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Bibliography

Research on the Use of Virtual Manipulatives

- Anstrom, T. (2006). *Supporting students in mathematics through the use of manipulatives*. Washington, DC: Center for Implementing Technology in Education. Retrieved from <http://www.cited.org/library/resourcedocs/Supporting%20Students%20in%20Mathematics%20Through%20the%20Use%20of%20Manipulatives.pdf>
- Baker, J. D., & Beisel, R. W. (2001). An experiment in three approaches to teaching average elementary school children. *School Science and Mathematics, 101*(1), 23–32.
- Barnett, M., Yamagata-Lynch, L., Keating, T., Barab, S. A., & Hay, K. E. (2005). Using virtual reality computer models to support student understanding of astronomical concepts. *Journal of Computers in Mathematics and Science Teaching, 24*(4), 333–356.
- Bolyard, J., & Moyer-Packenham, P. (2006). The impact of virtual manipulatives on student achievement in integer addition and subtraction. *Proceedings of the 28th annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education, 2*, 879–881.
- Butler, F. M., Miller, S. P., Crehan, K., Babbitt, B., & Pierce, T. (2003). Fraction instruction for students with mathematics disabilities: Comparing two teaching sequences. *Learning Disabilities Research & Practice, 18*(2), 99–111.
- Cotter, J. (2000). Using language and visualization to teach place value. *Teaching Children Mathematics, 1*, 2.
- Emihovich, C. (1988). Effects of Logo and CAI on black first graders' achievement, reflectivity, and self-esteem. *The Elementary School Journal, 88*(5), 473–487.
- Flanagan, R. (1996, April). *Unintended results of using instructional media: A study of second- and third-graders*. Paper presented at the annual meeting of the American Educational Research Association, New York, NY.
- Fuchs, L. S., Fuchs, D., Hamlett, C. L., & Appleton, A. C. (2002). Explicitly teaching for transfer: Effects on the mathematical problem-solving performance of students with mathematics disabilities. *Learning Disabilities Research & Practice, 17*(2), 90–106.
- Garofalo, J., & Sharp, B. D. (2003). Teaching fractions using a simulated sharing activity. *Learning and Leading With Technology, 30*(7), 36–39.
- Grupe, L. A., Huffman, L. F., & Bray, N. W. (1996, April). *Addition strategies in children*. Presented at the Conference on Human Development, Birmingham, AL.
- Hannafin, R. D. (2004). Achievement differences in structured versus unstructured instructional geometry programs. *Educational Technology Research and Development, 52*(1), 19–32.

- Hasselbring, T. S., Lott, A. C., & Zydney, J. M. (2005). *Technology-supported math instruction for students with disabilities: Two decades of research and development*. Washington, DC: American Institutes for Research.
- Helsel, F. K. I., Hitchcock, J. H., Miller, G., Malinow, A., & Murray, E. (2006). *Identifying evidence-based, promising and emerging practices that use screen-based and calculator technology to teach mathematics in grades K–12: A research synthesis*. Retrieved from http://www.citeducation.org/docs/AERA_CITEd.pdf
- Hwang, W. Y., Su, J. H., Huang, Y. M., & Dong, J. J. (2009). A study of multi-representation of geometry problem solving with virtual manipulatives and whiteboard system. *Educational Technology & Society*, 12(3), 229–247.
- Kramarski, B. (1999). The study of graphs by computers: Is easier better? *Educational Media International*, 36(3), 203–209.
- Masalski, W. J., & Elliott, P. C., (Eds.). (2005). *Technology-supported mathematics learning environments: 2005 yearbook of the National Council of Teachers of Mathematics*. Reston, VA: National Council of Teachers of Mathematics.
- Moreno, R., & Durán, R. (2004). Do multiple representations need explanations? The role of verbal guidance and individual differences in multimedia mathematics learning. *Journal of Educational Psychology*, 96(3), 492–503.
- Moreno, R., & Mayer, R. E. (1999). Multimedia-supported metaphors for meaning making in mathematics. *Cognition and Instruction*, 17(3), 215–248.
- Moyer, P. S., Niezgodá, D., & Stanley, J. (2005). Young children's use of virtual manipulatives and other forms of mathematical representations. In W. J. Masalski & P. C. Elliott (Eds.), *Technology-supported mathematics learning environments (sixty-seventh yearbook)* (pp. 1, 17–34). Reston, VA: National Council of Teachers of Mathematics.
- Moyer-Packenham, P. S. (2005). Using virtual manipulatives to investigate patterns and generate rules in algebra. *Teaching Children Mathematics*, 11(8), 437–444.
- Moyer-Packenham, P. S., Salkind, G., & Bolyard, J. J. (2008). Virtual manipulatives used by K–8 teachers for mathematics instruction: Considering mathematical, cognitive, and pedagogical fidelity. *Contemporary Issues in Technology and Teacher Education*, 8(3), 202–218.
- Murphy, R. F., Penuel, W. R., Means, B., Korbak, C., Whaley, A., & Allen, J. E. (2002). *E-Desk: A review of recent evidence on the effectiveness of discrete educational software*. Menlo Park, CA: SRI International.
- Reimer, K., & Moyer, P. S. (2005). Third-graders learn about fractions using virtual manipulatives: A classroom study. *Journal of Computers in Mathematics and Science Teaching*, 24(1), 5–25.
- Rust, A. (1999). *A study of the benefits of math manipulatives versus standard curriculum in the comprehension of mathematical concepts*. (Doctoral dissertation) (ERIC Document Reproduction Service No. ED436395).
- Shiah, R. L., Mastropieri, M. A., Scruggs, T. E., & Mushinski Fulk, B. J. (1994). The effects of computer-assisted instruction on the mathematical problem solving of students with learning disabilities. *Exceptionality*, 5(3), 131–161.
- Sowell, E. J. (1989). Effects of manipulative materials in mathematics instruction. *Journal for Research in Mathematics Education*, 20(5), 498–505.

- Steen, K., Brooks, D., & Lyon, T. (2006). The impact of virtual manipulatives on first grade geometry instruction and learning. *Journal of Computers in Mathematics and Science Teaching, 25*(4), 373–391.
- Suh, J. M., & Moyer, P. S. (2007). Developing students' representation fluency using virtual and physical algebra balances. *Journal of Computers in Mathematics and Science Teaching, 26*(2), 155–173.
- Suh, J. M., Moyer, P. S., & Heo, H. J. (2005). Examining technology uses in the classroom: Developing fraction sense using virtual manipulative concept tutorials. *Journal of Interactive Online Learning, 3*(4), 1–22.
- Suh, J. M., & Moyer-Packenham, P. S. (2007). The application of dual coding theory in multi-representational virtual mathematics environments. In J. H. Woo, H. C. Lew, K. S. Park, & D. Y. Seo (Eds.), *Proceedings of the 31st Conference of the International Group for the Psychology of Mathematics Education, 31*(4), 209–216.
- Tzur, R. (1999). An integrated study of children's construction of improper fractions and the teacher's role in promoting that learning. *Journal for Research in Mathematics Education, 30*(4), 390–416.
- Van Eck, R. (2006). The effect of contextual pedagogical advisement and competition on middle-school students' attitude toward mathematics using a computer-based simulation game. *Journal of Computers in Mathematics and Science Teaching, 25*(2), 165–195.
- Van Eck, R., & Dempsey, J. (2002). The effect of competition and contextualized advisement on the transfer of mathematics skills in a computer-based instructional simulation game. *Educational Technology Research and Development, 50*(3), 23–41.
- Witzel, B. S., Mercer, C. D., & Miller, M. D. (2003). Teaching algebra to students with learning difficulties: An investigation of an explicit instruction model. *Learning Disabilities Research & Practice, 18*(2), 121–131.