Student Satisfaction on Online Mathematics Learning: A Literature Review

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• Mathematics - important, nature of the course, unique challenges

• Student satisfaction - Students an asset to the institution (Parahoo et al., 2016), Potential contributor/donor as alumni (Parahoo et al., 2013), They can spread word-of-mouth positively (Alves & Raposo, 2009)
• Allen and Seaman (2011)

<table>
<thead>
<tr>
<th>Course Delivered Using Internet</th>
<th>Course Mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>1% -29%</td>
<td>Web-facilitated</td>
</tr>
<tr>
<td>30% -79%</td>
<td>Blended</td>
</tr>
<tr>
<td>More than 80%</td>
<td>Online</td>
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METHODOLOGY

• literature review combined snowball sampling and systematic database searches with reverse and hand searches
• peer-reviewed articles related to (1) Online learning mathematics, (2) students’ satisfaction (3) higher education
• Other terms: motivation, distance education, student satisfaction, online courses, feedback, perceptions, performance, student-student interaction, student instructor interaction, social presence and student engagement

Data sources:
• The databases: EBSCO, ProQuest, Elsevier, Science Direct, 10 years: 2009 – 2018
SELF-REGULATED LEARNING (SRL)

- SRL refers to students’ systematic effort to manage their learning process to achieve goals (Zimmerman & Schunk, 2011).
- Often, SRL is explained with motivation, emotion, and learning strategies (Abar & Loken, 2010).
- Research has shown that self-regulation is critical in determining students’ successful learning experiences in an online learning environment (Cho & Kim, 2013).
SELF-REGULATED LEARNING (SRL)

- Cho and Kim (2013) - students’ mastery-oriented goals are positively related to their self-regulation for interaction in online learning environments.
- Cho and Shen (2013) - students’ intrinsic goal orientation is positively related to their self-efficacy for learning and performance as well as metacognitive self-regulation in an asynchronous online learning environment.
- Cho & Heron (2015) - only motivational and emotional variables significantly predicted 63.1% of the variance in satisfaction, however, learning strategies did not influence student satisfaction (online survey of 229 college students, remedial mathematics courses)
• What constitutes meaningful mathematics engagement?
• The lack of interactions in both quantity and quality can impact students’ motivation, emotions, and cognitive processes that typically involve social influence (Schunk, Pintrich & Meece, 2008; ChanMin, Seung Won & Cozart, 2014)
• Moore and Kearsley (1996) and Hillman (1994) model: Learner-Instructor, Learner-Learner, Learner-Content, and Learner-Technology interactions
Online mathematics students are diverse in terms of interactional preferences (Warren, 2018):

- Learner-Instructor – value of going directly to Instructor
- Learner-Learner – teaching others as a way to help oneself learning
- Learner-Content – lack of confidence & high confidence in their own maths ability
- Learner-Technology interactions – outset of class, only interact with technology followed by content
Many studies report that the students at tertiary level are lacking/losing of mathematics skills (Galligan et al., 2010, Matzakos & Kalogiannakis, 2018)

Mestel et al., 2011: Longitudinal experimental support program in Mathematics that uses synchronous communication through the Elluminate Live software - received positive feedback both from the instructors and the students

Zimmermann et al., 2013: Video-recorded mathematics lessons – positive effect on the final exams of first-year students in the University of Ludwigsburg
• Johnston, et al., 2016: A support program in mathematical skills developed for the first-year Chemistry students, Queensland University- this program has a positive impact on the mathematical skills that the students needed in the chemistry courses.

• Matzakos & Kalogiannakis, 2018: An online support distance-learning program in Mathematics (SDLPM) was developed to aid first year engineering students - the students liked the program, they felt comfortable with the environment, the tools and the material used.
ADDITIONAL SUPPORT

SDLPM tools (Matzakos & Kalogiannakis, 2018):

• Reading activities
• Samples with solutions
• Self-assessment exercises (True/False and multiple choice questions)
• Dynamic presentation material, GeoGebra files
• Sources of audiovisual material and carefully chosen videos
SELF REGULATED

INTERACTION

ADDITIONAL SUPPORT

STUDENT SATISFACTION ON MATHEMATICS ONLINE LEARNING


Thank you