Lídia VINCZÉNÉ FEKETE & Judit SASS

lidia.fekete@uni-corvinus.hu

Corvinus University of Budapest (Pannon University)

How to make instructional videos more student-friendly? Effects of multimedia principles on boredom and emotions

Following the pandemic, face-to-face learning was restored to normal, but by then, both instructors and students had experienced that instructional videos could effectively support teaching-learning strategies like blended learning (Fyfield et al., 2022). Their use, however, raises several concerns and questions for instructors, who might need new skills and insights to use this opportunity effectively (Woolfitt, 2015). Meanwhile, one of the biggest pitfalls for students is learning by watching asynchronous videos: Gen Z, used to short, stimulus-rich content, experiences not only a high level of boredom but also strong feelings of isolation when using this form of learning (Brown, 2024). The presentation shares the results of an empirical study with the participation of Hungarian students (N=50) who watched a 22-minute-long instructional video as part of a media studies course. Data collection was multimodal, including automated facial expression analysis, self-report questionnaires and interviews, to measure the effect of the application of multimedia principles (Fyfield et al., 2022; Mayer & Fiorella, 2021) on boredom, arousal, valence and basic emotions. As boredom – especially when measured by facial analysis – shows large individual differences and the applied software achieved a recognition rate of 55% for intentionally displayed boredom (Gudi, 2017), within-person analysis was used to investigate statistical data (Holmes-Bonferroni corrected paired Student T-tests and Wilcoxon signed-rank tests). Results show that multimedia measures aiming to increase emotional interest, e.g., the catch-type behaviours (Bolkan & Griffin, 2018; Mazer, 2013) and generative processing through affective and social cues (Mayer & Fiorella, 2021) such as personalisation, storytelling, smiling, embodiment and humour contributed to the increase of the intensity of facial expressions related to positive emotional states while vastly decreasing the intensity of expressions related to negative emotions and neutral states (neutral and boredom). Measures aiming to support cognitive interest and engagement (also called hold-type interventions such as signalling, avoiding

redundancy, multimedia, segmenting or applying examples) significantly affected both positive and negative emotions. Surprisingly, they contributed to an increase in negative emotions such as anger, disgust and sadness and reduced the intensity of "happy" (and consequently, of valence). Facial expressions related to "boredom" and "neutral" were reduced during the episodes when any multimedia principle was applied. Results support the consideration of both types of multimedia principles to reduce boredom: (a) the ones that reduce cognitive load (Mayer, 2021; Sweller, 1988) and (b) those that strengthen students' emotional interest.

References

- Bieleke, M., Wolff, W., & Martarelli, C. (Eds.). (2024). The Routledge International Handbook of Boredom. Routledge. https://doi.org/10.4324/9781003271536
- Bolkan, S., & Griffin, D. J. (2018). Catch and hold: Instructional interventions and their differential impact on student interest, attention, and autonomous motivation. Communication Education, 67(3), 269–286. https://doi.org/10.1080/03634523.2018.1465193
- Brown, A. (2024). Online student engagement in higher education—What it is, why we need it, and how we can promote it. In C. Stone & S. O'Shea (Eds.), Research Handbook on Student Engagement in Higher Education (pp. 39–53). Edward Elgar Publishing. https://doi.org/10.4337/9781035314294.00013
- Fyfield, M., Henderson, M., & Phillips, M. (2022). Improving instructional video design: A systematic review. Australasian Journal of Educational Technology, 150–178. https://doi.org/10.14742/ajet.7296
- Gudi, A. (2017, August). Affective Attitudes in FaceReader 7.1. VicarVision.
- Mayer, R. E. (2021). Cognitive Theory of Multimedia Learning. In R. E. Mayer & L. Fiorella (Eds.), The Cambridge Handbook of Multimedia Learning (3rd ed., pp. 57–72). Cambridge University Press. https://doi.org/10.1017/9781108894333.008
- Mayer, R. E., & Fiorella, L. (Eds.). (2021). The Cambridge Handbook of Multimedia Learning (3rd ed.). Cambridge University Press. https://doi.org/10.1017/9781108894333
- Mazer, J. P. (2013). Student Emotional and Cognitive Interest as Mediators of Teacher Communication Behaviors and Student Engagement: An Examination of Direct and Interaction Effects. Communication Education, 62(3), 253–277. https://doi.org/10.1080/03634523.2013.777752
- Sweller, J. (1988). Cognitive Load During Problem Solving: Effects on Learning. Cognitive Science, 12(2), 257–285. https://doi.org/10.1207/s15516709cog1202_4

• Woolfitt, Z. (2015). The effective use of video in higher education. https://www.academia.edu/22387499/The_effective_use_of_video_in_higher_education