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THE ADVANTAGES OF DIDACTIC MUSICAL GAMES AS A METHOD OF TEACHING YOUNGER STUDENTS: AN EXPERIMENTAL STUDY

LAS VENTAJAS DE LOS JUEGOS MUSICALES DIDÁCTICOS COMO MÉTODO DE ENSEÑANZA PARA LOS ALUMNOS MÁS JÓVENES: UN ESTU-

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ABSTRACT

The study aims to theoretically substantiate and empirically test the effectiveness of using didactic musical games as a means of teaching primary school students at music lessons and identify the advantages of this method compared to the traditional ones. The main conclusion of the paper is that comparative analysis of experimental results shows significant shifts in the development of musicality in primary school students from a school that has deployed didactic musical games. Overall, more primary school students show a high level of development of musicality after the implementation of didactic musical games. The study results demonstrate the effectiveness of developing musicality in primary school students through didactic musical games and the appropriateness of their use in music lessons in primary schools. A great advantage of games is that this type of work is enjoyed by primary school students and can be organized in a way that would meet the objective of ensuring students' musical education, upbringing, and development. The dynamic of the development of students' musicality is more pronounced when didactic musical games are implemented.

Keywords:

Music teaching, development of musicality, educational entertainment, game technology.

RESUMEN

El estudio tiene como objetivo fundamentar teóricamente y probar empíricamente la efectividad del uso de juegos musicales didácticos como medio para enseñar a estudiantes de primaria en clases de música e identificar las ventajas de este método en comparación con los tradicionales. La principal conclusión del trabajo es que el análisis comparativo de los resultados experimentales muestra cambios significativos en el desarrollo de la musicalidad en estudiantes de primaria de una escuela que ha desplegado juegos musicales didácticos. En general, más estudiantes de primaria muestran un alto nivel de desarrollo de la musicalidad después de la implementación de juegos musicales didácticos. Los resultados del estudio demuestran la eficacia del desarrollo de la musicalidad en alumnos de primaria a través de juegos musicales didácticos y la idoneidad de su uso en las clases de música en escuelas primarias. Una gran ventaja de los juegos es que este tipo de trabajo es disfrutado por los estudiantes de primaria y puede organizarse de manera que cumpla con el objetivo de asegurar la educación, formación y desarrollo musical de los estudiantes. La dinámica del desarrollo de la musicalidad de los estudiantes es más pronunciada cuando se implementan juegos musicales didácticos.

Palabras clave:

Enseñanza musical, desarrollo de la musicalidad, entretenimiento educativo, tecnología de juegos.

INTRODUCTION

According to most scientists (Mikhailova, 2005; Bukharova, 2021; Vygotsky, 2021), musical game activities play a great role in children's musical development. Games allow every child to show and improve their creative abilities. Games influence children's self-identification in life, as well as the development of their emotional and intellectual spheres. Moreover, musical games as a type of educational and creative activity of students in music lessons generate a positive emotional environment that allows all of their mental processes to function more actively (Praslova, 2005; Radynova & Komissarova, 2019; Teplov, 2021). However, the musical upbringing of children has certain specifics (the formation of interest, love, and need for music, the development of creative musical abilities) and didactic musical games have to be developed with consideration of these specifics. Such games have to be aimed at transferring not only knowledge about music but also skills in creative musical activity (audial perception and performance and composition of music) (Pereverzeva et al., 2019, 2020).

The use of games as a means of upbringing and development of musical abilities in children is substantiated by Saracho (2013); Pereverzeva (2013, 2019); Kniazeva (2014); Nijs & Leman (2014); Sarrazin (2016); and Zdravković et al. (2018), etc. Scientific literature presents several approaches to the study of game technologies and their effect on musical development (see Table 1)

Table 1. Authors and their Approaches to the study of gaming technologies.

Authors	Research results
Tarasova (2009); Vygotsky (2021); Teplov (2021)	a thorough study of psychological characteristics of play and its potential for the development of musical abilities in school students
Praslova (2005); Pereverzeva (2013; 2019), Kniazeva (2014); Zdravković et al. (2018); Radynova & Komissarova (2019)	a study of the pedagogical potential and the range of opportunities for using didactic musical games
Mikhailova (2005); Bukharova (2021)	an analysis of the process of development of children's creative abilities based on different methods including game methods
Reyes et al. (2012); Corrigall et al. (2013)	a study of the process of intellectual and emotional perception of music by children in the process of learning
Nijs & Leman (2014)	a study of the effect of interactive technologies (a computer program) in teaching to play musical instruments
Pereverzeva et al. (2020)	an approbation of game technologies in the process of mastering theoretical music disciplines

However, despite the great scientific interest in game technologies in musical education, the advantages of didactic musical games that become evident in experimental work have not yet been identified by researchers.

Despite the considerable amount of theoretical research on musical education and upbringing of children, the problem of using didactic musical games in primary school is underexplored. Little attention is paid to the issues of identifying the developing potential of didactic musical games, their role in the educational process of general education schools, and learning mechanisms the effectiveness of which is promoted by children's participation in didactic musical games. This study hypothesizes that musical and didactic games allow children to develop musical abilities in an accessible form since they open up a way for the child to apply the knowledge gained in cognitive and play practice.

MATERIALS AND METHODS

The process of testing the study hypothesis involves theoretical (analysis of scientific studies on the use of game technologies in teaching music to children, psychological and pedagogical research, summarization and systematization of materials on the studied topic) and empirical research methods (introduction of didactic musical games into the educational process, an experimental study, comparison and analysis of the results of using explanatory-illustrative and game methods in teaching music, statistical data analysis).

The analysis of scientific studies on musical game technologies allowed us to select the most effective methods approbated in pedagogical practice, as well as determine whether they meet the goals and objectives of musical upbringing. Psychological and pedagogical research was analyzed to select game methods that have been tested in practice and demonstrate psychological and pedagogical effectiveness in teaching children. Summarization and systematization of materials on the topic of the study were conducted to identify the reasons and conditions for the positive effect of

game methods on the process of the musical upbringing of children. Scientific sources were selected based on whether they reflected the practical experience of using game technologies in musical education and analyzed the results of their implementation. Preference was given to research articles on the problem published in the last 6-7 years.

The study uses empirical research methods to test the effectiveness and identify the advantages of using game methods in teaching music to children and developing their musical abilities: didactic musical games were developed and introduced into the educational process and an experimental study involving one group of children being taught music with the traditional explanatory-illustrative methods and the other being taught using the specially developed by us didactic musical games was conducted. The results of the study were compared and analyzed to formulate the study conclusions.

The study evaluated the advantages of musical and didactic games in enhancing children's musical attention, memorizing, perception, artistic and imaginative thinking, intensifying the emotional experience of music, and increasing interest in musical activity and the volume of assimilated musical material.

During the experimental work, we evaluated the effectiveness of the use of didactic musical games in relation to the formation of children's musicality that comprises three abilities:

- the sense of harmony (the ability to emotionally distinguish the harmony functions of the sounds of a melody, to feel its emotional expressiveness);
- musical hearing (sensitivity to the accuracy, "purity" of intonation that manifests itself in the perception of the melody, its comprehension, and reproduction);
- the ability to actively experience music, particularly in the motor sense, to feel the emotional expressiveness of musical rhythm and the accuracy of its reproduction.

The study evaluates the benefits of didactic musical games in enhancing children's musical attention, memory, perception, artistic and imaginative thinking, intensifying the emotional experience of music, increasing interest in musical activity, and expanding the volume of mastered musical material. These indicators are assessed through testing the children, observing them during music lessons, and evaluating the results of creative tasks. The assessments were conducted both before the experiment (introduction of didactic musical games) and after it. The testing was conducted in September 2020 in children's music schools No. 14 and 27 in Moscow with the participation

of 46 children from 1st-3rd grades of children's music schools.

Testing included the performance of the following tasks: determining by ear of major and minor, short and long durations, high and low sounds, wide and narrow intervals, the ability to repeat a melodic phrase from 2-3 motives and move to the beat of the sounding music. In total, 12 tasks were given; for each correctly performed, children received 1 point. At the initial stage, in the experimental group (24 children), only 8 coped with 9-12 tasks, which indicated a high level of development of musical abilities; in the control group (22 children) – 6 students; the rest coped with only 5-8 tasks out of 12, which indicated an average level, and 1-4 tasks – a low level of development of musical abilities.

The information received was processed manually using the method of summing up the scores received by each child during testing, as well as the assessments of the results of the children performing creative tasks. No software was used. The scores received by the children were grouped as follows: 9-12 points corresponded to a high level of development of musical abilities, 5-8 points – average, and 1-4 points – low. There were no exceptions or limitations.

Statistical analysis of data (the results of test tasks) was used to compare the number of children at the high, average, and low levels of development of creative abilities in the experimental and control groups before and after the experiment.

The levels of formation of musical abilities were determined using the method of testing children – assessing the level of development of children's musical abilities by their ability to accurately repeat the rhythm and melody played by the teacher, sing a familiar song, memorize and reproduce the musical phrase of an unfamiliar song, identify the character of the music, etc. The three established levels of development of musicality in primary school students, the low, average, and high, differ in the degree of children's musical activity, the quality of their performance in test tasks, and the level of manifestation of musicality. Overall, the tested children demonstrate a low level of development of musicality as they show the inability to repeat a rhythm or a melody, to memorize a new motive, and determine the character of music inaccurately and without certainty. Therefore, the didactic musical games aimed at the development of these components were incorporated into the curriculum of one of the groups of children.

The practical work deployed the following games, which were developed by us in 2020-2021:

"The Constructor Game" involving adding up the note values into bars, the bars of a learned song into a melody, and geometric figures of different colors into the forms of music.

The staging game (a "pantomime" game) with the use of different musical pieces: E. Grieg's "In the cave of the mountain king", P. Tchaikovsky's "The Sick Doll", "The New Doll", "March of the Tin Soldiers".

The "Music Store" game with the use of specially developed didactic handout material including cards with images of different instruments and names of voices (viola, discant, mezzo-soprano, contralto, lyric soprano), as well as phonograms of the necessary musical material. The winner is the one who answers all the questions without mistakes.

The "Dunno" game is based on the teacher's performance of music with mistakes (incorrect note-taking, song lyrics, inadequate plastic, or musical-motor intonation). To facilitate students' understanding of the figurative content of musical intonation, the teacher turns to the children's life experiences. To find an answer to the task, students perform simple searching actions for comparison finding common features between speech, rhythmic, and musical intonation. The game makes the typical types of work interesting and exciting thus contributing to the intensification of the development of primary school students' musicality.

For the development of the sense of harmony in the indicator of the ability to distinguish between major and minor harmonies, elementary school students were presented with the "Sun-Cloud" game. The goal of the game is to provide students with knowledge of major and minor harmonies. The didactic resources for the game include cards with pictures of a sun and a cloud. During the game, the teacher invites the children to learn the song "sun-cloud". The melody of the two sentences is the same but the "sunny" melody is in the major and the "cloudy" melody is in the minor. After the song is performed in full, the teacher plays the first and second sentences in random order and invites the students to show the cards with the corresponding images. In the following lessons, the game is complicated by the fact that the children start to identify major and minor triads, major and minor songs, and harmony development in instrumental works while listening to music.

The development of pitch hearing (the ability to establish the accuracy of the reproduction of a melody; the ability to reproduce the melody with voice (intonation)) was addressed through the didactic musical game "Where are the notes running?". The game focuses on the student's ability to

distinguish high and low sounds through hearing. Before the start of the game, the students are reminded that on a piano or xylophone, the high notes are on the right and the low notes are on the left. The teacher plays short melodic overtones in the ascending and descending directions. The students listen intently with their eyes closed and immediately react to changes in the direction of the notes by raising their hands or lowering them down. After each group of sounds is played, the teacher tells the students where the notes went.

The "Invisibility Hat" game is aimed at the development of the musical and rhythmic sense. The course of the game was as follows. The teacher's instruction for the game: "Children! A familiar song has come to us under the invisibility hat. We cannot see it but we can hear its footsteps (the teacher taps softly the rhythm of the song). Do you recognize it? What song has come to visit us?" The children have to guess the song from the clapping and the rhythm.

For the development of the musical rhythm sense (the ability to reproduce the metro-rhythm of a musical piece in movements with the prepositions or chants; compliance with the emotional content of the movements of the character and image of the performed song or dance), students were offered the didactic musical games "Rhythmic Dictation" and "Repeat the Rhythm". The "Repeat the Rhythm" didactic musical game involves the teacher clapping short rhythmic formulas to be repeated by the students (at the wave of the teacher's hand). The game is gradually complicated by adding humorous movements (for example, spreading hands to the side, touching your ears, clenching your fingers into a fist) after the clapping (to develop visual attention). The game can also be performed in different variants for the development of attention and coordination of movements.

For the development of musical hearing, the music lessons with children included "music minutes" during which the teacher is humming different melodies and the students have to accurately reproduce them. The implementation of this task in several lessons has improved students' musical hearing.

The last are the tasks on memory development the main goal of which is to consolidate the material and try to structure it. The children are offered logical questions in the form of simple answers on general erudition and attentiveness:

"How many games were there today?"

"What is rhythm?"

"What kinds of harmony sounds are there?"

Further on, the children are offered to pick the fragment they liked and enjoyed the most and sing it, tap out the rhythm, etc. There is also an option to ask the opposite, what the students did not like. The game includes both analysis and classification of the material and allows for a child's independence, reveals their position, and allows the teacher to find the most successful points of contact with the group. It should be noted that the musical experience of primary school students is rather small, therefore, it is advisable to use the tasks that are most interesting to schoolchildren in each particular class in the process of observation of musical phenomena.

To ensure the greatest effect, all games have to be organized into a set of lessons and alternated to increase the variety of activities in accordance with the educational objectives.

RESULTS AND DISCUSSION

As a result of the systemic use of the described exercises in the educational process, the children's sense of musical rhythm, musical memory, the system of interpretations of musical works in accordance with the inner world of the child and musical taste, general erudition, perception skills, and the educational level improved. Observations carried out in the course of the study reveal that didactic musical games provided the children with new impressions, developed their initiative, independence, and ability to attentively perceive the teacher's instructions. Game situations helped to maintain the children's interest in the lesson, provided emotional relief, and promoted the development of younger students' musicality.

The creative activity of younger students in the presented cycle of tasks was implemented in a complex way in the process of performing a series of multidirectional game exercises (experimental group). The other group of students engaged in music through the traditional explanatory-illustrative methods (the control group). The results of the six-month training achieved by children of both groups are compared and evaluated in terms of the achievement of the main goal of the lessons – the development of musicality. The level of development of musicality is assessed through testing and children's performance of creative tasks. In the experimental group, this level is predominantly high and average, while in the control group, it remains low. The results of testing at the initial (September 2020) and final (spring 2021) stages of the study are presented in Figures 1 and 2. The testing included such tasks as the identification of the major and minor, short and long note values, high and low sounds, wide and narrow intervals, repeating a melodic phrase of 2-3 motifs, and moving to the beat of the sounding music. The test includes a

total of 12 tasks; a child receives 1 point for each correctly completed task. At the initial stage, in the experimental group (24 children), only eight children coped with 9-12 tasks which indicates a high level of musical abilities, while in the control group (22 children), there were six such students; the rest were only successful in 4-8 tasks out of 12 which indicates the average and low levels of musical abilities. At the end of training in both groups, the testing was repeated: 20 children coped with 9-12 tasks in the experimental group, while only 12 control group students were this successful; the rest (4 children from the experimental and 10 from the control group) only coped with 4-8 tasks out of 12.

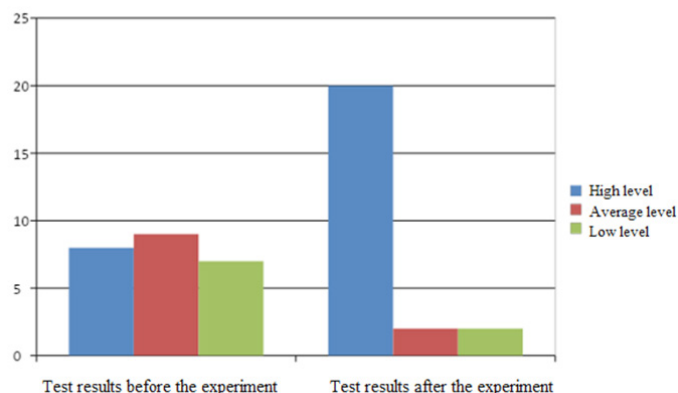


Figure 1: Test results of students in the experimental group at the initial and final stages of the experiment.

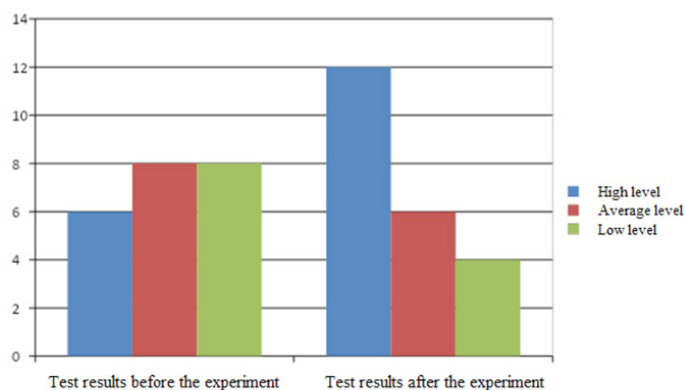


Figure 2. Test results of students in the control group at the initial and final stages of the experiment.

Statistical analysis of the data (the results on the completed test tasks) shows an increase in the number of children at the high level of creative abilities by 2.5 times in the experimental group (8 students who coped with the task before the experiment vs. 20 after the experiment) and only by 2 times in the control group (6 students vs. 12). Meanwhile, the number of children at the average and low levels shows a decrease by 5 and 3 times, respectively, in the first group and by 1.3 and 2 times in the second group. The comparison of statistical data is presented in Figures 3 and 4.

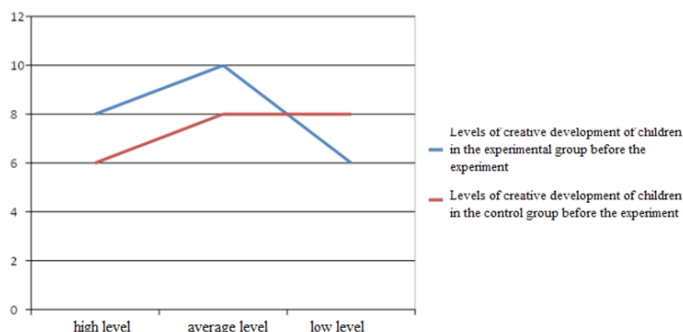


Figure 3. Levels of creative development of children in the experimental and control groups before the experiment.

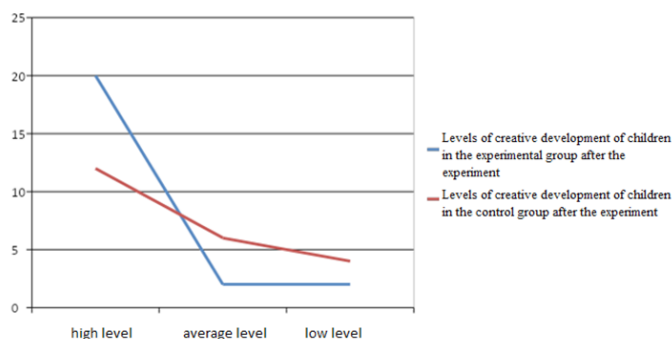


Figure 4. Levels of creative development of children in the experimental and control groups after the experiment.

Comparing the results of our study with others, it can be noted that other researchers in the field of musical pedagogy recognize the advantages of play forms of activity in the development of musicality and give their explanations of the reasons for these advantages. For example Aksenova et al. (2020), notes the impact of gaming technologies on intellectual development (Tarasova, 2009) and Corrigan et al. (2013) – on the formation of cognitive abilities. Sarrazin (2016), argues that a child uses all of the intelligences through music and play. Moreover, she notes that *“the most obvious connections might be between music and logical-mathematical or spatial intelligences since music involves rhythm, counting, and working with*

time-space relationships”. She considers the advantages of didactic musical games to be such characteristics as multimodality (blends movement with singing, making sounds with objects and instruments), visually, kinesthetically, and aurally activity (unpremeditated and improvisational character), younger children are more spontaneous, and older children are more stylized and base their play on other genres, game is a form of social interaction and highly collaborative process (Sarrazin, 2016). This indirectly confirms our hypothesis that musical and didactic games open up a way for children to apply the knowledge gained in life practice and allow them to develop musical abilities in an accessible form. A comparative analysis of the results of our experimental work showed that significant changes occurred in the development of the musicality of primary school students, in which musical and didactic games were used. In general, after using musical and didactic games in music lessons in primary school, more schoolchildren with a high level of musicality were identified.

Nijs & Leman (2014), evaluating the effectiveness of the use of interactive technologies in music education, particularly the game program “Music Paint Machine” in the process of learning to play the clarinet in grades 1 and 2, note an increase in the level of development of practical performance skills, the quality of independent home training, and self-regulation skills. The authors highlight that despite the lack of noticeable statistical difference between the experimental and control groups of children, *“the study revealed important aspects about the transformative impact of technology in education; furthermore, it has provided insights on methodology (design, measures, analysis) in music educational technology research”* (p. 40). In the course of our research, by observation, it was revealed that musical and didactic games enriched children with new impressions and developed their initiative, independence, and the ability to attentively perceive the teacher’s instructions.

We believe that a great advantage of games is that this type of work is enjoyed by primary school students and can be organized in a way that would meet the objective of ensuring students’ musical education, upbringing, and development. Being carried away with the game, children do not realize that they are learning, remembering new things, replenishing the stock of ideas about the musical activity. In addition, in the process of play, the students develop the habit of focusing, thinking, remembering, and working independently which proves the effectiveness of the use of didactic musical games in teaching music in primary school. The dynamic of the development of students’ musicality is more pronounced when didactic

musical games are implemented. This allows us to consider the development of musicality through didactic musical games effective (Gardner, 1983; Aksenova et al., 2020).

It is advisable to introduce musical and didactic games into the practice of musical development since they can perform the functions of educational tasks in the training system and at the same time improve the teaching methodology. The pedagogical value of didactic musical games is that they:

- combine play, learning, education, and development of students;
- shape students' moral and cognitive levels and musicality;
- enrich the child with ideas about the world around them (folk customs, holidays, musical instruments, folklore, etc.)
- help to overcome insecurity; create conditions for the formation of certain musical skills;
- are a special form and means of uniting the team of children;
- help the teacher to comprehensively study their students, gain insight into their spiritual world;
- promote discipline, endurance, patience, courage, generosity, independent judgment in children;
- develop creative imagination and fantasy in independent musical activity;
- develop activity, initiative, concentration, purposefulness, self-control, self-esteem;
- promote the expansion of musical experience, speech, expressiveness of performance;
- stimulate younger students to use the acquired knowledge in practical activities.

CONCLUSIONS

Thus, our results – an increase in the level of development of children's musical abilities – confirm our hypothesis that musical and didactic games allow children to develop musical abilities in a form accessible to children since they open up a way for them to apply the knowledge gained in cognitive play practice. The study reveals the essential importance of didactic musical games in the development of musicality in primary school students found in the activation of children's musical attention, memory, perception, and artistic and imaginative thinking. Games promote the intensification of the emotional experience of music, strengthen interest in musical activity, and increase the volume of the mastered musical material. The use

of didactic musical games in primary school counteracts students' passive perception. This is evidenced by the results of the training of children engaged in music based on the method of didactic musical games.

The significance of the findings in relation to previous studies is as follows. First, it was observed that games at the lesson as a form of work were found to relieve students' fatigue, prevent mental overstrain, and support efficiency. These factors, as well as the active cognitive activity of students, provide for a high level of mastery of educational material. Secondly, as a result of the study, the principles of the development of musical abilities in primary school students in the process of using musical and didactic games in their teaching were determined:

1. Combining different types of musical games, particularly the vocal and instrumental ways of musical creation or improvisation, didactic musical and creative methods, as well as various forms of work with students – individual, group, collective creativity: solo, orchestra, ensemble. The selection of musical games depends on the level of development of students' musicality, its diagnostics allow the teacher to determine the appropriateness of the use of certain types of games in the lesson.
2. Implementing musical games systematically and consistently – not occasionally but purposefully.
3. Practicing musical games in different types of activities in the lesson – as a part of perception, performance, and creativity. It is advisable to introduce music games in the lesson during the introduction of new concepts and their consolidation or the analysis and interpretation of musical works to expand the vocabulary, etc.
4. Mastering game methods and techniques of emotional, intellectual, and motivational stimulation and competition.

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