

Getting STEM Right from the Start: Using the Project Approach in Early Childhood Settings

Sabeerah Abdul-Majied* and Sandra Figaro-Henry

University of the West Indies, St. Augustine Campus, Trinidad & Tobago

This paper reports on a qualitative study of a year-long in-service professional development programme for Early Childhood teachers which used the project approach and integrated Science, Technology, Engineering and Mathematics (STEM) teaching. The views of nine teachers from five government and government-assisted Early Childhood centres in North Trinidad were analysed to answer the question: What are the benefits to teaching and learning of a STEM professional development programme which used the project approach as a teaching strategy? Gusky's (2000) Model of Staff Development and Teacher Change provided the theoretical framework. Findings are reported under three themes: Teacher knowledge and skills development, Benefits to students and Resulting changes in teacher beliefs and attitudes. A novel modification to Gusky's model resulted from teachers' reflective practice. This modification is represented as a recursive cycle of teacher motivating students and students motivating teacher leading to transformation in teacher beliefs and attitudes. Recommendations for improved Early Childhood teacher professional development programmes are provided.

Keywords: *STEM, early childhood education, the project approach, teacher professional development*

*Corresponding Author. Email: sabeerah.abdul-majied@sta.uwi.edu

References

- Anonymous. (2013). Nurturing STEM Skills in Young Learners, PreK, STEM Smart Brief: Lessons Learned from Successful Schools, 3 December 2013.
- Brockbank, A. & McGill, I. (2007). *Facilitating reflective learning in higher education*. (2nd ed.). New York, NY: Open University Press.
- CARICOM Secretariat (2010). *Learning outcomes for early childhood development in the Caribbean: A handbook for practitioners*. Mona, Jamaica: Chalkboard Press.
- Caribbean Policy Forum on Early Childhood Development (ECD) (2006). *Regional guidelines for developing policy regulations and standards in early childhood development services*. Retrieved from http://www.caricom.org/jsp/community_organs/cohsod_education/early_childhood_development_guidelines.pdf
- Center on the Developing Child, Harvard University (2007). *A science-based framework for early childhood policy*. Retrieved from http://developingchild.harvard.edu/resources/reports_and_working_papers/policy_framework/
- Copley, J. V. (2010). *The young child and mathematics* (2nd ed.). Washington, DC: National Association for the Education of Young Children.
- Corbin, J. & Strauss, A. (2008). *Basics of qualitative research: Techniques and procedures for developing grounded theory* (3rd ed.). Thousand Oaks, CA: Sage.
- Creswell, J. W. (2004). *Research design: Qualitative, quantitative, and mixed methods approaches* (2nd ed.). Thousand Oaks, CA: Sage.
- Franklyn, G. (2010). Support for Transition from Early Childhood Care and Education (ECCE) to Primary Education. Port of Spain. Retrieved from http://www.moe.gov.tt/national_consultation_primaryschool/FRANKLYN%20G%202010%20Support%20for%20Transition%20from%20Early%20Childhood%20Care%20and%20Education%20ECCE%20to%20Primary%20Education.pdf
- Guskey, T. R. (2000). *Evaluating Professional Development*. Thousand Oaks, CA: Corwin Press.
- Hart, B. & Risley, T.R. (2003). The Early Catastrophe: The 30 Million Word Gap by Age 3. *American Educator*, 4-9. <http://www.aft.org/sites/default/files/periodicals/TheEarlyCatastrophe.pdf>
- Hatch, J. A. (Ed.). (1995). *Designing qualitative research in early childhood settings*. Connecticut: Praeger.
- Helm, J. H., & Katz, L. G. (2011). *Young investigators: The project approach in the early years*. New York: Teachers College Press.
- Mendoza, J. A., & Katz, L. G. (2013). Nature education and the project approach. In D. R. Meier & S. Sisk-Hilton (Eds.), *Nature education with young children: Integrating inquiry and practice* (pp. 153-171).
- Ministry of Education. (2005a). National early childhood care and education curriculum guide. Port of Spain, Trinidad: Author. Retrieved from http://www.moe.gov.tt/Docs/Policies/ECCE/DRAFT_NATIONAL_CURRICULUM_GUIDE.pdf
- Ministry of Education. (2005b). Proposed standards for regulating early childhood services. Port of Spain, Trinidad: Author. Retrieved from [http://moe.gov.tt/Docs/Policies/ECCE/Proposed_Stds_forRegulatingECS\(UPDATED\).pdf](http://moe.gov.tt/Docs/Policies/ECCE/Proposed_Stds_forRegulatingECS(UPDATED).pdf)

- Ministry of Education (2005c). *Responses to the challenge of improving the quality of recruitment and selection, initial formation, professional development and evaluation of teachers in countries of this hemisphere: A harmonized policy framework for teacher education in the Caribbean Sub-Region*. Trinidad and Tobago.
- Minner, D. M., Levy, A. J. & Century, C. (2010). Inquiry-based science instruction- what is it and does it matter? Results from a research synthesis years 1984 to 2002. *Journal of Research in Science Teaching*, 47(4), 474–496.
- Nagy, W., & Stahl, S. (2006). *Teaching word meanings*: Mahwah, NJ: Lawrence Erlbaum Associates.
- OAS Hemispheric ECCE Team (2004). *Ready to Learn: Early childhood education of quality to prevent school failure in Trinidad and Tobago*. [PowerPoint slides]. Retrieved from [http://www.oas.org/udse/readytolearn/documentos/EarlyChildhoodEducation_theSolutiontoGraderepetition\(final%20draft\).ppt](http://www.oas.org/udse/readytolearn/documentos/EarlyChildhoodEducation_theSolutiontoGraderepetition(final%20draft).ppt)
- Williams, C., Walter, E., Henderson, C., & Beach, A. (2015). Describing undergraduate STEM teaching practices: a comparison of instructor self-report instruments. *International Journal of STEM Education*, 2(1), 18. Retrieved from <http://www.stemeducationjournal.com/content/2/1/18>