Adamchuk, V., Barker, B. S., Nugent, G., Grandgenett, N., Patent-Nygren, M., Lutz, C., & Morgan, K. (2012). Learning Geospatial Concepts as Part of a Non-Formal Education Robotics Experience. In *Robots in K-12 Education: A New Technology for Learning* (p. 284). Hershey, PA: IGI Global.

Alimisis, D. (2012). Robotics in Education & Education in Robotics: Shifting Focus from Technology to Pedagogy. Presented at the 3rd International Conference on Robotics in Education, Prague. Retrieved from http://www.etlab.eu/files/alimisis_RIE2012_paper.pdf

Alimisis, D. (2013). Educational robotics: Open questions and new challenges. *Themes in Science and Technology Education*, *6*(1), pp–63.

Anderson, J., & Baltes, J. (2007). A mixed reality approach to undergraduate robotics education (Vol. 22, p. 1979). Presented at the PROCEEDINGS OF THE NATIONAL CONFERENCE ON ARTIFICIAL INTELLIGENCE, Menlo Park, CA; Cambridge, MA; London; AAAI Press; MIT Press; 1999.

Aslam, D. M., Cao, Z., & Rostamzadeh, C. (2008). Innovative engineering education using programmable LEGO robotic VD Graaf generators. *ASEE Zone*, *1*. Retrieved from http://www.asee.org/documents/sections/middle-atlantic/spring-2008/02-Innovative-Engineering-Education-Using-Programmable-Lego-Robotic-VD-Graaf-Generators.pdf

Baker, J. Y. (2012). The Mediating Role of Context in an Urban After-School Robotics Program: Using Activity Systems to Analyze and Design Robust STEM Learning Environments. In *Robots in K-12 Education: A New Technology for Learning* (pp. 204–221). Hershey, PA: IGI Global. Retrieved from http://services.igi-global.com/resolvedoi/resolve.aspx?doi=10.4018/978-1-4666-0182-6.ch010

Barak, M., & Zadok, Y. (2009). Robotics projects and learning concepts in science, technology and problem solving. *International Journal of Technology and Design Education*, *19*(3), 289–307.

Barker, B. S., & Ansorge, J. (2007). Robotics as means to increase achievement scores in an informal learning environment. *Journal of Research on Technology in Education*, *39*(3), 229.

Barker, B. S., Nugent, G., Grandgenett, N., & Adamchuk, V. I. (2012). *Robots in K-12 Education: A*

New Technology for Learning. IGI Global. Retrieved from http://services.igi-global.com /resolvedoi/resolve.aspx?doi=10.4018/978-1-4666-0182-6

Barnes, D. J. (2002). Teaching introductory Java through LEGO MINDSTORMS models. In *ACM SIGCSE Bulletin* (Vol. 34, pp. 147–151). Retrieved from http://dl.acm.org /citation.cfm?id=563397

Beer, R. D., Chiel, H. J., & Drushel, R. F. (1999). Using autonomous robotics to teach science and engineering. *Communications of the ACM*, *42*(6), 85–92.

Benitti, F. B. V. (2012). Exploring the educational potential of robotics in schools: A systematic review. *Computers & Education*, *58*(3), 978–988. doi:10.1016/j.compedu.2011.10.006

Bers, M. (2008). *Blocks to robots: learning with technology in the early childhood classroom*. Teachers College Press. Retrieved from http://books.google.com/books?id=KkUmAQAAIAAJ

Bers, M., Flannery, L., Kazakoff, E., & Sullivan, A. (2014). Computational thinking and tinkering: Exploration of an early childhood robotics curriculum. *Computers & Education*, *72*, 145–157. doi:10.1016/j.compedu.2013.10.020

Bers, M. U. (2002). Teachers as Designers: Integrating Robotics in Early Childhood Education. *Information Technology in Childhood Education Annual*, *2002*(1), 123–145.

Bers, M. U. (2007). Project InterActions: A Multigenerational Robotic Learning Environment. *Journal of Science Education and Technology*, *16*(6), 537–552. doi:10.1007/s10956-007-9074-2

Bers, M. U., & Ettinger, A. B. (2012). Programming Robots in Kindergarten to Express Identity: An Ethnographic Analysis. In *Robots in K-12 Education: A New Technology for Learning* (p. 168). Hershey, PA: IGI Global.

Bers, M. U., & Portsmore, M. (2005). Teaching Partnerships: Early Childhood and Engineering Students Teaching Math and Science Through Robotics. *Journal of Science Education and Technology*, *14*(1), 59–73. doi:10.1007/s10956-005-2734-1

Brophy, S., Portsmore, M., Klein, S., & Rogers, C. (2008). Advancing Engineering Education in P-12 Classrooms. *Journal of Engineering Education*, *97*(3).

Cejka, E., & Rogers, C. (2005). Inservice Teachers and the Engineering Design Process. *Proc. Amer.*

Soc. Eng. Ed. Retrieved from http://soe.rutgers.edu/files /Inservice%20Teachers%20and%20the%20Engineering%20Design%20Process.pdf

Cejka, E., Rogers, C., & Portsmore, M. (2006). Kindergarten Robotics: Using Robotics to Motivate Math, Science, and Engineering Literacy in Elementary School. *International Journal of Engineering Education*, *22*(4), 711–722.

Cole, R. K. (2012). STEM Outreach with the Boe-Bot®. In *Robots in K-12 Education: A New Technology for Learning* (p. 245). Hershey, PA: IGI Global.

Computing Community Consortium. (2009, May 21). A Roadmap for US Robotics From Internet to Robotics. Computing Community Consortium. Retrieved from http://www.us-robotics.us/reports /CCC%20Report.pdf

Crawford, R. H., Wood, K. L., Fowler, M. L., & Norrell, J. L. (1994). An engineering design curriculum for the elementary grades. *Journal of Engineering Education*, *83*(2), 172–181.

Demo, G. B., Moro, M., Pina, A., & Arlegui, A. (2012). In and out of the school activities implementing IBSE and constructionist learning methodologies by means of robotics. In *Robots in K-12 education: A new technology for learning* (pp. 66–92). Hershey, PA: IGI Global.

Denis, B., & Hubert, S. (2001). Collaborative learning in an educational robotics environment. *Computers in Human Behavior*, *17*(5), 465–480.

Donahue Institute. (2012). Hampshire Regional School District: Technology Enhancement Summative Evaluation Report 2009–2011. Donahue Institute.

Eguchi, A. (2012). Educational Robotics Theories and Practice: Tips for how to do it Right. In *Robots in K-12 Education: A New Technology for Learning, B. Barker, G. Nugent, N. Grandgenett, & V. Adamchuk, Eds. Hershey, PA, IGI Global* (pp. 1–30). Hershey, PA: IGI Global.

Erwin, B., Cyr, M., & Rogers, C. (2000). LEGO engineer and ROBOLAB: Teaching engineering with LabVIEW from kindergarten to graduate school. *International Journal of Engineering Education*, *16*(3), 181–192.

Gaudiello, I., & Zibetti, E. (2013). Using control heuristics as a means to explore the educational potential of robotics kits. *Themes in Science and Technology Education*, *6*(1), pp–15.

Gomez, K., Bernstein, D., Zywica, J., & Hamner, E. (2012). Building Technical Knowledge and Engagement in Robotics: An Examination of two Out-of-School Programs. In *Robots in K-12 education: A new technology for learning*. Hershey, PA: IGI Global.

Grandgenett, N., Ostler, E., Topp, N., & Goeman, R. (2012). Robotics and Problem-Based Learning in STEM Formal Educational Environments. In *Robots in K-12 Education: A New Technology for Learning* (pp. 94–119). Hershey, PA: IGI Global.

Head, E., & Carberry, A. (2010). AC 2010-207: WHAT CAN TEACHERS LEARN FROM ENGINEERING EXPERTS? USING A THREE-PHASE MODEL TO IMPROVE K-12 TEACHER'S KNOWLEDGE OF ENGINEERING AND TECHNOLOGY.pdf. Presented at the American Society for Engineering Education Annual Conference & Exposition, Louisville, KY: American Society for Engineering Education.

Heffernan, J. (2012a). Elementary Engineering Curriculum Maps.

Heffernan, J. (2012b). *Kids Engineer Resources Page*. *Kids Engineer!* Retrieved September 27, 2012, from http://kidsengineer.com/?page_id=106

Heffernan, J. (2013). *Elementary Engineering: Sustaining the Natural Engineering Instincts of Children*. Charlestown, SC: Printed by CreateSpace.

Hussain, S., Lindh, J., & Shukur, G. (2006). The Effect of LEGO Training on Pupils' School Performance in Mathematics, Problem Solving Ability and Attitude: Swedish Data. *Educational Technology & Society*, *9*(3), 182–194.

Hynes, M. (2007). AC 2007-1684: IMPACT OF TEACHING ENGINEERING CONCEPTS THROUGH CREATING LEGO-BASED ASSISTIVE DEVICES. Presented at the American Society for Engineering Education Annual Conference & Exposition, Honolulu,HI: American Society for Engineering Education. Retrieved from http://icee.usm.edu/ICEE/conferences /asee2007/papers/1684_IMPACT_OF_TEACHING_ENGINEERING_CONCEPTS_.pdf

Hynes, M., Crismond, D., & Brizuela, B. (2010). AC 2010-447: MIDDLE-SCHOOL TEACHERS' USE AND DEVELOPMENT OF ENGINEERING SUBJECT MATTER KNOWLEDGE. American Society for Engineering Education.

Hynes, M. M., Crismond, D., & Danahy, E. (2010). AC 2010-457: USING ROBOBOOKS TO TEACH MIDDLE SCHOOL ENGINEERING AND ROBOTICS.pdf. Presented at the American Society for Engineering Education Annual Conference & Exposition, Louisville, KY: American Society for Engineering Education.

Kazakoff, E., & Bers, M. (2012). Programming in a robotics context in the kindergarten classroom: The impact on sequencing skills. *Journal of Educational Multimedia and Hypermedia*, *21*(4), 371–391.

Kazakoff, E. R., Sullivan, A., & Bers, M. U. (2012). The Effect of a Classroom-Based Intensive Robotics and Programming Workshop on Sequencing Ability in Early Childhood. *Early Childhood Education Journal*, *41*(4), 245–255. doi:10.1007/s10643-012-0554-5

Kearns, S. A., Rogers, C., Barsosky, J., Portsmore, M., & Rogers, C. (2001). Successful methods for introducing engineering into the first grade classroom. In *ASEE Annual Conference and Exposition Proceedings, Albuquerque, New Mexico*.

Korchnoy, E., & Verner, I. M. (2008). Characteristics of learning computer-controlled mechanisms by teachers and students in a common laboratory environment. *International Journal of Technology and Design Education*, *20*(2), 217–237. doi:10.1007/s10798-008-9071-7

Levy, S. T., & Mioduser, D. (2010). Approaching Complexity Through Planful Play: Kindergarten Children's Strategies in Constructing an Autonomous Robot's Behavior. *International Journal of Computers for Mathematical Learning*, *15*(1), 21–43. doi:10.1007/s10758-010-9159-5

Lindh, J., & Holgersson, T. (2007). Does lego training stimulate pupils' ability to solve logical problems? *Computers & Education*, *49*(4), 1097–1111. doi:10.1016/j.compedu.2005.12.008

Ludi, S. (2012). Educational Robotics and Broadening Participation in STEM for Underrepresented Student Groups. In *Robots in K-12 Education: A New Technology for Learning* (pp. 343–361). Hershey, PA: IGI Global.

Lye, N. C., Wong, K.W., Chiou, A.,. (2011). Framework for Educational Robotics: A Multiphase Approach to Enhance User Learning in a Competitive Arena. *Lecture Notes in Computer Science*., (6872), 317–325.

Martin, F. G., Scribner-MacLean, M., Christy, S., & Rudnicki, I. (2012). Developing and Evaluating a Web-Based, Multi-Platform Curriculum for After-School Robotics. In *Robots in K-12 Education: A New Technology for Learning* (p. 266).

Mauch, E. (2001). Using technological innovation to improve the problem-solving skills of middle school students: Educators' experiences with the LEGO mindstorms robotic invention system. *The Clearing House*, *74*(4), 211–213.

McGrath, E., Lowes, S., McKay, M., Sayres, J., & Lin, P. (2012). Robots Underwater! Learning Science, Engineering and 21st Century Skills: The Evolution of Curricula, Professional Development and Research in Formal and Informal Contexts. In *Robots in K-12 Education: A New Technology for Learning* (pp. 141–167). Hershey, PA: IGI Global.

Mead, R. A., Thomas, S. L., & Weinberg, J. B. (2012). From Grade School to Grad School: An Integrated STEM Pipeline Model through Robotics. In *Robots in K-12 Education: A New Technology for Learning* (pp. 302–325). Hershey, PA: IGI Global. Retrieved from http://services.igi-global.com/resolvedoi/resolve.aspx?doi=10.4018/978-1-4666-0182-6.ch015

Miglino, O., Lund, H. H., & Cardaci, M. (1999). Robotics as an educational tool. *Journal of Interactive Learning Research*, *10*(1), 25–47.

Mioduser, D., Levy, S. T., & Talis, V. (2007). Episodes to scripts to rules: concrete-abstractions in kindergarten children's explanations of a robot's behavior. *International Journal of Technology and Design Education*, *19*(1), 15–36. doi:10.1007/s10798-007-9040-6

Mitnik, R., Nussbaum, M., & Recabarren, M. (2009). Developing Cognition with Collaborative Robotic Activities. *Educational Technology & Society*, *12*(4), 317–330.

Mitnik, R., Nussbaum, M., & Soto, A. (2008). An autonomous educational mobile robot mediator. *Autonomous Robots*, *25*(4), 367–382.

Nelson, C. A. (2012). Generating Transferable Skills in STEM through Educational Robotics. In *Robots in K-12 Education: A New Technology for Learning* (pp. 54–65). Hershey, PA: IGI Global.

Nourbakhsh, I. R., Crowley, K., Bhave, A., Hamner, E., Hsiu, T., Perez-Bergquist, A., … Wilkinson,

K. (2005). The robotic autonomy mobile robotics course: Robot design, curriculum design and educational assessment. *Autonomous Robots*, *18*(1), 103–127.

Nourbakhsh, I. R., Hamner, E., Crowley, K., & Wilkinson, K. (2004). Formal measures of learning in a secondary school mobile robotics course. In *Robotics and Automation, 2004. Proceedings. ICRA'04. 2004 IEEE International Conference on* (Vol. 2, pp. 1831–1836). Retrieved from http://ieeexplore.ieee.org/xpls/abs_all.jsp?arnumber=1308090

Nugent, G., Barker, B., Grandgenett, N., & Adamchuk, V. (2009). The use of digital manipulatives in K-12: robotics, gps/gis and programming. In *Frontiers in Education Conference, 2009. FIE'09. 39th IEEE* (pp. 1–6). Retrieved from http://ieeexplore.ieee.org /xpls/abs_all.jsp?arnumber=5350828

Nugent, G., Barker, B. S., & Grandgenett, N. (2012). The impact of educational robotics on student STEM learning, attitudes, and workplace skills. In *Robots in K-12 education: A new technology for learning* (pp. 186–203). Hershey, PA: IGI Global.

Nugent, G., Barker, B. S., Grandgenett, N., & Adamchuk, V. I. (2010). Impact of robotics and geospatial technology interventions on youth STEM learning and attitudes. Retrieved from http://digitalcommons.unomaha.edu/tedfacpub /33/?utm_source=digitalcommons.unomaha.edu%2Ftedfacpub%2F33&utm_medium=PDF& utm_campaign=PDFCoverPages

Ortiz, A. M. (2010). *Fifth grade students' understanding of ratio and proportion in an engineering robotics program*. Tufts University.

Owens, G., Granader, Y., Humphrey, A., & Baron-Cohen, S. (2008). LEGO ® Therapy and the Social Use of Language Programme: An Evaluation of Two Social Skills Interventions for Children with High Functioning Autism and Asperger Syndrome. *Journal of Autism and Developmental Disorders*, *38*(10), 1944–1957. doi:10.1007/s10803-008-0590-6

Papert, S. (1993). *Mindstorms: Children, Computers, And Powerful Ideas* (2nd ed.). Basic Books.

Papert, S. (2000). What's the big idea? Toward a pedagogy of idea power. *IBM Systems Journal*, *39*(3.4), 720–729.

Perova, N., Johnson, W. H., & Rogers, C. (2008). USING LEGO BASED ENGINEERING ACTIVITIES TO IMPROVE UNDERSTANDING CONCEPTS OF SPEED, VELOCITY, AND ACCELERATION. *American Society for Engineering Education*.

Portsmore, M. (2002). Engineering By Design Lego Based Building Lessons for Grade One.

Portsmore, M. (2011). *Scaffolding the Engineering Design Process for Elementary Students*.

Portsmore, M. D. (2011). AC 2011-1780: FIRST GRADE STUDENTS PLANNING AND ARTIFACT CONSTRUCTION WHILE WORKING ON AN ENGINEERING DESIGN PROBLEM. Presented at the ASEE Annual Conference, Vancouver, BC, Canada. Retrieved from http://jee.asee.org/file_server/papers/attachment/file/0001/1710/Draft_Portsmore_ASEE2011v2.pdf

Portsmore, M., & Swenson, J. (n.d.). AC 2012-3792: SYSTEMIC INTERVENTION: CONNECTING FORMAL AND INFORMAL EDUCATION EXPERIENCES FOR ENGAGING FEMALE STUDENTS IN ELEMENTARY SCHOOL IN ENGINEERING.pdf. Presented at the ASEE Annual Conference, San Antonio, TX.

Robinson, M. (2005). Robotics-Driven Activities: Can They Improve Middle School Science Learning? *Bulletin of Science, Technology & Society*, *25*(1), 73–84.

Rockland, R., Kimmel, H., Carpinelli, J., Hirsch, L. S., & Burr-Alexander, L. (2011). Medical Robotics in K-12 Education. In *Robots in K-12 Education: A New Technology for Learning* (pp. 120–140). Hershey, PA: IGI Global.

Rogers, C., & Portsmore, M. D. (2004). Bringing engineering to elementary school. *Journal of STEM Education*, *5*. Retrieved from http://www.greenframingham.com/bring_engr_elem021505.pdf

Rosen, J., Stillwell, F., & Usselman, M. (2012). Promoting Diversity and Public School Success in Robotics Competitions. In *Robots in K-12 Education: A New Technology for Learning* (p. 326). Hershey, PA: IGI Global.

Rusk, N., Resnick, M., Berg, R., & Pezalla-Granlund, M. (2008). New pathways into robotics: Strategies for broadening participation. *Journal of Science Education and Technology*, *17*(1), 59–69.

Skorinko, J. L., Doyle, J. K., & Tryggvason, G. (2012). Do Goals Matter in Engineering Education? An Exploration of How Goals Influence Outcomes for FIRST Robotics Participants. *Journal of Pre-College Engineering Education Research (J-PEER)*, *2*(2), 3.

Slangen, L., Keulen, H., & Gravemeijer, K. (2010). What pupils can learn from working with robotic direct manipulation environments. *International Journal of Technology and Design Education*, *21*(4), 449–469. doi:10.1007/s10798-010-9130-8

Stubbs, K., Casper, J., & Yanco, H. A. (2012). Designing Evaluations for K-12 Robotics Education Programs. In *Robots in K-12 Education: A New Technology for Learning* (pp. 31–53). Hershey, PA: IGI Global. Retrieved from http://services.igi-global.com/resolvedoi /resolve.aspx?doi=10.4018/978-1-4666-0182-6.ch002

Sullivan, F. R. (2008). Robotics and science literacy: Thinking skills, science process skills and systems understanding. *Journal of Research in Science Teaching*, *45*(3), 373–394. doi:10.1002/tea.20238

Sullivan, F. R. (2011). Serious and playful inquiry: Epistemological aspects of collaborative creativity. *Educational Technology & Society*, *14*(1), 55–65.

Sullivan, F. R. (2013). Robotic Construction Kits as Computational Manipulatives for Learning in the STEM Disciplines.

Sullivan, F. R., & Moriarty, M. A. (2009). Robotics and discovery learning: pedagogical Beliefs, Teacher practice, and Technology integration. *Journal of Technology and Teacher Education*, *17*(1), 109–142.

Suomala, J., & Alajaaski, J. (2002). Pupils' Problem-Solving Processes In A Complex Computerized Learning Environment. *Journal of Educational Computing Research*, *26*(2), 155–176. doi:10.2190/58XD-NMFK-DL5V-0B6N

Torok, R. (2012). Robotics Education Literature Review.

Vallance, M., Yamamoto, T., Goto, Y., & Ibayashi, K. (2013). Task Fidelity: a new metric for measuring task complexity involving robots. *Bulletin of the IEEE Technical Committee on Learning Technology*, *15*(4), 22.

Varnado, T. E. (2005). *The Effects of a Technological Problem Solving Activity on FIRST™ LEGO™ League Participants' Problem Solving Style and Performance*. Virginia Polytechnic Institute and State University. Retrieved from http://scholar.lib.vt.edu/theses/available/etd-04282005-101527/

Varney, M. W., Janoudi, A., Aslam, D. M., & Graham, D. (2012). Building Young Engineers: TASEM for Third Graders in Woodcreek Magnet Elementary School. *Education, IEEE Transactions on*, *55*(1), 78–82. doi:10.1109/TE.2011.2131143

Voyles, M. M., Fossum, T., & Haller, S. (2008). Teachers respond functionally to student gender differences in a technology course. *Journal of Research in Science Teaching*, *45*(3), 322–345.

Wagner, S. P. (1999). Robotics and Children Science Achievement and Problem Solving. *Journal of Computing in Childhood Education*, *9*(2), 149–192.

Wang, E. L., LaCombe, J., & Rogers, C. (2004). Using LEGO® Bricks to Conduct Engineering Experiments. In *Proceedings of the ASEE Annual conference and exhibition*. Retrieved from http://wolfweb.unr.edu/homepage/lacomj/Faculty/Pubs/JCL-2004b.pdf

Wendell, K., Connolly, K., Wright, C., Jarvin, L., Rogers, C., Barnett, M., & Marculu, I. (2010). AC 2010-863: POSTER, INCORPORATING ENGINEERING DESIGN INTO ELEMENTARY SCHOOL SCIENCE CURRICULA.pdf. Presented at the International Conference of the Learning Sciences, Chicago, IL: American Society for Engineering Education.

Wendell, M. K. B., & Portsmore, M. D. (2011). AC 2011-904: THE IMPACT OF ENGINEERING-BASED SCIENCE IN-STRUCTION ON SCIENCE CONTENT UNDERSTANDING. Presented at the Annual International Conference of the National Association for Research in Science Teaching (NARST), Orlando, FL. Retrieved from http://www.asee.org/file_server/papers/attachment/file/0001 /1144/Draft_ASEE2011_Wendell_version2.pdf

Whittier, L. E., & Robinson, M. (2007). Teaching evolution to non-English proficient students by using lego robotics. *American Secondary Education*, 19–28.

Williams, D., Ma, Y., Lai, G., Prejean, L., & Ford, M. J. (2007). Acquisition of Physics Content Knowledge and Scientific Inquiry Skills in a Robotics Summer Camp. In *Society for Information*

Technology & Teacher Education International Conference (Vol. 2007, pp. 3437–3444). Retrieved from http://www.editlib.org/p/25146/

Zeid, I., August, R., Perry, R., Mason, E., Farkis, J., & Hersek, M. (2007). AC 2007-1481: A PARTNERSHIP TO INTEGRATE ROBOTICS CURRICULUM INTO STEM COURSES IN BOSTON PUBLIC SCHOOLS. Presented at the American Society for Engineering Education Annual Conference & Exposition, Honolulu,HI: American Society for Engineering Education. Retrieved from http://www.icee.usm.edu/icee/conferences/asee2007/papers /1481_A_PARTNERSHIP_TO_INTEGRATE_ROBOTICS_CURR.pdf