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SPECIALTY SECTION
This article was submitted to
Digital Education,
a section of the journal
Frontiers in Education

RECEIVED 21 October 2022
ACCEPTED 31 October 2022
PUBLISHED 11 November 2022

CITATION
Quesada-Pallarès C, Marrs S and
Martínez-Fernández JR (2022)
Editorial: Teaching and learning
research methods: Fostering research
competence among students.
Front. Educ. 7:1075978.
doi: 10.3389/feduc.2022.1075978

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Editorial: Teaching and learning research methods: Fostering research competence among students

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KEYWORDS

research competence, teaching research, learning research, evidence-based practice, scientific thinking

Editorial on the Research Topic

Teaching and learning research methods: Fostering research competence among students

Research competence, internationally recognized as a twenty-first-century competency, helps people to develop clinical reasoning and an increased understanding of the complexity of the reality surrounding us. Research competency is characterized by critical thinking, comprehension of the basics of science, epistemic understanding, research skills, evidence-based reasoning, and contextual understanding. Although scientific thinking is traditionally associated with the natural sciences, it is also necessary for success in the social sciences, arts, and humanities.

Since the inception of the Bologna Process in 1999 and the creation of the European Higher Education Area in 2010, all European university grades must include a module on research competence; “research methods” is a core topic, embedded in all educational programs, regardless of field or education level. Additionally, secondary schools must provide activities that foster students’ scientific thinking, such as the completion of a research project in 12th grade (International Standard Classification of Education level three). Given the requirement for students to achieve research competency, more work is needed to develop best practices for fostering research skills in the classroom at all levels.

With the relevance of scientific reasoning to the improvement of current and future societies in mind, this Research Topic is interested in deepening best practices for teaching and learning research competence through research methods courses. Indeed, it aims to gather contributions that will help us to learn more about how research competence can be fostered among students, whether as a whole or as one of its components.

Although there are resources, such as books, blogs, websites, infographics, and posts, that explain how research competence is taught, there is a lack of

empirical-evidence-based scientific literature about how teachers can help students develop research competence. Froehlich et al. and Froehlich and Guías offer two different scenarios in which the curriculum plays an important role in fostering students' research competency. Using a specific pedagogical approach they call the Teaching Clinic, Froehlich et al. combine service-learning and design-based research to engage students in research through meaningful learning. By applying digital pedagogical approaches, such as multimodal video feedback, Froehlich and Guías help lecturers give feedback about students' research in a more efficient and engaging way.

Additionally, the current environment—a globalized world, with educational practice heavily influenced by our experience of the pandemic—has forced us to design virtual teaching and learning activities that are expected to foster the same amount of research competence. This is the reason why Randazzo et al. transformed a section of their research methods courses for university students into an asynchronous online component. In this instance, the authors compared the results of using traditional pedagogical methods, such as the ones used in face-to-face courses, with those obtained when using online project-based learning.

Papanastasiou makes a valuable contribution by providing a Greek alphabet guide, which is a very helpful tool to use when dealing with research. Students usually get confused with all the names and symbols that are often included in textbooks and lectures, so keeping this guide in hand might help students better understand the research process.

The pedagogical approaches being implemented are not all new, and basic research-learning projects are applied when promoting students' research competencies. Böttcher-Oschmann et al. conducted a longitudinal study to explore the value of research-learning projects for preparing teacher training students for evidence-based practice.

This Research Topic also examines specific experiences of exploring competence levels and conceptions of research methods. For example, Salmento et al. developed a study to explore how teacher-education students understand research competence through their conceptions of theory, a challenging concept for everyone when learning the basics of research. Using a broader vision, Ciraso-Calí et al. analyzed the acquisition and development of research competence among Education Sciences students by carrying out a three-phase study consisting of the following: (1) a content analysis of the syllabus; (2) a student questionnaire; and (3) the undertaking of a Delphi panel with experts. Important results regarding how research competence is acquired, developed, and assessed were considered when

the authors suggested specific guidelines for improving the educational sciences program. Moreover, Marrs et al. focused on junior researchers by measuring the level of research competence that they perceive about themselves to understand which doctoral students have the necessary level of research competence to pursue their doctoral degree.

Contributions to this Research Topic attempt to lay a foundation for an evidence-based approach when developing teaching and learning activities aimed at fostering and developing research competence. Scientific knowledge promoting research competence is necessary to help teachers, lecturers, mentors, and others plan evidence-based teaching and learning activities. This approach should replace intuition and mouth-to-ear advice; academics and scientists must ensure that teaching and learning activities for developing research competence are properly thought out, planned, designed, and evaluated using published peer-reviewed studies as their main source, such as the ones featured in this Research Topic.

Author contributions

CQ-P elaborated the draft of the editorial. JM-F and SM revised and added new aspects to the editorial. All authors contributed to the article and approved the submitted version.

Acknowledgments

We want to thank all authors with their interesting and relevant contributions. This Research Topic would have not existed without your contributions to the scientific knowledge.

Conflict of interest

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