

Investigating the impact of Virtual School experiences on teaching and learning

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Instrument

Collaborative research project

Description

In this project, the investigators work to overcome the challenges of educational disadvantage in STEM education, one of the most challenging areas for students, and a field where many students' difficulties have been documented.

Researchers at UniPd and Monash will observe the development of the digital community as well as the progression of the virtual teaching activities, trying to answer the following research questions:

- How does the Virtual School experience shape future teachers' reasoning and action, and in particular how does it affect their (T)PCK?
- How does the experience of an international online community of practice support the Virtual School experience?
- What is the impact of the virtual school on the students?

The pilot project will be implemented in five phases, to be held between January and December 2022. Data will be collected with the following instruments: semi-structured interviews with future teachers (approx. 45 min, think aloud technique by van Someren et al., 1994) at the beginning of phase two and at the end of phase four. Interviews will be likely carried out online.

Observation protocols for participants' online interaction (both synchronous and asynchronous) will be implemented all through the pilot, to help answer the second research question: how does the experience of an international online community of practice support the Virtual School experience. Finally, an online survey on STEM self-efficacy will be administered to high school students at the beginning of phase two and at the end of phase four. These will be used to answer the third research question: what is the impact of the virtual school on the students.

Expected results

Short term results of our project will be an improvement of the initial training opportunities of future STEM teachers (particularly in Italy), while at the same time reinforcing disadvantaged students in their learning. For the future teachers, we expect that the networking experience will enrich their professionalism along with the virtual teaching experiences. For the secondary school students, a free-of-charge support

provided by experts will foster equal access to education even for low-income families and other educational disadvantages. We therefore believe that our project fits in well with both the schools' and future teachers' needs.

In the long term, we expect that the experience could serve as a model to shape future pre-service teacher programmes. In the Italian context a reform of secondary school teachers' education is expected, and projects like this one can contribute to inform the design of future programmes. This is particularly true after the pandemic experience, which has inevitably accelerated the introduction of digital technologies in school practice and has brought to the introduction forms of online or blended learning also in the school context.