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How technology enhanced learning strategies affect healthcare students' engagement? A mixed methods study

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Technology-enhanced learning strategies have proliferated and/or re-purposed since the COVID-19 pandemic as education around the world transitioned to online learning. A review of existing literature has identified that many technologies used during the pandemic for remote emergency education were developed or utilised as a crisis management tool, without an emphasis on the student's engagement or learning experience. Hence, it is worthwhile studying the effects of technology-enhanced learning strategies on students' engagement to guide educators' decisions in retaining or utilising certain technologies as the world returns to face-to-face teaching and hybrid learning. There is little attention within the literature on the effects of technology on student engagement post pandemic, and highly limited research that is supported by theoretical frameworks. As such, this study uses constructivism and connectivism to unpack and understand student engagement in this transforming education space. These frameworks are two of many learning theories that have been central to understanding how students learn. Connectivism and constructivism have been selected here for their relevance in the digital age where technological change is fast and ubiquitous, and for their emphasis on student autonomy and ability to connect information.

This critical research is aiming at identifying successfully engaging technologies for healthcare and biomedical students at the University of Sydney and diagnose areas for improvement in the digital learning space. This study will look at all technologies, including those used prior to COVID-19 as well as crisis management tools. A hybrid student engagement scale, customised from existing scales in the literature, namely the Student Engagement in e-Learning Environment Scale (SELES) and Distance Education Learning Environment Scale (DELES), is used to measure student engagement across varying technologies in different class delivery modalities.

A mixed quantitative and qualitative methods survey for healthcare and biomedical students is conducted utilising this customized hybrid scale to investigate how different technological strategies have enhanced their engagement during and post COVID-19 restrictions. Furthermore, interviews with both students and educators are conducted to understand in greater depth the factors behind student engagement with technologies. The quantitative data are analysed using SPSS for statistical interpretations while the qualitative outcomes are thematically analysed using NVivo. The presented findings of this study will inform future practices in using technology-enhanced strategies for better student engagement and their wider learning experience.

Preliminary findings of the study indicate that whilst students are engaged in online learning using various technological tools, they prefer to experience face-to-face teaching supplemented by technologies that are used in an effective manner. Both students and educators have identified the need for learning to be focused on acquiring skills and graduate qualities, as opposed to traditional knowledge focused teaching methods, which is consistent with connectivism and constructivism frameworks. A full set of study results and their interpretations, as well as consolidated recommendations of a range of effective technologies and their practical features will be presented in the conference.

Keywords: technology enhanced learning, student engagement, engagement scale, digital learning, healthcare, biomedical, educators, quantitative, qualitative, mixed methods, survey, interview

References

Ahmed, S., Shehata, M., & Hassanien, M. (2020). Emerging faculty needs for enhancing student engagement on a virtual platform. *MedEdPublish*, *9*, 75. https://doi.org/10.15694/mep.2020.000075.1

Bigné, E., Badenes, A., Ruiz, C., & Andreu, L. (2018). Virtual classroom: teacher skills to promote student engagement. *Journal of Management and Business Education*, *1*(2), 87-105. https://doi.org/10.35564/jmbe.2018.0008

Brown, T., Robinson, L., Gledhill, K., Yu, M., Isbel, S. & Greber, C. (2022). Reliability and Validity Evidence of Two Distance Education Learning Environments Scales. *American Journal of Distance Education*. https://doi.org/10.1080/08923647.2022.2065147

Elshami, W., Taha, M. H., Abdalla, M. E., Abuzaid, M., Saravanan, C., & Al Kawas, S. (2022). Factors that affect student engagement in online learning in health professions education. *Nurse Education Today*, *110*, 105261. https://doi.org/10.1016/j.nedt.2021.105261

Henrie, C. R., Halverson, L. R., & Graham, C. R. (2015). Measuring student engagement in technology-mediated learning: A review. *Computers & Education*, *90*, 36-53. https://doi.org/10.1016/j.compedu.2015.09.005

Karimian, Z., Farrokhi, M. R., Moghadami, M., Zarifsanaiey, N., Mehrabi, M., Khojasteh, L., & Salehi, N. (2022). Medical education and COVID-19 pandemic: a crisis management model towards an evolutionary pathway. *Education and Information Technologies*, *27*(3), 3299-3320. https://doi.org/10.1007/s10639-021-10697-8

Lee, J., Song, H.-D., & Hong, A. J. (2019). Exploring Factors, and Indicators for Measuring Students' Sustainable Engagement in e-Learning. *Sustainability*, *11*(4). https://doi.org/10.3390/su11040985

Mattar, J. (2018). Constructivism and connectivism in education technology: Active, situated, authentic, experiential, and anchored learning. *Revista Iberoamericana de Educación a Distancia*, *21*(2), 201-2017. https://doi.org/10.5944/ried.21.2.20055

McNamara, A. (2021). Crisis Management in Higher Education in the Time of Covid-19: The Case of Actor Training. *Education Sciences*, *11*(3), 132. https://doi.org/10.3390/educsci11030132

Owolabi, J., & Bekele, A. (2021). Implementation of innovative educational technologies in teaching of anatomy and basic medical sciences during the COVID-19 pandemic in a developing country: the COVID-19 silver lining? *Advances in Medical Education and Practice*, *12*, 619. https://doi.org/10.2147/AMEP.S295239

Ryan, G., Callaghan, S., Rafferty, A., Higgins, M., Mangina, E., & McAuliffe, F. (2022). Learning outcomes of immersive technologies in healthcare student education: A systematic review of the literature. *Journal of Medical Internet Research*, *24*(2), e30082. https://doi.org/10.2196/30082

Walker, S. L., & Fraser, B. J. (2005). Development and Validation of an Instrument for Assessing Distance Education Learning Environments in Higher Education: The Distance Education Learning Environments Survey (DELES). *Learning Environments Research*, *8*(3), 289-308. https://doi.org/10.1007/s10984-005-1568-3

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