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MathPlayer and the Design Science Mathematics Accessibility Project

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Design Science, the publisher of Equation Editor, MathType, WebEQ, has obtained an American National Science Foundation (NSF) grant to “research ways of making mathematical content accessible to people with vision disabilities” [1].

The focus is on five research areas [2]; each addresses a deficiency in current online mathematics. The results of this research are to be incorporated into MathPlayer, the MathML plugin for Internet Explorer.

1. Communicating an audio description of the mathematics. Screenreaders convert the text on a web page to speech. “*Math-to-speech*” in MathPlayer, with Microsoft’s Active Accessibility interface, will enable screenreaders to access mathematics on a webpage. MathPlayer 2.0 contains “an early version” of this technology and is supported by the Jaws screenreader, amongst others [3].

2. Allowing navigation of mathematics expression using the keyboard. Since it is often difficult to grasp spoken mathematics, this will allow users to replay sections of an expression to facilitate understanding.

3. Maths to braille translation. Online braille displays and braille embossing of web content will be greatly aided by this translation.

4. Adding line breaking to maths expressions. When one enlarges the size of webpage text it can wrap around and take more lines. Without similar wrapping, longer mathematics expressions can move off the screen (or printout).

5. Synchronising highlighting of a subexpression with what is being spoken. Highlighting maths as it is spoken will help those with certain learning difficulties, such as dyslexia, who have a visual learning style.

Along with math-to-speech, MathPlayer 2.0 has: the ability to copy mathematics into other systems (MathType, Maple, Mathematica), MathZoom, which allows enlarging of expressions to clarify small details, and several technical upgrades and fixes.

The future results of the research will be very useful to students with disabilities. This will greatly help institutions meet their obligations under SENDA, requiring only that authors publish their content using MathML.

References

- [1] DESIGN SCIENCE, 2003. *Design Science Awarded NSF Grant to Research Mathematics Accessibility*. At: [http://www.dessci.com/en/company/press/releases/dec03\(2\).htm](http://www.dessci.com/en/company/press/releases/dec03(2).htm) [Accessed 14 April 2004].
- [2] DESIGN SCIENCE, 2004. *Making Mathematics Accessible*. At: <http://www.dessci.com/en/reference/accessibility/> [Accessed 14 April 2004].
- [3] DESIGN SCIENCE, 2004. *MathPlayer Can Speak!* At: <http://www.dessci.com/en/products/mathplayer/tech/accessibility.htm> [Accessed 14 April 2004].

Useful links

- [1] MathPlayer is available as a free download from <http://www.dessci.com/en/products/mathplayer/>.
- [2] MathPlayer 2.0 requires Internet Explorer 6, also free from <http://www.microsoft.com/ie>.
- [3] LTSN Maths, Stats & OR Network MathML resources page: <http://mathstore.ac.uk/mathml/>.

Note: A review of MathType 5.2 can be found on page 38