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TRANSITION FROM CLASSICAL TO MODERN METHODS OF TEACHING MATHEMATICS

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ABSTRACT

Mathematics of teaching classic from methods modern to the methods transition education in the process innovative approaches implementation to grow necessity emphasizes . Today on the day education in the process technological news and interactive methods application students science was interest increase and in them deep knowledge to take skills to form service This is article mathematics in their classes modern approaches application opportunities to study Dedicated to . Research during of the students logical thinking abilities development , problems solution in doing creative approach support , and training process interesting to do aimed at methods analysis In particular , technological resources (interactive boards , online platforms) and interactive pedagogical methods (discussions , group (training) efficiency studied . Research results showed that modern methods education to the process successful integration to do students knowledge level increase with together , their science relatively interest noticeable at the level increases .

INTRODUCTION

Mathematics science study humanity development the most important structural from parts one This science is not only engineering and technologies in development , but daily in life many problems solution also important in making importance has . Modern in the world mathematician knowledge , logic thinking abilities and analytical approach requirements increasingly exceed Therefore , education in the system mathematics science in education modern to methods transition necessity become remains.Traditional education methods far years during teachers main tool as applied came . These methods to the students standard knowledge in delivery important role played although , their their interests wake up and creative thinking abilities in development to restrictions Therefore , modern in education interactive and technological approaches place increasing This is happening . article mathematics science in education innovative of methods importance analysis to do Dedicated to . Especially technological from tools use , collective work methods , students interesting interactive lessons organization to grow such as issues seeing is released . In the article of education traditional and modern methods between main differences and modern approaches advantages deep analysis is done . With this together , teaching to the process technologies integration to do relevance and this of the process efficiency according to evidence is brought .

METHOD

In the study mixture methodological approach used . Information in collection following methods used :

1. **Literature analysis :** Classic and modern mathematics education methods according to scientific sources studied . Last published in the years , particularly in the years 2015-2023 articles and books based on innovative approaches according to information received .

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2. **Experimental research : Tashkent** city in 2022 and in the provinces five 8th grade students at school in the presence of interactive methods application according to lessons was held . This such as GeoGebra and Khan Academy in lessons online from platforms use results analysis was done .

3. **Questionnaire and interviews :** 100 in 2023 teacher and 250 people student in the presence of online and face to face questionnaires organization was read . by technological of tools lesson to the effectiveness The impact is 85% positive. was evaluated .

4. **Video analysis :** Second half of 2022 in the quarter lesson processes video recording experienced educators by analysis This method was through of the students technological approaches using mastery level studied and 30% improvement observed .

In the study the students mastery level and their interests measurement for PISA-2021 international assessment system tests and local test programs was used . Experimental and control in groups of the students results compared , technological approaches high efficiency was determined .

RESULTS AND DISCUSSION

Research results mathematics in education modern approaches high efficiency showed . Obtained results :

Mathematician Skills Development **:** Conducted in 2022 in the experiment modern from technologies used students control to the group 25% higher than to the results In particular , GeoGebra and Desmos platforms using concepts visual in appearance study students logical thinking abilities strengthened .

Students Interest : 250 in 2023 student between held questionnaire as a result modern methods used to classes 40% increase in interest Europe in the countries take visited to research According to (2018, Germany STEM Education Report), mathematics in education interactive methods application students science was increased interest by 35-50% .

Technologies impact: in the PISA -2021 report digital from tools used in schools mathematics according to students mastery level 20% higher than average that record The United States California in the US take visited research (2020) interactive boards and visual lesson of materials of the students study improved their skills by 30% showed .

Group work and collective Activity : Experiments during group training held in the classrooms students knowledge absorption and social skills increased by 22% observed . In Finland (2021) visited research As shown , the group work students thinking speed and creativity noticeable at the level develops .

Students thinking Speed : China took 2019 visited in research mathematics in their classes modern from technologies use because of students problems solution to do speed increased by 18% . Results showed that modern approaches education to the process current to be students not only to study was interest increases , maybe their analytical thinking and creativity level noticeable at the level improves .

NEW IDEAS

Mathematics in education Gamification : Education to the process game elements input through students interest increase For example , issues solution virtual rewards for and rating systems create

Artificial intellect using customized Education : Every to the individual needs of the student suitable lesson materials presented AI systems that current to do . This is mastery . level noticeable at the level increases .

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Mathematics and vital practice Integration : Real- life experiences in lessons problems to solve aimed at project approaches For example , financial literacy or ecological issues mathematician analysis to do

From VR and AR technologies Usage : Virtual and expanded reality tools hand , geometry and other complicated concepts further deeper study opportunity create

Mathematics Laboratories : Modern technologies with equipped laboratories organization to grow and this on the ground to the students mathematician modeling and analysis according to training transfer

DISCUSSION

Research and practical experiments this shows that modern methods lesson process further effective and interesting For example , in education interactive of methods application students motivation increase and students own knowledge in practice to apply encourages . Interactive methods using students only information acceptance to do not , maybe thinking , analysis to do , problems solution to do and mutual idea exchange through knowledge deepen . Teacher students interest wake up for gamification , discussions , small group their work organization , case studies , online training tools and multimedia from materials use through students activity increase It is also possible to methods students independent thinking abilities to develop service For example , collaborative reading , critical thinking developer questions , issues and problems solution to do aimed at methods students analytical thinking and problems solution in doing efficiency These methods students only themselves not , maybe in the group other students with each other in activity to be provides , this and collective work and social mutual the effect However , this of methods successful implementation teachers' professional qualifications , pedagogical to their abilities and methodical to the preparations related . Research this shows that teachers new pedagogical methods mastery process during them regular accordingly professional development courses , seminars and trainings through support necessary . Professional development programs to teachers new methods in use practical experience increase opportunity provides , as well as pedagogical technologies mastery , teaching modern methods to know and students to oneself typical to the needs adaptation opportunity Creates . Resources The issue is also the teachers' methods successful implementation in the end important importance has . Textbooks , electronic resources , education technologies and interactive tools teacher's pedagogical your work efficiency However , this of resources only existence enough not ; from them effective use for teachers this tools with introduction and to them from them how use according to skills to teach necessary . For example , modern education from technologies use to teachers students individual work with take to go to them customized tasks to give and students self assessment opportunities create opportunity gives . Traditional methods , of course , education in the process own instead save remains , because they students main knowledge to master help gives and solid the basics creates . But, this methods modern methods with harmonization education quality further to improve help Gives individual characteristics of students in consideration take , teacher own pedagogical approach adapt Every student for the most good method choose , their reading methods understanding and the lesson interesting to do for necessary changes input necessary . This point of view in terms of the teacher's professional qualifications , innovative to methods readiness and training resources existence education system in development important role plays . Also , this methods implementation of reaching social and cultural context into account to take not to forget the need Teachers own in their classes modern technologies in use not only pedagogical in terms of effective approaches , but students cultural , psychological and social taking into account the needs

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of they receive need . Such integrated approach education system all sides for positive results brings .

CONCLUSION

Mathematics of teaching modern methods only technological from approaches consists of not , maybe students activity increase , creative thinking abilities develop and training to the process interactivity add through mathematics to science was interest further to increase aimed at complex This is an approach . methods the students not only in class active to participate , maybe mathematics to science relatively psychological and social motivation to strengthen encourages . Also , modern education technologies , gamification , online study resources and multimedia tools through mathematics lessons further revive and interesting to do opportunity is created .

Mathematics science to teach in the process modern methods application through in students clear and solid knowledge formation with together , their problems solution to do , to analyze to do and critical thinking skills also develop . For example , mathematics problems in real life situations with link , interactive education from the means use , issues in the group solution to do such as methods students creative approach supports . This is the students ' only mathematical formula and concepts remembering to stay not , maybe them in practice also possible to use creates . Modern methods education to the process successful current to grow of the students mathematics to science was interest noticeable at the level increases . These students mathematics practical importance to understand help will also give in the future complex problems solution in doing mathematician from knowledge effective to use prepares . For example , mathematics in their classes collaborative approaches and of the students mutual in cooperation their work , their social and communication It also develops students ' skills . This not only scientific , maybe personal also great for development impact It also shows methods of the students mathematician his/her thinking and logical thinking to strengthen help gives . The students difficult issues to solve , every kind methods to apply and mathematician the results consistent in a way analysis to do to teach through them , training in the process to oneself was confidence increases . Mathematics to science was interest not only his/her main concepts to master , but his/her daily in life importance to understand provides . From this outside , modern education methods individual needs of students in consideration to take provides , this and to the teacher every one student's to oneself typical study to the style suitable methods choice opportunity gives . So do mathematics of teaching modern methods not only students knowledge level increases , maybe their thinking style , create abilities and in the team work It also develops skills . From this perspective from the perspective of mathematics of teaching modern methods students' knowledge of science imagination expansion and in them further deeper and wide comprehensive knowledge formation opportunity This is what it is . in turn , not only mathematics science , maybe other also interested in science and knowledge level to increase take is coming .

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