

Integrating sustainability into secondary school teacher training: a multidisciplinary approach to promote active learning and behavioural engagement

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Abstract. This study uses a multidisciplinary approach to train secondary school teachers on sustainability to promote active learning and behavioural engagement. The teacher training course seeks to improve teachers' understanding of the complexity of sustainability through various topics, including climate, energy considerations, economic and legal aspects, and socio-anthropological perspectives. The aim is to enable teachers to have a broader view of sustainability that can lead to a broadening of teaching practices. Physics provides a solid framework for teachers to broaden and integrate their view of sustainability. The course focuses on enhancing the psychological factors identified as enablers in climate psychology.

Introduction

Sustainability is a complex and interdisciplinary issue that includes several disciplines, which is why it represents the greatest global challenge of our time. So, education in this field must reflect this multi and interdisciplinary nature through an approach that incorporates scientific, economic, social, legal, and psychological knowledge.

Therefore, in the current landscape of teacher education, several studies are modelling a new approach. Some studies emphasise the importance of integrating sustainability issues into the teaching of science subjects [1–3]. Other studies highlight the usefulness of an interdisciplinary and multidisciplinary approach to promote greater awareness of sustainability in the science discipline [4,5].

Research, therefore, focuses on the importance of going beyond the study of individual subject disciplines and promoting critical thinking that embraces the complexity of sustainability.

Research questions

The main research questions at the basis of the present work are:

- How does participation in a multidisciplinary sustainability course change teachers' views on sustainability and their teaching methods?
- What effect does multidisciplinary training have on secondary school teachers' ability to integrate sustainability concepts into their teaching?

Methods

Our research aims to examine how to improve teacher education by including a broader approach to sustainability, involving economic, legal, scientific, social, and psychological aspects. For that reason, we designed and implemented a teacher training course on sustainability that addressed the topic in a multidisciplinary point of view. The target of our research focuses on secondary school teachers, exploring ways to teach sustainability concepts more effectively by promoting active learning and behavioural engagement of students.

The course design involves university lecturers from various departments. Indeed, the course is divided into several modules, each of which deals with specific topics related to sustainability. In the first module of the course, dedicated to climate psychology and behavioural activators, we emphasise the central role of physical concepts relating to climate. Physics is presented as indispensable for understanding sustainability and for interpreting and linking its various dimensions. This is followed by a discussion of various topics, from climate and energy, which have more of a physical slant, to legal and economic issues, and finally the socio-anthropological aspects of sustainability. The course concludes with a final class that includes a feedback session and the development of an interactive educational module targeted at students.

The sequence of modules is designed to have an activating effect on the teachers (and the students with whom the lecturers will interact). Communication, the scientific approach, and psychology will serve as a reference, within which technical and practical tools will be provided to understand how to teach the topic of sustainability.

For this reason, the course is characterised by an interactive and participative approach. In each class, lecturers present their topics, but there are also laboratory activities, discussion and sharing of experiences. Through group work, participants analyse quantities in different situations and develop concrete projects related to sustainability.

For data collection, pre- and post-intervention questionnaires were administered to assess growth in psychological factors identified as activators in climate psychology. The results obtained from the questionnaires will be analysed together with the teachers' final papers.

Conclusions

The didactic experimentation was carried out in 3 classes, with a total amount of about 50 students, who were given a set of questionnaires before and after the sequence was carried out to assess their learning. The poster will present the results obtained and show some ideas for what concerns the future redesign of the course.

References

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