chosen: the stage with visual educational content, side-scenes, a curtain, etc. For presentation of educational material in addition to traditional multimedia components, the new integrated forms are used. Because of complexity and richness of information of the CD-ROM model, its realization is based on graph of program transitions and application of script paradigm, which is accepted for the description of structure of the educational and navigating information. These solutions can be recommended for creation of a new generation of "three-dimensional" educational multimedia CD-ROMs.

**Using a Web Site to Increase Student Motivation to Write and Enhance the Reading/Writing Relationship**

Susan Nelson, Elm Street Elementary School, USA; Harrison Yang, State University of New York at Oswego, USA

This action research project is an example of how Internet technology is being used in an elementary classroom as a means to increase student achievement. The project explores the relationship between writing and reading and its effects on early literacy development. It also explores the concept of motivating students to write by publishing student work for real life audiences. The project uses the current technology of an Internet web site as a source for publishing student writing. It explores the effects that this type of publication has on student attitude, motivation to write, and literacy development.

**TELSI, Web-Based Software For Collaborative Learning**

Graciela Nielsen, Norwegian State Center for Adult Education, Norway; Boo Hever, Majornas Vuxengymnasium, Sweden; Aase Steinmetz, Undervisningsministerium, Denmark

The TELSI software has been developed with the support of the European Union under the SIMULAB-project. SIMULAB is a concept for Web-based collaborative tasks. TELSI has been created to cater for the needs of this type of activity, and is a flexible and user-friendly environment.

**Development of Speech Input System for Web-based Courseware**

Ryuichi Nisimura, Nara Institute of Science and Technology, Japan; Shoji Kajita, Nagoya University, Japan; Kazuya Takeda, Nagoya University, Japan; Fumitada Itakura, Nagoya University, Japan

We propose WebSPEAC(Web SPEech Acquisition for Courseware) System that provides a speech-input function for Web-based online education system. WebSPEAC has the following three features; (1) easy to maintain the system by the use of a simple speech input program in Web browsers, while the other speech processing are performed on the Web server, (2) a natural interactivity between Web server and users by using the server push technology, (3) a simple installation and no needs of external programs on client machines. To show the effectiveness, an Web-based speech analysis system, a speech recognition system and a student identification system are developed as the examples of WebSPEAC System. By using the speech analysis system, it is clarified that WebSPEAC System can significantly reduce task steps, error steps and elapsed time for speech-input task, compared with the conventional method (file upload).

**The Instructional Portal Project**

Kevin Oliver, Virginia Tech, USA

The Instructional Portal is a clearinghouse of information, resources, tools, and services at Virginia Tech, designed to facilitate practical instructional design among faculty. Faculty can increasingly adopt and easily utilize educational technologies in their courses. While some faculty use technology to modify and improve teaching and learning practices, too many rely on tools to simply make their existing teaching practices more efficient. The portal is designed to help faculty integrate technology more effectively by applying three instructional design components. The analysis component outlines strategies and instruments to account for environmental and learner characteristics, and provides information about structuring course content. The strategy component describes instructional methods and models that utilize technology effectively, and provides teaching modules covering popular web-based instruction and interface design issues. The evaluation component describes evaluation methods and models and provides tools to help faculty revise and improve their technology innovations. Visit the portal at: http://www.edtech.vt.edu/edtech/portal/index.html

**Integrating and Adapting Multimedia Resources**

Mary Panko, UNITEC Institute of Technology, New Zealand

In UNITEC students enrolled on an Automotive Trades course have access to a series of 32 CDX disks, entitled The Automotive Trainee Series that provides them with a learning resource in addition to their basic theoretical and practical teaching. This study attempted to:

- discover what beneficial learning effects the students perceived as being currently provided by the multimedia component;
- examine the extent to which the tutors integrated and adapted the multimedia material as part of their teaching; and