

INVESTIGATING MATHEMATICAL HABITS OF MIND IN A FLIPPED CLASSROOM ENVIRONMENT

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A “Flipped Classroom” (FC) approach is based on “flipping” the traditional learning approach. The knowledge acquisition process which traditionally occurs in class, takes place outside of it via a variety of technological means (Lage et al., 2000). Owing to the significant amount of class time dedicated for exercising and problem solving, students can have more time mastering a huge variety of mathematical abilities (Bishop, 2013). Mathematical Habits of Mind (MHoM) are considered fundamental mathematical abilities that students need to acquire and improve. MHoM-based instruction enables students to engage in mathematical thinking processes that are similar to those used by mathematicians (Cuoco et al., 1996). Most research has looked into the application of MHoM in mathematics classrooms, yet scant research has been done on their application as part of an FC environment, particularly referring to the online component of the FC. The goal of the current study is to investigate the integration of MHoM in the online component of an FC environment.

The study focuses on an FC environment, which its online component is comprised of an advanced mathematics course for high school students and contains filmed lectures to numerous subjects. This study focuses on the MHoM of the instructor who delivers the content in the filmed lectures of the online environment, in addition to the those invited by the online exercises. Both quantitative and qualitative research tools are administered, including short filmed mathematics lectures, as well as interactive online exercises. The findings indicate that the instructional process in the examined lectures exemplify the characteristics of an MHoM-based instruction. In several filmed lectures for instance, it is clearly visible that the instructor is mainly focusing on implementing an MHoM that is applying mathematical reasoning. This research contributes theoretically to the limited literature about the interrelationship between MHoM and FC. The study also contributes to providing insights and probable solutions to challenging learning situations such as the current period of COVID-19 pandemic.

References

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