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Abstract
Recently, the rapid evolvement of Internet has moved network on-line learning from concept to reality. Contents, usually including text, pictures, graphs, and audiovisual media, of most of on-line courses are provided through World-Wide Web. Because of the ease of HTML, it becomes the most popular markup language used to present a course on the web. However, due to the limited syntax of HTML, not only it cannot effectively synchronize various media, but also cannot efficiently display mathematic symbols and vector graphics on web pages.

To address this issue, in this research XML and its related techniques such as SMIL, SVG, and MathML are utilized to provide rich contents of web-based courses. XML, SVG, and MathML are used to represent text, vector graphics, and mathematic symbols, respectively. Various media are integrated and synchronized through SMIL. To explore the advantages of XML-based techniques, an on-line course platform called WME is built. It conforms to proposed seven properties of providing excellent web courses which are interactivity, completeness, scalability, diversity, consistence, synchronization and active guidance. In addition, course based on three proposed teaching styles, which are “interactive teaching of synchronizing text and audiovisual”, “interactive teaching of synchronizing segmented audiovisual”, and “interactive teaching of synchronizing positioned text and audiovisual”, are edited to demonstrate the excellence of WME platform.
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