

Teaching STEM Using Technology: Practices of Elementary School Teachers in Quebec (Canada)

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Abstract

Teaching STEM is a major challenge for elementary school teachers, both in Quebec (Couture & al., 2015; CSE, 2013) and internationally (Chai & al., 2019). STEM is often neglected in favor of other school subjects. Several researchers are trying to find solutions to improve STEM education in elementary school. Among these, the use of technology seems to be promising (Goodnough & al., 2019; Tavares & al., 2021). To better understand this avenue, our study relied on the TPaCK model (Koehler & Mishra, 2009) to study the teaching practices of elementary school teachers in Quebec (Canada) integrating technology into STEM. From interviews and classroom observation, it was possible to identify and describe the knowledge mobilized by the teachers in the light of the three phases of teaching: pre-active, active and post-active phases. This descriptive qualitative research is based on the multi-case study (Merriam, 1988) as a data collection method. From a qualitative codification of data from the practices of 5 teachers, it is possible to draw conclusions. Although the pre-active phase is a good time to plan the use of technology to teach STEM, the fact remains that in the active phase, their integration remains variable. Indeed, various contextual factors identified in the post-active phase influence the use of technology. Therefore, it seems to have sometimes positive and sometimes negative effects on STEM education. A discussion of these results will shed new light on these effects in STEM education.

Keywords: STEM, technology, teaching practices, Elementary, technopedagog