

Developing an ASL Performance Evaluation/ Assessment Network

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We are developing a project that is expected to transform the testing and evaluation processes in the American Sign Language (ASL) program. ASL is a world language that was initiated at the University of Minnesota a decade ago. Each semester 32 sections of ASL classes are taught with an average enrollment of 740 students. The primary assessment in ASL involves the evaluation of students' conversational communication proficiency. Twice each semester (i.e. for midterm and final exams), students must locate a video camera and prepare a 15-minute video on a topic provided by the instructor. The video is submitted to the instructor, reviewed and graded individually. There are no TAs and few alternatives to the testing protocol. Moreover, tape management, grading procedures, and the cost of evaluation are problematic. For example, the testing protocol costs approximately \$7,000- \$9,000 each semester. Several issues regarding the validity of the process have been raised. For example, it has been suggested that the conversational topics are subject to bias and may be unreliable because no standardized evaluation mechanism exists. The current process is also extremely time consuming and limited in student feedback.

This year we designed, developed, and evaluated software to improve the testing process. Known as the **Independent Capture Platform (ICP)**, the software allows students to record their ASL performance using computers with digital video cameras. Recordings are transported via a computer network for storage in a digital repository. The ICP eliminates the existing obstacles of recording, submitting, and managing videotapes.

The ICP is part of a larger project involving the development of four software applications. The second application, the **Performance Evaluation Network (PEN)**, is a digital assessment instrument that will be used by raters to evaluate the videos captured by the ICP. Instructors will view and score student performances and provide personalized performance feedback. Evaluations will be stored centrally and used by students to monitor performance.

The third application, a **Continuous Assessment Portfolio (CAP)**, will promote and scaffold students learning. At present, assessment data are used primarily to assign grades rather than to improve performance. The CAP will be designed as a virtual learning space where performance histories may be developed in a setting that encourages students to compare and contrast personal and model performance.

The fourth application, the **Kinesthetic Information Management Protocol (KIMP)**, is a content management protocol that stores and retrieves videos captured from the ICP and assessment feedback generated from the PEN. The protocol is a modifiable set of rules that coordinate the complex information management process between students and evaluators, and monitors and regulates student progress.

The goal of this proposal is to design, develop, and evaluate prototype versions of the PEN and the CAP. This project is highly innovative and solves a

significant practical problem: computer-software has not been used previously to assess ASL performance, and the project uses contemporary Internet technology to establish new forms of electronic assessment and create instructional potential that exceeds current practice.

Courses that will be affected by TEL grant funds

ASL 1701 – ASL I	ASL 1702 – ASL II
ASL 3603 – ASL III	ASL 3604 – ASL IV
ASL 5642 – ASL in the Classroom	

Expected learning outcomes

We will design and develop the PEN and CAP to achieve the following goals:

- development a self-assessment portfolio system to improve student learning
- improve cost-effectiveness
- improve test efficiency, reliability, and students’ and instructors’ experience

Roles and responsibilities

The project will be collaboration between Simon Hooper, Associate Professor, Department of Curriculum and Instruction, and Susan Rose, Associate Professor, and Diane Holte, Instructor, Department of Educational Psychology. Professor Hooper is an expert in Instructional Systems and Technology and will serve as instructional designer on the project. Professor Rose is the faculty representative in ASL and will serve as the assessment expert. Diane Holte is a subject matter expert. She will develop the evaluation protocol and help with the design of the PEN. Funds from the TEL grant will be used to hire a programmer who will be responsible for developing the prototypes. 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.

Evaluation Plan

Technical adequacy, system reliability, and cost effectiveness will be evaluated. Specifically, we will:

- Conduct formative evaluation to test and optimize the effectiveness of the software. This testing will assess usability and analyze the needs of the students and evaluators. This year we are conducting a study to determine the effects of video size and frame rate on students’ ability to perceive ASL stimulus materials via the computer. 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. We will research similar issues as they emerge.
- Evaluate system reliability. Develop inter-rater reliability measures comparing instructor ratings with Curriculum Based Measures (CBM) including picture naming, story retell and picture descriptions; and develop an instrument to measure student evaluation of instructor feedback.
- Develop a cost-benefit analysis to determine the financial implication of using the software. It is important to understand the practical elements of data

storage, bandwidth 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.

Budget

Item	Funded by TEL	Funded by Dept.
25% Graduate TA for two semesters to support the project, programming etc.	\$10,000	
25% tech support from ASL program and 25% of ASL instructor's PD time. Computer.		\$17,000
Total costs	\$10,000	\$17,000

Timetable

Planning meeting Establish procedures, roles, communication, etc.; determine milestones, production schedule and deployment date	8/04
Analysis Identify common instructional practices and system functionality	8/04-9/04
Develop initial prototype of the PEN	10/04-11/04
Interface prototype review Review interface prototypes	12/04
Production phase Modify prototype and develop "alpha" version of the application.	1/05-2/05
Develop initial prototype of the CAP	2/05-3/05
Interface prototype review	4/05
Testing and Debugging Phase Begin beta testing, correct problems and create a final version.	3/05-4/05
Installation/ Evaluation	5/05-6/05

Collegiate and Department Support

The College of Education and Human Development lists technology 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. Also, the CEHD has contributed a computer specifically for use in this project (\$4,000).

Sustainability

Our project will impact practice in several ways. We will submit the results of our current research to diverse journals. We anticipate submitting data based research to Educational Technology: Research and Development, technical data on video size and data rates will be submitted to Tech Trends, and a report on the pedagogical implications is expected to be submitted to Sign Language Studies. We expect to continue to present our project to University groups, from

whom we have received much feedback and praise.

Outcomes Appendix

Simon Hooper has received three TEL grants. The first involved the development of modules to support a course on technology use for students in a post-baccalaureate program. These modules form the foundation of a course completed by approximately 350 students annually. The second supported the University of Minnesota Learning Software Design Competition, a national competition to identify and recognize innovative educational software. The third examined the potential of using handheld technology to support communication and evaluation of student teachers. Susan Rose has also received a TEL grant. The grant, awarded last year, was used to pay for the development and evaluation of the Independent Capture Platform described above. We have developed prototypes of the system and are presently conducting research on questions arising from development questions.