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From Visual to Kinesthetic: Adapting Teaching Strategies in Mathematics

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Learning mathematics remains a significant challenge for many students, particularly in areas involving computation and problem-solving, resulting in lower grades and difficulty keeping pace with peers. Traditional teaching methods, often dominated by visual and auditory instruction, may fail to engage kinesthetic learners, who require movement and hands-on experiences to internalize concepts. As a result, educators have increasingly adapted their strategies to include kinesthetic teaching approaches, allowing students to "train their minds like their muscles" through physical interaction and active learning. This approach is supported by research indicating that integrating movement into mathematical learning can enhance comprehension, engagement, and retention (Irvine, 2019).

Kinesthetic strategies acknowledge that classrooms comprise diverse learning modalities, including approximately 30% visual learners, 25% auditory learners, 15% kinesthetic learners, and 30% with mixed learning preferences. Educators who address kinesthetic learning needs create dynamic classroom environments, where students move freely, manipulate materials, and interact physically with content, which significantly improves performance (Irvine, 2019). Quasi-experimental studies in Nigeria confirm that students exposed to kinesthetic learning showed significantly higher interest and achievement in mathematics compared to peers taught through conventional methods, regardless of gender (Abah et al., 2025).

Furthermore, self-efficacy and self-confidence are critical predictors of success in mathematics. Students with negative beliefs toward math often display lower persistence and resilience, limiting their academic growth. Kinesthetic instructional strategies, including manipulatives and repetitive action-based exercises, have been shown to strengthen neuroplasticity and improve computational efficiency, leading to measurable gains in self-efficacy and confidence in elementary students' math performance (Carr et al., 2025).

Physical activity is also strongly correlated with cognitive engagement. Lecture-based classes with minimal movement result in reduced student performance, with research indicating that students in static classes are 1.5 times more likely to fail compared to those in kinesthetic or multi-sensory learning environments (Freeman et al., 2014). Yet, fewer than a quarter of children and adolescents meet recommended levels of physical activity, which compounds the challenges of conventional instruction (Katzmarzyk et al., 2016). Integrating kinesthetic learning addresses both cognitive and physical engagement, enhancing overall student learning outcomes.

Recent technological innovations, including augmented reality (AR), virtual reality (VR), and motion-capture systems such as Kinect, further extend the potential of kinesthetic learning. These tools provide interactive experiences that help students visualize mathematical concepts, graphs, and formulas while encouraging active participation. Research demonstrates that combining AR/VR with kinesthetic

approaches results in deeper understanding, increased focus, and improved retention of mathematical concepts (Ayala et al., 2013). The synergy of movement-based learning and technology-driven interaction represents a promising path for mathematics education, bridging the gap between abstract concepts and experiential comprehension.

In conclusion, kinesthetic learning offers a transformative approach for mathematics education by addressing diverse learning modalities, improving self-efficacy, and integrating physical activity and technology into lessons. By adopting movement-based and interactive teaching strategies, educators can foster greater engagement, comprehension, and achievement, equipping students with the confidence and skills needed to succeed academically and in future careers. Schools and educators are encouraged to incorporate kinesthetic techniques consistently, ensuring that learning is dynamic, inclusive, and responsive to student needs.

References

Abah, J., Chinaka, T. W., & Jobe, N. B. (2025). Digitization: The Next Frontier in African Indigenous Mathematical Games Research. In Empowering Pre-Service Teachers to Enhance Inclusive Education Through Technology (pp. 19-58). IGI Global Scientific Publishing.

Ayala, N. A. R., Mendívil, E. G., Salinas, P., & Rios, H. (2013). Kinesthetic learning applied to mathematics using kinect. *Procedia Computer Science*, *25*, 131-135.

Carr, J. M., Schoephoerster, K., & Riegel, C. (2025). The impact of kinesthetic instructional strategies and manipulatives on fourth grader's self-efficacy and self-confidence toward multiplication. *Mathematical Thinking and Learning*, *27*(3), 361-377.

Freeman, S., Eddy, S. L., McDonough, M., Smith, M. K., Okoroafor, N., Jordt, H., & Wenderoth, M. P. (2014). Active learning increases student performance in science, engineering, and mathematics. *Proceedings of the national academy of sciences*, *111*(23), 8410-8415.

Irvine, J. (2019). Strategies for enhancing mathematics learning for students who are kinesthetic learners. *Gazette-Ontario Association for Mathematics*, *57*(4), 41-44.

Katzmarzyk, P. T., Denstel, K. D., Beals, K., Bolling, C., Wright, C., Crouter, S. E., McKenzie, T. L., Pate, R. R., Saelens, B. E., Staiano, A. E., Stanish, H. I., & Sisson, S. B. (2016). Results From the United States of America's 2016 Report Card on Physical Activity for Children and Youth. *Journal of physical activity & health*, *13*(11 Suppl 2), S307–S313. https://doi.org/10.1123/jpah.2016-0321

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