

## Evaluating American Sign Language Performance

Principle investigator

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### **Programmatic Significance**

The ASL option as a world language was initiated at the University of Minnesota a decade ago. Since that time, the number of Universities and Colleges in the United States initiating ASL as a world language has increased from three major universities to more than 450 colleges and universities across the country (Stokoe, 2001).

The instructional problem inherent in the teaching and learning of American Sign Language is that ASL has no written component. It is a visual kinesthetic language with its own unique syntax, vocabulary, classifiers, and charemic (phonetic) structures. While a few mediated instructional materials in the form of videos and DVDs have been developed for use with young deaf children, the availability of instructional materials for use at the post secondary level is virtually nonexistent. Literally, one text in the form of a Teacher's Guide and videotape for student use is available commercially (*Signing Naturally*). While instructional support materials are desperately lacking, the challenge faced by every instructor is the process of evaluation of communication proficiency. Currently, midterm and final exams require that each student locate a video camera and prepare a 15-minute video on a particular topic provided by the instructor. The video is submitted to the instructor, reviewed and graded individually. Each instructor teaches 4 classes per semester with minimally 24 students per section. There are no TAs and few alternatives to the testing protocol at this time. The management of tapes, grading protocols and time is basically a nightmare.

As students complete the world language studies, they are required to pass a competency exam (GPT= Graduation Proficiency Test) in ASL referred to as the SPI or Sign Proficiency Interview. This exam is a variation of the Sign Communication Proficiency Interview (SCPI) which is a protocol used nationally to evaluate communication fluency among teachers and other professionals preparing to work with deaf and hard of hearing children and adults. The SPI is made available to students each semester. The protocol consists of students registering to take the SPI, hiring of an interviewer, setting up a room for video recording, and conducting a 25 minute individual interview with each student. The recorded interviews are then evaluated by one person other than the interviewer and then by a second person if failure is a question. Each semester approximately 200 students register for the SPI with a cost of approximately \$7,000- \$9,000. Moreover, several issues regarding the validity of the process have been raised. For example, it has been suggested that the questions posed by interviewers and the testing environment are subject to bias, the evaluations may be unreliable because no standardized evaluation mechanism exists, and students would benefit from receiving more detailed feedback regarding their performance.

The goal of this project is to design, develop, and evaluate a tool to facilitate evaluation of students' performance in ASL. We will create an Internet-based tool for students to submit work samples using video-cams to record their signing, and then store their work on a central server. Students will be able to record their performance and, when satisfied with the overall quality of their work, submit their work for evaluation. Students will be able to access the tool anywhere and at any time. Evaluators will use corresponding software to access the videos, to generate feedback, and to report students' grades.

The project is expected to stimulate related developments. For example, the videos could be used to develop a training program to standardize the evaluation process. Furthermore, the software will be appropriate for use in similar content areas (such as training teachers of the deaf), and other language learning environments could benefit greatly from related tools.

**Courses that will be affected by TEL grant funds**

The University of Minnesota’s ASL program consists of four levels of four-credit classes (ASL 1701 – American Sign Language I, ASL 1702- American Sign Language II, ASL-3603 American Sign Language III and ASL 3604- American Sign Language IV) as well as the Cultural Perspectives of Deafness course (ASL 3705). Each semester 33 – 35 sections of ASL classes are taught with an average enrollment of 740 students per semester.

**Expected learning outcomes**

We will design and develop an online evaluation instrument to improve cost-effectiveness, increase efficiency, improve assessment reliability, and enhance student access and opinions of the learning experience. The system will record students’ responses digitally and store these on a central server, and assist and manage the evaluation process. Evaluators will assess performance by viewing the digital videos, and complete on-line evaluation forms thereby enabling feedback to be delivered electronically. We expect the system to evolve into a tool to train evaluators and to improve grading reliability.

**Evaluation Plan**

The project will be evaluated according to four criteria: Technical adequacy/ reliability; cost effectiveness; access; and efficiency. During development, we will conduct formative evaluation to test and optimize the effectiveness of the software. This testing will include typical usability themes as well as an analysis of the needs of the evaluators. For example, it is important that the video images should be of sufficient size, and that the video frame rate and quality are adequate to ensure that important visual information is not lost. Therefore, we are planning research to investigate these and similar issues. We will conduct a cost-benefit analysis to determine the financial implication of using the software. It is important to understand the practical elements of data storage, band width requirements, network capabilities, etc. and their resulting financial implications. We will develop a survey and conduct a focus group to assess end-user satisfaction and issues that impact the end users.

**Timetable and Budget**

Item	Funded by TEL	Funded by Dept.
25% Graduate TA for two semesters to support the project, programming etc.	\$9,610	
25% technical support person provided by Dept. of Educational Psychology and 25% of an ASL instructor’s time		\$13,000

Communication Server MX Pro Edition	\$2,640	
Total costs	\$12,250	\$13,000

### Roles and responsibilities

The project will be collaboration between Simon Hooper, Associate Professor, Department of Curriculum and Instruction, and myself. Professor Hooper is an expert in the field of Instructional Systems and Technology and will serve as instructional designer on the project. Funds from the TEL grant will be used to hire a programmer who will be responsible for developing initial and final working prototypes. I will be the subject matter expert. Prototypes will be used to enable team members to gain early access to the software to allow modifications to the look and feel and to adapt functionality.

### Timeline

<b>“Kick-Off” Meeting</b> Establish initial project procedures and expectations. Define roles, establish lines of communication, assign tasks and determine project milestones such as a production schedule and final deployment date.	<b>8/03</b>
<b>Requirements Gathering</b> Determine the technical requirements and develop a complete list of desired functionality and content.	<b>8/03-9/03</b>
<b>Design and Prototype</b> Develop functionality, graphics, and navigation.	<b>9/03-12/03</b>
<b>Interface Prototype Review</b> At this stage one or more interface prototypes will be reviewed.	<b>12/03</b>
<b>Production Phase</b> Modify prototype and develop “alpha” version of the application.	<b>1/04-2/04</b>
<b>First Production Review:</b> Review the working application and generate final, minor improvements.	<b>3/04</b>
<b>Testing and Debugging Phase</b> Begin beta testing the application, correcting any problems and creating a final version.	<b>3/04-4/04</b>
<b>Installation/ Evaluation</b> Application is installed on a server and evaluation begins.	<b>5/04-6/04</b>

### Collegiate and Department Support

The College of Education and Human Development lists technology and on-line learning as one of four areas in need of special attention and additional investments. As such, this project is central to the to the College’s core initiatives. The Department of Educational Psychology will contribute 25% time of the technical support position (approximately \$5,000) for two semesters and 25% professional development time of one ASL instructor for each semester (approximately \$8,000). The dollar equivalent for this contribution is approximately \$13,000 is personnel costs.

### Mentorship Phase

It is anticipated that the project will impact all levels of the ASL program, initially by providing alternative assessment methodologies, but ultimately by generating alternative instructional systems. Although a mentee has yet to be named, the software will be integrated into ASL teaching, which will require faculty participation.