

## Teaching, Learning and Technology (TLT) Pilot

*Nana Lowell  
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### INTRODUCTION

The University of Washington UWired program, in conjunction with teachers from around the state, has developed the [Teaching, Learning and Technology \(TLT\) Program](#) to teach effective use of educational technology in K-12 classrooms. The program covers all aspects of educational technology and its use, from software applications to pedagogical issues, and leads to a *Certificate of Accomplishment in Teaching, Learning and Technology*, or a *Washington State Endorsement in Instructional Technology*.

The certificate programs are designed to be accessible to diverse educators, including teachers, librarians, technology coordinators and administrators. Instructional sites may be located at school districts, Educational Service Districts (ESDs) or community colleges around the state. Instruction is delivered in person or over the World Wide Web, and may be supplemented by other media. Multi-credit courses are comprised of a combination of one- and two-credit learning modules selected from several content themes. Educators may choose to work toward the 12-credit *Certificate*, the 24-credit *Endorsement*, or simply complete individual courses as needed to address immediate classroom needs and professional goals. Instructional development follows these precepts:

- **Modularity** Topics or themes are broken into modules that can be linked in a sequential order, grouped with modules from other themes, or taught independently.
- **Integrated technology** Modules help teachers integrate technology into their professional lives, whether into their curricula or their own professional development.
- **Essential Academic Learning Requirements** Modules help teachers teach to the state standards, and provide links to the Essential Academic Learning Requirements.
- **Student centered learning** Instruction is delivered in a student-centered, project oriented and technology based environment.
- **Generalizability** As much as possible, courses are appropriate for all teachers, regardless of grade level, subject matter or technical ability.
- **Interactivity** Modules are engaging and interactive, and employ strategies such as group work, discussions, and integration of multimedia and hypertext.

## THE PILOT

*Introduction to Technology for the K-12 Classroom* was offered as a four-credit pilot course in August, 1997. Classes were conducted at Ingraham High School to provide participants with hands-on experience in a school environment, and were attended by 21 K-12 educators. The course was taught in daily class sessions over a two week period and comprised four one-credit learning modules:

**Why Technology** was designed to help educators think critically about their use and their students' use of technology. Discussion and assignments centered around critical questions such as "Does the use of technology contribute to the preparation of students for the contemporary world?", "Does technology contribute to vital, enduring learning?", and "Does the use of technology contribute to the redefinition of teaching and learning?". This module is required for both the *Certificate of Mastery* and the *Endorsement in Instructional Technology*.

**Web Resources for Learning** focuses on the knowledge, skills, and tools needed to make effective use of World Wide Web resources in the classroom and for professional development. Participants are guided toward a constructivist approach for developing Web-based curricula. Unit topics include: "Conducting effective searches," "Evaluating and critiquing Web sites for usefulness and validity," "Selecting resources to enhance the curriculum," "Using the Web to promote critical thinking," and "Considering legal and ethical issues of information access."

**Web Design** addresses the need for students and educators to be producers, rather than simply consumers, of information. It focuses on using the World Wide Web as a vehicle for providing students with a "high stakes" audience for their work. Pedagogy imbedded in this unit also addresses student motivation, the value of soliciting feedback, and the need for opportunities to re-work projects.

**Assessment and Technology** focuses on issues of assessment in technology-rich learning environments. "How do changes in the structure of the classroom require changes in assessment?" "How do the Washington Essential Learning Requirements cause teachers to reconsider the types of assignments they give to their students?" "What are proper ways to use technology to address the Essential Learning Requirements?" Participants addressed these and other issues in the context of technology use and Washington State's new standards.

## PARTICIPANT FEEDBACK

Three types of web-based questionnaires were administered to program participants to obtain specific feedback for instructors and web designers, as well as a more general assessment of the course. This report summarizes the general information collected.

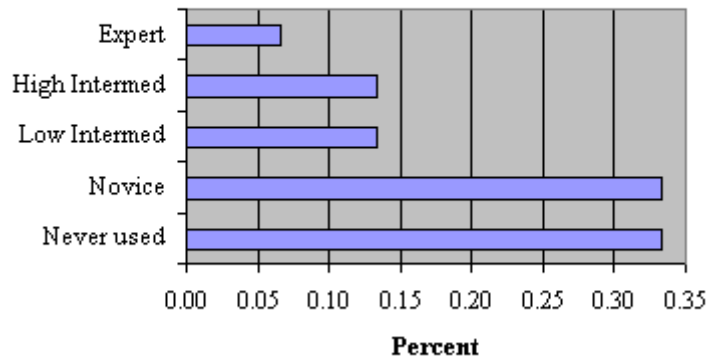
### Pre-Course Assessment

The [Pre-Course Assessment](#) was completed by sixteen of the program participants. Open-ended questions asked about reasons for taking the course and specific skills desired. When asked about their reason for enrolling, half of the sixteen respondents cited compliance with a Challenge Grant awarded to Ingraham High School, and half indicated that they had enrolled to learn more about some aspect of computer technology. Specific skills or knowledge desired centered around the topics of the learning modules: building web sites, learning to use web resources and using computers in the classroom, each of which was cited by eight (50%) of the respondents.

Five items asked participants to rate their previous experience with computers using a five-point scale. As shown in Figures 1 through 5, most respondents had little or no experience in creating web pages, incorporating web resources in instruction, or using computers to assess student learning. There was a wider range of experience in searching for educational resources on the web, and particularly in using computers in the classroom.

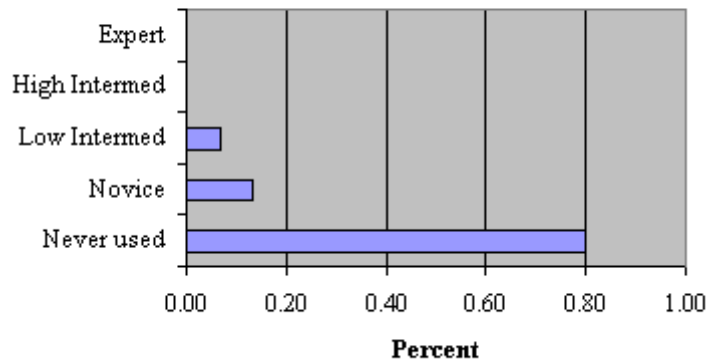
### Experience searching for educational resources on the web

Figure 1.



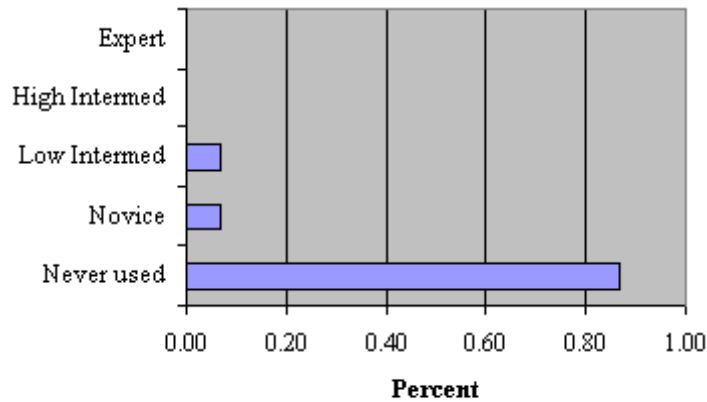
### Experience incorporating web resources in instruction

Figure 2.

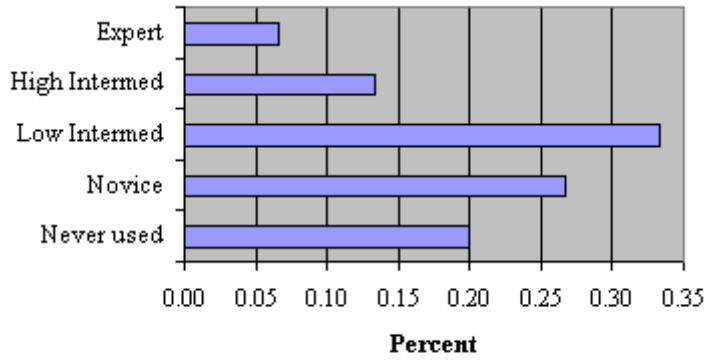


### Experience creating web pages

Figure 3.

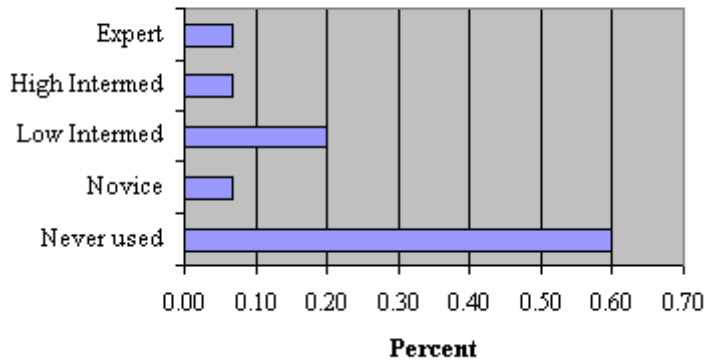


**Experience using computers in the classroom**



**Figure 4.**

**Experience using computers to assess student learning**



**Figure 5.**

## Post-Course Assessment

The fairly lengthy [Post-Course Assessment](#) was completed by seventeen participants. It included a set of questions specific to each learning module, a set on the design of the course web page, and another on the quality of the facilities. Of general interest was a group of five questions matched to the Pre-Course items described above. Respondents were asked to rate the degree to which the course had improved their technical skill level and responses are shown in Figures 6-10, below. The largest change participants noted was with respect to *Searching for educational resources on the web*. Most respondents (88%) reported that their skill level in this area had been improved either *Considerably* or *Dramatically* as a result of the course. Approximately 60% to 70% of the respondents reported similar gains in their skills in *Incorporating web resources in instruction*, *Creating web pages* and *Using computers in the classroom*. Fewer respondents (41%) noted this level of improvement in their ability to *Use computers to assess student learning*.

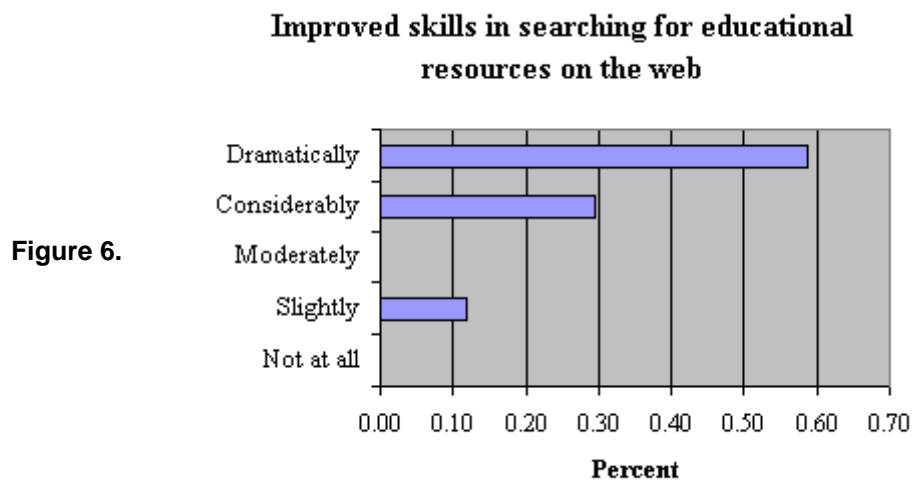


Figure 6.

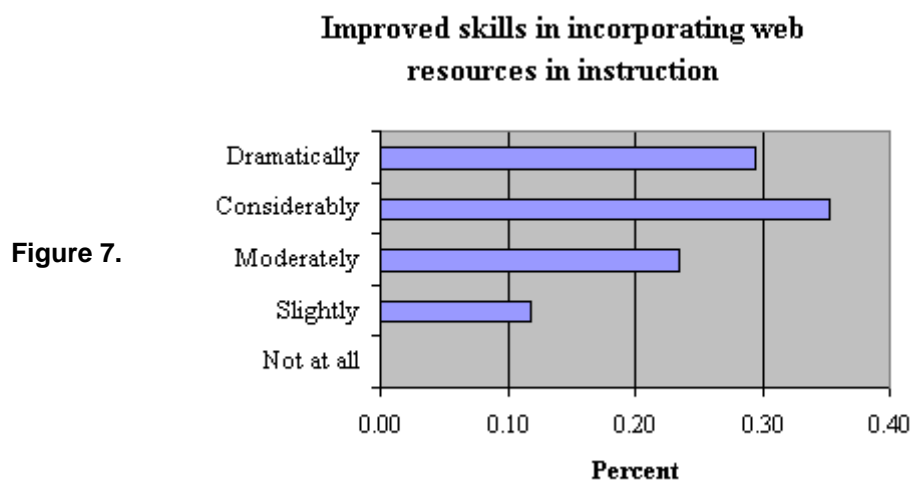


Figure 7.

Figure 8.

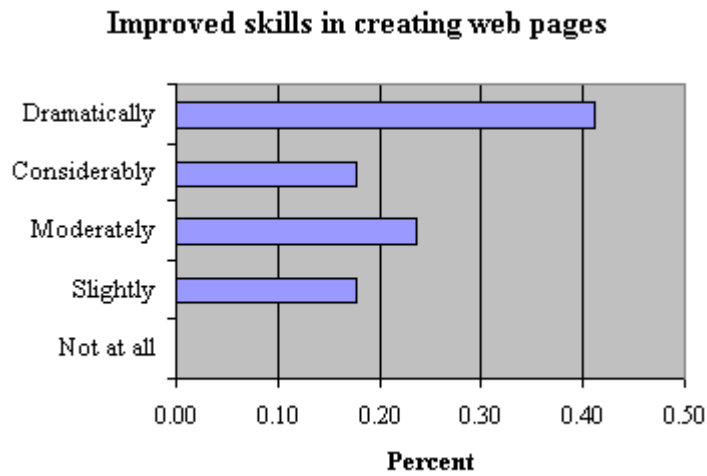


Figure 9.

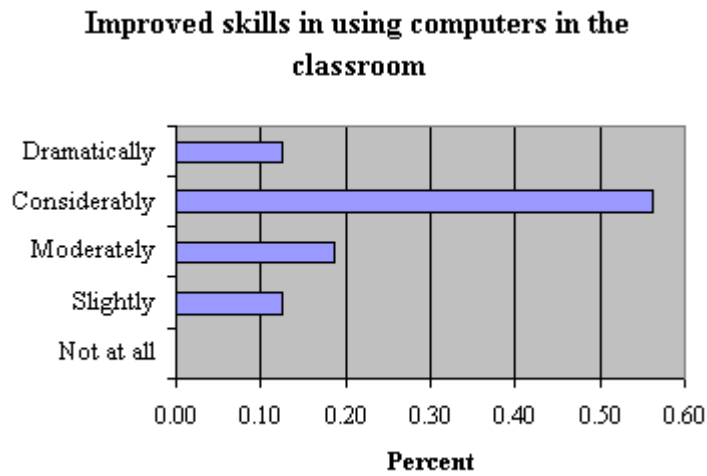
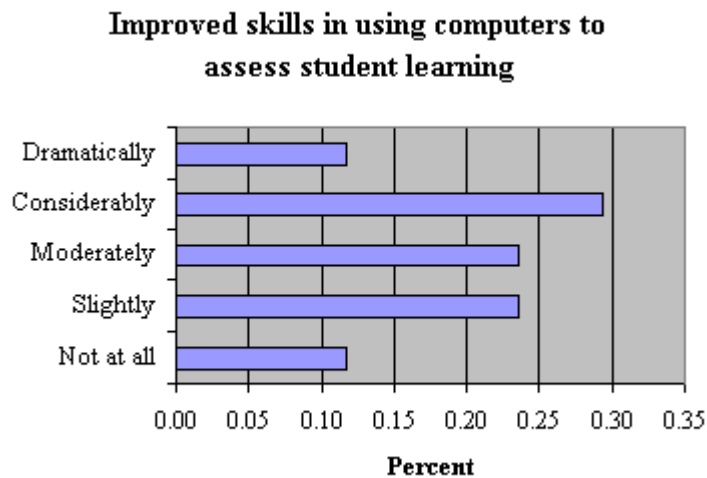
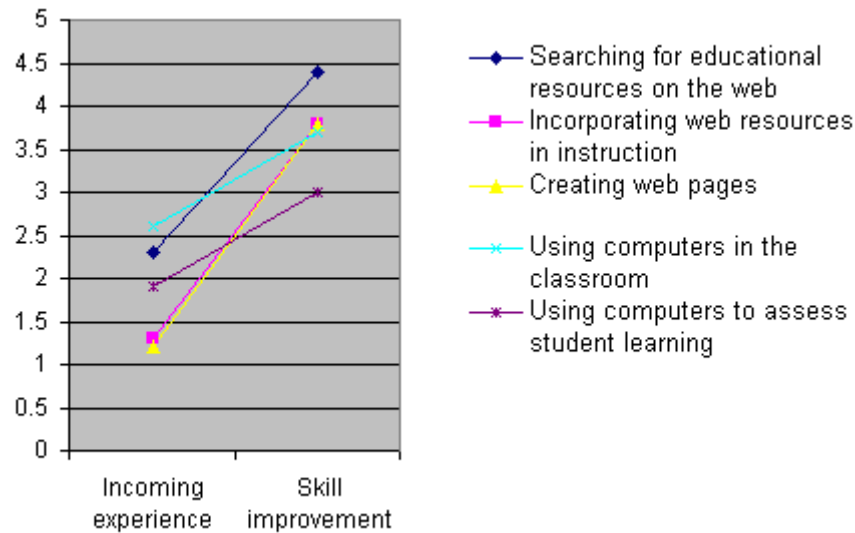


Figure 10.



The amount of perceived change may be due to participants' incoming level of experience, the complexity of the skills to be learned, and/or the effectiveness of instruction. To examine the contribution of incoming experience, average ratings on the five matched items are graphed in Figure 11. As shown in the graph, the greatest gains were made in areas with both highest and lowest levels of experience (*Searching for educational resources on the web*, *Incorporating web resources in instruction* and *Creating web pages*), and the lowest gains were reported for an area of moderate experience (*Using computers to assess student learning*). What was taught, and how it was taught, seemed to have more influence on learning than did initial experience.

Figure 11.



## Lesson Evaluation

A brief [Lesson Evaluation](#) was administered at the end of each class session to provide specific feedback on that instructional period, and responses were available on-line for immediate review by course instructors. Respondents were asked to rate the instruction as *High* or *Low* according to whether the material was presented clearly, in an interesting way, and in a way that allowed them to work at their own level. Interpretation of results was limited by the small number of respondents (ten or fewer) to all Lesson Evaluations with the exception of the survey administered on the afternoon of the first day. Responses to this survey suggested that respondents' reactions to instruction may be affected by their incoming level of experience, but there was not sufficient information from other surveys to generalize. Although the Lesson Evaluations were very short, the low response rates indicates this number of surveys was too demanding with respect to participant time.

## CONCLUSIONS

Much was learned from this pilot test of the TLT learning modules. Many of the lessons came as project staff worked with participants and instructors to iron out kinks in the presentation of on-line instructional material and surveys. In particular, the number of exercises and activities was overly ambitious. Our attempt to obtain participant assessment of each lesson was not successful because participants simply had too much to do.

We also learned that participants differ widely in their level of experience with technology, and that although these differences influence participant response to instructional materials, the effect is moderated by other factors such as the complexity of the subject taught, and the effectiveness of instruction.

Finally, we were encouraged in our attempt to implement an on-line system to collect and analyze assessment data. We were able to create and deliver on-line surveys soliciting meaningful information from program participants, and although we stumbled across several practical impediments, none were insoluble. Topics for further investigation include differences in the nature and rate of participant response to on-line versus paper-and-pencil surveys.