

From Theory to Practice: Using Web-Based Instruction For Professional Development

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Abstract

This paper reports data analysis results of three online professional development courses developed for K-4 classroom reading teachers through a grant from the Ohio Department of Education. Courses were delivered through WebCT and featured sustained electronic dialogue created among participants through asynchronous threaded discussions. In addition to electronic and print resources, content of the courses included videoclips of four outstanding Ohio teachers instructing in small and whole group settings. Analyses of usage and participation patterns demonstrated the power of videoclips and threaded discussions to support the growth of classroom teachers implementing new instructional strategies. What emerged from the data was evidence of the potential of web-based courses for professional development, particularly among novice users of technology implementing research-based theory into classroom practice. Course participants deepened their knowledge and strengthened their practice through a variety of interactive multimedia experiences.

Introduction

In response to a need for continuing professional development, the state of Ohio developed Summer Institute for Reading Intervention (SIRI) workshops for pre-K through grade eight classroom teachers. These workshops, which are offered throughout the state, give teachers the opportunity to learn new instructional strategies in order to improve student learning in their classrooms. In 2001, the University of Akron was invited to develop online courses, called “SIRI: At Work in Your Classroom,” which would extend the objectives of the original SIRI workshops.

At the inception of “SIRI: At Work In Your Classroom” in spring 2002, over 17,000 pre-K through grade eight classroom teachers from across the state of Ohio had participated in the summer workshops (Vincent, Sickinger, Yates, and Hamlin, 2001). The purpose of the online project was to provide web-based follow-up support for SIRI alumni who were implementing instructional strategies they learned in the summer sessions. Through three one-credit-hour online courses, “SIRI: At Work” classroom teachers read, used web resources, and discussed in depth what they had learned with other teachers on a flexible schedule and in a variety of settings.

Recent research has evaluated the effectiveness of online professional development (Turbill, 2001; Levin et. al, 2001; Mather, 2000). Increasingly, classroom teachers are expected to develop their ability to integrate and use technology in instruction as well as for their own learning. A recent survey, however, found that more than 80% of K-12 teachers in the U.S. did not feel well prepared to use technology in their classrooms (U.S. Department of Education, 1999). Undoubtedly, this is largely due

to insufficient staff development, since school districts in the U.S. spend, on average, only 20% of their technology budget on staff development (CEO Forum, 1999). “SIRI: At Work” was an effort to respond to these multiple needs.

Topics of the three courses—Guided Reading, Strategic Readers and Writers: Comprehension, and Word Study—were selected because they represent core instructional issues that have been the focus of past SIRI workshops. Reading assignments were drawn from SIRI I texts and supplemented with additional online resources. Participants had an opportunity to deepen their understanding of the topic by revisiting their texts, analyzing and applying the new Ohio English Language Arts (ELA) standards that related to the course topic. As they accessed and explored electronic resources, participants learned computer-based inquiry methods that had direct application in the classroom. Consequently, “SIRI: At Work” used technology to support the standards movement through its instructional delivery system and through project assignments.

In conversations with former SIRI students, two concerns were consistently raised that could be addressed through technology. First, SIRI alumni said it would be helpful to visit the classroom of a teacher who had already implemented SIRI instructional strategies. Seeing the strategies “in action” would support their own implementation efforts. An opportunity to observe an expert classroom teacher would allow them to learn from someone else’s experience.

This need for firsthand experience was met by designing each course around four model Ohio teachers. Regional literacy leaders nominated former SIRI participants who were successfully using SIRI instructional strategies in their classrooms. The course developers observed several potential model teachers whose students performed well on standardized assessment measures, including improved Ohio Proficiency Test scores in reading. Ultimately, developers selected four teachers whose classrooms provided a socioeconomic and cultural diversity that resembled Ohio demographics. The four teachers were videotaped during reading instruction in their classrooms. Each teacher also answered questions about the theory behind instructional practices and shared insights on classroom management issues in a videotaped interview. One of the main activities in each course module was to view video clips of these four classrooms and then share observations and questions about the model teachers’ practices through asynchronous threaded discussions. By offering participants a visit to real-live classrooms through the use of video clips, online professional development was able to meet a need that conventional professional development does not.

Second, former SIRI participants said that they miss the community of other teachers with whom to share experiences, questions and ideas. Developers met this need by delivering the courses through WebCT, an electronic course management system. The University of Akron’s Design and Development Services, a division of Learning Technologies and Scholar/Learner Services, developed an online tutorial specifically to provide technological support for “SIRI: At Work” participants, anticipating some participants might be novices in electronic learning.

Each course included a syllabus, an introductory module, and five content modules. One module was released to participants each week. Each module emulated the structure of a good reading lesson, with before, during, and after reading activities. “Before reading” activities prepared participants. “During reading” provided a narrative with reading assignments, embedded online resources, and a visit to the model teachers through video clips. “After reading” activities involved written response to the module content, including the video clips. Each module had a bibliography of traditional print resources and a weblibliography of electronic references.

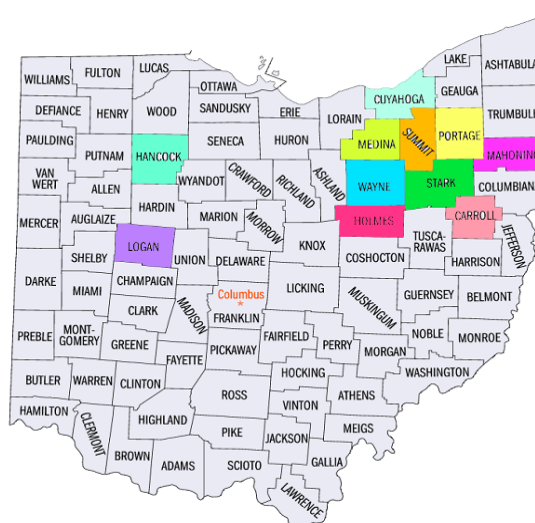
Developers further met the need for online community by offering two sections for each topic, one for K-2 teachers and one for 3-4 teachers, and by providing a variety of interactive activities. Participants regularly used threaded discussions to share experiences, raise questions, and exchange ideas about what they were learning with their grade-level peers. They developed projects (e.g., lesson plans) that were also shared and posted, so that course participants could learn from each other as well as from the texts and online resources used during course assignments.

Another important course goal was to increase teachers’ comfort level with the use of technology. Developers met this goal through reading and writing assignments that relied on electronic resources. A featured site was the Ohio Resource Center (ORC) for Mathematics, Science and Reading (www.ohiorc.org). ORC maintains a state-funded web site that identifies and connects high quality electronic resources to Ohio’s ELA standards. Course participants were required to develop a standards-based lesson plan using ORC’s rubric guidelines. Technological support was provided through the online WebCT tutorial and a “Help” desk staffed by university personnel.

Demographic and Participation Data

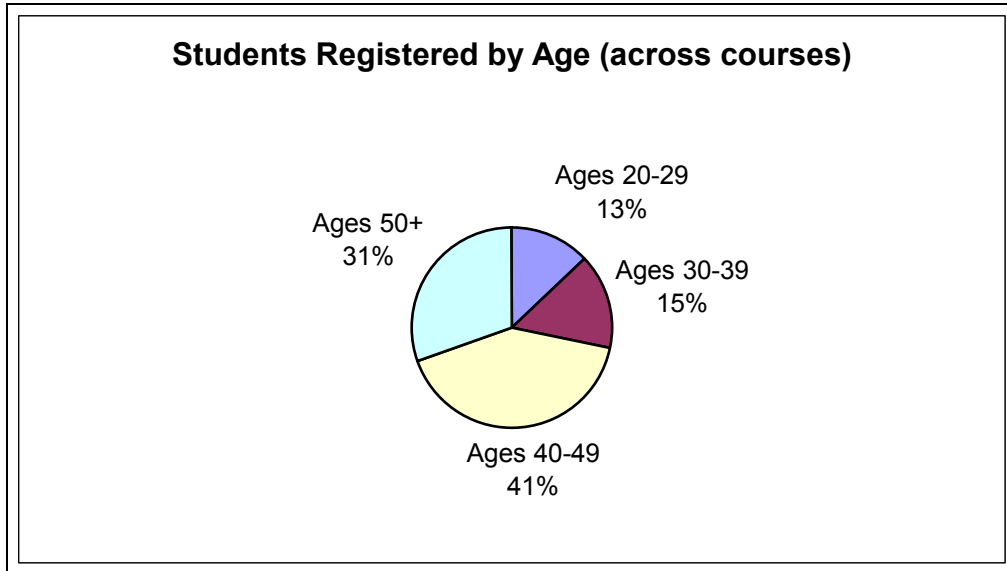
Most participants were from counties in northeast Ohio, but some represented counties in other parts of the state as illustrated in Figure 1. The following demographic data is based on two sections each of Guided Reading, Comprehension, and Word Study offered during the spring 2002 semester.

Figure 1. SIRI Enrollment: Distribution by County



As evident in Figure 2, a majority (72%) of students enrolled were over 40 years old.

Figure 2. Distribution by Age



Most of these teachers had not received formal computer training or experienced online coursework as high school or college students. Initial survey results for the “Guided Reading” course showed that only one student out of the entire group had previously enrolled in an online course. A majority of those students, however, continued online learning by taking the second and third “SIRI: At Work” courses.

Time Online

To determine the amount of time participants should spend on the course, developers used Carnegie units of 12.5 hours in class and 25 hours outside of class (McKeachie, 1999). Participation patterns as indicated by the average number of visits (“hits”) and time spent are provided in Table 1.

Table 1. Average Hits and Time Accessing Content Pages

Course	Average Total Hits	Average Content Hits	Average Time Accessing Content Pages (includes students who did not complete course)
Guided Reading K-2 (n=18)	520	189	9.64 hours (n=22)
Guided Reading 3-4 (n=10)	428	167	8.19 hours (n=12)
Comprehension K-2 (n=12)	418	183	10.13 hours (n=14)
Comprehension 3-4 (n=10)	485	207	10.71 hours (n=12)
Word Study K-2 (n=18)	472	156	7.36 hours (n=22)
Word Study 3-4 (n=11)	440	168	6.49 hours (n=14)

As Table 1 indicates, participants average from 6.5 to almost 11 hours accessing content modules, not including time spent on organizer pages, examining linked websites, or reading or writing posts to threaded discussion. However, because WebCT does not make available time online for individual students, these numbers include data for students who did not complete the course. Consequently, the average time spent is lower than it would have been if it had included only those students who did complete the course. Furthermore, based on the patterns of access available through WebCT, it is evident that many participants visited particular pages very briefly. This pattern suggests that they were not reading online but rather printing materials and reading them offline. Therefore, extrapolating from average time accessing content pages, *total* time online approximates the face-to-face time Carnegie would expect in a traditional one-credit-hour classroom.

Patterns of Discussion

Each of the courses had multiple threaded discussions where participants posted responses to assignment questions and responded to the comments of others. Figure 3 highlights the discussion patterns of three prototypical students. The first student's response patterns are typical of most students in the courses. Student 2 wrote all required posts but chose not to participate in ongoing discussions. Finally, Student 3 responded to colleagues more frequently than she posted original comments.

Figure 3. Prototypical Threaded Discussion Patterns

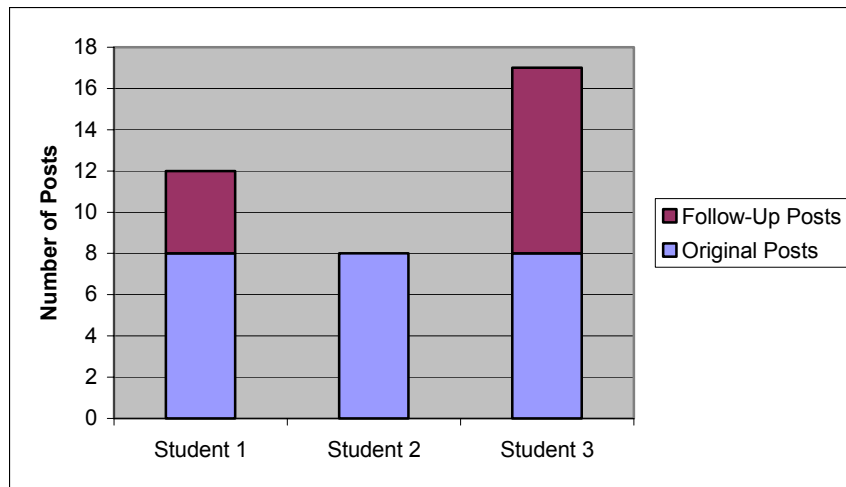


Table 2 provides specific information on the frequency of threaded discussion postings by the participants for each course. The “average # of posts written” typifies direct written responses to each original discussion question. The “average # of posts read” signifies the average number of comments participants read that were posted by other people. Average content hits is repeated here as a point of reference.

Table 2. Frequencies of Threaded Discussion Postings

Course	Average Content Hits	Average # Posts Read	Average # Posts Written
Guided Reading K-2 (n=18)	189	166	11
Guided Reading 3-4 (n=10)	167	89	10
Significance (t-test)	p=.50	p=.004*	p=.22
Comprehension K-2 (n=12)	183	91	9
Comprehension 3-4 (n=10)	207	105	12
Significance (t-test)	p=.48	p=.46	p=.0003*
Word Study K-2 (n=18)	156	147	13
Word Study 3-4 (n=11)	168	106	13
Significance (t-test)	p=.92	p=.11	p=.95

In each of these courses, there are no significant differences between K-2 students and 3-4 students in the number of content hits. Differences are apparent, however, in their number of hits to threaded discussion, either reading or writing posts. In the Guided Reading course, the K-2 teachers read significantly more posts than did the 3-4 teachers, while in the Comprehension course, the 3-4 teachers wrote significantly more posts than the 3-4 teachers. Reading posts was entirely voluntary, as students were neither graded on this nor aware that their instructor would have knowledge of how many posts they were reading. Furthermore, beyond the required eight posts per class, writing additional posts was also voluntary.

There might be two explanations for these differences. The additional time some sections spent in the discussion area could be a function of the focus of the curriculum at particular grade levels: K-2 teachers might be more engaged with guided reading; 3-4 teachers might be more engaged with comprehension; both groups would have equal interest in word study. A second factor appears to be operating here, however. There is a tendency for students in a larger class to read and write more posts. This suggests the building of a single learning community within a course. In other words, students taking an online course are not simply sitting at home doing the work in isolation. Rather, they are building networks within the class. Thus, the larger the class, the greater the interaction through threaded discussion. This is clearly an area for future research.

The Nature of Online Discussion

One of the goals of this project was to create a cyber-community of learners (Knowlton et al, 2000) where there was interaction among the students through the online discussions as they used technology and made sense of course content. An analysis of the patterns and content of postings is currently in process, beginning with the Guided Reading K-2 course. Four categories have emerged that seem to reveal the nature of online discussion and parallel research on face-to-face peer-led discussion (Stuart, 1999).

Facilitative Talk represents ideas posted that address procedures, formats and structures of WebCT, for example, how to use video or access web links and encouraging others to do so procedurally. This may offer insight into ways students interact in their cyber-community to increase their technology skills.

From the initial analysis of the data it appears that **Recitative Talk** may be prevalent in the discussions of the first course, Guided Reading. This type of cyber-talk is where students post their ideas without making direct connection to what others have said through specific reference or branching responses. These statements seem to stand-alone. While they connect to the overall content of the discussion they do not show connection to others in the community of learners.

On the other hand, two categories represent use of threaded discussions to construct meaning of content including ideas shared, text read or videos watched. These represent the interactive nature of online discussions in the cyber-community of learners.

Inquisitive Constructive Talk seeks to construct meaning by asking questions or wondering “aloud” about ideas. This could be seeking literal information, wondering

about word meaning, asking interpretive questions, or seeking ways to apply ideas. **Elaborative Constructive Talk** represents how students build on each other's ideas by elaborating on what someone else said, directly responding to each other or evaluating ideas in agreement, disagreement or qualification. As Knowlton et al (2000) point out, this type of constructive talk leads to "deeper cognitive processing of course material" (p. 54) as debate, discussion and revision of ideas evolve in a cyber-community of learners. An emerging result of the analysis of the nature of online discussion suggests that to achieve this level of interaction, more explicit design that requires such response may be necessary.

Impact on Professional Growth

Successful completion of course requirements demonstrated that participants had mastered course content. This mastery included evidence of deepened understanding of theoretical constructs through successful completion of assignments that had direct application in classroom practice. Two instruments were used to evaluate short-term changes based on participants' self-assessment: a Knowledge Rating Chart developed specifically for these courses, completed by participants as a pre- and post- assessment, and a summative survey that can be administered through any WebCT course.

Literacy: Knowledge Rating Charts

In each section of the SIRI online courses, participants assessed themselves on their knowledge of key concepts relative to the specific course. To assess their growth in content knowledge, participants completed a pre- and post-course survey. Each course survey included questions on ten key content-related concepts. Students responded to each question by selecting one of three perceived mastery levels. The first level indicated a deep understanding of the concept, e.g., they knew it well and could explain it to others. The second level indicated some familiarity with the concept, and the third level indicated little to no knowledge of the concept.

Results presented in Figures 4-6 show the percentage of students indicating Level One mastery for each of the three courses, both pre- and post- instruction. Each figure reflects the combined results of two sections, K-2 and 3-4.

Figure 4. Guided Reading Knowledge Rating Charts

Percent Students Indicating Mastery by Responding They Know “A Lot” as opposed to “A Little” or “Not Much” (n= 27 Pre-instruction; n=26 Post-instruction)

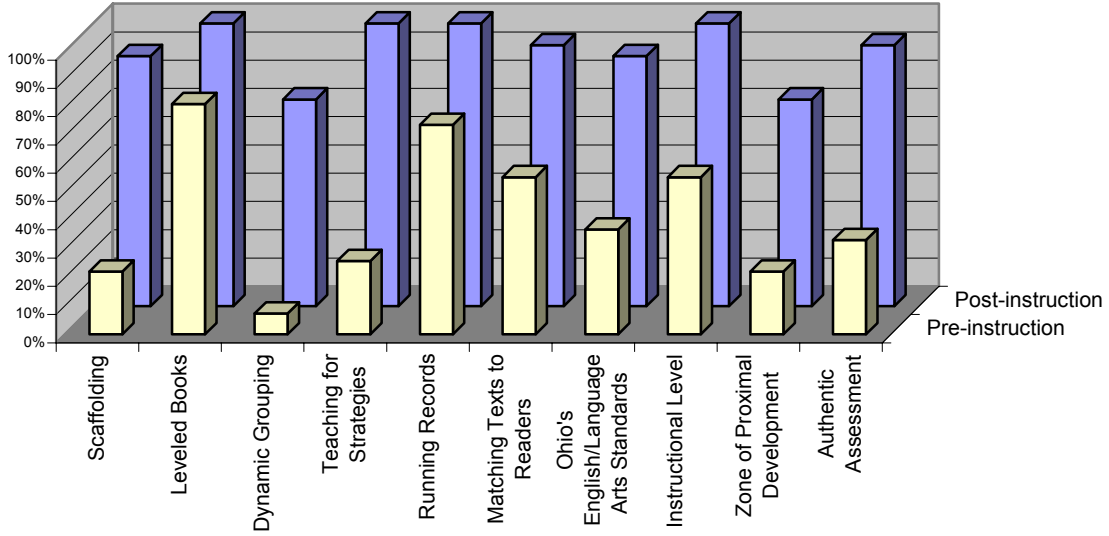


Figure 5. Knowledge Rating Chart: Comprehension

Percent Students Indicating Mastery by Responding They Know “A Lot” as opposed to “A Little” or “Not Much” (n= 29 Pre-instruction; n=24 Post-instruction)

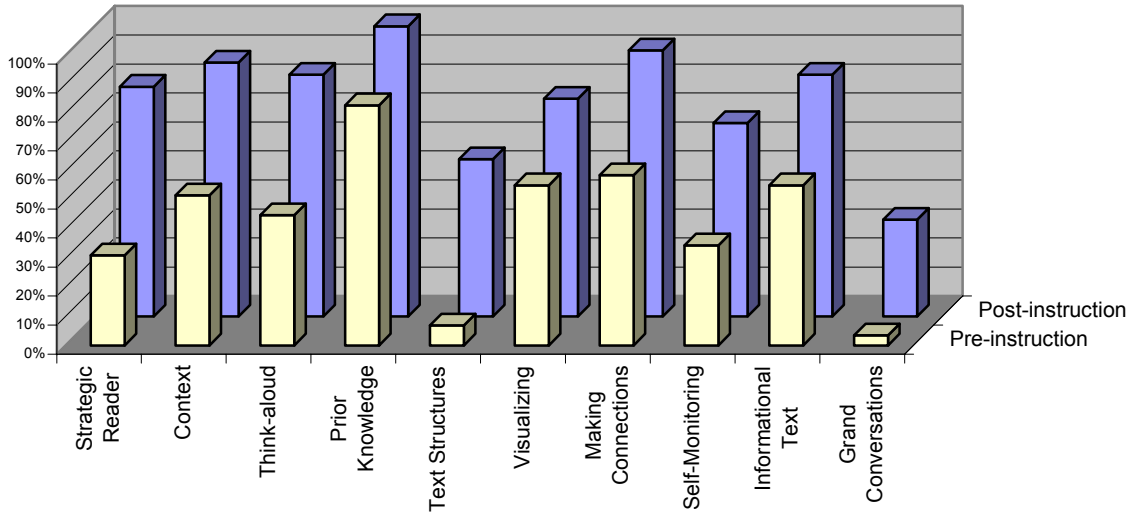
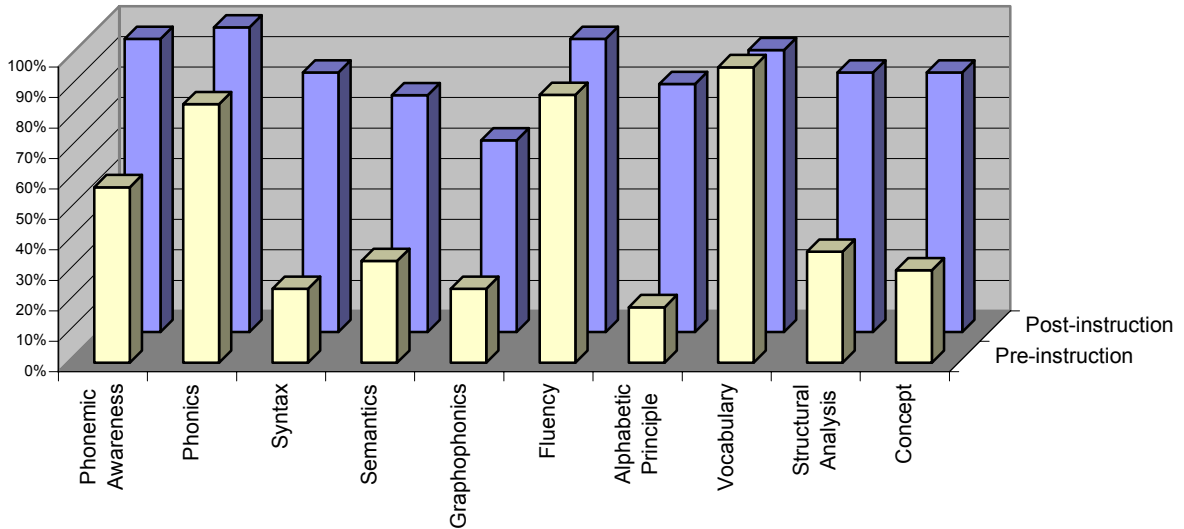


Figure 6. Word Study Knowledge Rating Charts

Percent Students Indicating Mastery by Responding They Know “A Lot” as opposed to “A Little” or “Not Much” (n= 33 Pre-instruction; n=27 Post-instruction)



From the Knowledge Rating Charts it is obvious that at least some students in every course felt they had Level One mastery, e.g., they felt they knew “a lot” about the topics, prior to instruction. The number of students indicating Level One mastery for twenty-nine of the thirty questions rose at the end of the course.

WebCT Summative Survey: Technology

At the end of the course, students were asked to submit an anonymous, online evaluation that gave them a chance to reflect on their learning processes and outcomes. This section reports on the results of this survey for the Guided Reading and Comprehension courses.

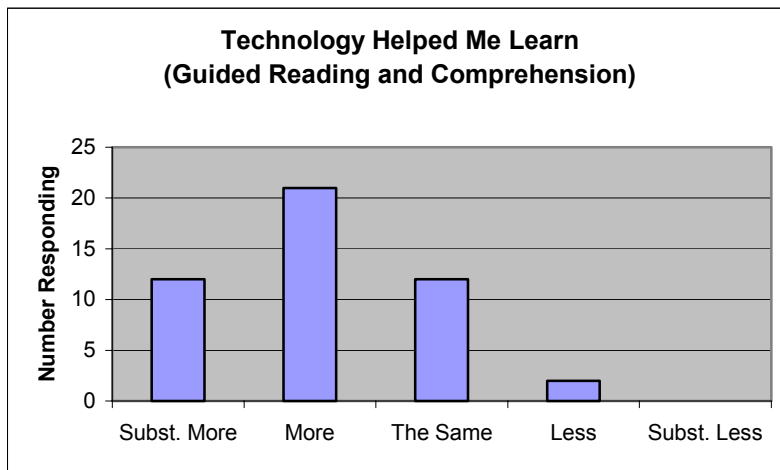
Technology Helped Me Learn

The greatest challenge expressed by participants in this course evaluation related to technology. One student aptly observed that, “Technology is as temperamental as working with a difficult child at times. You embrace it but still struggle.” Another student reported, “I did not have the appropriate knowledge to operate the computer nor did my computer have all the software needed to run the program.” As noted earlier (3.1), only one of the participants had ever taken an online course before enrolling in “SIRI: At Work.” Consequently, the challenges they faced were not surprising but rather underscore Bischoff’s (2000) recommendation that participants be well informed about

the structures of online learning so they are able to overcome technological barriers to success.

In light of these challenges, it is noteworthy that most participants believed they had learned “more” or “substantially more” content through the use of technology (see Figure 7). Specific comments spoke positively about the extensive use of hypertext and online resources woven throughout each module. One student remarked, “I really like having all readings online.” Other comments affirmed the effect that the video clips had on their learning: “I enjoyed the video clips. It’s so powerful to get glimpses into other classrooms – if only to validate ourselves sometimes!” and “I really enjoy watching the teachers in action in the videos. As teachers I so often feel so removed from other teachers – all in their rooms doing their own thing. Our profession needs more time to collaborate and observe/help each other.”

Figure 7. Technology Helped Me Learn



Overall Course Satisfaction

Figure 8. Satisfaction with Course

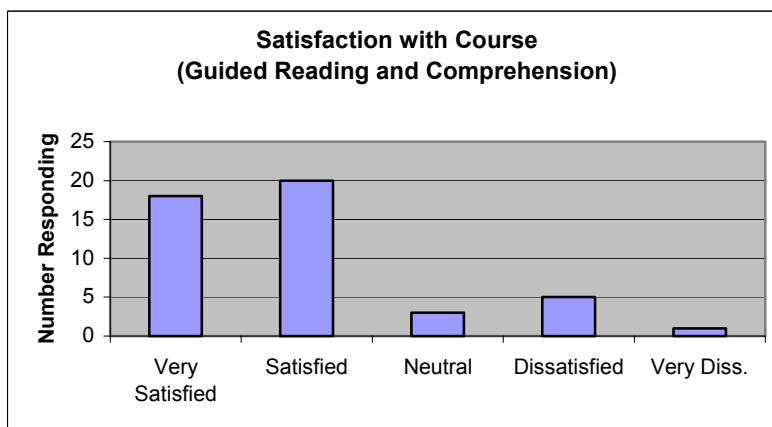
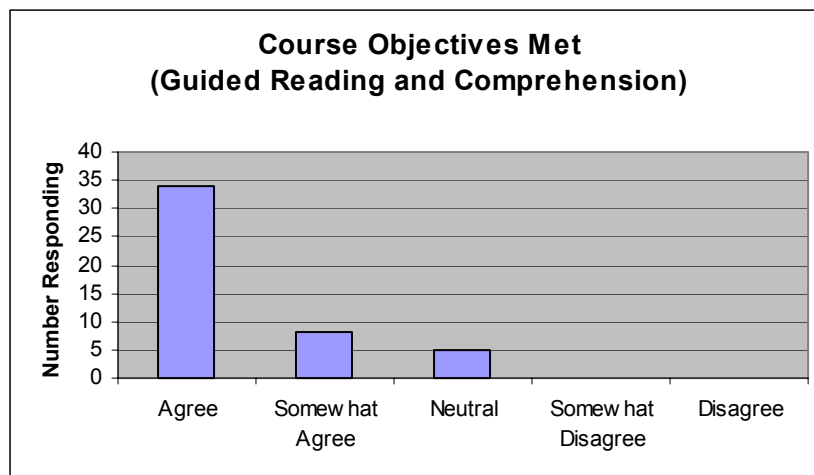


Figure 8 indicates that despite any technological hurdles or other course-related concerns, a majority of participants in the Guided Reading and Comprehension courses were either “satisfied” or “very satisfied” with their overall experience in the courses. One participant announced, “Thank heaven for this class! It is really helping me take a good look at what I am doing and refocus.” Another student noted, “As I mentioned in my survey of the Guided Reading and now this class online, I am becoming a much better teacher of reading.” There was also evidence that the online discussions facilitated a sense of community amid the participants. As one student expressed, “I am really enjoying these classes and listening to others’ opinions, suggestions and advice; it is a great help to talk to other colleagues.” Another student noted, “It is comforting to hear others that are doing the same things I am, and being successful. It answers my question of ‘Am I doing the things I should be doing, and is anyone else doing the same things?’ knowing that there is no one right way. We truly have a gifted group!”

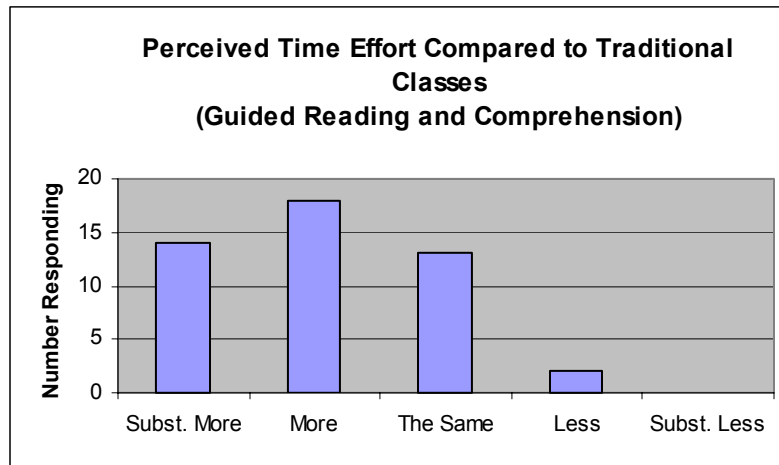
Furthermore, as Figure 9 indicates, participants overwhelmingly expressed strong agreement that course objectives had been met.

Figure 9. Course Objectives Met



It is also worth noting that objectives were met with high participant satisfaction despite the fact that, as Figure 10 demonstrates, participants reported spending more time meeting course requirements than in a traditional course. One student concluded, “ How long will I be able to log onto Web CT? So many of the websites are so good, and the info in the course is good to go back over, too. This class had much more active involvement. Some classes in the past I only had to show up to get the credit and not much else. I did much more thinking and learning to complete the course requirements.”

Figure 10. Perceived Time Effort



Certainly the flexibility offered by the online structure and the opportunity for ongoing electronic dialogue appealed to some of the participants: “I really liked working on my own time and chatting with other teachers.” Another wrote, “I liked it and thought it was excellent for fulltime teachers and mothers like myself. I was able to stay after school and come early and read without interrupting my whole night.” Some participants, however, expressed a conflict between appreciating the flexibility and missing the face-to-face contact. One wrote, for example, “I enjoyed the course immensely and felt it was successful. The only part I missed was meeting my colleagues in person.”

The following comment from a course participant summarizes the themes of accessibility, time flexibility, and pedagogical relevance found in anecdotal feedback received through threaded discussions and emails in all three courses.

I am finding the course manageable (very important while teaching all day to have the opportunity to work from home on my time schedule) as well as very motivational. When I took the SIRI class this past summer, it was a wonderful introduction, but I was overwhelmed with all the material and despite having had good intentions to reread it, there was always something that had my immediate attention. With the pacing of the on-line class, I am able to read all material and then use it in my class that week. I really feel that I am growing as an educator! (Newton et al, 2002)

Summary

As efforts to enhance the professional expertise of experienced classroom teachers enter the twenty-first century, the resources of technology appear to hold great promise for supporting and sustaining innovative, high-quality classroom instruction (Darling-Hammond, 1997; National Reading Panel, 2000). Leu (2000) expressed this well: “The connectivity that characterizes literacy on the Internet permits all of us to learn from one

another in ways never before possible. As a result, the more members of the literacy community that enter these worlds, the more insights we can bring to central issues of instructional practice” (p. 5). One of the participant’s course evaluation comments corroborates Leu’s perspective when she writes:

I am singing the praises of this type of learning. I feel like I could work on my own time, try the strategy in my classroom as I was reading and writing about it, and felt like I really had time to understand the concepts...Now the trick is to get more of these approved by my district for credit...Thank you for your time putting it together...let’s hope to continue this online learning! (Newton et al, 2002).

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