JRST
Journal of Research in Science Teaching
Research Brief
VOL. 60, NO. 1, PP.164-195 (2023)

Declining Interest in Science in Lower Secondary School – Teaching Quality Maintains Interest

Lena Steidtmann, Thilo Kleickmann, Mirjam Steffensky

Overview: This study focused on the long-term development of interest in physics at the lower secondary level (grades 5-7) and examined the role of teaching and teaching quality on the changes in interest in physics.

Audience: Teacher educators; Science teachers; School administration; Education policy

Key Points

- Students' interest in physics declines during lower secondary school (grades 5 to 7).
- Physics teaching as such seems to fail the goal of promoting or maintaining interest in physics.
- Perceived teaching quality mitigated the decline in interest in physics.
- Content-specific dimensions deserve particular attention when it comes to fostering or maintaining interest at this stage.

INTRODUCTION Interest improves the quality of learning and fosters academic success by increasing attention and engagement (e.g., Renninger & Hidi, 2016). Therefore, fostering student interest is a key educational goal, but one that is not usually achieved: student interest in science declines substantially during secondary school. As a result, decreasing numbers of students choose science subjects in upper secondary school. Findings show that teaching and teaching quality can influence students' interest in science. However, findings for the development of interest in physics in lower secondary school classes and the role of teaching and teaching quality on it are still lacking.

FINDINGS The interest in physics declined from grade 5 to 7, with stronger declines from grade 5 to 6. There were no substantial effects of participation versus non-participation in physics classes on the change in interest in physics. The effects of teaching quality on the change in physics interest varied. The dimensions of cognitive activation and cognitive support were positively related to changes in interest from grade 5 to 6 and from grade 6 to 7, which means higher levels of cognitive activation and cognitive support were related to less decline in interest. Emotional support and classroom management were positively related to changes in physics interest from grade 5 to 6 only.

TAKEAWAYS The lower secondary (grades 5 to 7) seem to be a critical phase for the development of physics interest. To achieve the goal of maintaining interest during secondary school, it is important to mitigate the decline in interest during these earlier secondary grades. Whether classes participated in physics teaching or not neither notably reduced nor increased interest in physics in this study. Our results suggest that, on average, regular physics teaching might not achieve the goal of promoting or maintaining interest in physics. However, several dimensions of perceived teaching quality mitigated the decline in interest. While the more general dimensions of emotional support and classroom management showed mixed results, the content-specific dimensions of cognitive activation and cognitive support showed positive effects on the development of interest in physics from grade 5 to 6 and grade 6 to 7. Thus, our results point to the need to consider content-specific features of teaching quality when it comes to promoting or maintaining interest in physics.

Reference

Renninger, K. A., & Hidi, S. (2016). The power of interest for motivation and engagement. Routledge, Taylor & Francis Group.

Declining Interest in Science in Lower Secondary School Classes: Quasi-Experimental and Longitudinal Evidence on the Role of Teaching and Teaching Quality