



Einladung zur öffentlichen Defensio

**Martin MAYERHOFER**

Thema der Dissertation

**From School to University: Trends and Gender Differences  
in the Motivation to Learn Mathematics**

Abstract:

This dissertation comprises four studies that examine motivational aspects related to learning mathematics in adolescents. The first study investigates differences by gender and age cohorts in the intentions of upper secondary school students to pursue a career in the fields of science, technology, engineering, and mathematics (STEM). The second study explores gender differences in the motivation to learn mathematics during the secondary-tertiary transition into STEM bachelor programs. The third study identifies distinct patterns in the development of the motivation to learn mathematics during this transition. The fourth study examines the impact of a specific intervention program designed to foster the motivation and learning skills of beginning students in STEM bachelor programs.

The studies were conducted using validated questionnaires administered to Austrian academic upper secondary school students and to students in STEM bachelor programs at two universities in Austria. The results suggest that gender differences in STEM career intentions during upper secondary school are consistently in favor of male students. Regarding the motivation to learn mathematics, gender differences in favor of male students are evident during the secondary-tertiary transition into STEM bachelor programs. A closer examination revealed that beginning students can be assigned to one of four distinct motivational profiles. Only the students in the most adaptive profile are able to maintain their favorable motivational state, while other students experience a considerable decline in motivation. A short-term intervention aimed at fostering the motivation and learning skills of beginning students in STEM bachelor programs was shown to boost learning skills and some aspects of motivation at the beginning of the first semester. However, the intervention did not enable students to maintain their motivation beyond the transition period.

The results of these studies show that gender differences in favor of male students persist in the STEM domain and that they are reinforced during upper secondary education and the transition to university. The results also show that having a beneficial motivational pattern at the beginning of one's tertiary education is an asset for mastering the secondary-tertiary transition. Therefore, motivational support should be an integral part of education both at the secondary and tertiary level.

### **Prüfungssenat**

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### **Zeit und Ort**

Freitag, 23. Mai 2025, 13:00 Uhr

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