Book Review

Artificial Intelligence in Second Language Learning
Marina Dodigovic, 2005 (Multilingual Matters, Clevedon, UK)
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This book examines the conditions under which Intelligent Computer Assisted Language Learning (ICALL) programs could be useful to adult learners of a second language by focusing on error and remediation. It describes the development of an Intelligent Tutor (IT) that aims to help university students improve their English for Academic Purposes (EAP). The author bases the system on real learner needs, adapts it to their individual learning style, and stresses that the AI part of the project is there as a vehicle to implement her ideas of raising language (and error) awareness of the students. Most of the students have either Chinese (Mandarin or Cantonese) or Indonesian as their L1. Although the students have reached a certain level of English, there is a gap between the students’ perceived proficiency level and that expected by their lecturers. Students are often disappointed with the low marks they receive for their coursework. The author identifies a two-tiered problem. On one level, the students do not have a sufficient command of Academic English, while on another level they lack the necessary skills for writing academically.

The author states that she hopes that the book will be of interest to a wide audience, from language teachers and applied linguists on the one hand, to ICALL specialists on the other. The book covers Second Language Acquisition (SLA), language awareness, CALL and Natural Language Processing (NLP). Chapter 1 looks at interlanguage (applying rules from the learner’s L1 or overgeneralising/oversimplifying rules from the L1) and raising language awareness, especially error awareness. It outlines the idea behind using an artificially intelligent error correction aid to eliminate or de-fossilise errors. Chapter 2 addresses the research/development issue in CALL and concludes that CALL development is indeed research, particularly in the areas of user analysis and evaluation. The author states that pre-developmental research is often neglected in CALL literature. Chapter 3 outlines why the web was chosen as the delivery platform for the IT. Its review of the theoretical underpinnings for the spread and acceptance of innovation (Rogers, 1983) is interesting. The question of whether computers can correct language errors is addressed in Chapter 4. An overview of the literature on error correction and feedback, particularly with regard to CALL, is provided. The chapter reviews various parsers, including
rule-based parsers (which would have difficulties parsing an erroneous sentence) and probabilistic parsers (which are based on statistics and may not recognise an error or be able to provide pedagogical feedback). The author highlights Herr Kommissar as an example of a good ICALL system. The idea behind the IT is to use a pedagogical parser based on learner interlanguage (James, 1998).

Chapter 5 investigates how ICALL tutors are developed. Most of the target learners for the IT are either communicative or analytical learners (Willing, 1988). Dodigovic looks at how individual learner differences can be catered for by the IT by providing different types of feedback depending on a student’s preferred learning style. The analysis of written Academic English, which considers the difference between written and spoken language, the logical organisation of academic texts and the difference between IT’s target student writing and established academic writing, is insightful. The corpus analysis undertaken to analyse the erroneous subsets of the target student interlanguage is clearly explained. Dodigovic broadly focuses on interlingual (that is, transfer from the native language) errors and intralingual (developmental) errors. The typical and most prominent errors of her learning group are analysed and the most likely causes of these errors are investigated so that this knowledge can be incorporated into the IT. The IT also aims to assist learners in the development of the necessary skills for writing logical, academic texts. The PROLOG statements (the “intelligence”), which can handle both correct input and erroneous input that conforms to the specific errors likely to be made by the target users, as well as sample outputs, are shown.

Chapter 6 addresses the most interesting question of the book—whether the IT works. In this final chapter, the author reviews evaluation in CALL and summaries her findings to date with the IT. Although the starting and evaluated environments of the project are different (albeit similar), the author managed to carried out a quasi-summative evaluation and found that there was a significant level of improvement even after just one treatment with the IT. If her findings could be replicated with other groups and over a longer period of time, the results would be truly impressive.

The information in the book is quite dense and at times diagrams and tables would have helped to clarify or summarise some points, while Chapter 5 contains perhaps too many screen shots of the output of the IT. The author acknowledges that due to funding difficulties, the size of the IT curriculum and the User Interface (UI) leave room for improvement. The book leaves readers with some unanswered questions (for example, would the same results emerge with other groups? What would the longitudinal results be?), but this points to the fact that the book engages readers, leaving them wanting to know more. The author’s work represents a small-scale, realistic project that is perhaps reflective of some more recent ICALL projects that attempt to deal with specific problems, rather than aiming for the stars.

In summary, the book outlines the development of an ICALL project that is driven by learner needs, the stages and difficulties encountered in its development and the potentially significant contribution it can make to learning. It focuses on a specific AI project rather than AI in CALL in general and deals with the real-world issues.
Writing a book that aims to appeal to a broad readership (from SLA to CALL to ICALL specialists) is difficult and while each camp may take issue with some parts of the book, the author manages to cover the diverse topics in a successful and engaging manner. It will be interesting to follow the author’s progress in future publications.

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