

Technology-Enhanced Replays of Expert Gaze Promote Students' Visual Learning in Medical Training

Marko Seppänen¹ and Andreas Gegenfurtner²

¹ Turku PET Centre, Turku University Hospital, Turku, Finland
marko.seppanen@tyks.fi

² TUM School of Education, Technical University of Munich, Munich, Germany
andreas.gegenfurtner@tum.de

Abstract. Based on diagnostic performance and eye tracking data, the present study demonstrates that technology-enhanced replays of expert gaze can promote the visual learning of students in clinical visualization-based training.

Keywords: Eye tracking, gaze replay, visual expertise, medical visualizations.

Diagnosing medical visualizations is difficult for students to learn [1-3]. The purpose of the study is to test whether technology-enhanced replays of expert gaze (TEREG) promote visual learning of medical students with realistic, three-dimensional stimuli. Medical students' diagnostic performance and eye movements were compared before and after exposure to TEREG. Participants were 18 undergraduate students of medicine (10 women, 8 men) with no self-reported prior knowledge in interpreting PET/CT. Results of the performance and eye movement measures indicate significant improvement in diagnostic performance and eye movements. Given the importance of motivation for transfer in technology-enhanced training environments [3-5], future studies can test if students apply their novel visual skills to related clinical domains.

References

1. Gegenfurtner, A., Lehtinen, E., Säljö, R.: Expertise Differences in the Comprehension of Visualizations: A Meta-Analysis of Eye-Tracking Research in Professional Domains. *Educ. Psychol. Rev.* 23, 523–552 (2011)
2. Gegenfurtner, A., Siewiorek, A., Lehtinen, E., Säljö, R.: Assessing the Quality of Expertise Differences in the Comprehension of Medical Visualizations. *Vocat. Learn.* 6 (2013)
3. Helle, L., Nivala, M., Kronqvist, P., Gegenfurtner, A., Björk, P., Säljö, R.: Traditional Microscopy Instruction versus Process-Oriented Virtual Microscopy Instruction: A Naturalistic Experiment with Control Group. *Diagn. Pathol.* 6, S8 (2011)
4. Gegenfurtner, A., Vauras, M.: Age-related Differences in the Relation between Motivation to Learn and Transfer of Training in Adult Continuing Education. *Contemp. Educ. Psychol.* 37, 33–46 (2012)
5. Gegenfurtner, A., Festner, D., Gallenberger, W., Lehtinen, E., Gruber, H.: Predicting Autonomous and Controlled Motivation to Transfer Training. *Int. J. Train. Dev.* 13, 124–138 (2009)