

# Intelligent Assistants in Education: Capabilities and Limitations

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## **ABSTRACT**

This workshop provides an opportunity to consider and to explore, collectively and critically, the advent of Intelligent Assistants (IAs) from the user perspective in the context of teaching and learning. IAs such as Siri, Google Assistant, Alexa, etc. are available on smartphones and many other devices and offer a range of services. Some are being developed to support specific aspects of learning. What claims are being made about their capabilities, and what do we know of their limitations? The workshop will (a) offer an overview of this rapidly growing field, based on an extensive literature review and some interviews with developers; (b) engage participants in several short activities to explore and discuss IAs' capabilities and limitations; (c) encourage participants to consider how IAs can best support a group of learners (e.g. their own students).

## **Author Keywords**

Intelligent personal assistants, smart assistants, chatbots, conversational agents, virtual assistants, voice-activated assistants, avatars

## **RATIONALE**

Intelligent Assistants can be regarded as an extension of increasingly mobile means of access to learning support beyond the classroom. IAs are also part of contemporary discourse surrounding the impact of artificial intelligence on teaching and learning. Voice-activated and text-based IAs present new possibilities, yet there might be a fine line between specific assistance and smart technologies acting (inadequately) as teachers. IAs might also cleverly assist learners with undesirable activities such as cheating. An IA might amplify human capabilities, yet it could have negative consequences that we are only just beginning to recognize. Both the capabilities and limitations of IAs need to be understood by all involved in education.

## **TARGET AUDIENCE**

The workshop is intended for teachers at any level and in any discipline, support staff, education managers, and researchers who need to be aware of how the advent and increasingly widespread use of IAs might (or might not) change how we design and evaluate mobile applications. Interaction in the workshop will be encouraged through a series of collaborative activities accompanied by questions for discussion and feedback, and a template to help participants plan how to support learners with IAs.

## **ORGANIZATIONAL REQUIREMENTS**

No special requirements.

## **ACKNOWLEDGMENTS**

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## **REFERENCES**

- Canbek, N. G., & Mutlu, M. E. (2016). On the track of artificial intelligence: Learning with intelligent personal assistants. *Journal of Human Sciences, 13*(1), 592-601.
- Cowan, B. R., Pantidi, N., Coyle, D., Morrissey, K., Clarke, P., Al-Shehri, S., ... & Bandeira, N. (2017, September). "What can I help you with?" Infrequent users' experiences of intelligent personal assistants. In *Proceedings of the 19th International Conference on Human-Computer Interaction with Mobile Devices and Services* (pp. 1-12).
- de Barcelos Silva, A., Gomes, M. M., da Costa, C. A., da Rosa Righi, R., Barbosa, J. L. V., Pessin, G., ... & Federizzi, G. (2020). Intelligent personal assistants: A systematic literature review. *Expert Systems with Applications, 147*, 113193.
- Fryer, L. K., Nakao, K., & Thompson, A. (2019). Chatbot learning partners: Connecting learning experiences, interest and competence. *Computers in Human Behavior, 93*, 279-289.

Kukulska-Hulme, A. (2019, September). Intelligent assistants in language learning: friends or foes? In Proceedings of mLearn World Conference on Mobile and Contextual Learning (pp. 127-131).

Kukulska-Hulme, A. (2017). Mobile and Intelligent Assistants in Education. Keynote at MEC 2017 Conference, University of Lapland, Rovaniemi, Finland, 27 November 2017.

Kukulska-Hulme, A. (2016). Mobile Assistance in Language Learning: A critical appraisal. In: Agnieszka Palalas & Mohamed Ally (Eds.) The International Handbook of Mobile-Assisted Language Learning. Beijing: China Central Radio & TV University Press Co., Ltd.

Lopatovska, I., Griffin, A. L., Gallagher, K., Ballingall, C., Rock, C., & Velazquez, M. (2020). User recommendations for intelligent personal assistants. *Journal of Librarianship and Information Science*, 52(2), 577-591.