

STEM IN MY KINDERGARTEN CLASS: LEARNING FROM 5-YEAR-OLDS

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THEME

Teacher education and professional learning in STEM

BACKGROUND AND AIMS

Amidst calls for STEM education to formally commence from the first year of school, after being introduced in preschool, early years teachers require role models and exemplars to support its implementation and achieve educational benefits. Engaging kindergarten students in authentic integrated STEM inquiry learning requires real-world situations to foster their interest, develop practical skills, and promote inherent thinking. Effective STEM teaching practices (e.g., engineering design, digital literacy, etc.) take time and pedagogical expertise to develop. Like enacting the design process, iterations of lesson design, implementation and redesign can result in high quality STEM learning experiences. Teachers' development of STEM literacy and building of practical knowledge for STEM teaching, essential for teacher education / professional development (Hsu & Fang, 2019), can be supported by reflection on classroom-based exemplars. The purpose of this presentation is to share insights of STEM teaching practices and student learning derived from practitioner/researcher studies conducted with kindergarten (5-year-olds) in an Australian primary school.

METHODOLOGY

For the last 18 years I have concurrently taught weekly science lessons to two kindergarten classes whilst working as a science education lecturer and researcher. Working as a teacher-researcher has enabled me to develop and refine STEM teaching and learning practices. Lessons were implemented in a team-teaching situation with the kindergarten classroom teacher whose knowledge and experience of early years teaching was invaluable in developing age-appropriate lessons. Lesson observations, collection of student work samples and photographs of practical work captured examples of practice that informed publications for teachers.

RESULTS AND CONCLUSIONS

Working through my initial ideas for STEM lessons with the classroom teachers was critical for preparing both the children and the teachers for the challenges of singular, open-ended lessons followed by extended projects. Gradual integration of STEM design tasks into science units gave children time to develop collaborative group work skills and build confidence in decision making. The students began to value each other's ideas and learnt from failure through re-iterations in the design process. A notable outcome was students' self-accomplishment and teacher pride as they successfully achieved STEM challenges.

The insights gained through my teacher-researcher experiences confirm the capabilities of early years students and potential of STEM education for advancing their interest and identity as STEM learners.

REFERENCES

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