Enhancement Themes

Resilient Learning Communities

Promoting the Equity of the Student Learning Experience

Case Study 7: Investigating Solutions to make Mathematical Teaching Content Accessible

Morgiane Richard, Academic Skills Adviser, and Professor Ben Martin, Professor Nir Oren, and Dr Murilo Baptista, School of Natural and Computing Sciences, University of Aberdeen

What was the issue?

In 2018, new regulations came into force implying that universities must provide course material on their Virtual Learning Environment (VLE) that is accessible. A particular requirement is that files must be compatible with text-to-speech software. In STEM disciplines, and more generally in many disciplines where advanced mathematics is used, documents are written with the LaTeX typesetting system which produces high quality mathematics based on marked-up text. The end-product obtained from LaTeX, however, is a PDF file and the mathematics within it is not well recognised in text-to-speech software. Therefore, all LaTeX documents are currently deemed not fully accessible.

How was it solved?

A possible alternative is to publish HTML documents, with the Javascript MathJax to render the maths. It is possible to convert LaTeX documents into HTML, albeit with some limitations and often with conversion errors. The aim of our LTEP project was to investigate the efficiency of four existing pieces of software which convert LaTeX documents to HTML. Our intern ran the pieces of software on sample lecture materials from the Maths Department and identified two as giving most satisfactory results.

What comes next?

We have now secured a subsequent funding from the Council of Professors and Heads of Computing to recruit a pool of academic volunteers to:

- try our two identified pieces of software and provide user feedback on ease of use, errors encountered and time investment needed to learn the piece of software
- learn and produce a simple HTML output using a new (non-LaTeX) markup language and provide feedback on ease of use and time investment needed to learn this language.

At the end of this second project, we should be able to advise the academic community of LaTeX users on which types of LaTeX documents can be efficiently converted by using recommended software and how they can be converted. Moreover, we will provide guides on using alternative markup languages that produce accessible math material, which can be used when LaTeX files cannot be converted.

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Find out more

This case study is one of nine published as part of the 2021-22 Student-led Project from the Resilient Learning Communities Enhancement Theme.

The project in year 2 explored equity and inclusivity in the context of a more blended learning environment and how we can best develop representative systems and student/class representative skills to effectively support all the students they serve.

You can find further case studies and resources on the Enhancement Themes website.

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