

9. Increasing inclusivity and fairness in learning analytics: Exploring the LMS behaviours of students with and without learning disabilities

Maliha Homaira
University of Technology Sydney
maliha.homaira@student.uts.edu.au

Amara Atif
University of Technology Sydney
amara.atif@student.uts.edu.au

Lisa-Angelique Lim
University of Technology Sydney
lisa-angelique.lim@uts.edu.au

DESCRIPTION

Are we genuinely moving towards "fair education" in the educational race? There is limited research to highlight how learning analytics can help students with learning disabilities. Traditional teaching methods (including the "one size fits all" approach) disregard students with learning disabilities, which poses severe challenges for these students. It is conceivable to analyse and enhance students' learning practices with learning disabilities by utilising educational data mining. For example, data from student interactions can be used by teachers to trace any difficulties that students may be encountering (Baek & Aguilar, 2022), through the potential of big data obtained from students with learning disabilities, teachers will be able to analyse students' academic and behavioural progression (Lenz et al., 2016). Moreover, using data mining technology in education can determine each student's needs while also encouraging inclusivity in education. This presentation will demonstrate if there was any difference in interacting with the learning management system (LMS) between students with a learning disability and students who don't and if that difference affected their final grade using a publicly available data Open University Learning Analytics Dataset, OULAD (Kuzilek et al., 2017).

BACKGROUND

The use of technology in learning has advanced over the years. Alarming, research on learning analytics for students with learning disabilities lags in this race of educational development. Building adaptable learning environments, identifying at-risk students, and supporting students' learning with personalised feedback at scale are all now feasible because of the development of Educational Data Mining which enhances the quality of education (Yağcı, 2022). However, this swift advancement has paid lesser attention to the needs of the students with learning disabilities (Baek & Aguilar, 2022). The most prevalent instance in this situation is how neglecting a text description or accessibility in reading-specific fonts can make it more challenging for students with learning disabilities to comprehend (Chen, 2021).

Students may not feel compelled or comfortable to reveal their impairment (Kent et al., 2018), and ethical issues arising from adopting learning analytics and other factors may be the most important contributors to the slower growth of research in this area. Consequently, there is a pressing need to build up this area of research in order to ensure greater inclusiveness for students in this equity group. The study described in this presentation takes a first step to this agenda by analysing student trace data to understand the learning of students with disabilities.

DESCRIPTION OF THE SHOW AND TELL PRESENTATION

This presentation will describe the findings from the analysis of an openly available dataset (Open University Learning Analytics Dataset, OULAD). The analysis involved exploratory data analysis (EDA) of students with learning disabilities and those without. The two groups were analysed based on their interaction with the LMS to uncover any differential effects on grades.

The participants will acquire an additional perspective into how learning-disabled students interact with a virtual learning environment.

INTENDED AUDIENCE

Academics, researchers, and HDRs

PRESENTER BIOS

Maliha Homaira is an HDR student in the School of Computer Science, Faculty of Engineering and IT. Maliha's research interest lies in learning analytics and Metacognition. She is currently exploring the innovative uses of educational data mining approaches such as Epistemic Network Analysis and Process Mining.

REFERENCES

- Baek, C., & Aguilar, S. J. (2022). Past, present, and future directions of learning analytics research for students with disabilities. *Journal of Research on Technology in Education*, 1-16. <https://doi.org/10.1080/15391523.2022.2067796>
- Chen, W. (2021). *Learning Analytics for Inclusive Higher Education*.
- Kent, M., Ellis, K., & Giles, M. (2018). Students with Disabilities and eLearning in Australia: Experiences of Accessibility and Disclosure at Curtin University. *TechTrends*, 62(6), 654-663. <https://doi.org/10.1007/s11528-018-0337-y>
- Kuzilek J., Hlosta M., Zdrahal Z. Open University Learning Analytics dataset Sci. Data 4:170171 doi: 10.1038/sdata.2017.171 (2017).
- Lenz, L., Pomp, A., Meisen, T., & Jeschke, S. (2016, 15-16 March 2016). How will the Internet of Things and big data analytics impact the education of learning-disabled students? A Concept Paper. 2016 3rd MEC International Conference on Big Data and Smart City (ICBDSC),
- Yağcı, M. (2022). Educational data mining: prediction of students' academic performance using machine learning algorithms. *Smart Learning Environments*, 9(1), 11. <https://doi.org/10.1186/s40561-022-00192-z>