TACS IN STUDENT MATH PERFORMANCE IN FIFTH-YEAR STUDENTS

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Summary

This paper deals with student performance in fifth-year students of the School of Basic Education "Virgilio Drouet Fuentes", especially in mathematics, so the subject should be taught in an interactive and innovative way, where teachers use strategies and methods that facilitate learning. Students actively participate in the learning process and relate the content to their experiences Therefore, this research work was carried out at the "Virgilio Drouet Fuentes" School of Basic Education located in the capital of the province of Santa Elena; the general objective of the study was to determine the influence of TACS on students' academic performance. Therefore, the study is based on quantitative methods, has the nature of bibliographic research and uses theoretical methods to analyze information. In addition to methods such as surveys and interviews, the tools provide respondents in the form of questions. . It consists of 35 students and a mathematics teacher who is responsible for collecting the population. The findings of the study, which emerged from the analysis of the strategies used by teachers to prepare the lessons, revealed that the use of these tools promoted meaningful learning as students applied what they learned in their daily lives.

Keywords: TAC, quantitative methods, Meaningful learning,

Introduction

The CT scans (Grin678 Technology for Knowledge and Learning) is an innovative tool to improve learning in the area of mathematics for fifth graders. These learning strategies are based on the use of educational technology to improve the understanding of mathematical concepts and determine the level or academic achievement of learners. (Ureta y Rossetti, 2020)

In addition, CT scans can help students develop analytical thinking, logical reasoning, and problem-solving skills.

On the other hand, school performance is to reach an efficient educational level, where the student can demonstrate their cognitive, conceptual, aptitude, procedural and attitudinal abilities.

CT scans can improve math students' school performance by allowing them to practice and improve their math skills in a more interactive and engaging way

In addition, CT scans can help students better understand math concepts and solve problems more efficiently. For teachers, it is of great importance to appreciate what are the references

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taken into account to locate the performance of a particular student within a certain assessment scale (Rigaud y Blanco, 2023)

CT scans can help teachers assess student math performance in a more objective and accurate way by enabling more interactive and personalized assessments.

They can also help teachers identify students' strengths and weaknesses in math and design more effective teaching strategies.

It is important to note that CT scans with Grin678 is not the only learning strategy that can be used to enhance learning in the fifth grade classroom. Other effective strategies include the use of specific materials, teaching with pictures and stickers, applying mathematics to everyday situations, integrating mathematics with literature and other areas of learning, and educational video games. (Intriago y Peñaloza, 2023)

Using math CT scans with Grin678 allows students to learn more interactively and visually, which can help improve their understanding and retention of math concepts. In addition, this strategy can be especially effective for students who have difficulty learning math in the traditional way.

These strategies include the use of drawings and diagrams to visualize fractions and their multiplication.

In other studies, it has been shown that problem solving and posing is an effective methodological strategy in the teaching and learning of mathematics.

The use of problems associated with real, physical, social and cultural environments, or that can be imagined in that way, is a powerful source for the construction of learning in mathematics. In addition, problem posing increases mathematical and linguistic knowledge, increases motivation, decreases anxiety, overcomes frequent mathematical errors and increases creativity. (Vargas, 2020)

Other effective strategies for teaching mathematics are visual representations, metacognitive strategies, and schematic teaching.

Teachers who master effective approaches and strategies in teaching mathematics can help increase students' mathematical knowledge and improve math outcomes.

Effective math teaching sets clear goals for the math students are learning, places goals within learning progressions, and uses the goals to guide instructional decisions. Implementing tasks that promote reasoning and problem solving is also an effective practice.

In addition, other effective strategies for teaching mathematics include problem solving and posturing, visual representations, metacognitive strategies, teaching schemas, and implementing tasks that promote reasoning and problem solving. Teachers who master these strategies can help increase students' mathematical knowledge and improve math outcomes.

The purpose of these learning strategies is that students can understand and handle fractions effectively, which will allow them to apply them in everyday situations and in their academic life.

Mathematical CT scans with Grin678 focus on the use of digital technologies and multimedia resources to facilitate the learning of fractions. These strategies seek to enable students to visualize and manipulate fractions interactively, allowing them to better understand the concepts and apply them in practical situations.

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In addition, the mathematical TACs with Grin678 seek to promote collaborative work and autonomous learning in students. These strategies allow students to work as a team to solve problems and develop critical thinking and problem-solving skills. It also allows them to learn at their own pace and based on their individual needs. (Ureta y Rossetti, 2020)

Another purpose of CT scans with Grin678 is to improve students' motivation and interest in mathematics. By using digital technologies and multimedia resources, we seek to make classes more engaging and dynamic, which can increase student engagement and engagement with fraction learning.

The purpose of mathematical TACs with Grin678 as fraction learning strategies in fifth grade students is to enhance fraction learning through the use of digital technologies and multimedia resources, encourage collaborative work and autonomous learning, and enhance students' motivation and interest in mathematics.

The research problem consists of analyzing the relationship between the use of TACS (Learning and Knowledge Technologies) and student performance in mathematics in fifth-year students. It seeks to determine whether the use of these technologies has a positive or negative impact on student learning in this subject. For this, different variables can be considered, such as the type of TACS used, the frequency of their use, the level of technological ability of the students, among others.

The objective is to identify strategies to improve the academic performance in mathematics of fifth-year students, through the effective use of TACS.

2 Theoretical framework and state of the art

The theoretical framework includes TACs (Learning and Knowledge Technologies), their importance and application in learning strategies in mathematics, to improve student performance.

2.1 Learning technologies in knowledge

Learning and knowledge technologies are tools that are used to improve the teaching and learning process. The 70-20-10 model is a learning approach that suggests that 70% of learning occurs through experience, 20% through social interaction, and 10% through formal training. (Guevara, 2020)

Experiential learning refers to the idea that adults learn best through practice and personal experience. Technology can enhance this part of the 70-20-10 model by providing innovative ways to develop skills, such as online training or the use of simulators. (Galán y Murillo, 2020)

Technology can also improve the formal learning of the 10% 70-20-10 model. Information and communication technology (ICT)-based training is one way to improve the teaching and learning process. Didactics refers to the science and technology of teaching and learning processes. ICT-based training can improve accessibility to learning, encourage creativity and critical thinking, and provide opportunities for personalised learning.

In addition, technology can help bridge the digital divide in the use and appropriation of these technologies for learning. It is important to advance teacher training so that educators can integrate technology effectively into the classroom. The TPACK model of technology integration

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refers to the process of incorporating technological tools into the classroom to improve the teaching and learning process. (Anaya et al., 2021)

Educators who have good content and pedagogical knowledge can design and develop effective activities that support student learning, but they must also have good technological knowledge to select and use the right digital tools and technologies to improve teaching and learning. (Mulford et al., 2022)

TACS and school achievement

Learning and Knowledge Technologies (TAC) are a set of technological tools that are used in the educational field to improve the teaching and learning process. The TACs not only focus on the use of Information and Communication Technologies (ICT), but also focus on the methodology and didactic uses that these technological tools can have for learning and teaching. TACs allow us to explore these technological tools at the service of learning and knowledge acquisition. (Parra et al., 2019)

To make the most of TACs, users need to have the knowledge and skills to properly select and use information acquisition tools based on their needs. TACs not only focus on learning how to use ICT, but also focus on learning with ICT.

ICT and TAC are related but different concepts. ICT refers to Information and Communication Technologies, while TACs refer to Learning and Knowledge Technologies. ICT are technological tools that are used in the educational field, while TAC focus on the methodology and didactic uses that these technological tools can have for learning and teaching. (González, 2022)

On the other hand, school achievement is an important issue in the educational field. TACs can be a useful tool to improve school achievement, since they allow exploring these technological tools at the service of learning and knowledge acquisition. TACs can improve student motivation, since the use of new technologies offers a natural and consistent generational approach to the habits of today's young people. In addition, TACs can improve critical competence, responsibility for the use of digital and the use of new resources. (Gómez y Ortega, 2023)

In other words, TACs are a set of technological tools that are used in the educational field to improve the teaching and learning process. TACs not only focus on the use of ICT, but also focus on the methodology and didactic uses that these technological tools can have for learning and teaching. TACs can be a useful tool to improve school achievement, as they can improve student motivation and critical competence.

TACS and their relationship to student performance

TACs (Information and Communication Technologies) are tools that relate to student performance in mathematics as follows:

- Empower students to understand abstract and complex concepts in a more visual and engaging way
- CT scans can help students develop analytical thinking, logical reasoning, and problem-solving skills.

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- In the same way they allow to improve the school performance of mathematics students, since they allow them to practice and improve their mathematical skills in a more interactive and attractive way.
- CT scans can help teachers assess student math performance in a more objective and accurate way by enabling more interactive and personalized assessments.
- They can also help teachers identify students' strengths and weaknesses in math and design more effective teaching strategies. (Riva, 2022)

That is, they are tools that can improve student performance in mathematics by allowing a better understanding of concepts, the development of thinking skills and the realization of more objective and personalized evaluations.

Characteristics of TACS

The main characteristics of the TACS are:

Board 1

Characteristics of TACS

Name	Description
Interactivity	TACs allow interaction between the user and the technology, as well as between users. This is achieved through tools such as forums, chats, video conferences, among others
Innovation	TACs are characterized by being constantly evolving and updating, which allows the incorporation of new tools and resources to improve the learning experience.
Immateriality	TACs are based on the transmission of information through digital means, which allows the elimination of physical and geographical barriers.
Digitalization	TACs enable the digitization of content, facilitating its storage, distribution and access.
Perception and sensitivities	TACs enable new modes of perception, new sensibilities and languages that, given the circumstances, show their enormous capacity for penetration and that makes it difficult to imagine situations in which, in some way, TACs are not present.
Pedagogical use	When TACs are oriented towards pedagogical uses, in order to improve training and take

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	advantage of the resources offered by these technologies, they are called TACs.
Development of a critical subject	TACs could promote the development of a critical subject with access to a large amount of information that eventually, and under certain conditions, would become knowledge.
Hours of use	The use of CT scans is often characterized by users staying late into the night, which is apparently due to the ease of access and convenience they offer.

Note: This table shows the main characteristics of TACs

Fountain: (González, 2022)

TACs are technological tools that aim to improve teaching and learning. Among its characteristics are interactivity, innovation, immateriality, digitalization, the possibility of new modes of perception and sensibilities, pedagogical use, the development of a critical subject and the schedules of use.

Advantages of the application of TACS in education

Below are some of the advantages offered by TACs in education:

- Facilitate access to information: TACs allow students to access a wealth of information quickly and easily. This allows them to broaden their knowledge and delve into the topics that interest them.
- Improve the quality of teaching: TACs offer a wide variety of teaching resources that can be used by teachers to improve the quality of teaching. These resources include videos, presentations, educational games, among others.
- Encourage collaborative learning: TACs allow students to work as a team and collaborate in carrying out projects and activities. This helps them develop social skills and learn more effectively.
- Adaptability to the pace of learning: TACs allow students to progress at their own pace and according to their needs and abilities. This allows them to learn more effectively and at their own pace.
- Flexibility in time and space: TACs allow students to access educational resources from anywhere and at any time. This allows them to tailor learning to their schedules and needs.
- Motivation and participation: TACs can be used to motivate students and encourage their participation in the teaching and learning process. Multimedia resources and interactive activities can make learning more engaging and fun.
- Technology Skills Development: TACs allow students to develop technology skills that are increasingly important in today's world. This prepares them for the future and gives them a competitive advantage in the job market. (Cuenca, 2021)

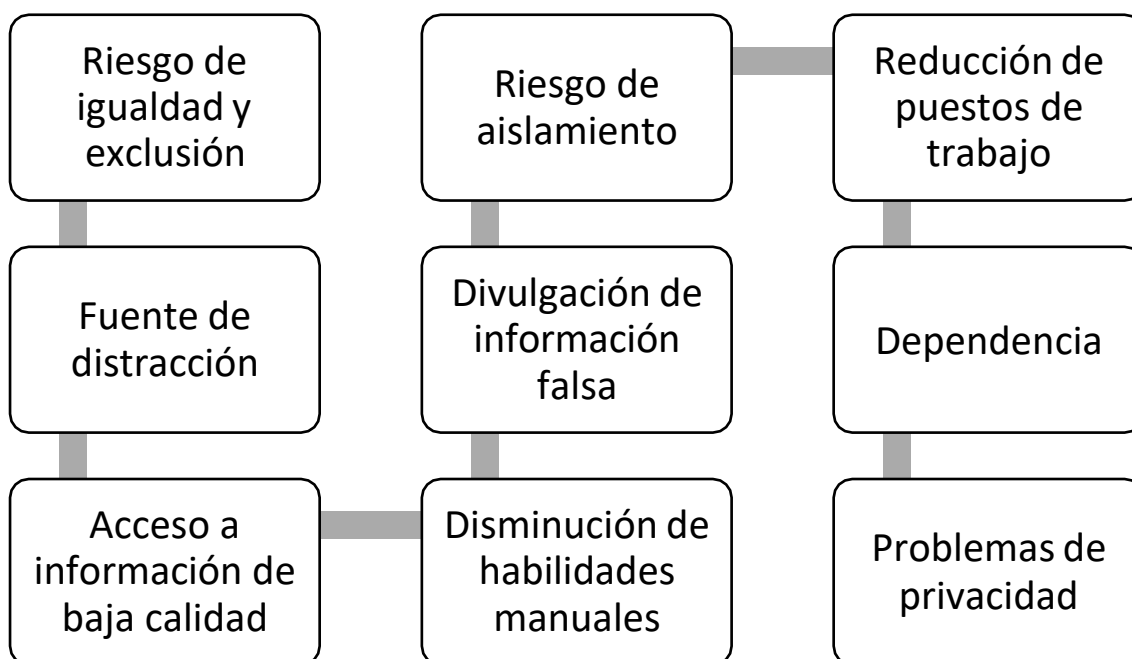Eur. Chem. Bull. 2023, 12(Special Issue 8),647-666

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TACs offer a lot of advantages in the educational field. They improve the quality of teaching, encourage collaborative learning, adapt to the pace of student learning, offer flexibility in time and space, motivate students, develop technological skills and facilitate access to information.

Disadvantages of TACS

Information and Communication Technologies (ICT) have revolutionized the way we interact with the world. However, they also have their disadvantages. Below are some of the disadvantages of ICT:

Graphic 1

Disadvantages of TACS

Riesgo de igualdad y exclusión	Riesgo de aislamiento	Reducción de puestos de trabajo
Fuente de distracción	Divulgación de información falsa	Dependencia
Acceso a información de baja calidad	Disminución de habilidades manuales	Problemas de privacidad

Fountain: (Cuenca, 2021)

Among the main disadvantages of ICTs can create a digital divide between those who have access to them and those who do not. This can lead to the social and economic exclusion of students who do not have the economic resources to access them.

Another disadvantage is that they can be a source of distraction, especially for students. Social media, online games, and other content can distract students from homework and cause their academic performance to drop considerably.

In addition, although ICTs give us access to a large amount of information, not all of it is of high quality. It is important to be critical and evaluate the information found online, because not all information on networks has been checked or failing that, does not come from a reliable source.

It should also be noted that excessive use of ICT can lead to the decline of manual skills. For example, children who spend a lot of time playing video games may have difficulty developing fine motor skills.

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ICTs can also be a source of false information. It is important to verify information before sharing it or making decisions based on it. Similarly, excessive use of ICTs can lead to social isolation. People can spend so much time online that they neglect their relationships in the real world.

These technologies can lead to job reductions. For example, the automation of processes can make some tasks unnecessary, this would harm the economy of hundreds of families.

It is necessary to indicate that excessive use of ICTs can lead to dependency. People may feel anxious or stressed if they don't have access to their devices. ICTs can also raise privacy concerns. It is important to protect our personal information and be aware of how it is used.

Importance of TACS in the teaching of mathematics

Teaching mathematics is a complex task that requires a large amount of resources and strategies to get students to understand the concepts and develop mathematical skills. In this sense, Learning and Knowledge Technologies (TAC) have become a fundamental tool for teaching mathematics, as they allow students to explore, experience and visualize mathematical concepts in a more interactive and dynamic way. (Hernández et al., 2020)

TACs include a wide variety of tools and resources, such as educational software, simulations, games, educational videos, online learning platforms, among others. These tools allow students to learn math in a more engaging and motivating way, which can increase their interest and engagement with learning. (Yanza et al., 2023)

In addition, CT scans can help students understand abstract and complex mathematical concepts in a clearer and more visual way. For example, simulations can help students visualize concepts such as geometry, trigonometry, and calculus, which can make them easier to understand and apply in real-world situations.

Similarly, TACs allow students to work at their own pace and skill level. Students can use the tools and resources of CT scans to practice and improve their math skills, which can boost their confidence and self-esteem in relation to math. (Hernández et al., 2020)

Another important point is that they encourage teachers to personalize student learning and adapt their teaching to the individual needs of each student. Teachers can use CT scans to assess student progress, identify areas of difficulty, and provide individualized feedback and support.

In other words, CT scans are a valuable tool for teaching mathematics, as they allow students to explore, experience and visualize mathematical concepts in a more interactive and dynamic way. In addition, CT scans can help students understand abstract and complex mathematical concepts in a clearer and more visual way, and can help teachers personalize student learning and tailor their teaching to each student's individual needs.

It is therefore important that teachers incorporate CT scans into their mathematics teaching and that students learn how to use these tools effectively to improve their learning and understanding of mathematics.

Teachers can effectively integrate technology into mathematics teaching by following some strategies and recommendations that have been identified in educational research. Here are some of these strategies:

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- Use of educational software: Teachers can use educational software to teach mathematical concepts in a more interactive and visual way. Educational software may include games, simulations, activities, and exercises that allow researchers to explore and experiment with mathematical concepts.
- Using online learning platforms: Online learning platforms can be a valuable tool for teaching mathematics as they allow students to access educational materials and online resources from anywhere and at any time. Teachers can use these platforms to provide students with additional activities and exercises, as well as to assess their progress and provide feedback.
- Use educational videos: Educational videos can be an effective tool for teaching math concepts in a more visual and engaging way. Teachers can use educational videos to introduce new concepts, provide examples and explanations, and to reinforce student learning.
- Encourage collaboration and teamwork: Technologies can be used to foster collaboration and teamwork among students. Teachers can use online collaboration tools, such as wikis and discussion forums, for students to work together on projects and activities.
- Personalize learning: Teachers can use technology to personalize student learning and tailor their teaching to each student's individual needs. For example, teachers can use adaptive educational software that adjusts the difficulty level of exercises based on student progress. (Galán y Murillo, 2020)

Teachers can effectively integrate technology into mathematics teaching by following some strategies and recommendations that have been identified in educational research.

These strategies include using educational software, online learning platforms, educational videos, encouraging collaboration and teamwork, and personalizing learning. By using these strategies, teachers can improve the quality of mathematics teaching and increase student interest and motivation.

Learning model 70:20:10

The 70:20:10 learning model is a formula that is conveniently used in talent management teams to maximize employee learning and leadership capacity. This model is based on the idea that 70% of learning occurs through experience, 20% through social interaction and 10% through formal training. (Guevara, 2020)

Here's how the 70:20:10 learning model relates to technology:

- Experience (70%): Technology can enhance the learning experience by providing innovative ways to develop skills, such as online training or the use of simulators. Technology can also improve accessibility to learning and provide opportunities for personalized learning.
- Social interaction (20%): Technology can improve social interaction through online collaboration tools, such as discussion forums, chats, and video conferencing. These tools allow employees to interact and share knowledge and experiences with each other, which can enhance social learning.
- Formal training (10%): Technology can improve formal training through information and communication technology (ICT)-based training. ICT-based

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training can improve accessibility to learning, encourage creativity and critical thinking, and provide opportunities for personalised learning. (Guevara, 2020)

Technology can enhance all three aspects of the 70:20:10 learning model by providing innovative ways to develop skills, improve accessibility to learning, encourage social interaction, and provide opportunities for personalized learning.

Tools Technologies in learning Model 70:20:10

Experiential learning is the most important part of the 70:20:10 model, accounting for 70% of learning.

Below are some technological tools that may be useful for experiential learning in the 70:20:10 model:

Board 2

Technological tools

Name	Feature
Simulators	Simulators are tools that allow employees to experience work situations in a safe and controlled environment. Simulators can be useful for learning technical skills and for decision making
Virtual reality	Virtual reality is a technology that allows employees to experience work situations in a virtual environment. Virtual reality can be useful for learning technical skills and for decision making.
Online Learning	Online learning is a form of learning that uses technology to provide training and training to employees. Online learning can be useful for learning technical skills and for decision making.
Gamification	Gamification is a technique that uses game elements in a non-playful environment to motivate and engage employees. Gamification can be useful for learning technical skills and for decision making.

Note: In this table we find the main technological tools that can be useful for experiential learning in the 70:20:10 model:

Fountain: (Ruiz et al., 2019)

It is necessary to mention that there are several technological tools that can be useful for experiential learning in the 70:20:10 model, such as simulators, virtual reality, online learning and gamification. These tools can be used to enhance the learning experience of employees and to provide opportunities for personalized learning.

2.2 Learning strategies

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Learning strategies are a set of techniques, activities and means that are planned to make the learning process more effective. These strategies are used by both teachers and students, and focus on improving study and training. Learning strategies are a sequence of cognitive and procedural operations to process information and learn it meaningfully. The procedures used in a learning strategy are called learning techniques. (Moncini y Pinela, 2021)

It is important that teachers promote in students the use of learning strategies, supported this in turn with direct teaching and modeling. Similarly, promoting the use of learning strategies in students favors self-regulation, goal cognition, self-evaluation, autonomy and continuous reflection.

Learning strategies are deliberate and planned by the student himself, and are used to process information and learn it meaningfully. Learning strategies differ from teaching strategies, which are procedures used by the teacher to make student learning possible. Some examples of teaching strategies are: concept maps, interleaved questions, pre-organizers, and analogies. (Camizán et al., 2021)

They are used to improve the learning process, and their use is essential for both teachers and students. Learning strategies differ from teaching strategies, which are procedures used by the teacher to make student learning possible. Some examples of teaching strategies are: concept maps, interleaved questions, pre-organizers, and analogies. Learning strategies are a fundamental tool to improve the learning process, and their use is essential for both teachers and students.

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Learning strategies used in mathematics

Learning strategies are techniques and tools that are used to facilitate the learning process in mathematics. Below are some of the most common strategies:

- Problem solving: This strategy involves identifying the problem, understanding it, identifying relevant information, formulating a strategy to solve the problem, and verifying the solution.
- Concept maps: Concept maps are diagrams that show the relationships between concepts. This strategy helps students organize and visualize information.
- Cooperative learning: This strategy involves working in groups to solve problems and learn together. Students can share ideas, discuss concepts, and help each other.
- Reciprocal teaching: This strategy involves students teaching each other. Students can divide into pairs and teach each other the concepts.
- Project-based learning: This strategy involves students working on projects that allow them to apply mathematical concepts in real-world situations.
- Use of technology: Technology can be a useful tool for learning mathematics. Students can use computer programs, graphing calculators, and other devices to solve problems and visualize concepts.

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- Teaching study skills: This strategy involves teaching students study skills, such as note-taking, organizing information, and managing time.
- Positive reinforcement: This strategy involves using positive reinforcement, such as praise and reward, to motivate students and reinforce learning.
- Teaching problem-solving strategies: This strategy involves teaching students specific problem-solving strategies, such as identifying patterns and simplifying complex problems.
- Teaching Meta Cognition: This strategy involves teaching students to think about their own learning process. Students can learn to identify their strengths and weaknesses and develop strategies to improve their learning. (Camizán et al., 2021)

These are just some of the learning strategies that can be used in math. It is important to remember that each student is unique and can respond better to different strategies. Therefore, it is important for teachers to try different strategies and find the ones that work best for their students.

Importance of Learning Strategies

Learning strategies are a set of techniques, activities and means that are planned to make the learning process more effective. These strategies are used by both teachers and students, and focus on improving study and training. Learning strategies are a sequence of cognitive and procedural operations to process information and learn it meaningfully. (Camizán et al., 2021)

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Relevant factors within academic performance

The main factors are:

Board 3

Factors

Factor	Feature
Motivations	The motivational structure can be studied in terms of its basic components or dimensions: value dynamics, expectations dynamics, and motivational feelings. All of them act as an engine of learning and adjustment of efforts to achieve the goals, a condition that is reflected in the performance results.

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Previous performance	This is considered as a variable concerning the learning process of learners in the school environment. If a student's academic performance during their academic life is disproportionate, the student's academic performance will deteriorate in the future, even reaching the point of leading to academic failure.
Study habits	It is an important factor as students with special study skills, better strategies, and better habits tend to have high academic performance, and students with low academic ability but with regular study habits tend to achieve the same results as students with superior abilities. Then, study habits are adapted as a developmental factor or not in the problem and this has a direct impact on whether learning is appropriate or not for students.
The perception of homework	This is considered an important feature since it allows the student to distinguish himself, make decisions and demonstrate his participation and voluntary commitment in the tasks and undertakings that correspond to his context, which is reflected in the suitability of school tasks, the establishment of personal goals and the development of an attitude of achievement, That is, the realization of the tasks are pleasant for the students who develop them, this is an element that can be advantageous if it is developed in the right way.
Self-regulation	It states that people who self-regulate their learning have a cognitive and motivational awareness of what they do and what they need to do to successfully achieve their goals, and thus, show a positive balance between the beliefs they have about themselves, their tasks, research and reasons for their participation.

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	Self-regulation must be understood in the context of learning because when students participate in their own educational process, it must be established from causes, feelings and actions that, by their frequency and effectiveness, support the performance of students.
Parents' interest in learning	Because the interest of the representatives for the educational mission of the students makes them realize that their work in the educational field will have an impact on the academic performance of their children, the contact with the center focuses on education, creating a good work environment at home, achieving good results in the use of their free time, pressuring them to carry out reading and culture activities that help in the fulfillment of their duties.

Note: In this table, we find the most relevant factors of academic performance

Fountain: (Baque y Portilla, 2021)

Classroom intervention guidelines.

In this sense, the approach to academic performance, with guidelines for action and intervention in the classroom such as:

Graphic 2

Intervention guidelines

- Identification of students at educational risk and their factors, adapt their performance and allow educational policy to achieve its objectives.
- Compensation through additional training or other support to those with less favourable "start-up conditions".
- Encourage the efforts of these students to effectively utilize their potential. (González, 2022)

3 Methodology

The research work was carried out at the primary school "Virgilio Drouet Fuentes", located in the capital of the province of Santa Elena. This study is based on the following levels:

Explanatory. - Study of the true circumstances of the event and its characteristics, manipulation of one or more variables, deep knowledge of the subject, attention to general details, which allows to deepen in specific aspects and concrete description of the causes that originate the situation or event, verify the facts to find the correct explanation.

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Descriptive. - Summarize the details and deepen the research related to the problem and the solution to be sought, as well as the analysis of the parts, classes and categories found in the process. And use the survey method:

Quantitative It is characterized by the use of rigorous procedures, experimental methods and methods of collecting statistical data characterized by an empirical-deductive logic.

It will be taken as population to the students of the 5th year of EGB of the School of Basic Education, "Virgilio Drouet Fuentes" which corresponds to a total of 35 students, being a very small universe will work with 100% of them as a total population.

This research will collect information using the following technologies and their respective research tools:

Technology: studies that allow the collection of qualitative and/or quantitative information on a set of different topics, carried out according to the chosen methods and the objectives to be achieved, ensuring a standardized process with the data obtained. Instrument: A questionnaire that facilitates the preparation of a set of open or closed questions aimed at obtaining information from respondents on pre-identified variables to evaluate them qualitatively or quantitatively.

To process the information and analyze the results obtained in the research used, Microsoft Excel was used, which allowed to generate tables and illustrations for each part of the research tool,

A strong correlation was found between CAT (technology for knowledge and learning) and student performance in mathematics, which may indicate the development of TAC-based resources to improve subject performance.

4 Results

According to the survey results, there are several electronic devices that can be useful for students at home. Here are some of them:

Desktop computer: This device can be useful for working on tasks that require a large screen and a physical keyboard. However, it is not very portable and can be uncomfortable to work in different places of the house this had a reception of 11% among the students of the institution

Laptops are portable and easy to carry around different places in the house. They are ideal for working on tasks that require mobility and Internet connection having an acceptance of 29%.

Cell phones are very popular and useful devices for students. They can be used to take notes, do online searches, send emails and make video calls and due to their lower cost had a reception of 60%.

The use of technology in the classroom can have a positive impact on teacher efficiency and productivity, as well as student learning and performance.

For example, technology can help teachers personalize learning, improve student understanding and retention, and save time on administrative tasks.

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However, it has also been found that the effectiveness of technology in the classroom depends on how it is used and integrated into the teaching process. Overall, it seems that proper use of technology can be beneficial for classwork, but it is important to note that it is not a magic bullet and that its effectiveness depends on how it is implemented and used.

With regard to the performance of students in mathematics, where 34% of students, he pointed out that in his opinion he considers himself a regular student in mathematics, because certain topics are difficult, it should also be noted that 40% of students consider that their level in mathematics is good.

The impact of technology on academic performance in mathematics is a topic of interest to many researchers. The use of technology in the teaching of mathematics in primary school has a small positive effect on students' mathematical performance.

In addition, technology fosters a deeper understanding of mathematical concepts and rules, and that students using calculators and computers can work at higher levels of generalization and abstraction. Research indicates that by using technology, students can learn more math more deeply.

Teaching mathematics with technology led to better academic achievement by students, the use of technology in mathematics has contributed to improved attitudes towards mathematics, as well as conceptual understanding and motivation.

Regarding whether fifth-year students devote enough time to learning mathematics, 57% indicated that they do not do it all the time, only when they consider it necessary and only 17% indicated that if they dedicate the time corresponding to the subject of mathematics.

According to the data obtained in the survey, students consider that it is rare that they do not finish their math tasks on time this in 40%, but a group of students in 23%, points out that for them if it is very frequent for various reasons, not to finish their math tasks on time.

5 Conclusions

- The situation of education today, especially in the area of mathematics, requires teachers to innovate in mathematics teaching methods and instructional strategies to take advantage of students' resources, creativity and skills in the virtual classroom. With technology as the main support, a positive response to the development of TAC learning is demonstrated in a participatory and dynamic way.
- Personalized TAC-based learning environments are essential because they offer an innovative pedagogical strategy that promotes full interaction with the many free web 3.0 tools available online, facilitates understanding, and incorporates the student's learning experience at their own pace and style.
- Students supported the implementation of information technologies for learning and knowledge, indicated that they prefer to work on gaming platforms for their ease of use and, above all, motivated by incentives or bonuses to be more interested in work, collaborate to optimize time and resources.
- The TAC, as a set of new technologies and digital tools that facilitate access to knowledge, is closely related to mathematics and its academic performance, since it favors the understanding of the subject and improves the academic performance of

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students, allowing them to be pioneers and transform technology. . Be able to feel, think and reason independently and holistically.

- The use of obsolete pedagogical methods, such as traditionalism, combined with the ignorance of new technologies by teachers, creates tension in the training of students, since it does not allow to improve the learning process, except rigor. The demands of today's technical education require students who are critical, focused and capable of generating their own knowledge.

- By using digital resources developed based on TAC, students can show more interest in the subject of mathematics, concluded that innovation in digital education is the best method of application in this new technological era, the educational lesson will improve academic performance and teaching the subject. process

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