

THESIS FOR THE DEGREE OF DOCTOR OF PHILOSOPHY

Experiences of Speaking with Conversational AI in Language Education

Elin Ericsson

Department of Applied Information Technology

The thesis will be defended in public on Friday September 8th,
2023 at 13:00, in Torg Grön, Patricia building (4th floor),
at the Department of Applied Information Technology,
Forskningsgängen 6, Gothenburg.

Faculty opponent: Professor Ylva Lindberg,
Department of Language, Aesthetic Learning and Literature,
Jönköping University



UNIVERSITY OF GOTHENBURG

University of Gothenburg
SE-405 30 Gothenburg, Sweden
Phone: +46 31 786 0000

ABSTRACT:

This thesis explores the application of digital tools in Swedish language education, specifically in relation to speaking skills. It focuses on dialogue-based, computer-assisted language learning, which enables students to practise and develop their speaking skills in a target language. The aim of the thesis is to gain a comprehensive understanding of how students experience conversational artificial intelligence during their language education while practising speaking skills in face-to-face interaction.

The thesis consists of one study conducted with language teachers, and three studies conducted in real classroom settings with lower-secondary students using two different spoken dialogue systems. A framework was designed to analyse student–conversational-agent interaction and the students’ educational experiences in the system. The data was produced through system metrics, questionnaires, digital logbooks, and interviews. Both descriptive and inferential statistics were employed to analyse the quantitative data, while qualitative data was analysed using reflexive thematic analysis.

There were three major areas of findings related to the conducted studies. Firstly, teachers have positive views of using digital tools, but speaking skills are the least assisted by these tools, despite being considered the most challenging skill to teach and learn. Secondly, students reported positive educational experiences when practising speaking in a spoken dialogue system, both in the short and long term. They were cognitively and emotionally engaged, felt safe, and gained confidence. However, some students became disengaged when the scenarios did not relate to their daily lives, lacked challenge, or resulted in communication breakdowns. Thirdly, students had a range of experiences with the embodied conversational agents, from seeing them as deadpan machines to relating socially with them in positive ways. The level of experienced social interaction was linked to the students’ educational experiences in the system.

The contributions of the thesis include the framework for analysing student–conversational-agent interaction and the adaptation of a digital logbook for this educational context. The practical implications for language education are various. Firstly, spoken dialogue systems offer supplementary opportunities for lower-secondary students to practise speaking in a target language and align with key principles of effective language learning. Secondly, understanding the complexity of various aspects of students’ experiences in the system can help teachers to address challenges and diverse student reactions, transforming their role into that of a facilitator and guide for teaching and learning speaking skills using conversational AI.

KEYWORDS:

Conversational artificial intelligence; dialogue-based computer-assisted language learning; educational experience; embodied conversational agent; student–conversational-agent interaction framework; lower-secondary students; speaking skills; spoken dialogue system; teachers.

ISBN: 978-91-8069-3516 (PRINT)

ISBN: 978-91-8069-352-3 (PDF)