A MEASURE OF MOTIVATION IN AN ONLINE ASTRONOMY COURSE

Kate Jackson[a], Thomas Dixon[a]

Presenting Author: Kate Jackson (kate.jackson1@unsw.edu.au)
[a]School of Physics, UNSW, Sydney NSW 2052, Australia

KEYWORDS: motivation, online learning, quantitative analysis

SUBTHEME: Other

INTRODUCTION

Motivation is defined as the factors that cause individuals to move towards specific tasks (Deci & Ryan, 1985). There is extensive literature on student motivation, with several models suggesting that the following factors positively affect a student's motivation: feelings of competency and self-efficacy, and opportunities for autonomy (Pintrich, 2003). In this work, we aim to understand how the motivations of students change during an astronomy course and factors that influence this change.

DESIGN AND METHOD

Twice in the teaching period (beginning and end), a motivation questionnaire (a combination of the Motivated Strategies for Learning Questionnaire (MSLQ) (Pintrich & de Groot, 1990) and the Motivation to Learn Online Questionnaire (MLOQ) (Fowler, 2018)) was administered in a wholly online introductory astronomy course. An additional open-ended question about factors affecting motivation was included in the end survey. The survey quantifies seven factors for each student on a Likert scale: intrinsic motivation, extrinsic motivation, task value, expectancy, self-efficacy, social engagement, and instructor support. Mean Likert scale data for each factor were calculated for each student. An unpaired t-test determined statistical significance. A thematic analysis was performed on the open-ended question.

RESULTS

Data collection is ongoing; these are preliminary results for two cohorts of students (N = 266 for the beginning survey and N = 180 for the end survey). Intrinsic motivation was significantly higher after completion of the course compared to the start ($p < 0.05$). No other factor saw a significant change. The proportion of students that had "high" intrinsic motivation shifted from 49.4% to 64.4% during the course. The proportion that had "low" intrinsic motivation shifted from 3.8% to 4.5%, and those with "moderate" intrinsic motivation shifted from 46.8% to 31.1%. Our thematic analysis yielded the following influences on motivation: interesting content, freedom of choice, acquisition of knowledge, and format of assessments.

This research identifies factors that affect motivation for learning and can guide course developments.

REFERENCES

Deci, E.L., & Ryan, R.M. (1985) Conceptualizations of Intrinsic Motivation and Self-Determination. In: Intrinsic Motivation and Self-Determination in Human Behavior. *Perspectives in Social Psychology*. Springer, Boston, MA. https://doi.org/10.1007/978-1-4899-2271-7_2

Fowler, S. (2018) The motivation to learn online questionnaire [Doctoral thesis]. The University of Georgia.

Pintrich, P. R. (2003) A motivational science perspective on the role of student motivation in learning and teaching contexts. *Journal of Educational Psychology*, 95(4), 667–686.

Pintrich, P.R., & de Groot, E. V. (1990) Motivational and self-regulated learning components of classroom academic performance. *Journal of Educational Psychology*, 82(1), 33-40.

Proceedings of the Australian Conference on Science and Mathematics Education, The University of Canberra, 18 – 20 September 2024, page 52, ISSN 2653-0481.