

# UNDERSTANDING COVID\_19 PANDEMIC WITH STEM EDUCATION

Maria Cristina Costa<sup>1</sup>, and António Domingos<sup>2</sup>

<sup>1</sup>Instituto Politécnico de Tomar, Ci2, CICS.NOVA, <sup>2</sup>NOVA.SST, CICS.NOVA

An integrated approach of STEM (Science, Technology, Engineering and Mathematics) education with a focus on the “M” of Mathematics (steM) is being defended in the literature to correspond to the real-world needs (Stohlmann, 2018).

This paper uses activity theory (Engeström, 2001) to discuss steM practices. In this regard, a case study of a teacher who participated in a Professional Development Programme (PDP), and implemented mathematical tasks related with the real-world scenario of COVID\_19 pandemic is presented. Elisabete is a Mathematics and Natural Science teacher who developed steM tasks to raise awareness of her students regarding several scenarios of transmission of the virus. Activity theory is used to analyse data collected from participant observation and interviews during the workshops of the PDP (Costa et al., 2020), and Elisabete’s portfolio containing evidence of the work implemented in class. Based on different scenarios of transmission (*Object*), students (*Subject*) produced tables (*Tools and signals*) representing the increasing number of infections, and discussed the results in class (*Community*), mediated by the teacher. In this research, it is discussed how students understood the evolution of the pandemic and the need for measures to prevent it (*Outcome*). It is concluded that the steM approach in the mathematical class was more effective regarding the comprehension by the students of transmission of the virus. Although the teacher had already addressed the topic in the science class, she found that it was based on interdisciplinary mathematical tasks that students finally understood the scenario of transmission of the virus, and consequently the need for measures to prevent the transmission.

## Acknowledgment

FCT-Foundation for Science and Technology, I.P., PTDC/CED-EDG/32422/2017.

## References

- Costa, M. C., Domingos, A., & Teodoro, V. (2020). Promoting integrated STEM tasks in the framework of teachers’ professional development in Portugal. In J. Anderson, & Y. Li (Eds.), *Integrated approaches to STEM education. Advances in STEM education* (pp. 511-532). Springer.
- Engeström, Y. (2001). Expansive learning at work: Toward an activity theoretical reconceptualization. *Journal of Education and Work*, 14(1), 133-156.
- Stohlmann, M. (2018). A vision for future work to focus on the “M” in integrated STEM. *School Science and Mathematics*, 1-10.