**Using Technology to Increase Achievement in Mathematics Based on the District's Scores on Standards**

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**Improving Basic Skills in Mathematics Using Technology**

**Introduction**

The use of technology is directly integrated into the district's scores standards in mathematics. Using simple modeling and representations assists learners in understanding the mathematics concepts necessary to solving math problems. Technology can lessen the tedious computations in math and enhance learners' focus on more fundamental and essential mathematics concepts. Technology represents math in a way that helps learners comprehend the math concepts easily and also assists instructors in improving how and what learners learn. All people face limits in the number of details they can keep track of when solving problems. Besides, all learners have some unavoidable difficulties in solving specific math problems and experiencing thinking difficulties in the tool and materials. Therefore, using technology to improve math competency is crucial as it enables learners to focus on the appropriate way of thinking that is not superfluous.

**The Role of Technology in Enhancing Math Competency**

Technology expands the capacity of learners to engage in investigations, communicate, attack calculations, and obtain informational resources. Learners can also use technology to explore and interacting with exciting math concepts and improve their skills and knowledge in math (Dikusar, 2018). The power of computation frees mathematics students to explore and link math and real-world phenomena. Technology tools influence mathematics concepts like substitution, addition, interdisciplinary and disciplinary reconstructions. Several students below the ninth-grade classes demonstrate difficulties with number sense which interferes with their ability to comprehend and recall basic math concepts and facts (Putri, Roza & Maimunah, 2020). Many teachers have resorted to re-teaching the basic math skills by focusing on the number sense using computers, software, calculators, and other technological devices to enhance students' math achievements.

Mathematics deficiency among learners with disabilities, diverse learners, and ELLs results in wrong computation, which creates an obstacle in solving math problems. Integrating various technologies such as PowerPoint, software programs, Smart Boards, digital text, calculators, projectors, YouTube videos, internet websites, music CDs, and DVDs to facilitate classroom learning would help in improving mathematics achievement among students (Dikusar, 2018). Technology serves as a tool to enhance skills and knowledge in mathematics. For instance, using calculators increases learners' ability to solve math problems. Various technologies support students' achievement and enable learners to work independently, be competent and creative thinkers (Soares, Evans & Patel, 2018). Technology assists learners in linking concepts to real-world experiences, accurately computing solutions, and increasing math state standards. Computing computers has helped find math games and related websites that will advance learners' interests in mathematics.

**How Technology Support Diverse Learners in Solving Math Problems**

Many students learn in different ways. Thus, the technology used should offer tasks and materials with varying degrees of scaffolding and help learners work alone or collaboratively in creative means (Soares, Evans & Patel, 2018). For diverse learners, schools should use digital text, audio, digital enhancement, software, visuals, targeted populations, curricular supports to meet the needs of all learners. These techniques offer effective differentiated instructional techniques that maximize students' growth and progress (Dikusar, 2018). In addition, technology helps teachers to tailor their instructions to meet the needs of all learners by changing the contents, channels of input, and means of output.

**Use of Digital Text**

Digital texts will assist learners who have difficulties reading standard print books and can easily interact with numbers and letters (Putri, Roza & Maimunah, 2020). These texts allow learners to manipulate, copy, or past the letters and numbers. As a result, students can play with numbers and solve math problems quickly, unlike when writing on paper.

**Audio or Talking Text**

Through this technology, words on the screen are read by the computer on command. The application operates like the text to speech, and learners can easily click on the numbers and solve math problems. The application is also suitable for learners who have difficulties composing grammatically correct sentences or hearing challenges and inaccuracies in their task.

**Assistive Technology for Math**

The use of assistive technology to improve math competency among diverse learners enhances students' performances. Students will be able to learn independently and feel comfortable when solving math problems (Putri, Roza & Maimunah, 2020). Assistive technology tools such as calculators and digital graphical tools can be helpful to people struggling with math. Button calculators with large numbers and symbols can assist students in solving both simple and complex math. Using graph papers would assist learners in lining up numbers and symbols in math problems and help keep track of place value and the total value of numbers (Soares, Evans & Patel, 2018). Using graph papers with large squares will help learners solve math problems quickly by lining up numbers on the grids. Drawing tools like rulers, protractors, and stencils can help students draw lines, angles, shapes, and geometric figures. These tools will help students solve geometry and trigonometric math problems with a lot of ease. Using digital equation-solving tools assists learners in solving equations by figuring out how to obtain a solution from a math problem (Putri, Roza & Maimunah, 2020). For example, if the learners are asked to solve X in the equation 5 + X = 10, they can collect like terms on one side and obtain the correct answer (Soares, Evans & Patel, 2018). Using graphical organizers will assist learners in breaking down and laying out steps for solving mathematics problems. Text to speech read aloud numbers are can be used together with talking calculators to assist in dictating and solving math problems.

**Manipulative Technologies**

Learners with a disability should be accorded opportunities to realize their full potentials as students without disabilities. Using technology in education has simplified the education processes for learners with disabilities due to the easy accessibility of digital technologies (Callaghan et al., 2018). Many schools use manipulative technologies to assist students in understanding math concepts. These tools assist in the mastery of computations balanced with problem-solving, making real-world connections, and applying mathematics in daily activities (Callaghan et al., 2018). Incorporating hands-on activities engages learners in creative thinking as they work to determine math principles. Teachers can use words and actions to create a meaningful situation that learners recall later and recall what they learned (Soares, Evans & Patel, 2018). Hands-on activities help students create significant concepts regarding the number system. Manipulative technologies assist learners in remembering what they have done instead of being forced to recall what they memorized. Manipulative technology assists learners through guided discovery- hands-on activities that help them notice math patterns and relationships.

**Corporative Learning**

Incorporating technology with cooperative learning techniques helps in motivating learners to work on enhancing their math skills. Learners can adopt the social skills required to accomplish some math tasks and projects. Cooperative learning will generate interest in mathematic concepts and make learning more enjoyable for both learners and teachers (Callaghan et al., 2018). Through collaborations, students can learn from others and improve their overall math skills and knowledge. Some cooperative learning techniques involve peer tutoring, mentoring, and tutoring. The instructions must be student-centered, with the teacher acting as the facilitator. When students work together, they develop a bond that increases social and educational relationships while enhancing academic success.

**Use of Technology for Exceptional Need Learners**

Modern technologies offer learners with disabilities equal opportunities to realize and potential as students without disabilities in the classroom (Callaghan et al. 2018). Technology simplifies the learning process for learners with disabilities by offering solutions that suit the needs of all students. Using custom-made technologies designed based on the requirements of a specific group of learners will increase students' ability to acquire essential math skills and knowledge to solve real-life problems (Soares, Evans & Patel, 2018). Using assistive to teach learners with disability math concepts, they become more independent and free themselves from the constant need for direct teacher involvement. Learners are capable of choosing technology that best suits their needs and would result in personalized learning. Using modern technologies also help in simplifying communication and enhancing math skill and knowledge for learners with disabilities (Kukey, Gunes & GenÃ, 2019). Using E-learning technologies such as assistive technologies makes it possible for teachers to offer highly flexible and differentiated instructions. These technologies offer various learning opportunities and techniques that instruct, engage, inform, educate, and support special education learners (Soares, Evans & Patel, 2018). Technologies allow math learning to move away from the classroom and help learners learn at a pace that they can easily cope up within improve their math knowledge and skills.

**Adaptive Computing**

Adaptive technology allows teachers and learners to use digital devices to bypass challenging mathematics concepts. For example, using screen reader software like JAWS and other specially designed Braille keyboards enables visually challenged learners to use computers and solve math problems (Kukey, Gunes & GenÃ, 2019). Using adaptive technology in mathematics enhances simple computation and visualization of math situations and relationships, thus understanding math concepts in practice adequately. Technology acts as a tool for learning mathematics and cannot replace theoretical understanding, computational fluency, and problem-solving skills. In mathematics, teachers use content-specific technologies such as computer programs, software’s and computational tools and content-neutral technologies such as collaboration and communication tools (Kukey, Gunes & GenÃ, 2019). Technology changes the kind of math students learn, infrequence how and when to learn math concepts. Because diverse learners have varied ways of understanding math concepts, technology helps incorporate what is essential. It replaces what is less important to increase personalized learning and gaining skills and knowledge.

Similarly, using argumentative communicating applications would assist learners with speech problems, overcome communication barriers, and solve various math problems (Callaghan et al., 2018). For example, visual technologies such as a specialized computer that provides a word function feature capable of predicting words and letters would improve learners' communication abilities (Kukey, Gunes & GenÃ, 2019). In addition, using picture charts, books, and smartboard displays assists learners with speech difficulties to solve math problems effectively than using text to speech or verbal teaching of math concepts. Using technologies effectively in teaching mathematics increases students' understanding of math concepts, boosts their engagement, and strengthens their problem-solving skills (Kukey, Gunes & GenÃ, 2019). Various education technologies need to be integrated with instructions and should be learners centered on meeting the varied needs of diverse students in learning math concepts.

Technology has become an essential part of the district's standards for mathematics practice starting from kindergarten and progressing through to grade twelve (Callaghan et al., 2018). Students are expected to integrate technology tools in their problem-solving activities in math. The standard technologies used in teaching mathematics for diverse learners include hands-on activities or handheld devices, calculators, internet websites, and computer applications (Putri, Roza & Maimunah, 2020). Using handheld devices such as calculators and other technologies supplements learners' computational and procedural skills and assures that technology can be integrated into learning without harming learners' math proficiency. In addition, using computer-mediated learning tools has increased the capabilities to grasp mathematics concepts and abilities (Putri, Roza & Maimunah, 2020). Leaners need to interact frequently with technology tools to improve their problem-solving aptitudes. Computerized teachers would be more effective when incorporated with constructive teaching techniques in which learners gain conceptual understanding via inquiry-based and collaborative learning models.

**Conclusion**

Integration of technology in mathematics learners has improved the learning process and facilitated math learning using various digital learning tools. However, effective technology implementation in learning requires that teachers develop high values and beliefs on technology's importance. The instructions need to be learner-centered and disseminated through a personalized approach, with the teacher only acting as a learning facilitator. Increased interaction with technological tools among diverse learners increases their chances of solving math problems and links them to real-life circumstances.

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