Can Cultural Insights Be Considered a Way to Trigger the Development of Future-Scaffolding Skills?

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Abstract: In the rapidly changing world where young people struggle in projecting themselves into the futures and taking an active role in the society, education should help students to develop so-called *future-scaffolding skills*. At the same time, education should acknowledge diversity and foster inclusiveness and cooperation among youth coming from different backgrounds. To this end, in an EU project in STEM education named I SEE, a teaching-learning module on climate change was designed and implemented in an international summer school with 24 upper secondary school students from three EU countries. Based on the data collected during the summer school we aim to answer the question: *Can cultural insights be considered a way to trigger the development of future-scaffolding skills?*

Introduction

Europe is in the midst of a social change with unprecedent flows of migrants and society needs education that acknowledges diversity and fosters inclusiveness as well as a cooperative culture among youth from different backgrounds. As recent reports claim, responsible science education has to encourage a view of science that is inclusive in terms of gender, social, economic and cultural diversity (OECD, 2015). Cultural diversity is not only a need to be met, but also an invaluable resource for deepening student engagement and increasing personal and societal relevance of STEM. Adolescents from different cultures entering secondary school, meet challenges in learning and building their futures. It is especially critical that the nature of education they experience is inclusive and supports their capacity to aspire towards the future (Levrini et al., 2019).

Background and research context

The study presented in this paper was carried out within an EU project named I SEE – Inclusive STEM Education to Enhance the capacity to aspire and imagine future careers (www.iseeproject.eu). The aim of the project was to design innovative teaching approaches to develop what we call future-scaffolding skills (FSS): skills to project thinking into the futures, build alternative future scenarios and design possible actions in the present to influence the desirable futures (Levrini et al., 2019; Tasquier et al., 2019). In the project, several interdisciplinary teaching-learning modules have been designed, the first of which was implemented in an international summer school. The context of this implementation was special, as diversity was capitalised in several ways. 24 upper secondary school students attended the summer school, 8 students from each partnering country of the project, Finland, Iceland and Italy. Among the students there were also persons with families coming from non-EU countries. The module was designed by researchers and teachers from different countries and of different genders, ages and work experiences. The module implementation was carried out by this same diverse groups with a polyphony of disciplinaries as well as pedagogical and methodological approaches. All these elements resulted in an interdisciplinary module on climate change that was implemented across one intensive week.

Methods

During the summer school many data were gathered in order to evaluate the potential of the module to enhance students' capacity to aspire and imagine their future through inclusive activities in science education (Tasquier et al., 2018). The data collection was designed to take into account the multi-cultural feature of the setting.

The main analysis carried out showed that students developed FSS (Tasquier et al., 2018) but also another phenomenon emerged: from students' words it seemed that cultural insights had a very special role. Indeed, cultural dimension appeared very strongly as a recurrent pattern. In order to interpret the macro-phenomenon, a thematic analysis (Braun & Clarke, 2006) was carried out. The data were analysed through an iterative process that foresaw bottom-up debriefing phases, designed to identify the emergent aspects in the data and generate first interpretative ideas, formulated by a group of analysts. In order to reach an acceptable level of internal validity, the analysis was conducted through a triangulation process between several researchers.

This process of analysis was guided by the following questions: *How the cultural dimension impacted the students' experience? Is this related in some way to FSS? If so, how?*

Results

The cultural dimension appeared to be a constant reference in students' answers. They revealed that the meeting with different cultures gave the students something beyond conceptual knowledge, that is, an awareness of others' lifestyles, approaches, ways of reasoning, environmental cultures, etc.

What emerged with a strong emphasis in interviews with students from all three different countries is the great opportunity they had to share values and desires, and to act together for changing the world internationally. This agreement was reached neither suddenly nor easily and several problems were encountered: i) *the problem of language*, some students stressed their difficulties in speaking in English and some others complained the initial difficulties in understanding the others; ii) *the problem of interacting*, for some students the short but intensive interaction to have only in a week was an obstacle; iii) *the problem of having a very different cultural background*, the diversity of experiences and ways of expressing/behaving made the search for a common 'trading zone' hard.

Despite such problems, all the students asserted that, after having overcome initial barriers, the cultural differences became a chance to learn. The multi-cultural relation was positive and fruitful from many aspects:

- the challenge and the satisfaction of finding an agreement, e.g. *there was a moment when we could not do well, and that was a difficulty but then we managed to find an agreement. However, there were seven brains that thought and had ideas, that need to get to a unique solution and this is not easy, particularly when there are imagination and creativity in the play* (SC1);
- the surprise and satisfaction of sharing the same problems, e.g. *it was surprising to hear that there are people who have similar interests and with new and different ideas of solutions to the problems* (SC1);
- the exchange of values with young people from other countries made it possible for them to create deep relationships, based on important things and also to debate about difficult arguments, even though they had known each other only for few days, e.g. *it seemed normal to talk about complicated things that even with people we know for a long time we have never talked before and we talked about it quietly with people we know precisely for four days* (SC3);
- the encounter with different cultures and perspectives enabled them to enlarge their horizons and open new perspectives, i.e. *we met different cultures, people who come from very distant countries, this is a great enlargement of our horizons. We met people with completely different opinions and this made me discover the reasoning I had never done and made me humbly stand before the opinions of others* (SC3).

Conclusions

The cultural aspects were deeply embedded in all students' discourses. They expressed the difficulties they encountered, related to language, relationships and to the different cultural backgrounds. However, the discussion about the issue of climate change – from many disciplinary perspectives – allowed them to explicate their values, ideas and desires for the future and to share them with others. This was crucial, since most students recognized that a similarity of values could be identified internationally: despite the different lifestyles and ways of reasoning, all the cultures were still dealing with the same global problems and the students were convinced that they needed to act together to change the world. We argue that the cultural insights had this very special role to help students in moving from their local, culturally grounded individual dimension to a more global and collective dimension. The passage from the focus on their individual perspective toward the sharing of values presented a threshold that, when overcame, let them open new future horizons. In this sense, we argue that reflections on cultural diversity can be considered a valuable way to trigger FSS.

References

Braun, V. & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3, 77-101.

Levrini, O., Tasquier, G., Branchetti, L. Barelli, E. (2019). Developing future-scaffolding skills through science education, *International Journal of Science Education*, *41*(18), 2647-2674.

OECD, 2015. Education at a glance.

Tasquier, G., Branchetti, L., & Levrini, O. (2019). Frantic standstill and lack of future: How can science education take care of students' distopic perceptions of time? In E. McLoughlin, O. Finlayson, S. Erduran, & P. Childs (Eds.), Bridging research and practice in science education. Contributions from science education research (Vol. 6, pp. 205–224). Cham: Springer.

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