Desktop Videoconferencing and the Virtual Practicum

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This paper describes a pilot project that explored teacher candidates' opinions of the use of desktop videoconference technologies to provide teaching experiences that mimic the real-world practicum. Opinions were gleaned from questionnaires and reflective papers. Videoconference software was said to mimic certain aspects of the practicum such as: direct instruction, questioning, tutoring, and one-on-one scenarios that rely to a large extent on audio communication. The candidates also reported that limitations of the technology (e.g., slow frame rates, inability to capture students' facial expressions, and inability to simultaneously capture images of students' and written work as it is created) constrain its ability to mimic the practicum. The limitations lead candidates to suggest that videoconference sessions might be used by a Faculty of Education to augment but not replace the real-world practicum experience.

Keywords: Videoconferencing, Teacher training, Virtual practicum

電腦視像會議與虛擬教學實習

本文描述探索準老師對使用桌面電腦的視像會議科技的意見，是一個為他(她)們提供仿造真實世界教學經驗的一個試驗計劃。這些意見是從問卷和反思報告中搜集得來的。視像會議軟件是模仿教學實習的某些方面，如直接講述、提問、輔導和單對單情節，這些都非常依靠音像通訊。準老師反映這些科技的限制(如主機速度緩慢、未能攝取學生的面部表情、未能同時攝取學生進行書寫時的形象及工作) 阻礙了教學經驗的模仿能力。針對這些限制，準老師認為視象會議有助提升教育學院的效能，但不能替換真實世界的實習經驗。

關鍵詞： 視像會議、教師培訓、教學實習

Introduction

The typical teacher training course begins with the Professor describing an aspect of a theory of learning. Teacher candidates use the description as a framework to develop a lesson which they subsequently present to their peers. This course model usually allows for the presentation of just 1 lesson; on occasion, 2 lessons can be accommodated. After the presentation the professor and the candidate's classmates provide feedback on the performance. There are a number of problems with this course model.

★ Student teachers can only imagine what a student in say grade 7 might understand and enjoy. That is, the feedback they provide to the presenter may not be age appropriate.

★ Faculty who have not have taught in the classroom for several years may not provide feedback that is relevant to teaching today.

★ It is likely that multiple lessons (not 1 or 2) need to be presented for the acquisition of effective pedagogical content knowledge.

The above problems arise because authentic classroom teaching experiences are difficult, if not impossible, to provide in the typical teacher training course. Authenticity is usually accommodated in the practicum but there is no way to transition gradually from the artificialities of the training classroom to the realities of the teaching classroom and so the student teacher often resorts to survival tactics to make it through to the end of the practicum session. Not surprisingly, the tenets of high-level learning that Faculties of Education espouse are seldom realized in the practicum.

The Research Problem

The research problem considered here is the matter of providing authentic teacher training lessons with desktop videoconference technologies such that student teachers acquire effective pedagogical knowledge. Specifically, this study explores the potential that desktop videoconference freeware and inexpensive web cameras hold for providing multiple virtual teaching experiences to support the acquisition of pedagogical content knowledge.

Purpose of the Study

It is proposed that problems with teacher training programmes, as listed above, might be overcome by offering a variety of virtual practicum experiences in a variety of classes or schools. It is also proposed that multiple real-world teaching opportunities make possible the acquisition of effective pedagogical content knowledge in a controlled and directed manner. In regard to the latter proposal, the virtual practicum provides a variety of lesson presentation opportunities that allow the student teacher to explore the application of a variety of learning theories in the classroom. The lessons can be structured such that each of them builds upon the pedagogical knowledge the candidate displayed in the previous lesson. By providing for such teaching experiences, the virtual practicum makes possible the controlled acquisition of pedagogical knowledge. This study presents an initial test of the viability of the virtual practicum. In using inexpensive web cameras and freeware the study tests a worst case scenario for the learning effectiveness of the virtual practicum.

The nature of the virtual practicum

The question of what a virtual practicum experience might look like has to be considered before we can proceed. Desktop videoconference freeware can connect any computer in a Faculty of Education to a computer in any school (provided both computers are connected to the Internet). Once a connection is made, a student teacher can deliver lessons with a web camera. The lessons can be captured to DVD, edited, and archived on a server. Student teachers and faculty can review each video and provide feedback on the teaching performance. By reflecting on the feedback received for each video the candidate can work to improve his or her pedagogical content knowledge before another lesson is taught.

A variety of teaching scenarios can be offered in the virtual practicum. Two examples are described below. The first example involves asking the student teacher to teach the same lesson to different classes. The second involves teaching different lessons to the same class. It is worth repeating that the intent in providing multiple virtual practicum (teaching) experiences is to support the gradual acquisition of pedagogical content knowledge. The mechanism for acquisition is: teach, review a video of performance, reflect on the performance and on feedback provided by others, revise one's strategies and teach another lesson. The process of teach, review, reflect and revise can be repeated any number of times in the academic year (unlike the real-world practicum). At each iteration, opportunities arise to increase pedagogical content knowledge.

Technologies used in this pilot study include inexpensive web cameras (Logitech and D-Link) and videoconference freeware (Yahoo Messenger) to connect teacher-candidates in a northern Ontario teacher-training program to students in a high school. Questionnaires

and reflective papers are used to elicit the candidates' thoughts on the limitations and benefits these technologies hold in regard to their ability to provide virtual practicum experiences.

Literature review

There is a record of research into the use of high-end videoconference systems to deliver (or to support the delivery of) courses and programmes. The following represents just a few of many examples that are available to the reader (Sembor (1997), Laufer, Fuks, deLucena (1998), Hildebrand (1995), Petersen (2000), Andrews and Klease (2002), Espinoza (2002), Badenhorst and Axmann (2002), Jones and Sorenson (2001), Gal and others (1994)). The notion of using videoconference technology to train professionals has been the topic of research too (Wood and Parham (1996), Hampton and others (1994), DeBourgh (2003)). More specific to this work, research reports are available that consider the use of videoconference technologies to train education administrators. Chancey (1995) for example used a videoconference system to train administrators of special education in Florida's small and rural school districts.

Another body of work has focused on the use of high-end videoconference systems for teacher training. Williams (1995) used videoconference technologies in project CREST, a special education programme. She proposed that Internet-based videoconferencing might offer low-cost professional training in rural schools. RNP news (2004) reports on the use of videoconference technologies to upgrade the training of high school math teachers in 11 states in Brazil. Teachers in all 11 states reported satisfaction with the experience and moves are underway to expand the experience in the future. Griffin (2004) compared the use of videoconference and streamed media technologies to provide teacher training. He found that videoconferencing more fully replicated

the classroom experience but was costlier and more time consuming than streamed media. Geelan and Fiege (2004) used videoconference technologies to provide teacher training in remote schools in northern Alberta, Canada. North, Strain and Abbot (2000), also considered the use of videoconference technology for teacher training. They used it to support the delivery of a multimedia training programme that taught in-service teachers to use information communications technologies (ICTs).

Researchers have also considered ways that videoconference technologies might be used to communicate with trainee teachers during their practicum sessions. Roberts-Young and Constable (2004) used videoconference technologies to maintain contact (to provide feedback) with trainee teachers during practicum sessions in remote rural schools. In addition to helping the trainees, the feedback was said to increase the strength of connections with associate schools. Dudding and Drucker (2002) also used videoconference technology to provide feedback during practicum sessions. They found that the process was cost effective and that it reduced stress levels in student teachers.

Research conducted into the use of desktop videoconference software for teacher training is thin on the ground. Sharpe, Hu, Crawford, Gopinathan Moo and Wong (2000) provide a notable exception that is related to this work because of its use of archived video for reflective purposes. To the best of the authors' knowledge, no research has been conducted into the provision of authentic teaching experiences (virtual practicum sessions) from a faculty of education. This paper represents a starting point for the use of desktop videoconference facilities in that arena.

The successful use of high-end systems in previous research adds weight to the argument that desktop videoconference utilities might be used to provide for valuable teacher training experiences. After all, the same media (audio, video, chat, whiteboard etcetera) are used

for communication in desktop and high-end arrangements. In fact, desktop videoconferencing offers advantages over high-end systems. For example, any computer can be used for a desktop videoconference session (provided it has Internet access) so there is no need to travel to a central videoconference centre (as is the case with high-end systems). Where high-end systems may cost $100,000 or more, desktop connections can be set up for as little as $30 (the cost of a web camera). Low cost and flexibility make desktop systems ideally suited to the provision of virtual practicum experiences in a wide variety of educational settings.

Method

Videoconference Freeware

Several videoconference packages are available as freeware or shareware: (CUSeeMe, iVisit, Paltalk, SILC (Secure Internet Live Conferencing), Yahoo Messenger, NetMeeting etcetera). Only Yahoo Messenger and Microsoft NetMeeting were considered here. The reasons these software packages were selected for investigation are that they are the packages that (in the opinion of the authors) present the lowest threshold for adoption and regular use by teachers. They both enjoy freeware status and relatively high (compared to other packages) levels of acceptance and use amongst the Internet using public.

NetMeeting is bundled into the Microsoft Windows Operating System. Yahoo Messenger has to be downloaded from www.yahoo.com. Unfortunately, NetMeeting could not be used in this study for it could not connect participants across the network security systems of the University and the School. Yahoo did enable connectivity. It offers point-to-point video and multicast audio, chat, file transfer and the capacity to connect to phones and mobile communication devices.

Of these utilities, only the web cam, and the voice options where used in this study.

Participants.

One male and six female teacher-candidates from a northern Ontario teacher-training program participated in this pilot study. Their ages ranged from 21-23, with one 29- and one 34-year old. All participants had a personal computer at home, and had at least 4 years experience working with computers. Only one of the participants had experience using desktop videoconference software and a web camera.

Seven, grade-11 biology students were also involved in the study. They were selected by their teacher based on their willingness to participate in the study and the degree to which they were up to date with their work.

Procedure

Two or three days prior to the web camera sessions the teacher candidates and the students studied a web site that was developed by the first author and the third author. The website presented a discrete unit of study regarding the diagnosis, treatment and prevention of melanoma. Related literature that can be found on the World Wide Web was not referenced. Each teacher candidate worked in a single videoconference session to guide a single grade 11 student toward the resolution of three questions. Questions 1 and 2 were related to the web site. Question 3 was designed to challenge the teacher candidates' ability to use the technology to explain a hands-on problem. The questions were:

Question 1
Why is it that the nurse is the "go to" person during patient recovery? Why isn't this the job of the oncologist?

Question 2.
Why are the genes that acquire the mutations that cause cancer called tumor suppressor genes?

Question 3.

Let's say that a melanocyte is 0.005 cm in diameter. Let's say too that melanocytes divide every 2 days. Then let's say that a mole can only be diagnosed as a melanoma when it reaches 1 cm in diameter. For the sake of argument, assume that a cancerous mole is circular and only 128 cells or 128 layers of melanocyte thick. It therefore has the shape of a 128 layer-thick cylinder. How much time has to pass after a cancerous melanocyte has formed before a mole can be diagnosed as a melanoma

Attitude questionnaires were administered to the teacher-candidates immediately before and after the web camera sessions. On completion of the post-questionnaire, the teacher candidates were presented with the first 10 pages of Lankshear, Peters and Knobel (2000), a paper that considers philosophical issues related to on-line learning. It particularly considers the directed approach to training that on-line education companies provide and compares it to the undirected holistic approach to education that Faculties of Education offer. The candidates were asked to write a reflective paper that answers the following questions:

1. In your opinion, can the videoconference sessions provide training experiences that compare to practicum-based lessons? How do they compare.

2. In regard to teacher education, can videoconference software be used to provide a more direct, streamlined and efficient approach to training than the practicum (in your opinion)?

3. Given that the teaching process is a combination of science and art, is a directed approach to teacher training a more or less appropriate approach than the undirected practicum?

Questions 2 and 3 were designed to elicit the candidates' opinions as to whether pedagogical content knowledge can be broken down into components that can be acquired by way of a series of virtual practicum sessions.

Results

Attitudinal Questionnaire, Rating Scales

Due to the small number of participants in this study, results are reported in terms of a description of "trends" observed in the quantitative data collected. A larger sample size should be used in a future study in order to obtain results that may be generalized to a larger population of participants.

Attitudes of the participants prior to the intervention.

The majority of the participants were looking forward to using the web-based technologies for instruction and they thought that it would be beneficial and exciting. In addition, the majority of the participants thought that web cameras could assist with web-based learning. However, most of the participants did not feel that they were adequately instructed on the use of web-based technologies and had some reservations about web-based learning and instruction. In general, participants were "neutral" on the issues of whether web-based instruction is as effective as a teacher in front of the class, whether it had many advantages over traditional teaching, whether the students would be interested in it, or if they would like to use web-based instruction to teach in the future.

Change in attitudes of participants post intervention.

In general, when participant attitudes were positive prior to intervention, their attitudes remained positive post-intervention (i.e., no change). For the items where participants indicated neutrality prior to the intervention there was no change post-intervention with one exception - teacher candidates perceptions of student interest were positive post intervention. There was no change on other items.

It was interesting to note that the five younger participants tended to change in attitude more than the two older participants. For example, when data from the five younger participants were isolated, the majority of them had a positive change in attitude regarding the benefits of web-based instruction. Further research with a larger sample size is necessary to determine if this is a trend (or random variance). It is worth noting that the result might be explained by the fact that the eldest candidate had used desktop videoconference software extensively prior to the intervention and as such was less likely to experience a large change in attitude as a result of participation in the intervention.

Attitudinal Questionnaire, Comments

The teacher candidates' responses to the open-ended questions of the attitudinal questionnaire were analyzed using an adaptation of Patton's (1990) inductive analysis technique. That is, 3 readings were conducted to identify themes in the teacher candidates' responses to the open-ended questions of the questionnaires and in their reflective papers.

Table 1 summarizes the themes that were identified from the candidates' work. A description of the themes follows the table.

Table 1 Summary of responses

Theme	Summary
Technology problems	Better video and audio needed. Needs a Whiteboard
Specificity	Web cameras can provide for some (direct instruction, questioning) but not all (classroom management) aspects of the practicum.
Compensation	More complete verbal explanations are required to compensate for a lack of visual cues
Enculturation	While the usefulness of web cameras is recognized, traditional face-to-face instruction is still preferred
Outcome	Web cameras present a beneficial avenue for teacher training

Technology problems.

The main problems according to this theme were that candidates were unfamiliar with the technology and that the quality of the video and audio was insufficient to support optimal teaching (and thus the replacement of a practicum session). Desktop videoconference software and web cameras are very easy to use but even so, some of the candidates were uncomfortable with the technology at the start of the study. In particular, they were unfamiliar with the application functions that are bundled into Yahoo Messenger. It is likely that 2 or 3 trial sessions prior to the study would have provided the candidates with the familiarity they needed to use the technology effectively.

A technology problem noted by all of the candidates (except candidate 5) was the slow frame rate of the video (3 frames per second was the usual frame rate). This was seen as a barrier to reading the facial expressions of students and the extent to which they understood the instruction. Candidate 2 provided the following in regard to the low frame rate.

> Have a better refresh rate. This would make it easier to gauge facial expressions and indicate how the student is doing.

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Candidate 2 also noted that the video was limited in its scope and clarity to the extent that a view of an entire classroom could not be provided. Candidate 6 was unhappier still with the quality of the video:

> I think the video playback could have been better. I found it pointless to have the picture if it was choppy. Plus the sound could have been improved.

Sound was often a problem at the start of the sessions. To receive clear audio we had to tell the high school students to move the microphone farther away from their face. Once the problem was identified it was resolved very quickly.

Image quality was the biggest disadvantage of the technology used in this study. The provision of satisfactory virtual practicum experiences will require clear images of the entire classroom.

Specificity.

The specificity theme suggests that virtual practicum sessions can be used as an adjunct to the practicum. The candidates thought that the technology had potential for providing specific practicum experiences. They did not think that it could serve as a replacement for the entire practicum. Candidate 2, noted:

> I think it can duplicate certain aspects, such as one-on-one instruction, student-teacher relationships, and general tutoring. I think there are many aspects of classroom experiences that get missed, classroom management, instructing in front of many students, dealing with varying levels of ability, and visual cues.

Candidate 2 went on to say:

> I think it has a place. It could be an effective way of providing expert instruction to students in more remote communities... however I don't see it as a replacement to current classroom experiences-rather I see it as an addition to creating a well rounded teacher.

One area where candidates reported that desktop videoconferencing was comparable to face-to-face sessions was information exchange in the audio channel. This would imply that virtual practicum sessions might be used to introduce candidate teachers to teaching techniques that rely on direct verbal instruction such as tutoring and question and answer sessions.

Compensation

In the classroom you can watch a student's face while they work and match facial expression against the work to determine whether an instruction has been understood. Yahoo Messenger does not support this capability for a web camera can focus on a student's face or work, not both. The candidates compensated for this through careful word choice and by working hard to maintain a dialog with the students.

Candidate 3 claimed:

> it was difficult to explain things without being face-to-face. I felt I had to focus more of my energy on coming up with the right words to use to answer the student's questions, or to help [them] understand an aspect of the problem.

According to Candidate 2:

> good communication skills are key for web-based instruction to succeed. I really had to work hard at keeping a constant dialog going to substitute for information I would normally pick up visually.

Candidate 2 added:

> conversations work well but hands on ideas are difficult to translate. When you cannot see what the student is working on you need to be able to draw to explain certain facts.

Candidate 6 tackled the visual communication problem by establishing a common means of expression. He reported;

> We had to find a common way to express ideas and concepts but this was harder with the camera than in real life.

In her reflective essay, candidate 3 noted that it might be possible to capitalize on limited images with focused training sessions. She envisioned a series of videoconferences that accommodate specific aspects of teacher training such as the importance of clear and precise instruction and the need to observe and interpret facial expression. She saw these sessions as a way to present the science (but not the art) of teaching to candidates.

Enculturation

The videoconference sessions did not leave all of the candidates in favour of virtual practicum experiences.

Candidate 5:
I still believe in the old way of teaching and that is for the teachers to be there with the students. However the web camera can be interesting.

Some candidates simply expressed a preference for the personal contact of face-to-face instruction.

Candidate 1:
I still like to have the student right in front of me.

Candidate 3:
I found it harder to instruct the student since we were not sitting together face-to-face. It made it harder to relate to one another.

Perhaps 2 or 3 sessions prior to the study to establish a level of rapport with the students might ameliorate the candidates' concerns and enculture them in the world of virtual instruction.

Outcome

Most candidates thought of the virtual practicum as a beneficial avenue for the future of teacher training.

Their sentiment though was tempered by the thinking that only specific aspects of the practicum can be replicated in a desktop videoconference.

Candidate 7:
I do not think that videoconferencing can replace all aspects of the practicum experience for student teachers. I believe it can assist

Other candidates speculated as to the potential that web cameras hold for teacher-training. Candidate 4 concurred with the notion that videoconference sessions may be archived and edited for demonstration purposes. She added that the archived sessions could serve as exemplars of: experienced teachers demonstrating best practices, instructional methods and classroom management techniques. Candidate 4 also noted that desktop videoconference software might be used to provide teacher candidates with opportunities to engage in interactive sessions during their practicum.

Candidate 2 pointed to web cameras' ability to deliver specific experiences wherein training is structured to meet particular learning goals. She was concerned however that content knowledge acquired in videoconference sessions might not be available for ready application in the classroom unless candidates were required to reflect upon the knowledge that they construct.

Points of note

In addition to the themes, 2 points of note were identified in the candidates' questionnaires and reflective papers; preparation and scheduling.

Preparation

Two of the students and one of the candidates who arrived for the videoconference sessions were

unprepared. In the case of students this amounted to not having the questions to hand. In the case of the teacher candidate, it consisted of not understanding the material on the website.

> Candidate 5:
>> The student did not have her information with her and she took longer to complete than I thought she would."
>
> Candidate 6:
>> I did not completely understand question 3 and the answer I was trying to communicate to the student.

Scheduling

The high school teacher did not turn up for one of the sessions. We had to reschedule the event.

Conclusions

The results of this study suggest that inexpensive web cameras and videoconference freeware hold the potential to replicate or enhance specific aspects of the teacher practicum experience (direct instruction, questioning, tutoring, and one-on-one scenarios that rely to a large extent on audio communication). The finding lends weight to the supposition that multiple desktop videoconference sessions might be adopted by Faculties of Education to provide teacher candidates with opportunities to acquire effective pedagogical content knowledge. This supposition is of course tempered by the extent to which limitations of the technology inhibit the student teachers' ability to teach and the school children's ability to learn. Better technology will better replicate the practicum experience so that teachers can perform to the best of their abilities and students can learn more effectively.

Limitations of the technology that were identified included: the resolution of the camera, the bandwidth, the frame rate, and the scope of the image. In combination, these factors detracted from the sensation of "being there." For example, the bandwidth (and the

capabilities of the web cameras) limited the frame rate such that it could not capture rapid changes in facial expression. When resolution fails to provide clear pictures and when audio is not synchronized with video, the student teacher fails to learn when a student has acquired complete comprehension of a point in a lesson. In this regard the virtual practicum as conducted in this study is inferior to the real-world practicum. To compensate for the shortfall in video quality the candidates had to choose their words very carefully and work hard to maintain a dialogue with the students. In this regard the virtual practicum exhibited superior learning effectiveness (in comparison to the real-world practicum) for in forcing student teachers to provide clear, comprehensive and concise descriptions and follow up dialogue, it drives home the importance that such things hold in regard to motivating students and ensuring that their understanding is complete.

The teacher candidates worked with just one student due to the limited field of vision of the web cameras. The desired capability of capturing images of the entire classroom cannot be achieved with an inexpensive, static web camera. While the internal microphones of the web cameras worked very well in the one-on-one instructional situations of this study, it would be impossible to capture audio from all areas of a classroom. Limitations in video and audio quality mean that 4 or 5 students huddled around a computer may be the most that a candidate can communicate with using the system that was adopted here. While this is a limitation of the technology it does provide an effective way to introduce students to the mechanics of small group work.

To provide a virtual practicum that provides for the effective acquisition of teaching skills, superior audio and video technologies are needed. Improvements in these areas will better provide for the sensation of being in the classroom. A number of commercial software products are available that accommodate the transmission of high-quality video and audio at

reasonable cost. Session (www.wave3software.com) and iVisit (www.ivisit.com) are perhaps the best low-cost products available at the time of writing. Web cameras with pan/tilt and zoom (PTZ) capabilities would allow for the capture of images of the entire classroom. The ability to focus on the entire classroom would allow for the presentation of information in ways that better simulate face-to-face instruction. Web cameras are available that provide the desired PTZ capabilities. An example is the Sony EVI D30. This older PTZ-type camera is especially useful for virtual practica as it can be daisy chained to enable the capture of high-quality images from all areas of the classroom. The closer the technology comes to duplicating the sensation of being in the classroom, the more meaningful the virtual practicum experience will be and student teachers will more effectively learn the job of teaching.

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Pre-Questionnaire

1Part One: Background Information

In order to assist us in the completion of our work on web-based interface we ask that you complete all of the following questions. Please circle the appropriate number to the right of each question.

_____

Background:

1. Sex
   Male 1
   Female 2

2. What is your age to the nearest birthdate?
   Years ____

3. Marital Status
   Married/Cohabitation 1
   Never Married/Single 2
   Separated/Divorced/Widowed 3

4. Geographic Area in which you were raised

    1-10,000 (Small Rural)   1
    10,0001-50,000 (Small City)   2
    50,001-99,999 (Medium City)   3
    100,000 plus 4

5. Education

    Less than a Bachelor's Degree   1
    Bachelor's Degree   2
    Master's Degree   3
    Doctoral   4

6. Is teaching your first career choice?

    Yes   1
    No   2

7. Do you have a personal computer at home?

    Yes   1
    No   2

8. Do you have any experience with web-based learning?

    Yes   1
    No   2

9. Do you have any experience with web-based instruction?

    Yes   1
    No   2

10. Please indicate the number of years you have worked on computers,
    circle one number only.

    1   2   3   4   More than   5

11. Do you have experience with web cameras?

    Yes   1
    No   2

Part Two: Web-Based Instruction

In this section, please answer all of the following questions.
For example:

Please circle the appropriate number beside each of the following statements.

Please indicate whether you:

Strongly Agree	1
Agree	2
Do not know	3
Disagree	4
Strongly Disagree	5

	SA	A	?	D	SD
Sample Question One. Thunder	1	2	3	4	5
Bay is cold in February.	Strongly Agree	Agree	Do not Know	Disagree	Strongly Disagree

1. As a teacher-candidate I look forward
   to instructing using web-based technologies
   (Web cams)   1   2   3   4   5

2. Web-based instruction is beneficial.
                          1   2   3   4   5

3. Web cameras could assist web-basedlearning.
                          1   2   3   4   5

4. I was adequately instructed on the Use of web-based technologies
                          1   2   3   4   5

5. I feel web-based instruction is as effective as a teacher in front of
   the class.
                          1   2   3   4   5

6. I would like to use web-based instruction to teach in the future.
                          1   2   3   4   5

7. Web-based learning has many advantages over traditional
    teaching.

	1	2	3	4	5
	1	2	3	4	5

8. Web-based instruction will be exciting.

	1	2	3	4	5

9. The level of interest among participants will be high.

	1	2	3	4	5

10. I have some reservations about web-based learning.

	1	2	3	4	5

11. I have some reservations about web- based instruction

	1	2	3	4	5

12. I understand the purpose of the assignment.

	1	2	3	4	5

Part Three:
Briefly answer each of the following questions in the space provided.

1. What problems do you foresee using web-based instruction?

_____

_____

_____

_____

2. Please discuss your level of computer literacy?

_____

_____

_____

_____

Please put down your pens. I would like to thank you for completing this part of the questionnaire

Post Questionnaire

Part Four: This section of the questionnaire is to be completed after you have completed the web based instruction and NetMeeting session.

In this final section, please answer all of the following questions.

For example:

Please circle the appropriate number beside each of the following statements.

Please indicate whether you:
Strongly Agree	1
Agree	2
Do not know	3
Disagree	4
Strongly Disagree	5

	SA	A	?	D	SD
Sample Question Three. The weather in Florida is cold all the time.	1	2	3	4	5

	Strongly Agree	Agree	Do not Know	Disagree	Strongly Disagree
1. As a teacher-candidate I enjoyed instructing using web-based learning strategies.	1	2	3	4	5
2. Web-based instruction is beneficial.	1	2	3	4	5
3. Web cameras assist web-based learning.	1	2	3	4	5
4. I was adequately instructed before the web-based instruction.	1	2	3	4	5
5. Web-based instruction is very effective.	1	2	3	4	5
6. I would like to use web-based instruction to teach in the future.	1	2	3	4	5
7. Web-based instruction is exciting.	1	2	3	4	5

	Strongly Agree	Agree	Do not Know	Disagree	Strongly Disagree
8. Web-based learning has many advantages over traditional teaching.	1	2	3	4	5
9. Students seemed to be interested in this activity.	1	2	3	4	5
10. I have some reservations about web-based learning.	1	2	3	4	5

11. I have some reservations about web-based instruction.

                                             1   2   3   4   5

12. The simulation was appropriate for teaching the stated concept.

                                             1   2   3   4   5

13. Participants were successful in negotiating the site.

                                             1   2   3   4   5

14. Participants were enthusiastic. 1   2   3   4   5

Part Five:
Briefly answer each of the following questions in the space provided.

1. What problems did you encounter when conducting this instruction?

_____

_____

_____

_____

2. Do you think videoconferencing can duplicate aspects of the practicum experience for student teachers?

_____

_____

_____

3. Were instructional techniques similar to your first in-class practicum. Explain?

_____

_____

_____

4. Is there anything you think could be done to improve web-based learning?

_____

_____

_____

5. Do you think that web cameras and NetMeeting will benefit future teacher training?

_____

_____

Please put down your pens. I would like to thank you for completing this questionnaire.

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