

Contribution ID: 39

Type: **Workshop in Wroclaw**

Utility Value Interventions to Foster Relevance of Physics Courses

Monday, December 13, 2021 4:00 PM (1h 30m)

Abstract. Utility value interventions have been implemented in various STEM courses in the last decade. Stemming from the Expectancy Value Theory, these interventions have been shown to positively influence students' value beliefs, interest, and achievement. This workshop will provide a general overview of the utility value interventions by explaining various types, how these can be implemented in physics courses, making space for participants to share their experiences as a way to highlight alternative perspectives, sharing our experiences in implementation. Participants will work in small groups to discuss potential implementations for their own teaching or research.

1 Introduction

It is difficult for many students to see the relevance of physics courses that are perceived among the difficult courses. Educators have been seeking ways to help students see the relevance of a course for their lives. Utility value interventions should be mentioned among the successful interventions to foster students' value beliefs in many fields especially in the last decade. These interventions are based on one of the major motivation theories in the literature: the Expectancy Value Theory developed by Eccles and colleagues [1].

According to the Expectancy Value Theory students' task values and success expectancies influence their achievement related choices such as their persistence, effort and performance [2]. Success expectancies are expectations that one can succeed at a task, while task values are beliefs about value of doing the task. Task values include intrinsic value-interest or enjoyment of a task, attainment value-importance of doing well on a task, utility value-usefulness of a task, and cost-negative consequences of task engagement [2].

2 Utility Value Interventions

Utility value interventions focus on the relevance of a course for students' lives and aim to help students perceive the course content as personally meaningful. These interventions have been implemented and shown to positively influence students' value beliefs, interest and achievement in various STEM courses such as high school mathematics [3], high school science [4], college biology courses [5], recently in a biology lab [6], and also in college physics [7]. Utility value interventions focus on the relevance of a course for students' lives and aim to help students perceive the course content as personally meaningful.

There are various types of utility value interventions:

- a. Directly-communicated utility value interventions provide students information on the value of engaging in a task. This information is usually provided by researchers, instructors or a text.
- b. Self-generated utility value interventions guide students to identify the value of engaging in a task independently.
- c. Critical reflection interventions ask students to evaluate others' relevance claims.

3 The workshop

This workshop will provide a general overview of the utility value interventions by briefly explaining the theoretical framework, various types of utility value interventions, and how they can be implemented in physics courses. Participants will have space to share their experiences and opinions as a way to discover alternative perspectives, before we share our experience in designing and implementing a utility value intervention.

We will also share the structured writing task that we have developed for the DiFuSeEM project and some excerpts from students' responses. Later, we will facilitate a discussion on how to interpret these excerpts and how they can be used in the physics courses to develop other types of utility value interventions. At the end of the workshop, the participants will work in small groups to discuss potential implementations for their own teaching or research. Finally, the participants will share their opinions with the whole group.

Acknowledgements

The DiFuSeEM project has received funding from the European Union's Horizon 2020 research and innovation programme under the Marie Skłodowska-Curie grant agreement No 843951.

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Session Classification: Parallel 2 - Wroclaw/Guayaquil

Track Classification: 16. Motivational strategies and metacognition in physics education