 |
| | Experimental B | 35 | 3.80 | 0.93 | | |
| | Control | 35 | 3.29 | 0.75 | | |
| | Total | 105 | 3.65 | 0.88 | | |

Table 6 shows the distribution of the scores obtained by the experimental and control groups from the attitude scale applied as a post-test after the experimental procedures of the research. The mean attitude score of the Experimental A group was 3.86 with a standard deviation of 0.85; the mean score of the Experimental B group was 3.80 with a standard deviation of 0.93; the mean score of the control group was 3.29 with a standard deviation of 0.75. In terms of attitudes towards the activities on Kazakh traditional games, the mean and standard deviations of the groups in the post-test were quite different. The analysis of variance value (F) between the post-test attitude mean scores of the groups was calculated as 4.842. According to this value, a significant difference was found between the groups in terms of post-test attitudes ($p<0.05$). As a result of further analysis with Scheffe test, it was seen that the pupils in Experiment A and Experiment B groups had more positive attitudes in the post-test compared to their peers in the control group. According to this finding, we can say that Experimental Group A, which received online supported instruction, and Experimental Group B, which received online + blended instruction, developed high and positive attitudes towards the activities at the end of the research experimental procedures.

Table 7. Analysis of Variance Results between the Posttest Perceptions of Cultural Values Scores of the pupils in the Experimental and Control Groups

| | Groups | N | Mean | Std. Deviation | F | p |
|---|---|---|---|---|---|---|
| Post-Value | Experimental A | 35 | 3.77 | 0.84 | | |
| | Experimental B | 35 | 3.74 | 0.70 | 0.733 | 0.480 |
| | Control | 35 | 3.54 | 1.01 | | |
| | Total | 105 | 3.69 | 0.86 | | |

Table 7 shows the distribution of the scores obtained by the experimental and control groups from the perception

of cultural values scale applied as a post-test after the experimental procedures of the research. The mean cultural value perception score of the Experimental A group was 3.77 with a standard deviation of 0.84; the mean score of the Experimental B group was 3.74 with a standard deviation of 0.70; and the mean score of the control group was 3.54 with a standard deviation of 1.01. The analysis of variance value (F) calculated between the post-test cultural value mean scores of the groups was 0.733. According to this value, there was no significant difference between the groups in terms of post-test perception of cultural values ($p>0.05$). Although an increase was observed in the post-test cultural value perception scores of all pupils, no significant difference was found between the groups.

## Discussion and Conclusion

In this study, the effects of online-supported educational Kazakh games on pupils' achievement, attitudes towards activities and cultural value perceptions were examined. According to the first finding of the study, the pupils in Experimental Group A, where online supported educational games were applied, and Experimental Group B, where online and face-to-face educational games were applied, achieved a higher level of achievement compared to the control group, where traditional teaching was applied. These findings support the results of studies conducted by Gee (2003), Kirriemuir and McFarlane (2004), Linderoth, Lantz-Andersson and Lindström (2002), Steinkuehler (2004) and Whelan (2005). Whelan (2005) emphasized that game-based learning provides important gains for pupils to achieve the outcomes in the lessons. In this context, according to Gee (2003), who predicts that the use of games in schools will increase, the real importance of well-designed computer and video games is that pupils recreate themselves in the virtual worlds within the games and that both fun and learning can be achieved simultaneously. Kirriemuir and McFarlane (2004) emphasize that games increase pupils' achievement by providing important gains such as strategic thinking, planning, communication and decision making. Educational games have functioned as an effective teaching method that concretizes abstract concepts, makes the learning environment enjoyable, increases the comprehensibility of concepts, provides learners with an active learning environment, and develops pupils' abilities and skills. In activities based on traditional Kazakh educational games, pupils were at the forefront and involved in the teaching themselves, participating in the process with all their senses, learning by doing and experiencing, and learning provided permanence.

The other variable addressed in the research is the effects of the practices carried out in the experimental and control groups on pupils' attitudes towards in-class activities. According to the findings of the study, pupils in the groups in which online supported game activities and online + face-to-face game activities were applied exhibited higher and more positive attitudes towards in-class activities compared to their peers who received traditional instruction. These findings are similar to the results of studies conducted by Bressler & Bodzin (2013), Ebner & Holzinger (2007), Lim, Nonis, & Hedberg (2006), Liao et al. (2011), Papert (1994), Wang et al. (2006), and Zing (2019). According to Papert (1994), computer-supported educational games have become a phenomenon that attracts children like a kind of toy activity. By using this toy to test ideas within the framework of predetermined rules and structures, children can learn by increasing their interest in various subjects.

Research has shown that when middle and high school pupils are in environments where online games and online

tools are used, their skills and confidence in the use of these tools increase and their motivation for course activities increases (Wang, Poole, Harris, Wangemann, 2001). The most prominent feature of educational games, whether online or face-to-face, is that they create a learning environment in which pupils participate willingly and enthusiastically. Online and face-to-face educational games also contributed to the formation of affective learning products by providing spiritual satisfaction and fun for pupils. Educational computer games are not just a game. Computer games are software that help individuals learn and reinforce existing knowledge while having fun (Jantakoon & Jantakun, 2021). Educational computer games increase pupils' motivation (Huang, Kuo & Chen, 2020) and are the easiest method that enables them to learn on their own and take responsibility while learning. Pupils participate voluntarily without any pressure or coercion (Huang, Hew, & Lo, 2019).

It has been found that the structured and integrated implementation of two active learning methods (online and face-to-face educational games) is more effective in increasing pupils' motivation towards activities and developing their social skills compared to their independent implementation at certain stages of the lessons. In this respect, it is very important to integrate online and face-to-face educational games with a mixed method. Lessons involving cultural phenomena have a feature that includes abstract subjects in terms of content and is suitable for directing pupils to memorization. In cases where technology-supported educational games are designed and the student is active, it can be ensured that they establish a meaningful connection to the subjects that cannot be learned or are difficult to learn. Thus, pupils' interest, desire and motivation towards traditional games and activities in the course can be increased.

The last variable addressed in the research is the effects of online, online + face-to-face educational game activities and traditional teaching practices on pupils' cultural value perceptions. According to the research findings, there was no significant difference in the cultural value perceptions of the groups after the experimental procedures. The short duration of the experimental process (5 weeks) may have been effective in this result. However, in the post-test application of the cultural value perception scale, the pupils of Experimental Group A and Experimental Group B received high scores, albeit partially. Squire (2006) argued that technology-supported educational games stimulate social and cultural perception, which in turn increases cultural value perception, history awareness, and social communication awareness. As a part of the existence of societies from past to present, play is an activity that continues to be transferred from generation to generation and from culture to culture in change and development. Through educational games, it is seen that children learn what the social rules are, as well as emotions such as winning, losing, leadership, cooperation, respect and empathy. These concepts that children learn through games will teach them to adapt and respect the social rules and cultural values that they will encounter in every period of their lives.

As a result, it was seen that pupils approached the use of educational games in lessons positively and preferred game-based learning to classical learning methods (such as reading from books, listening to the teacher). In this study, the educational game made a great contribution in attracting pupils' already existing interest in computers and games to the lesson and increased their motivation towards the Social Studies course. Moreover, pupils stated that they would prefer the use of such environments in other courses that they dislike. With the reflection of scientific and technological developments on education, traditional education has been replaced by innovative,

contemporary education. Constructivist understanding has replaced the rote memorization based, teacher-centered and student passive moments of work. A student-centered system has been adopted in education, and the opportunity for self-learning and discovery has been offered by taking into account the curiosity and creativity of the child. The most effective and helpful method in implementing these activities is play. The child will have the opportunity to assimilate information through play and transfer old learning and will learn more easily.

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