Adapting the Ontario Teacher Performance Appraisal Manual to Video-Based Teacher Assessment

by

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Abstract

This study asks if a teacher appraisal tool, the Ontario "Teacher Performance Appraisal Manual" (TPAM) can be modified toward the assessment of pre-service teacher competencies as viewed in archived videoconference lessons. Seven pre-service teachers worked in small groups to deliver the same lesson two times (six lessons were delivered in total) from a Faculty of Education to six groups of two or three grade seven and eight Science students in a regular classroom. The lessons were archived to video compact disc (VCD).

The researcher worked with two Education professors to develop an initial modification of the TPAM, a modification that they felt was suited to video-based assessment. The modified scale was provided to a group of five principals along with a VCD of one of the videoconference lessons. Feedback provided by the principals was used to confirm the suitability of the scale and to modify it further. A re-modified scale was sent to the same group of principals along with five VCD lessons. The principals' feedback regarding the re-modified scale suggested that further modification was not required.

Three lines of evidence are presented to support the argument that modification of the TPAM was successfully accomplished; the nature of the indicators of the modified scale conforms to expectations derived from the literature review, principals (experts in the use of the TPAM for teacher performance assessment) rated the utility of each of the scale's indicators as being suited or highly-suited to video-based assessment, the principals were able to use the modified scale to assess performance in archived videoconference lessons.

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CHAPTER ONE

Introduction

This study asks if a teacher appraisal tool, the Ontario "Teacher Performance Appraisal Manual," (TPAM) can be modified toward the assessment of pre-service teacher competencies as viewed in archived desktop videoconference (DVC) lessons. Modification of the scale occurred in three stages. In stage one, the researcher worked with two Education professors to develop an initial modification of the TPAM. Additional modifications were developed in response to feedback provided by a group of five principals. The principals rated the suitability that indicators of the modified TPAM held for video-based assessment of teacher performance against six archived videoconference lessons. The lessons were delivered by a group of seven pre-service teachers who worked in three groups (one group of three and two groups of two) to deliver a lesson via desktop videoconference from a Faculty of Education to six groups of grade seven and eight Science students in a classroom in a Northwestern Ontario middle school.

In the first stage of modification of the TPAM the researcher collaborated with two Education professors to remove indicators of teacher performance that would not appear in videoconference lessons. Removal began with each professor rating each indicator along a 5-point scale of highly unsuited (as score of 1) to highly suited (a score of 5) to video-based assessment. With the individual ratings complete the raters met with the researcher to discuss the removal of indicators with median scores of two or less and to retain indicators with scores of three or

more. During the discussion the indicators with high scores were reworded as was required such that they better conformed to videoconference assessment. The first modified version of the TPAM was developed as a result of the above efforts.

Stages two and three of the adaptation process involved seven pre-service teachers,students in an undergraduate Science Education class that was run by one of the Education professors), a group of five principals and 18 grade seven and eight students (members of a science class in a Northwestern Ontario middle school where the researcher was working). The pre-service teachers worked in groups (two groups of two and one group of three) to deliver a lesson via DVC from the Faculty of Education at Lakehead University to small groups (two or three students per group) of the grade seven and eight students. Each of the three groups of pre-service teachers taught the same lesson twice, so that six lessons were delivered in total. Each delivery involved a different group of three middle school science students, that is each group of grade seven and eight students received the lesson just once. Lessons one through three were the pre-service teachers' first-run attempts at delivery, lessons four through six were second-run deliveries.

The indicators of the TPAM are gradable along a 4-point rubric (Appendix One) of unsatisfactory through exemplary. It was reasoned that two attempts at lesson delivery would be required as the first delivery would likely invoke teaching performances at the lower two levels of the rubric (unsatisfactory and satisfactory) and the second delivery would likely provide examples of higher level performance. Two attempts at delivering the same lesson were thought to

increase the potential that each indicator of teacher performance would appear in the DVC lessons. Each group of grade seven and eight students received the lesson just once as it was thought that student expertise could interfere with the expression of teaching performance. The lesson itself is provided in Appendix Three. It required that the pre-service teachers guide the school children through the construction of a parachute that would land on a target with an optimal combination of long hang time and accuracy.

In the second stage of the study, the first modified version of the scale (the scale that resulted from the efforts of stage one) was sent to a group of five principals along with lesson one which had been archived to video compact disc (VCD). Lesson one represented a group of pre-service teachers engaged in their first delivery of the lesson. The principals watched the VCD and rated each of the indicators of the modified scale for suitability to video-based assessment. Their ratings occurred along the 5-point scale (highly unsuited to highly suited, to video-based assessment) that the researcher and the professors used in stage one. On receipt of the principals' feedback, the researcher engaged in discussion with the two Education professors to remove indicators with median scores of two or less and retain indicators with scores of three or more. Four indicators were removed from the modified scale of stage one in response to the principals' feedback.

In the third modification stage, the same principals received the re-modified scale and five VCDs (lessons two and three, like lesson one were first attempts at lesson delivery, lessons four, five, and six were second run lessons). They rated the suitability of the indicators of the re-modified scale for their suitability to video-

based assessment as per stage two. In this stage of the study, the principals' feedback indicated that additional modification of the scale was not required as the median scores of all of the indicators were three or more. The third stage also called upon the principals to rate the performance of the pre-service teachers against the 4-point rubric (unsatisfactory through exemplary) of the modified TPAM (Appendix 1). A final task that the principals were asked to perform was to provide feedback as they saw fit in regard to problems associated with the assessment of the indicators in archived desktop videoconference lessons. Their performance ratings are used in Chapter Four to argue that the scale has been successfully modified to video-based assessment. Their feedback on problems with assessment is used in Chapter Four to suggest ways and means by which the modified scale can be applied to better effect in archived desktop videoconference lessons.

Personal ground

This work was undertaken after a conversation with my advisor, Dr. Graham Passmore. Both of us were in agreement that the process of pre-service teacher assessment would be helped considerably if faculty advisors were provided with a more efficient means for observing pre-service teachers in the classroom during their practicum placements. More importantly, we agreed that an assessment tool was necessary in order to ensure that the assessment of pre-service teacher performance was done in a fair, equitable, and consistent manner. We sought to find an assessment tool which would provide for feedback of both strong and weak pre-service teacher performance in a standardized set of areas. One of the

challenges we discussed was the geographic and logistic difficulty for faculty advisors to be able to visit and observe pre-service teachers during practicum placements. We discussed the use and development of technology marrying desktop videoconference hardware and software in order for pre-service teachers to deliver lessons and then to archive the lessons for subsequent review and assessment. This study represents the important step in developing and testing an assessment tool which could be used following successful arrangement of desktop videoconference lesson delivery from pre-service teachers at a faculty of education to students in a regular school classroom.

Context for the Study

The practicum is regarded as a critical component of Teacher Education (Wilson 1999; Zeichner, 2002) and several researchers have sought to both improve and make the experience more meaningful (Ramsey and Battersby, 1998; Faire, 1994; Keller and Grossman, 1994; Zeichner, 1990; Zeichner, 2002; Volante, 2006). New field-based programs and professional development schools have been developed as a result of this research (Volante, 2006). These programs have, according to Volante, extended the length of the practicum and provided on-going contact with students in both elementary and secondary schools.

In contrast to the new field-based programs, practicum placements in rural areas pose communication problems for faculties and associate schools because geographic issues may be involved. Further, according to Zeichner (1992), little learning might be expected of the pre-service teacher (in a rural placement) beyond replication of the rules and practices of the associate school. These and

other problems with the rural practicum, as identified by Zeichner (2006), provided impetus for this work:

- Practicum supervision differs in quality according to the proximity of associate schools and the Faculty of Education. That is, some pre-service teachers can be visited by faculty advisors, and some cannot.
- Faculty and associate teachers lack formal preparation for practicum supervision.
- Communications problems with associate schools means that pre-service teachers fail to connect what is taught in the faculty to their actions in the schools.

Potential solutions to these problems lie with DVC technology for it can connect a Faculty of Education to associate schools for multiple virtual (remote) teaching events during the practicum and during the academic portion of the program. Such connections provide a means for faculty "visits," a medium for regular communication, and training opportunities for faculty.

Of particular interest to this thesis is DVC lesson delivery during the semester. Such lessons can be archived, to VCD for example, and viewed by faculty. On review of the archived lessons, faculty can suggest means by which pre-service teachers might improve their performance in the classroom. Pre-service teachers may review the archived lessons too. They can reflect on their performance, the feedback that faculty provides, and they can develop plans to improve their teaching. If faculty members rate performance using a scale in addition to providing feedback, the improvements pre-service teachers realize

may be monitored over time in a quantitative fashion. The identification of improvements in teaching skills over the course of multiple virtual teaching events calls for the development of a tool that is sensitive to indicators of teacher competence. The latter point leads us to the question of whether a scale for teacher performance assessment in the classroom can be modified to assess pre-service teacher competencies in archived DVC lessons.

The remainder of this chapter presents an overview of the study and an overview of the approach that was adopted for the adaptation of the TPAM. The study is described in detail in the remainder of this thesis. Chapter Two presents a review of literature and justification for this research. It also considers videoconferencing as it applies to education and teacher training, and it presents an overview of teacher assessment and teacher performance assessment. Chapter Three describes the process that was used to adapt the TPAM to video-based assessments of teacher performance. Chapter Four considers application of the modified scale to archived lessons by three school principals. It argues that as such application was in fact possible; the modified scale must have been successfully modified to the assessment of pre-service teacher performance in archived DVC lessons. Chapter Four also reviews feedback that the principals provided in regard to constraints associated with the application of the modified scale. In considering these constraints, it provides insights for better implementation of the scale in future studies. Chapter Five presents reflections on what was achieved in the study and how the information obtained might be of value.

Assessing Teacher Performance

The purposes of performance assessment in teacher education are to assure professional growth, and professional conduct and accountability, and to ensure that a minimum standard of performance is delivered in schools and school systems (Mayer, 2005). Current teacher assessment practices involve two types of evaluations; summative and formative. Summative evaluations are typically used to make decisions about the quality of teacher performance. In-class observations by school principals involve judgmental evaluations that concern a teacher's professional accountability and ability to meet minimum standards of practice (Dagley and Orso, 1991). Ongoing, collaborative communication based on observations and teacher-principal meetings are typical components of formative assessment which promotes professional growth by way of improved teacher performance. Ongel, Capa, and Vellom (2002), state that formative assessment requires "supportive partnerships, which can provide feedback to teachers for making decisions about how they can improve their teaching" (Ongel, et al, p. 4.). This thesis has suggested that multiple videoconference lessons that run during a semester may resolve assessment issues associated with the rural practicum. It has also called for the provision of expert guidance between such lessons. In this scenario, summative assessments would be applied to the archived lessons and used to develop between-lesson guidance (formative assessment) that leads to improved teacher growth. The development of a tool for video-based teacher performance assessment is required to realize the requisite assessments.

The process of summative evaluation has become standardized and formalized in most provinces and states in North America. Typically a school leader is responsible for observing the teacher delivering (and sometimes creating) lessons and then gauging competence based on a set of benchmarks and standards previously set out by the school, school board, or state. True performance assessment of teachers looks at what teachers do (or produce) and how they do it, typically with a group of students in a classroom (Stansbury, 1998).

In a review of the teacher evaluation literature, Colby, Bradshaw, and Joyner (2002) suggest that a variety of procedures and models have resulted in effective teacher evaluation. Common to these procedures and models is the need to develop a reliable, valid process that promotes fairness, involves teachers themselves, and employs quality criteria and standards. Standardized teacher performance assessment scales fit within this philosophy of impartiality and collaboration for they were created with these concepts and ideas in mind.

In Ontario, Canada, the "Teacher Performance Appraisal Manual" (TPAM) is the de facto standardized teacher performance assessment tool. It is used by elementary and secondary principals to evaluate all teachers on a regular basis. Also, it is often used to determine whether to offer probationary teachers a permanent contract. The TPAM presents a uniform, standardized set of performance expectations that were developed to assess teachers' competencies at both the beginning of their experiences in the classroom, and throughout their careers.

The Ontario Teacher Performance Appraisal system was selected for

adaptation to video-based analysis in this work for a number of reasons. First, this study took place in Thunder Bay, Ontario and as such the participating principals who examined the archived videoconference sessions were familiar with the TPAM. They use it on a regular basis. Second, a review of other teacher assessment tests showed many similarities to the TPAM framework (Ryan and Alcock, 2002).[1] Third, the pre-service teachers involved in the study will likely be exposed to the TPAM during their probationary teaching years (most of Lakehead University's graduates find work in Ontario) and throughout the course of their careers.

The Teacher Performance Appraisal Manual

The Ontario Teacher Performance Appraisal Manual contains five distinct "domains" that pertain to different elements of teacher competence. Each domain contains a number of "competencies" and each competency is made up of a number of indicators or "look fors." For example, the first domain, "Commitment to Pupils and Pupil Learning" encompasses the competency, "teachers are dedicated in their efforts to teach and support pupil learning and achievement." The "look fors" of this competency include "assists learners in practicing new skills by providing opportunities for guided practice" and "provides for active student participation in the learning process." These "look fors" like all of the indicators

[1] The "Performance Assessment for California Teachers" (PACT) for example highlights five distinct domains for assessment. In British Columbia, the "Standards for the Education and Competence of Educators" lists nine components of teaching for assessment and evaluation.

(there are 132 in total) of the TPAM are gradable along a four-point rubric of exemplary, good, satisfactory, and unsatisfactory.[2]

Methodology: Adapting the Teacher Performance Appraisal Manual

Seven volunteer pre-service teachers worked in two groups to deliver a lesson twice (using desktop videoconferencing) to two separate sets of grade seven and eight students. In other words, each group of teachers taught the lesson to a small group of two or three students, and then subsequently delivered it a second time, to a new group of students who had not previously been exposed to the lesson. Between the first and second delivery, the teachers practiced delivering the lesson to each other in their pre-service Science class at Lakehead University's Faculty of Education. Multiple deliveries allowed for improvement in the pre-service teachers' skills such that different levels of competency would appear in the archived (VCD) lessons. That is, according to Dr. Michael Bowen's suggestion, multiple deliveries are required to best reveal exemplars of performance at level one through level four (personal communication, August, 2004) of the rubric of the TPAM.

The lesson required that the pre-service teachers guide the middle school students through the construction of a parachute and the alteration of its parameters (size of the chute, height of the drop, etcetera) until they had a version that landed on a small target with the greatest degree of accuracy and reliability.

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[2] The Ontario Teacher Performance Appraisal four-point rubric is included for reference in Appendix 1.

The task required that the pre-service teachers taught the students how to handle multiple variables.

Six lessons were delivered in total. Lessons one through three represented the students teacher groups' first attempts at delivery. Lessons four through six represented second attempts at delivery. During delivery, the lessons were archived (recorded) to video compact disc (VCD). The VCDs were passed onto a group of five principals and the lessons were rated against versions of the TPAM that had been adapted to video-based assessment. The three stage process by which the TPAM was adapted to video-based assessment is the subject of the methodology chapter, Chapter Three. Stage one began with collaboration between the researcher and two Education professors. The goal of the collaboration was to remove indicators of teacher performance from the TPAM that would not appear in desktop videoconference lessons. To accomplish this, the professor raters engaged in individual ratings of each indicator along a 5-point scale of highly unsuited (a score of 1) to highly suited (a score of 5) to video-based assessment. The researcher collected the individual ratings and calculated median scores for each indicator. With the individual ratings complete, the three raters met and discussed the removal of indicators with median scores of two or less and the retention of indicators with scores of three or more. During this discussion the raters reworded high scoring indicators as was required such that they better conformed to desktop videoconference assessment.

Stages two and three of the adaptation process involved seven pre-service teachers (students in an undergraduate Science Education class run by one of the

Education professors), a group of five principals, and 18 grade seven and eight students (members of a Science class of a Northwestern Ontario middle school where the researcher was working). The pre-service teachers worked in groups (two groups of two and one group of three) to deliver a lesson via desktop videoconference (DVC) from the Faculty of Education at Lakehead University to students in the target school. Each group of pre-service teachers taught the same lesson two times. Each delivery involved a different group of three middle school science students (that is each group of students received the lesson just once). The rationale for delivering the lesson twice was related to the fact that the indicators of the TPAM are gradable along a 4-point rubric (Appendix 1) of unsatisfactory through exemplary. It was reasoned that a group's first delivery would likely invoke teaching performances at the lower two levels of the rubric (unsatisfactory and satisfactory) and that second deliveries would likely provide examples of higher level performance. The lesson itself (Appendix Three) required that the pre-service teachers guide the school children through the construction of a parachute that would land on a target with an optimal combination of long hang time and accuracy.

In the second stage of the study, the modified scale (the scale that resulted from the efforts of stage one) was sent to a group of five principals along with lesson one in video compact disc (VCD) format of a group of pre-service teachers engaged in their first delivery of the lesson. The principals watched the VCD and rated each of the indicators of the modified scale for suitability to video-based

assessment.[3] Their ratings occurred along the same 5-point scale (highly unsuited to highly suited to video-based assessment) used by the researcher and the professors. The researcher calculated median scores for the principals' ratings and then collaborated with the two Education professors discussing the removal of indicators with median scores of two or less and retaining indicators with scores of three or more. Four indicators were removed from the modified scale of stage one in response to the principals' feedback.

In the third modification stage, the same principals received five VCDs. The VCDs represented lessons two through six. Lessons two and three, like lesson one, were first run lessons and lessons four through six were second run lessons. They rated the suitability of the indicators of the re-modified scale to video-based assessment as per stage two. The principals' ratings of the indicators suggested that additional modification of the scale was not required (the median scores of all of the indicators were three or more). The third stage of modification also called upon the principals to rate the performance of the pre-service teachers for each indicator against the 4-point (unsatisfactory through exemplary) rubric of the TPAM (Appendix 1).[4] In addition to rating performance, the principals provided feedback as they saw fit in regard to problems with the assessment of indicators of teacher performance in archived desktop videoconference lessons. Their feedback

[3] Only four of the principals provided comments and suggestions to explain their ratings at this stage. One withdrew due to illness.
[4] In the final stage, only three of the principals returned their ratings as one withdrew citing personal reasons.

is used in Chapter Four to suggest ways and means by which the modified scale can be applied to better effect in archived desktop videoconference lessons.

Reflections on Methodology

The methodology that is summarized in the above served the research well as it conforms in a relatively seamless fashion to current teacher performance assessment practices. In addition, it suited the goals of this thesis as it provided the researcher with qualitative and quantitative data and an anecdotal record which, as the project progressed, could be used to modify the scale to DVC assessment.

Limitations of the Study

The intent of this study was to construct a version of the Ontario Teacher Performance Appraisal Manual that could be used for video-based assessment of teacher competence. The work was limited by the fact that only a small number of pre-service teachers were rated (seven), and only a few principals rated the performances of the student-teachers. A small-scale study was, however, considered prudent as it is in keeping with the principles of the pilot study approach to research and it met the budgetary restrictions of the project.

An additional weakness was that the study involved the assessment of one-off lessons. In doing so, it failed to accommodate the fact that the Ontario TPAM is meant to be applied by principals who have considerable personal knowledge of the teachers whom they are assessing. Valid use of the adaptation may require that raters get to know the student-teachers on a personal level over the course of

multiple teaching events. Testing the adaptation on a larger scale will likely reveal how this might best be accomplished.

The principals were told to provide comments to explain their suitability ratings as they saw fit. The work that they submitted speaks to the circumstances under which the modified scale can be applied. In retrospect, given the principals' understanding of the TPAM and teacher assessment it would have been better if they had been asked to provide feedback for each competence. Such feedback would have provided understanding and knowledge that would assist in best determining why and how a competency might be assessed in DVC lessons. That is, obtaining feedback from the principals for each indicator would have enabled the provision of a more complete answer to the research question.

It is worth noting that although the principals involved in this work were familiar with the TPAM, they were not familiar with its use in the context of this study. Specific instructions (Appendix Two) were developed by the researcher and distributed to indicate how the video-based assessments were to be conducted and under what context the revised scale was to be applied. It is not known how greater familiarity with the modified scale and DVC assessment would have affected the principals' ratings.

A final limitation of the study is that scales used by other provinces and states to assess teacher performance might contain competencies or "look fors" that ought to be included in a scale for video-based assessments of pre-service teachers. This is a rather intractable problem for, according to Barrett (1986), literally hundreds of teacher appraisal scales have been developed and time and

monies that far exceed the budget of a Masters thesis would be required to scour them all.

Concluding Remarks

DVC technology is still in the early stages of its development. The quality of video and audio that is captured from DVC sessions will likely increase alongside improvements that will inevitably occur as the technology advances. According to Pecheone and Chung (2006), there is no more powerful an indicator of success in the classroom than observed achievement in teaching and student learning. The more capable we are of providing (and archiving) desktop videoconference teaching sessions that truly emulate teaching in the classroom, the more video-based assessments of teacher performance will reflect pre-service teachers' classroom capabilities.

CHAPTER TWO

Literature Review

Video conference technology allows two or more people at different locations to engage in synchronous communication (Kinnear et al. (2002), Mason and Davis (2000), SBC Knowledge Ventures (1995), Videoconferencing: A Digital Handbook for Teachers and Students (2003)). In regard to teacher education, synchronous audio and video lends videoconferencing advantages over other distance education technologies in that they better enable the replication of in-class instructional practices (Cavanaugh, 2001).

The first of the two components of this chapter considers research into the use of videoconferencing technologies for teacher education. It culminates with an argument that DVC provides a suitable means for observation of teachers working in the classroom. The second section considers teacher performance assessment. It argues that the TPAM is a suitable tool for adaptation to the assessment of DVC teaching sessions as delivered in this study.

Research into the Use of Videoconferencing for Teacher Education

Videoconference guides. A number of online guides exist for educators who wish to adopt videoconference technologies (Mason and Davis (2000), Smith (2004), Heath, Holznagel, Ford, and Dimmock (2002), Videoconferencing: a Digital Handbook for Teachers and Students (2003), The Videoconference Cookbook (Video Development Initiative, 2005). The guides provided useful advice for structuring the work of this study. For example, Mason and Davis (2000) suggested that educators develop and print detailed scripts so that

participants know what will be covered in the work to come. The papers (Appendix 3) that were provided to the participants in this work served as detailed scripts. Mason and Davis also recommended that educators:

- Use graphical displays to help students follow along.
- Include activities that address all learning styles.
- Keep electronic and/or hardcopies of materials used for each lesson.
- Consider effective ways for student interaction and participation based on time and the lesson's objectives.

The detailed lesson description that was provided to the pre-service teachers and the students of this study served as hardcopy. PowerPoint was used by the pre-service teachers during DVC lesson delivery to help the students follow along. While the pre-service teachers were not specifically told to cater to learning styles or to provide effective interaction they were free to present the material in ways that met multiple learning styles and they were free to establish means for effective interaction with the students. Providing such freedom was considered a requirement for fair assessment of performance across the pre-service teachers' involved.

The importance of interaction in successful videoconferencing is also noted in the Digital Handbook, Stillborne and MacGibbon (2001), and Heath, Holznagel, Ford, and Dimmock (2002). According to Heath et al., the following should be considered to promote interactivity when videoconferencing:

- Plan for sufficient interactivity between the students and the teacher and between the students themselves

- Allow time for interactivity with the material to be learned
- Let students develop questions
- Let students work in teams on authentic tasks
- Allow for interactivity for gaining understanding and to make interpretations.

The DVC lesson (Appendix Three) that is described briefly in Chapter One and more fully in the Methodology chapter accommodates interactivity as per Heath et al (2002) in that students work in teams on an authentic task of building a parachute. The lesson begins with two to three minutes of reading and interacting with the material to be learned. Students also interact with each other and they can ask questions of the pre-service teacher at any time during the lessons.

Videoconferencing and distance education. There are three types of videoconference systems: desktop units, roll-abouts, and room systems (Kinnear, 2002). They are used in education to support program and course delivery (Chapman (2006), Peters-Grant, (1998), Shearer (1998), and Fetterman (1996)). These research efforts describe attributes of videoconferencing that lend weight to the notion that components of pre-service teaching might be captured in archived DVC sessions, observed and then rated by principals:

- videoconferencing technologies are currently the most convenient means to reproduce, at a distance, the social atmosphere of an ordinary classroom,

- videoconference technologies encourage document exchange and cultural exchange between student populations,
- both verbal and visual interaction are strongly represented on video, so the format is highly accessible and inclusive,
- teaching techniques are easily adapted to and improved by video (material presentation, speaking skills, class management and questioning skills),
- video is an easy distance delivery format for new participants to adapt to,
- video's face-to-face context enhances communication and engages students, it can provide interaction with experts and it can motivate students to learn new information,
- videoconferencing can significantly broaden learning opportunities, particularly for rural schools, and,
- scheduled videoconference sessions encourage rigorous planning for the event.[5]

Videoconferencing and teacher education. Passmore, Fredrickson, and Bowen (2006) point to multiple research efforts in which room systems have been used to train professionals and for teacher education. There are additional examples of these particular uses of videoconference technology in the literature. Anderson (1996), Williams, Coles, Wilson, Richardson, and Tuson (2000), Reynolds and Mason (2002) used room systems for professional development

[5] Synthesized from Jobe (1998), Reed and Woodruff (1995), Stillborne and MacGibbon (2001)).

while, Thach and Murphy (1995), Smith (2004), and Johnson, Maring, Dohty, and Fickle (2006) used them in teacher education.

Additional research conducted in this area provides indication that videoconferencing effectively serves as a vehicle for in-service teacher education and as a means for observing classroom performance. Persico (1997) investigated the potential that videoconferencing holds for teacher education. She stated that it could serve as a powerful tool for multi-person meetings for in-service education. RPN News (2004) further describes this use of videoconference technologies. It presents a Brazilian study wherein multicast technologies were used to provide professional development to 590 mathematics teachers in 11 states. The technology was used to augment the integration of the participating universities while upgrading Mathematics instruction for teachers in schools. The project was considered sufficiently successful that plans for future expansion of the project were under consideration when the article was published. In Canada, the Centre for Distance Learning and Innovation (CDLI) in Newfoundland and Labrador exemplifies acceptance of the argument that video conference technology can be used to provide effective teacher education. It works with the Newfoundland and Labrador Teachers Association to provide online professional development.[6]

In commenting on current approaches to teacher education, Darling-Hammond (1998) notes that, "Teachers learn best by studying, doing, and reflecting" she also states that "The "rub between theory and practice" (Miller and

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[6] The work of CDLI and NLTA is described at http://www.releases.gov.nl.ca/releases/2002/edu/1227n01.htm0

Silvernail 1994) occurs most productively when questions arise in the context of real students and work in progress" (Darling-Hammond, p. 7). Videoconference lessons undoubtedly provide a (virtual) means for pre-service teachers to gain access to real students. They also provide a means for faculties to observe pre-service teachers in action. Adcock and Austin (2002) concur with this reasoning stating that along with issues such as the liability of onsite visits, time constraints frequently cause Faculties of Education to seek alternate means for the observation of their students. They presented videoconference technologies as a suitable, alternative means for observation, and, subsequently, the assessment of pre-service classroom competency. They observed pre-service teachers both via videoconference and using more traditional in-class observation. When they set up the videoconference observation sessions to optimize interaction between teacher and student, the pre-service teachers reported greater satisfaction with the remote observations. In a similar vein, Cifuentes and Shih (2000) investigated the notion that videoconference meetings could substitute for face-to-face gatherings. They found no difference between pre-service teachers' satisfaction with face-to-face and remote presentations that utilized PowerPoint technology.

Desktop videoconferencing and teacher education. At present, there is a small but growing body of research in the field of desktop videoconference (DVC) systems and teacher education. Notable examples include Cifuentes, Beller, and Portella (1999), Hearnshaw (1997, 2000a, 2000b), and Hu, Sharpe, Crawford, Gopinathan, Khine, Moo, and Wong (2000).

According to Smith (2003), DVC allows person to person communication via personal computer using "special hardware and software." He lays out potential uses for DVC for in-service training, collaborative student projects, and peer mentoring, but makes note that the technology suffers from limited picture and sound quality. Like Hearnshaw (1997), Smith thinks of DVC as being best suited to small group work (instruction). Likely this reasoning is related to the fact that web cameras cannot typically capture images of an entire classroom. At best, images of four to five people in relatively close proximity to one another can be recorded or captured with a web camera.

Smith (2004) reviews the literature for DVC and professional development. Working with a series of small scale studies (Cifuentes, Beller and Portella (1999), Cifuentes and Shih, (2000), Jennings and Bronack (2001), Wilkerson and Rogers (2003), Jobe (1999), Zsiray (2001) Lehman et al. (2003) Crawford et al (2002)), Smith notes that the technology supports collaboration between teachers, students, and faculty (in any and all combinations) and that it is inexpensive and easy to use. She also suggests that DVC can be used to model correct pedagogical practices to pre-service teachers by Education advisors or faculty as immediate, concise feedback and criticism, and by current, practicing teachers; for example, those participating in a mentoring or partnership program.

Pemberton, Cereijo, Tyler-Wood, and Rademacher (2004) explore the use of DVC technologies for pre-service teacher observation during practicum sessions. Their opinion is that desktop systems permit observation of the practicum session in ways that could only be achieved in the past by way of face-to-face

observation. They conclude that the images and sound of DVC systems are sufficient because they let faculty perceive the teaching context (of students in a classroom) while also viewing instructional practices (pre-service teachers delivering curriculum).

Smith (2004) holds that the very existence of the studies she reviewed indicates that DVC already plays a considerable role in teacher education. It is particularly noteworthy that the works mentioned in Smith's review use DVC to communicate with, and observe pre-service teachers while they are working through their practicum assignment. The work of this thesis is similar to the research that Smith reviews, but it is driven by the notion that video-based assessment of teaching performance can occur prior to the practicum while pre-service teachers work through the academic portion of their training.

The research reviewed here suggests that videoconference technology facilitates reproduction of the social atmosphere of the classroom while interacting from a distance. In part, this is because the technology provides strong representation of visual and verbal interaction and also because teaching techniques are readily adaptable to videoconferencing. Videoconference technology is a proven vehicle for professional development or in-service in education and in regard to pre-service instruction, it is also a proven means for accessing students and observing pre-service teacher candidates in action. Although less research has been conducted into the use of desktop videoconferencing, it has been shown to support collaboration between students, teachers, and faculty and it has been shown to permit successful observation of practicum sessions. This

study simply proposes a reversal of the observation process, such that pre-service teachers teach students in a classroom from a faculty of education. It is reasonable to propose that in such a scenario, the visual and verbal interactions, the social atmosphere of the classroom, and the classroom techniques that could normally be applied will be reproduced and will be reproducible to an equal extent.

Performance Assessment

Performance assessment and teacher training. Performance assessment seeks to test competencies based on tasks and activities in which employees are routinely actively engaged. It is based on collaborative, active learning models, and has the goal of assuring success on "real world" tasks (Bartlett, 2002). Teacher performance assessment requires that the professional be actively working in a classroom setting; performing his or her job in as close to a regularly constructed situation as is the norm.

According to Mitchell and Crawford (1995), "performance assessment is the measure of whether or not and to what degree students achieve the standards" (p. 78). Similarly, Edmonstone (1996) equates performance assessment to enhanced communication of standards and objectives, clarification of individual responsibilities and accountabilities, and a definition and measurement of individual performance practice. In education, performance standards are most often measured by way of rubrics that indicate opportunities for growth, self reflection, and areas of strength and/or improvement (Bartlett, 2002).

Traditional, non performance-based measures of teachers' competency have come under fire for their lack of authenticity (Pecheone & Chung, 2006). For

example, Mitchell et al. (2001) note a lack of empirical evidence supporting the effectiveness of licensing tests in predicting effective classroom teaching. Further, tests administered by Faculties of Education often vary between programs, instructors, and institutions, and, as such, they rarely provide data that can be accurately and effectively analyzed and compared (Pecheone and Chung (2006)). According to Pecheone and Chung, performance assessments that include evidence observed during actual teaching practices provide more direct evaluation of teaching ability.

The above highlights the value that performance assessment holds for teacher evaluation. According to Bartlett (2002), performance assessment is based on a collaborative, active learning model, and it has the goal of assuring success on real world tasks. Fetter (2003) emphasizes the importance of the development of performance assessment tools that are reliable and valid and that focus on the performance of the pre-service teacher as learner. He notes that there has been a significant increase in the importance of practicum placements in teacher education programs and argues that methods-delivery courses coupled with field supervision are "old" and "no longer valid" (Fetter, p.3). Fetter also states that the "integration of practicum placements and performance assessment is key to pre-service teacher success, and that teacher educators "must develop relevant means of assessing the performance of candidates" (Fetter, p. 5).

It is likely that Fetter would see the electronic portfolio as an authentic means for teacher evaluation. It undoubtedly represents one of, if not the most powerful influence that technology has had on teacher assessment. The most

widely accepted definition of a teaching portfolio is Lee Shulman's (as quoted in Bartlett, 2002) which states that a portfolio is "the structured, documentary history of a set of coached or mentored acts of teaching, substantiated by samples of student portfolios, and fully realized only through reflective writing, deliberation, and conversation" (p. 90). Bartlett further defines the electronic portfolio as including sufficient dynamic information (via CD-ROM or other video formats) to show clear evidence of teaching development. At the time of this writing, electronic portfolios were becoming widely used as both reflective tools and as performance indicators. In addition to the pre-service teacher, they also focus on the classroom student by including examples of performance and learning based on lessons taught. They show a link between standardized, key assessment tasks, and student achievement, and, in short, showcase the learning of students who have been taught by pre-service teachers during their practicum placements (Spurgeon & Bowen, 2002). Video has increasingly become a component of performance assessment teacher assessment strategies. The Performance Assessment for California Teachers (PACT) is a variation of the electronic portfolio and is perhaps the best example of the inclusion of video in performance assessment. It is more fully outlined in the text which follows.

Pre-service teacher performance assessment. In the United States, the Federal Higher Education Act requires that "schools of education be evaluated based on graduates' performance on licensing tests" (Darling-Hammond, 2006, p.120). In California, teacher trainers are required to align their programs to state standards (Pecheone and Chung 2006). A standardized performance assessment

was developed by the State for Californian Colleges to adopt. Dissatisfied with the assessment instrument, teacher educators in 11 universities opted to collaborate on the Performance Assessment for California Teachers (PACT, http://www.pacttpa.org/) and develop their own instrument. The PACT consortium's assessments make use of multiple data sources that are organized along four dimensions of teaching: planning, instruction, assessment, and reflection. Included in the PACT data sources are video clips of pre-service teaching.

PACT's assessments build on the work of the National Board for Professional Teaching Standards and the Interstate New Teacher Assessment and Support Consortium (the INTASC standards http://www.ncpublicschools.org/pbl/pblintasc.htm). Pecheone and Chung (2006) suggest that assessing pre-service teachers with the multiple components of PACT (including the video-based teaching event) enhances learning experiences and professional development. Like California, other states make use of video in portfolio-based, multiple measure teacher performance assessments, for example, the Oregon Teacher Work Sample (TWS http://fp.uni.edu/itq/RTWS/ index.htm). Standards-based, holistic performance assessments such as PACT focus on subject-specific pedagogical knowledge that has been shown in research to be associated with successful teaching (Pecheone and Chung, 2006).

It can be argued that the use of video in electronic portfolios and PACT (Performance Assessment for California Teachers) speaks to the value that videoconferencing holds for assessing the quality of pre-service teacher

performance in classrooms. While differences exist between videos of pre-service teachers performing in the classroom and recorded DVC lessons (the angle(s) of the camera, the quality of the video, and the area of the classroom that is captured for viewing for example), it is undoubtedly the case that recorded DVC lessons, like classroom videos, contain examples of pre-service teacher behavior (visual and verbal cues at the least) that are reflective of potential competencies.

The Ontario teacher performance appraisal manual. In Ontario, Canada, the de facto performance assessment tool is the provincial Teacher Performance Appraisal Manual (TPAM). Like U.S. standards-based performance assessments, the TPAM has been passed into law. Late in 2001, the Quality in the Classroom Act amended the portion of the Education Act that establishes performance appraisal standards and processes for boards to use in the evaluation of teachers throughout the province. This legislation established the framework and mandatory requirements of the Teacher Performance Appraisal (TPA) system in publicly funded elementary and secondary schools in Ontario.

Like U.S. performance assessments such as the Performance Assessment for California Teachers, the Ontario TPAM, was developed in deference to a specific set of standards; in this case, the Ontario Standards of Practice, (http://www.oct.ca/publications/ pdf/standards_e.pdf). The development of the TPAM focused on key elements that expand upon five "Standards of Practice" statements. The five standards of practice form the five domains (commitment to pupils and pupil learning, professional knowledge, teaching practice, leadership and community, ongoing professional learning) of the current assessment tool in

Ontario and are further broken down into 132 specific indicators (called "look-fors" in the document).

While PACT calls on educators to assess pre-service teacher performance in the classroom on four levels using subject specific rubrics, the TPAM has a single rubric that is applied in all subject areas. Principals use it to rate in-service teachers along four levels of competency: exemplary, good, satisfactory, and unsatisfactory.

The decision to adapt the TPAM to DVC assessment in this work over a tool such as PACT is the result of two considerations. The first and most important of these is authenticity. Lakehead University, where this research takes place is in Ontario and the TPAM is the standard scale that Ontario principals use for in-service teacher assessment. Second, the TPAM is familiar to the Ontario school principals who will be assessing teacher performance in the desktop videoconference sessions. Subsequent to data collection for this research, Lakehead University developed a practicum rubric that associate teachers use to assess pre-service teacher performance in the classroom. This tool was not available when the study was conducted but it would have been rejected for this project for the same reasons as the PACT. It also would have been discarded because it relies on associate teacher assessments. Principals have been trained in the use of the TPAM and, unlike most associate teachers, they have current and relevant experience in the process of teacher assessment. In addition, the practicum rubric used by Lakehead University does not provide indicators specific enough to determine teaching competence as evidenced in archived videoconference teaching sessions.

A final important consideration in choosing to adapt the TPAM in this thesis was that the majority of graduates from the Faculty of Education at Lakehead University will teach in Ontario classrooms. At the time of writing, Ontario law held that teachers were to be exposed to the TPAM a minimum of four times during their first two years as classroom teachers. Exposure to the language and format of the TPAM during the pre-service period can only serve to increase understanding and connection for pre-service teachers as they prepare to enter the workplace. That is, use of the TPAM will reinforce pre-service teachers understanding of the expected standards of practice in Ontario classrooms.

Concluding remarks

This study seeks to adapt an evaluation tool, specifically, the Ontario Teacher Performance Appraisal Manual to provide assessments of pre-service teacher performance as demonstrated in archived desktop videoconference lessons. Videoconferencing has been shown to enable visual, verbal, and other components of teaching practice. It has been argued that archived desktop videoconference lessons delivered from a Faculty of Education to a school classroom capture the same components for subsequent review. Rating teacher performance in archived DVC lessons requires the development of an assessment tool. In Ontario, the Teacher Performance Appraisal manual serves as the only approved and pertinent tool for the assessment of all Ontario teachers who work in publicly funded classrooms. The location of this study made the TPAM an obvious choice for adaptation to DVC assessments of teacher performance in this work. Furthermore, the TPAM conforms to the tenets of performance assessment,

the new benchmark for authentic, meaningful assessment and evaluation. Like other performance assessment tools (such as PACT), the TPAM serves as the new assessment standard in education. The process of adapting an appraisal tool such as the Ontario Teacher Performance Appraisal Manual for the assessment of pre-service teacher candidates in archived videoconference lessons is explored in Chapter Three.

CHAPTER THREE

Methodology

The question this thesis asks is whether the Ontario Teacher Performance Appraisal Manual (TPAM) can be adapted to the assessment of pre-service teacher competencies in archived videoconference lessons that are delivered from a Faculty of Education to students in a classroom. The three-stage adaptation process that was applied to the TPAM is described in this chapter.

The first stage of the adaptation process involved a series of discussions in which the researcher worked alongside two Education professors (a Science educator and an Educational Technology instructor) to identify a suitable scale. With a scale identified the process of adapting it to DVC video-based assessment began.[7] During this first stage of adaptation, the professors and the researcher worked individually and then collaboratively to selectively remove or reword the TPAM's 132 indicators of teacher performance such that those that remained constituted a revised version of the scale that could be applied to DVC video-based assessment of pre-service teacher performance.

In the second stage, an archived DVC lesson was provided to the raters (a group of five Ontario principals) along with the modified scale, the 4-point rubric (Appendix One) of the TPAM, and a 5-point utility scale[8]. The raters were asked to consider the utility that each of the indicators held for video-based assessment

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[7] The Ontario Teacher Performance Appraisal Manual (TPAM) was selected for adaptation as it is the de facto assessment tool in Ontario and because it has a proven track record of in-service teacher (both new and experienced) assessment.

[8] From highly unsuited to video-based assessment [a score of one] to highly suited [a score of five].

along the 5-point scale. On receiving feedback from the principals, the researcher calculated median utility scores for each indicator and then met with the Education professors and discussed the removal or the retention of each indicator of the modified scale in turn. Indicators with median scores of three or more were retained and those with scores of two or less were marked for removal. Four indicators were removed from the modified scale (the scale of stage one) as a result of this discussion.

A word about the archived lessons is required before the third adaptation stage can be described. A single lesson was identified for delivery in this study (Appendix Three). It required that pre-service teachers guide small groups of two to three grade seven and eight students per lesson through the construction of a parachute from a plastic bag, a Dixie cup, string and paper clip. The variables of the parachute (size of the parachute, string length number of paper clips in the cup etcetera) were to be manipulated during the lesson such that a version was constructed that would drop on a target with the best combination of long hang time and accuracy. Seven pre-service teachers (members of an undergraduate Science Education class that was coordinated by one of the Education professors) worked in groups (two groups of two and one group of three) to deliver the lesson from the Faculty of Education at Lakehead University to the groups of middle school students. The grade even and eight students were members of a Science class in a school were the researcher was working. Each group of pre-service teachers delivered the parachute lesson twice, such that six lessons were delivered in total, over a three week period. In week one, lessons one through

three were delivered. They represented first run attempts by each group of pre-service teachers at delivering the lesson. In the second week of delivery, the pre-service teachers practiced the construction of a parachute in their Science Education class. In the third week, the same groups of pre-service teachers delivered lessons four, five, and six: their second run attempts at delivery. Three different groups of middle school students received the second run lessons. Different grade seven and eight students selected were required for each lesson to prevent student expertise interfering with ratings of pre-service teacher proficiency. This was an important consideration because in the third stage, the principals rated teacher performance in addition to the utility that the indicators of the modified scale hold for video-based assessment. Student expertise, by way of previous knowledge and exposure to the lesson, would likely have affected the outcome of the second run lessons.

In the third stage of adaptation, the same group of principals were provided with five VCDs (lessons two through six) and asked, once again, to rate the extent to which the indicators of the scale were suited to video-based assessment of pre-service teacher performance. The researcher calculated median scores for the principals' utility ratings. This time, when the researcher and the two professors got together to discuss the median scores, they found that all of them were at level three or higher. This was taken to mean that the indicators of the scale were suited to video-based assessment and that additional adaption was not required.

Stage three also called on the principals to rate the pre-service teachers' performances against each of the indicators of the modified scale. That is, they were asked to provide performance ratings for each indicator against the 4-point rubric (unsatisfactory to exemplary) of the TPAM (Appendix One). The raters were also asked to provide commentary on problems associated with the application of the scale (as they saw fit) such that teacher performance might be better assessed in future studies.

Chapter Four presents three lines of evidence that the TPAM has been successfully adapted to teacher performance assessment in archived DVC lessons. First, it suggests that the indicators of the modified TPAM conform to the types of indicators that the literature review indicates we would expect to find in DVC lessons. Second, it argues that if expert raters (the principals) consider the indicators of the modified scale to be suited to video-based assessment, then they likely are. Finally, it argues that if expert raters can use the modified scale to judge the quality of pre-service teacher performance then this provides evidence that the scale has been successfully modified to the assessment of teacher performance in archived videoconference lessons.

It should be noted that Chapter Four also compiles the suggestions that principal raters' provided (as they saw fit) with regard to problems associated with the assessment of particular indicators in DVC lessons. The compilation is used to develop suggested ways and means for conducting DVC lessons and applying the modified TPAM in the future so that better assessment of pre-service teacher performance may be possible.

Developing a Scale for Video-Based Assessment of Teacher Performance.

Selecting participants: professors. Two Education professors were chosen for their interest in the development of a DVC video-based assessment scale. In addition to his interest in the project, a Science educator was selected because of his ability to locate a Science lesson that he felt would meet the needs of the project and match his interest in Science methods research. An Educational Technology professor was selected who had used videoconference technology for research purposes in the past and who had an interest in continuing his work in this area.

Selecting participants: pre-service teachers. Seven pre-service teachers were chosen from a Science Education class at Lakehead University (seven pre-service teachers volunteered for the project). Science students were needed as the lesson that the Science Educator selected required a basic knowledge of Physics. Pre-service Physics-specialist teachers would have been ideal but an insufficient number of them were available in the Science Program at Lakehead University.

Selecting participants: students. The host school was in Northwestern Ontario, and was the school where the author worked at the time of the study. Letters explaining the research and permission forms were sent to the parents of the students in the intermediate division at the host school. Eighteen students were placed into six groups of three as approval forms (signed by the students and their parents/guardians) were returned.

Selecting participants: principals. Finding principals to rate pre-service teacher performance in the six DVC lessons was a significant aspect of the study. It

is principals who use the TPAM to rate in-service teachers and as such, they are the people most familiar with its use and, thus, are best able to rate teacher performance in any format (for the purpose of this study, through archived desktop video conference sessions). However, finding principals within reasonable distance to the target school in Northwestern Ontario who were willing to take this task on proved to be a difficult undertaking. In the end, the five principals accepted into the study were the ones who volunteered their time. These five principals were working in publicly funded elementary schools, serving students from grades Kindergarten through grade eight. Each of the five principals also had a great deal of teaching experience prior to working as a school administrator. The principals who participated in the study had worked in leadership roles for a sufficient length of time that they were experienced, confident, and familiar with the use of the Ontario Teacher Performance Appraisal system, having used it numerous times with staff in their schools.

Setup

The lesson. The lesson (Appendix Three) required the construction of a parachute from a paper cup, paper clips, a plastic sheet, string, and tape. The pre-service teachers guided the students through the manipulation of variables such as the weight (number) of the paper clips in the cup, the length of the parachute string, shape of the chute, number of strings, and the size of the parachute (plastic sheet) so as to construct a parachute that landed on a target with the greatest degree of accuracy and with the longest possible hang time.

The lesson was delivered via desktop videoconferencing from an office in Lakehead University's Faculty of Education building to a regular classroom in the host school. The students and the pre-service teachers did not meet or have any interactions prior to the delivery of the lesson. The lessons were recorded to disk as they were delivered.

Multiple lessons. The Ontario TPAM contains a number of teacher competencies, each of which is made up of a number of indicators that pertain to its components.[9] In typical use of the TPAM, a principal rates the classroom teacher's performance in each of the competencies and indicators using a four-point rubric of unsatisfactory, satisfactory, good, and exemplary. Rating occurs primarily during the observation of classroom instruction.

To determine whether the indicators of the adapted scale were suited to DVC assessment, it was considered that the pre-service teachers would need to exhibit performances at each level of the rubric, that is, the principals would need to be able to see the pre-service teachers performing the actions of the indicators. To best ensure that the pre-service teachers exhibited varied levels of performance, they were provided with two opportunities to deliver the lesson. During the first attempt at delivery, the pre-service teachers had not been exposed to the lesson or its materials and they were thought of as neophytes. Not having exposure to the student groups, the lesson, or the materials, it was thought that

[9] A more detailed description of the TPAM and the process that was used to adapt it to archived DVC lessons is provided in a later section of this chapter.

the neophyte pre-service teachers would be more likely to perform at the lower levels of the rubric (unsatisfactory and satisfactory).

Between the first and second attempts at lesson delivery, in their pre-service Science class, the pre-service teachers took part in a self-directed version of the lesson that they had delivered. They worked in two groups (a group of three and a group of four) to manipulate the variables and make the best possible parachute. The rationale of the in-class lesson was to mimic the kind of preparation and pre-work that classroom teachers undertake in order to be prepared to assist students in their learning. Armed with experience and knowledge, the pre-service teachers were regarded as experts. When they delivered the lesson a second time it was expected that their performance would better match the TPAM's descriptions of good (level three) and exemplary (level four) performance.

Pre-service teacher induction. Prior to lesson delivery, a pre-service teacher training session was set up to demonstrate the hardware and software that would be used for the study. The session gave the pre-service teachers an awareness of the capabilities and limitations of the videoconference hardware and software. This awareness included familiarity with the software's controls, and the manner in which the pre-service teachers would see and hear the students during the on-line lessons. Familiarity with the technology was required to reduce potential interference with the delivery of meaningful instruction.

The training session occurred in a small computer lab where the technology used in the research project was installed and operational. A PowerPoint

presentation was delivered to the pre-service teachers to explain the operation of the technology and to identify common problems and their solutions. Subsequent to the presentation, the pre-service teachers practiced connecting to and communicating with one another in the computer laboratory. They were free to practice until such time that they felt comfortable using the technology.

Lesson delivery. Data collection took place over a three week period. In that time, the pre-service teachers delivered two lessons of 50 minutes each. The first attempt at lesson delivery occurred in week one. The pre-service teachers worked in two groups of two and a single group of three to deliver the lesson to three groups of middle school Science students (three students per group). In the second week, the pre-service teachers practiced parachute construction in their Science Education class. In the third week, the pre-service teachers engaged in their second attempt at delivering the lesson. They worked in the same teacher groups but delivered to a different set of students who were again arranged into three groups of three. Different sets of students were used so that students would not have previous knowledge of the lesson, and, thus, change the approach to supporting and delivering the materials for the pre-service teachers. Had this been the case, the expertise of the students exhibited in the videos likely would have interfered with assessments of the expertise of the pre-service teachers.

During lesson delivery, the middle school students were seated around a desk with the materials for the lesson set out in front of them. Included in the materials was a copy of the background information for the lesson. Students were given time to read the background information which proposed a fictitious

company and indicated that the students were to deliver food and goods for the company to a group deep in the jungle of a foreign country. The background information also presented a parachute as the only viable means for delivering the freight. The students were asked to construct a parachute that satisfied two important variables: it must land on a target gently (requiring a controlled descent), and also it must land as accurately as possible.

After the students read the background information, they were given two to three minutes to discuss design ideas for parachute construction. The pre-service teachers watched and listened to the students' interactions and offered assistance as they felt it was required. This was done by asking for clarification, posing questions, and observing construction. During the discussion, the students considered the different variables of the parachute (string length, chute size, number of paper clips in the cup [cup weight]) both amongst themselves and with the pre-service teachers. When ready, the students constructed their first parachute making note of the variables (string length, chute size, number of paper clips in the cup [cup weight]). This was done under the guidance of the pre-service teachers. A target was placed on the floor, and one student stood on a chair to deploy the parachute and its load from a pre-determined and consistent height. A second student timed the parachute's drop and measured the distance from the centre of the target to the place where the parachute landed.

Once the first drop was complete, the pre-service teachers discussed the results with the students and asked them to consider which variables, if any, should be changed for the second attempt and why they were being changed. The

students made note of their thinking, altered the variables accordingly and made a second drop attempt. Drop time and accuracy were noted as before and the students engaged in more discussion with the pre-service teachers so as to manipulate the parachute for a third attempt. The process of discuss, construct, deploy, record, discuss and reconstruct was completed as many times as possible in each 50 minute lesson, although typically, the lesson concluded after the third drop attempt.

Developing a Scale for Video-based Teacher Performance Assessment

The Teacher Performance Appraisal Manual. A description of the nature of the Ontario Teacher Performance Appraisal Manual (TPAM) follows. It is an assessment tool that comprises five domains. Each domain encompasses a number of teacher competencies. Each competency is made up of a number of indicators or "look fors." For example, the first domain of the TPAM is called "commitment to pupils and pupil learning." It encompasses competencies such as:

1. teachers demonstrate commitment to the well-being and development of all pupils
2. teachers are dedicated in their efforts to teach and support pupil learning and achievement

The second competency of this domain contains "look fors" (indicators) such as:

- assists learners in practicing new skills by providing opportunities for guided practice
- provides for active student participation in the learning process

These "look fors," like all 132 indicators of the TPAM, are gradable along a four point scale of unsatisfactory, satisfactory, good, and exemplary (Appendix One). The TPAM was adapted in this work by way of a three stage process.

First adaptation of the TPAM. Adapting the TPAM to video-based assessment was a multi step process. It began with a review of the indicators of the scale by the author and two professors involved in this study. The three reviewers got together and discussed each of the indicators in turn. The purpose of the discussion was to reach consensus as to if or how the indicators applied to video-based assessment of teacher performance. Where necessary, indicators were re-worded to lend them to video-based assessment. For example, the original indicator, "recognizes student difficulties by employing effective assessment strategies," was changed to read, "recognizes student difficulties by employing effective assessment *to the extent possible.*" This change was made based on the supposition (of the reviewers) that when a single videoconference lesson is to be delivered (as was the case in this study), little time is available to get to know students, their abilities, and potentially, their difficulties. Further, while formative and summative assessment may be possible over the long term, single lessons do not lend themselves to that end particularly well.

With a review of the wording of the assessment scale complete, the professors and the author engaged in individual reviews wherein they rated each indicator against a five point scale of "highly unsuitable" (a rating of one) to "highly suitable" (a rating of five) for video-based assessment. Table 1 exemplifies part of the review sheets the raters received before they began the independent

review process. The reviewers were told to consider each indicator in turn before moving on to the next one.

Table 1

Individual review sheets of the "look fors" of the TPAM

"Look fors"	Rating (1-5)	Not usable	Usable in extended context	Usable in this context	Comment
Seeks and effectively applies approaches for helping students' effective cognitive and social development					
Recognizes student difficulties by employing effective assessment to the extent possible					

Once the independent and individual review process was complete, the author met with the professors for a collaborative session to identify the indicators that were best suited to video-based assessment. The session began with the identification of indicators whose scores differed by more than two points on the rating scale. For example, if an indicator was scored at 1, 3, and 5 or if there were two scores of 2 and one of 5 it was flagged for further discussion. During the discussion, each of the three raters used the comments they added to the review sheets to provide a rationale for their rating (how they imagined the indicator might appear in an archived DVC session) and the matter was then subjected to additional discussion until a commonly agreed upon rating was identified. With

this complete, the raters calculated scores for the median of the three raters' for each indicator.

Once median scores were available, the three raters were ready to remove indicators from the scale. To do this they collaborated, reviewing each of the indicators in turn. They marked indicators that attained high median ratings (three or more) for inclusion in a first adaptation of the TPAM. They marked indicators with low suitability ratings (one or two) for exclusion. However, once an indicator was identified as "Not Usable" on the review sheets, the raters considered their low (less than three) ratings against two more columns, "usable in this context" (the lesson under consideration here) and "usable in extended context" (other teaching scenarios). In both cases, the three raters used their notes from the individual reviews and tried to imagine if or how the low scoring indicators might appear in archived videoconference lessons. They discussed their imaginings and, as a result of the discussion, determined whether to award a score of yes (Y), no (N), or maybe (M) for an indicator in each of the two columns.

An example of the discussion the raters engaged in is presented below. It concerns the first "look for" of Table 1 "Seeks and effectively applies approaches for helping students' cognitive, affective and social development." Subsequent to the independent review process, there was general agreement that the indicator had a low degree of applicability to video-based assessment of teacher competence. After discussion with regard to context, however, the reviewers became aware that if a pre-service teacher could be observed over a period of time, they might very well evidence competence along this indicator. A score of Y

(yes) was placed in the "Usable in extended context" column and the indicator was included in the raters' adaptation of the rubric.

The collaborative review process led to the identification of indicators that were suited to video-based assessment (high scoring indicators and low scoring indicators with Y or M ratings) and those that were not (low scoring indicators with N ratings). The indicators that were deemed suited to video-based assessment were amalgamated by domains to form an initial adaptation of the TPAM.

Second adaptation of the TPAM. The initial adaptation was passed onto the five principals of the study group along with one of the VCDs (lesson one) of a group of pre-service teachers teaching the parachute lesson to a group of three middle-school Science students via desktop videoconferencing. The principals were asked to watch enough of the archived DVC session that they felt comfortable rating the extent to which each of the indicators might be identified and rated (their utility for video-based assessment of teacher performance) in archived DVC sessions. Table 2 exemplifies the sheet that was used to review the principals' feedback. Columns P1 through P4 contained the utility ratings of the four principals that responded to the request for feedback. The 5-point scale of 1 (highly unsuited) to 5 (highly suited) to video-based assessment of teacher performance that the professors used in the first adaptation was applied in this the second adaptation.

Table 2

The Principals' Ratings of the Revised Rubric

Look for	Utility P1	Utility P2	Utility P3	Utility P4	Median
Effectively motivates students to improve student learning					
Demonstrates a positive rapport with students					

The researcher calculated median scores (median column of Table 2) for the principals' utility ratings for each indicator. The Education professors and the researcher then met to discuss which indicators the principals could identify and rate in archived DVC sessions and which they could not. If an indicator attained a median utility score of three or more it was thought likely that principals could identify and rate it in an archived videoconference session. Indicators with lower scores were highlighted for further discussion and potential removal from the scale. In discussing whether to remove an indicator, the raters referred to comments added by the principals. In some cases the principals' comments led the raters to remove an indicator. In other cases, the comments were used to reword an indicator such that it was better suited to video-based assessment. The above processes lead to the removal of four more indicators from the adapted TPAM.

To confirm that the high scoring indicators were indeed identifiable and ratable by principals, the newly refined scale was sent to four principals (the same four principals of the study group who had previously responded to the ratings request) along with five VCDs (lessons two, three, four, five, and six) of the seven

pre-service teachers teaching the parachute lesson.[10] This process, along with the results is described in the following section.

Third Adaptation of the TPAM. The re-revised scale was passed onto the remaining principals of the study group for a third review. This time, the principals received five VCDs of the DVC lessons.[11] They rated the utility of each of the indicators on the five-point scale as per the previous adaptation. Scores for the indicators were calculated by the researcher in this adaptation by first determining median scores for each indicator for each of the five archived lessons. Then the medians of all five archived lessons were calculated to obtain "total" median scores for each indicator.

The professors and the author reviewed the "total" median scores with a view to revising the scale as before. They sought to retain high scoring indicators (total median scores of 3 or more) and remove low scoring indicators (total median scores of 2 or less). In this round of the revision, the reviewers found that the principals had awarded total median scores of 3 or more to all of the indicators of the adapted scale. This was interpreted to mean that the scale did not require additional adaptation.

The third adaptation also called upon the principals to rate the pre-service teachers' performances against the 4-point rubric of the TPAM (unsatisfactory to exemplary). In Chapter Four, the fact that rating performance against the

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[10] The principal who withdrew from the second review had a serious illness.

[11] These VCDs were selected for the study on the grounds that like the VCD of lesson one, they had video and audio of sufficient quality that the principals could rate teacher performance (early practice lessons had poorer quality video and audio).

indicators of the scale was possible is used to argue that the scale was successfully modified to video-based assessment. Chapter Four also considers feedback that the principals of the study group provided in the second and third adaptations of the scale in regard to why indicators were or were not suited to rating pre-service teacher performance in archived DVC lessons. This consideration is used to suggest ways and means by which the scale might be better applied in the future.

CHAPTER FOUR

Results

This chapter presents two arguments. The first concerns the study's research question, and is presented below in the section titled "Modification of the TPAM". It suggests that the Ontario "Teacher Performance Appraisal Manual," (TPAM) has been successfully modified to the assessment of pre-service teacher competencies as viewed in archived videoconference lessons that are delivered from a Faculty of Education to students in the classroom. Three lines of evidence are presented to support this argument; the nature of the competencies of the scale conforms to expectations derived from the literature review, the principals who are experts in teacher performance assessment using the Ontario TPAM considered, after careful review, that all of the indicators of the modified scale are highly suited to video-based assessment, and finally, the principals were capable of using the modified scale to assess pre-service teacher performance as it appeared in archived desktop videoconferencing (DVC) lessons. The second argument compiles feedback that the principals provided in regard to the problems associated with the assessment of teacher performance in archived DVC lessons and is presented in this chapter under the heading "Using the Principals' Comments to Improve Implementation". This section of the work culminates in a list of suggestions for implementing the modified scale to better effect in the future.

Modification of the TPAM

The modified scale contains expected indicators. The Literature Review (Chapter Two) presented videoconferencing as a proven tool for in-service teacher education (Persico (1997); RNP News (2004)). In regard to pre-service teacher education, videoconferencing was said to serve as a link for the connection between theory and practice (Darling-Hammond, 1998). Darling-Hammond also state that videoconferencing provides access to students and a means for observing pre-service teachers during practicum placements. Adcock and Austin (2002) were said to be in agreement with these points for they noted that videoconferencing provides for pre-service teacher observation and the assessment of classroom competence. The above is important for, according to Fetter (2003), the integration of performance assessment and practicum placements is key to pre-service teacher success. In addition, Pechone and Chung (2006) were of the opinion that evidence collected while teaching provides for direct evaluation of teaching ability.

The research noted above indicates that videoconferencing is a proven tool for in-service education and that it provides a means for observing pre-service teachers during their practicum placements. Importantly, this research also suggests that observation of teachers through videoconferencing permits assessments of classroom competence. The work conducted in this thesis was predicated on the above but it reversed the videoconference session such that observation and rating occurred from the Faculty of Education during the academic portion of the teacher education program, rather than during the practicum placement or the in-

service program. There is little reason to suppose that classroom capabilities captured by videoconferencing during practicum placements do not also appear in desktop videoconferencing lessons that are delivered remotely, from a Faculty of Education. Additionally, it is reasonable to suppose that this argument holds true despite the smaller viewing screens of DVC systems and the inferior quality of audio and video transmissions.

Chapter Two reported that videoconferencing is the distance technology that best enables replication of in-class instructional practices (Cavanaugh, 2001) and, as such, recordings of VC and DVC lessons hold the greatest potential for capturing expressions of classroom capabilities. In fact, Chapter Two goes beyond the suggestion that DVC enables the capture of pre-service teacher capabilities and points toward the types of capabilities that might be captured. The importance of the latter reasoning is that it provides a means for arguing, in a general manner, that the indicators of the modified scale are in fact the indicators that we would expect to appear in archived DVC lessons. For example, Chapter Two suggested that videoconferencing reproduces the social atmosphere of the classroom and captures its verbal and visual interactions (Smith, 2004). It also suggested that the images and sound of videoconferencing permit perception of teaching context and instructional practices (Pemberton, Cereijo, Tyler-Wood and Rademacher, 2004). In support of these points, Chapman (2006), Peters-Grant (1998), Shearer, 1998 and Fetterman (1996) held that teaching techniques are readily incorporated into videoconferencing and that its face-to-face context enhances communication and student engagement. Competencies associated with the social atmosphere of

the classroom, the teaching context, instructional practices, and verbal and visual interactions between and amongst teachers and students are then the competencies that we might expect to find in archived DVC sessions. Consequently, they are also the competencies that ought to appear in the modified scale.

The indicators conform to expectations. In 2001, the Quality in the Classroom Act established performance appraisal standards and processes for Ontario school boards to use in the evaluation of teachers. Five "Standards of Practice" statements were developed and organized into separate and distinct domains (commitment to pupils and pupil learning, professional knowledge, teaching practice, leadership and community, ongoing professional learning). Of these five standards, the researcher and the education professors determined that only three might be measured in archived videoconference teaching sessions. That is, during the development of the first modification of the TPAM it was judged that competencies of the domains, "Leadership and Community," and "Ongoing Professional Learning" could not be reasonably expected to either manifest or to be measured in archived videoconference teaching sessions.

The removal of two domains from the TPAM is considered in the text below. The domain, "Leadership and Community" is described in the Ontario Teacher Performance Appraisal Manual as follows:

> Members of the Ontario College of Teachers are educational leaders who create and sustain learning communities in their classrooms, in their schools, and in their profession. They collaborate with their colleagues and other professionals, with parents, and with other

members of the community to enhance school programs and student learning.

"Leadership and Community" is a domain whose competencies focus on teachers engaging and collaborating with the school community and colleagues to enhance their practice and to enrich school-based programming. As noted in Chapter Three, during the formation of the first adaptation of the TPAM, the two professors engaged in individual utility ratings of the indicators of the original TPAM and that with these ratings complete the professors got together with the researcher to discuss them. The discussion that followed the individual ratings revealed that both of the professors rated all of the indicators of this domain at level 1 (highly unsuited to video-based assessment), apart from the indicators of Table 3 below.

Table 3

Indicators of Leadership and Community with utility ratings above level 1

Indicator	Rater 1	Rater 2	Usable in this context	Usable in extended context
3.1 Learns with and from colleagues and others in the community of learners	3	1	Y	Y
3.2 Engages others effectively through shared problem solving and conflict resolution	1	1-5	N	N
3.3 Acknowledges and celebrates the efforts and success of others	5	1-5	N	N

During discussion it was decided that the indicators of Table 3, like the other indicators of the domain "Leadership and Community" ought to be removed from the modified scale. The reasoning behind this recommendation in the case of indicator 3.1 "learns with and from colleagues and others in the

community of learners" was that while the pre-service teachers would be teaching as part of a team in this study, opportunities for learning from colleagues in lessons beyond this study would likely be, at best, negligible. In the case of indicator 3.2 "Engages others effectively through shared problem solving and conflict resolution" the rater who awarded a score of 1-5 said that he had thought the rating for this indicator would be activity dependent but realized during the discussion around indicator 3.1 that one-off lessons would likely be under consideration in future studies and as such a score of one was appropriate for indicator 3.2. Limitations associated with one-off lessons lead to a similar shift in the rating of indicator 3.3 of Table 3. Ultimately then, all of the indicators of this domain had utility ratings of 1 or highly unsuited to video-based assessment. Further, as indicated in the columns to the right of Table 3, each rater considered that the indicators of this domain, (other than indicator 3.1) would be unusable in studies beyond this thesis.

Reasons for the low utility ratings of the indicators of "Leadership and Community" can now be considered. The indicator, "Teachers collaborate with other teachers and school colleagues to create and sustain learning communities in their classrooms and in their schools" typifies the nature of the components of this domain. Its assessment requires observation of a teacher's interactions within the school and community on an on-going basis. Such interactions cannot be observed nor can they be measured in a review of a single archived videoconference lesson. Another example of an indicator of this domain would be, "works co-operatively with colleagues to solve student, classroom and school concerns." This

competency, like all other competencies of this domain, was considered, by the researcher and the professors, impossible to gauge in cases where one-off archived videoconference lessons provide the means for review.

The domain, "Ongoing Professional Learning" speaks to the "interdependence" of teacher and student learning and requires that teachers engage in a "continuum" of professional development to improve their practice. During the development of the first modified version of the TPAM, the professors rated all of the indicators of this domain, other than indicator 4.1 ("Observes other teachers, acquires best practices and effectively applies new information/techniques to enhance teaching practices") at level 1, highly unsuited to video-based assessment. Examples of the professors' utility ratings for this domain are provided in Table 4.

Table 4

Example Utility Ratings of Indicators of Ongoing Professional Learning

Indicator	Rater 1	Rater 2	Usable in this context	Usable in extended context
Observes other teachers, acquires best practices and effectively applies new information/techniques to enhance teaching practices	3	1	Y	N
Volunteers and effectively works on skill development or curriculum committees at school or board level	1	1	N	N
Reads professional journals, books, Internet sites, or any articles related to the educational contexts and effectively shares with peers	1	1	N	N

Indicator 4.1 ("Observes other teachers, acquires best practices and effectively applies new information/techniques") was awarded a level 3 utility score as Rater 1 was the Science Education professor and he had provided the pre-service teachers of his class (the class from which the pre-service teachers of this study were selected) with a viewing of a Science methods videotape. Subsequent to the individual ratings when the researcher met with the professors, it was agreed that while indicator 4.1 may be of value in the context of this study, it would be of little use in other work (hence the 'NO' rating in the usable in extended context" column of Table 4). Consequently, indicator 4.1, like all of the indicators of this domain was removed from the modified scale.

Additional examples of the reasoning the professors provided for their low scores for the indicators of the domain "Ongoing Professional Learning" are considered next. The first competency of this domain "Teachers engage in ongoing professional learning and apply it to improve their teaching practices" was excluded from the modified scale along with its indicators as it was reasoned that pre-service teachers have not been exposed to the continuum of professional development that in-service teachers engage in, and consequently judgments about the application of professional development could not be applied to archived desktop videoconference lessons when pre-service teachers deliver them. Similarly the indicator "Reads professional journals, books, internet sites, or any articles related to educational contexts and effectively shares with peers" was excluded from the modified scale as it too is impossible to review in one-off

archived videoconference sessions. The reasoning "cannot be reviewed in videoconference sessions" was found to be applicable to all of the indicators of this domain.

In short, the domains "Leadership and Community" and "Ongoing Professional Learning" where removed from the modified scale as their indicators were deemed impossible to measure and/or they pertain to information regarding professional development of teachers and connection to the community which is not relevant to pre-service teacher assessment.

During stage one of the modification of the TPAM, most of the indicators of the three domains that remained in the modified scale "Commitment to Pupils and Pupil Learning," "Professional Knowledge," and "Teaching Practice" were retained on the grounds that they were awarded median utility scores of 3 or more by the professors. Indicators of these domains were, however, removed from the scale if they received median utility ratings of 2 or less. No indicator was removed from the scale without careful discussion on the part of the researcher and the two professors. Table 5 presents examples of indicators that were retained and removed from the domains of the modified scale during the researcher and the professors' discussion of the utility ratings.

Table 5

Sample Utility Ratings of the Indicators of the TPAM

Indicator	Rater 1	Rater 2	Usable in this context	Usable in extended context
Effectively motivates students to improve student learning	5	4-5	Y	Y
Seeks and effectively applies approaches for helping students' cognitive effective and social development	3	1-2	M	N
Models and promotes the joy of learning	5	5	Y	Y
Recognizes student difficulties by employing effective assessment to the extent possible	5	1-3	Y	Y

Indicators 5.1, "Effectively motivates students to improve student learning" and 5.3, "Models and promotes the joy of learning" were universally considered to be highly suited to video-based assessment of teacher performance and to be usable both in the context of this study and in any additional work that may use the scale in the future. These indicators typify the indicators of the three domains of the initial modification of the TPAM. They were retained in the first modification of the TPAM and passed onto the principals for their expert judgment as to their suitability for video-based assessment. Indicator 5.2, "Seeks and effectively applies approaches for helping students' cognitive effective and social development" was not passed onto the principals for consideration. During their discussions, the researcher and the professors argued that while it may be possible for this indicator to appear in occasional archived DVC lessons, the

potential of it doing so was very low as it requires that the pre-service teachers know the students they will be teaching. In addition to deciding whether to remove or retain indicators, the professors and the researcher occasionally reworded them to render them better suited to video-based assessment. Indicator 5.4 is an example of an indicator that was reworded. The phrase "to the extent possible" was appended to the end of the original indicator as it was recognized that opportunities to plan for effective assessment may be limited in one-off DVC lessons.

Interestingly, the three domains that remain in the scale "Commitment to Pupils and Pupil Learning," "Professional Knowledge," and "Teaching Practice" contain competencies that conform to the same factors that the literature review suggested might be found in videoconference sessions; the social atmosphere of the classroom, the teaching context, instructional practices, and verbal and visual interactions between and amongst teachers and students. That the nature of the domains and the indicators of the modified scale match expectations derived from the literature review is presented as the first of three lines of evidence to support of the argument that the TPAM has been successfully modified to the assessment of pre-service teacher performance in archived DVC lessons.

Indicators are suited to video-based assessment. In stage one of the Methodology, an initial modification of the TPAM was developed from careful consideration on the part of the researcher (a qualified public school teacher) and two Education professors in regard to which of the indicators of the original scale might appear in archived videoconference lessons. Stage two saw the

development of a second version of the modified scale. This version was developed from ratings provided by principal raters in regard to the suitability that each indicator held for video-based assessment of pre-service teacher performance in archived videoconference lessons. The principals watched a VCD of lesson one and generated utility ratings for each indicator of the modified scale. The researcher calculated median scores for the principals' utility ratings and discussed them with the professors. During the discussion, the goal was to decide whether to remove indicators with low median utility ratings (two or less). Four indicators were removed from the initial version of the modified scale during the discussion. The second modification of the scale was sent to the principals along with five VCDs of the students teachers delivering the parachute lesson.

Table 6

Sample Utility Ratings by Expert Raters (the principals)

Indicator	Principal 1	Principal 2	Principal 2	Median
Applies knowledge effectively about how students develop and learn physically, socially and cognitively	2	4	4	4
Responds to learning exceptionalities and special needs by modifying assessment processes to ensure needs of special students are met	4	4	3	4
Shapes instruction appropriately so that it is helpful to students who learn in a variety of ways	5	4	4	4

Table 6 exemplifies the utility ratings that the principals provided for the indicators of the second adaptation of the TPAM. On calculating median scores for all of principals' ratings and for all of the lessons, the researcher determined that the principals rated all of the indicators of the second adaptation at level

three or higher. Discussion of this finding with the professors culminated in the suggestion that additional modification of the scale was not required.

The above indicates that the third round of modification resulted in a version of the TPAM whose indicators had been rated by the principals on two occasions as being suited or highly suited to video-based assessment of pre-service teacher performance in archived videoconference lessons. Previously noted limitations of this study aside, the fact that the principals, experts in the use of the TPAM for teacher assessment, provided such utility scores suggested that they considered the indicators of the scale to be highly suited to video-based assessment. This reasoning is presented as the second line of evidence that the TPAM has been successfully modified to the assessment of pre-service teacher performance in archived DVC lessons.

Principals can rate teacher performance. In the third round of modification, the principals were asked to rate the performance that the teachers exhibited in the DVC lessons against the rubric (Appendix One) of the TPAM. That is, the principals were asked to rate teacher performance for each indicator in each lesson from unsatisfactory to exemplary. Table 7 exemplifies the performance ratings that one of the principals generated for lesson one.

Table 7

Sample Performance Ratings for Lesson One

Indicator	Performance Rating
Responds to learning exceptionalities and special needs by modifying assessment processes to ensure needs of special students are met	Not applicable
Effectively motivates students to improve student learning	Good
Demonstrates a positive rapport with students	Good

The principals provided pre-service teacher performance ratings for all of the competencies of the modified TPAM and the vast majority of its indicators. It should also be noted that the principals had indicated by way of their utility ratings that even the indicators with "not applicable" ratings (failed to manifest in the VCDs) were "highly suited to videoconference assessment." In other words, while the activities of this particular study failed to elicit competence in a few "look fors," the principals were able to imagine situations in which these indicators would appear in archived DVC lessons. Consequently the "Not applicable" rating of indicator 7.1 "Responds to learning exceptionalities and special needs by modifying assessment processes to ensure needs of special students are met" does not mean that this indicator of performance cannot be measured in an archived DVC lesson, it simply means that the particular lesson of this study failed to elicit the type of performance that enabled its assessment.

For the purposes of this study, it is important to point out that ratings of teacher performance such as those provided in Table 7 underscore the fact that the principals were capable of rating pre-service teacher performance against the competencies of the modified TPAM. That such rating was possible suggests that

the scale was successfully modified to the assessment of pre-service teacher competencies in archived videoconference lessons. The above is presented as a third line of evidence to indicate that the TPAM was successfully modified to the assessment of pre-service teacher competencies as viewed in archived videoconference lessons that are delivered from a Faculty of Education to students in a classroom.

The above three points of argument suggest that the research question has been answered successfully: "A teacher appraisal tool, the Ontario 'Teacher Performance Appraisal Manual' (TPAM) can in fact be modified to the assessment of pre-service teacher competencies as viewed in archived desktop videoconference (DVC) lessons that are delivered from a classroom in a Faculty of Education to students in a regular classroom."

In closing this chapter, a representation of the modified TPAM is fitting. Table 8 below presents the modified teacher performance appraisal tool. The original (and copyrighted) TPAM is available in Appendix One and at: http://www.edu.gov.on.ca/eng/ teacher/manual.pdf.

Table 8

The Revised TPAM

Domain	Competencies	"Look Fors"
1. Commitment to Pupils and Pupil Learning	1.1 Teachers demonstrate commitment to the well-being and development of all pupils	1. applies knowledge effectively about how students develop and learn physically, socially, and cognitively 2. responds to learning exceptionalities and special needs by modifying assessment processes to ensure needs of special students are met 3. shapes instruction appropriately so that it is helpful to students who learn in a variety of ways

	4. effectively motivates students to improve student learning 6. models and promotes the joy of learning 7. provides responsive and thoughtful feedback on assignments 8. effectively uses student work to diagnose learning difficulties and provides appropriate remediation 10. demonstrates a positive rapport with students 11. recognizes student difficulties by employing effective assessment strategies
1.2 Teachers are dedicated in their efforts to teach and support pupil learning and achievement	14. assists learners in practising new skills by providing opportunities for guided practice 15. provides for active student participation in the learning process 16. employs appropriate balance of student and teacher directed discussion/learning 18. encourages students to excel to the best of their ability 19. utilizes a variety of teaching strategies suited to the individual needs of students
1.3 Teachers treat all pupils equitably and with respect	22. maintaining positive interactions 23. promotes polite and respectful student interactions 25. differentiates curriculum expectations and teaching strategies to meet the needs of all students 26. addresses inappropriate student behaviour in a positive manner 28. communicates information from a bias-free, multicultural perspective 30. values and promotes fairness and justice by adopting anti-discriminatory practices in respect of gender, sexual orientation, race, disability, age, religion and culture
1.4 Teachers provide an environment for learning that encourages pupils to be problem solvers, decision-makers, life-long learners and contributing members of a changing society	33. provides learners with appropriate opportunities for independent practice of new skills 34a. employs effective questioning techniques that encourage higher level thinking skills 34b. employs effective questioning techniques that encourage more effective/complex engagement in activities and/or practices 35. provides guidance and appropriate feedback to learners on attainment of new concepts/skills 36. encourages feedback, risk-taking, questioning and experimentation by establishing a non-threatening learning environment

		39. promotes student self-esteem by reinforcing positive behaviours
2. Professional Knowledge	2.1 Teachers know their subject matter, the Ontario curriculum and education-related legislation	42. teaches the Ontario curriculum by exhibiting an understanding and ability to explain subject areas 43. demonstrates mastery of subject knowledge and related skills 44. presents accurate and up-to-date information 45. uses a variety of effective resources to enhance learning 46. implements and effectively explains statutes and regulations with regards to student safety and welfare
	2.2 Teachers know a variety of effective teaching and assessment practices	50. provides constructive criticism as part of evaluation 51. aligns assessment strategies with learning objectives 52. uses appropriate diagnostic techniques to assess student difficulties 53a employs formative and summative assessments to check for understanding 53b employs summative assessments to check for understanding 54. uses a variety of appropriate teaching techniques to engage students
	2.3 Teachers know a variety of effective classroom management strategies	58. organizes instructional time by providing for the needs of all students 60. teaches scheduled class/subject for allocated time periods with effective student engagement 61. displays student work appropriately for a variety of teaching/learning experiences 62. considers the individual needs of students, the learning environment and teacher skills when selecting resources 63. seeks and uses various resources to achieve and reinforce expectations 64. provides opportunities for students to share their interests and demonstrate their involvement in learning 65. ensures that all students have the opportunity to learn by planning purposeful assignments 66. uses appropriate strategies to manage discipline 67. implements the behaviour code with consistency 68. differentiates instruction to meet diverse student needs
	2.4 Teachers know how	71. students in developing competence in all

	pupils learn and factors that influence pupil learning and achievement	areas 74. modifies programs to fit student needs by making topics relevant to students' lives and experiences
3. Teaching Practice	3.1 Teachers use their professional knowledge and understanding of pupils, curriculum, legislation, teaching practices and classroom management strategies to promote the learning and achievement of their pupils	79. uses practices which successfully promote the development of higher order thinking skills 80. develops clear and achievable classroom expectations with the students 81. models and promotes effective communication skills 82. demonstrates flexibility in teaching strategies by addressing the needs of all students 83. chooses pertinent resources for development of instruction to address student needs 84. varies learning instruction based on student needs, curriculum expectations, teaching-learning strategies 85. implements with success the requirements of statutes and regulations with regards to student safety and welfare 86. uses instructional time in a focussed, purposeful way 87. establishes and maintains standards for student behaviour that support learning and respects the dignity of the students 88. organizes subject matter into meaningful lessons 89. relates specific lesson topics to major subject matter concepts and generalizations 90. incorporates appropriate curricular guidelines meaningfully into lessons 91. encourages students to know about, reflect on, and monitor their own learning 92. assists students to develop and use ways to access and critically assess information 93. communicates effectively information from a bias-free, multicultural perspective 94. uses a clear and consistent format to present instruction 114. integrates curriculum expectations effectively into teaching practice
	3.2 Teachers communicate effectively with pupils, parents and	98. demonstrates a positive, professional attitude when communicating with parents, students and colleagues

colleagues	101. communicates clear, challenging and achievable expectations for students

Using Principals' Comments to Improve Implementation

Comments that the principals provided in regard to the limitations of teacher performance assessment in archived DVC lessons are considered here. These comments were directed at the level of competencies (as evidenced to the principals in the playback of archived DVC lessons), and they were provided as the principals saw fit. Consequently, comments are not available for each competency. Where they do exist, however, they point to ways and means by which the scale might be better deployed in the future. Table 9 presents examples of the principals' comments. It represents all of the comments provided by one principal for the domain "Commitment to pupils and pupil learning." The body of text that follows on from Table 9 considers selective comments provided by all of the principals in regard to the competencies of the three domains. This selective commentary is subsequently used to generate a summary of the principals' feedback wherein ways and means for improving future implementation of the modified scale are considered.

Table 9

Sample Comments Provided by Principal One for Domain One

Domain One: Commitment to Pupils and Pupil Learning	
Indicator/Look For	Supporting Principal Comment(s)
1.1 Teachers demonstrate commitment to the well-being and development of all pupils	• teacher introductions more informal – get to know activity • "describe what you are holding," "tell us what you are doing each time you move" – each positive • I'll repeat what I said → Hey that's a good question ... reinforced • "what is hang time" – clarifies activity/instruction • provide positive feedback • very difficult to understand – [re: recognizes student difficulties ...]
1.2 Teachers are dedicated in their efforts to teach and support pupil learning and achievement	• students engaged • "hands-on inquiry" – discussion of task/role clarification • dialogue / group discussion • group work – enough room at table • positive reinforcement required (re: encourages students to excel to the best of their ability) • "tell me your names again" – half way through? • "variables" – pre taught term? • Question given – no response, onto another question – be patient, wait for response, re-word for understanding
1.3 Teachers treat all pupils equally and with respect	• lack of positive reinforcement • ½ way through video asked for names • please – thank you?
1.4 Teachers provide an environment for learning that encourages pupils to be problem solvers ...	• "strings even – excellent," "What do you think will happen," "Parachute big as possible," "we are forgetting one factor," "lengths different – won't hit target" → excellent!!

The first competency of Domain 1, *Commitment to Pupils and Pupil Learning,* "demonstrate commitment to the well-being and development of all pupils" (competency 1.1) yielded comments such as "can only be measured if a concrete lesson plan is provided" and "more work needs to be done upfront for

planning and assessment." The implication here is that this competency might be better assessed with the modified scale if the pre-service teachers submitted their lesson plans to the reviewers (the principals in this study). Other comments such as "is more meaningful if several observations are made," "there needs to be a series of lessons that demonstrate the continuum of learning based on diagnostic/formative assessments," "teachers didn't know the students' names," and "no encouragement by voice" all point to limitations brought on by the fact that, in this study, the teacher candidates were 'meeting' the students for the first time in each videoconference lesson. Consequently, when the lesson was delivered, no real relationship had been established with the students. Lack of comfort related to a lack of relationship may have been responsible for the low level of questioning and encouragement that some of the pre-service teachers exhibited at the start of their lessons. Thus, a series of lessons may be required. Early lessons in the series would serve to meet the principals' suggestion that more work needed to be "performed upfront" in regard to knowing students' names and establishing a relationship.

Competency 1.2, "are dedicated in their efforts to teach and support pupil learning and achievement" evoked both positive and negative comments from principals such as "provided verbal encouragement," "students encouraged to excel to the best of their ability," and "very little dialogue." The latter comment suggests that the pre-service teachers were not performing optimally all of the time and that there is a need to provide instruction regarding the maintenance of

a balanced dialogue with students over the course of a videoconference lesson. Additional research is required to determine how this might best be accomplished.

In regard to Competency 1.3, "Teachers Treat All Pupils Equitably and with Respect," the comments that the principals provided suggest that demonstrating evidence of performance on many of the indicators requires additional time than was available in this study. For example, the comment "only over time could this be measured" was provided for an indicator that pertains to the promotion of fairness, justice and anti-discriminatory practices in the classroom. The implication taken from this is that a series of lessons and the establishment of an ongoing relationship between teacher and student is required to better enable the application of the modified scale. This is in keeping with the comments the principals provided for Competency 1.1. Here again, additional research will be required to determine how best to foster pre-service teacher-student relationships in desktop videoconference lessons.

Principals' comments for Competency 1.4, "Teachers Provide an Environment for Learning that Encourages Pupils to be Problem-Solvers" suggest that the questioning techniques used by the teacher-candidates were measurable and well suited to video-based assessment. They point to the fact that the teacher candidates were able to seek clarification, ask good questions, and provide feedback that generated a positive learning environment for students. Two principals suggested that the pre-service teachers were asking "lots of questions," and that the quality of the questioning by the pre-service teachers was "higher level, thought provoking, and clarified learning." Such comments indicate that the

questioning techniques used by the teacher-candidates were laudable, measurable, and well-suited to video-based assessment.

Some of the comments for Competency 1.4 were actually a reflection of the limitations of the technology used in the study as opposed to the limitations of videoconference lessons and the modified scale. It was suggested that a "teacher was not able to tell what students are doing" or it was remarked that they were asking lots of questions "given that they couldn't see or see well." Such comments are perhaps not surprising given the limitations of the desktop videoconference technologies used in this study. Specifically, pre-service teachers faced the limited viewing angle of the camera and audio that diminished in volume as students moved away from the microphones. Following the collection of data for this study, cameras with remote pan, tilt, and zoom became available. Such technologies may have provided the teacher-candidates with an opportunity to "see" more of what the students were doing at their work table.

The second domain, *Professional Knowledge* focuses on teachers' knowledge of subject matter (2.1), effective assessment and teaching practices (2.2), effective classroom management strategies (2.3), knowledge of how students learn and (2.4) understanding of the factors that influence student learning and achievement. An exploration of the comments that the principals provided is provided in the text that follows.

In regard to Competency 2.1 "know their subject matter, the Ontario curriculum, and education-related legislation," comments focused upon the fact that the principals had no previous knowledge of the pre-service teachers'

background or their ability. One principal felt that if the teachers had been "interviewed prior" to the videoconference session, a better understanding of their mastery of the subject matter and their knowledge of curriculum would exist and better assessment of pre-service teachers capabilities would be possible. One of the principal raters noted during one observation session that a student was "standing on a chair," and remarked on the school health and safety concerns surrounding this. This would be no less observable in a regular performance appraisal, but the principal may have acted immediately on the concern, rather than noting it. Future studies in this area might consider inviting the principal to attend the lesson or by reminding the in-service teacher to intervene if health and safety issues arise.

Of concern to the principal raters was Competency 2.2, "Teachers know a variety of effective assessment and teaching practices." In this area, two of the principals felt that "assessment strategies were not clear," and that using a single archived lesson left them unable to "see what the teacher is looking for." Another comment, "would like to see assessment tool" indicates that more background information about lesson content and assessment was required by the principals. In a typical teacher performance assessment in Ontario, where the TPAM is used, the principal and teacher meet prior to the observation to discuss the lesson that will be reviewed, and the teacher submits a detailed outline of his or her lesson for review prior to the assessment. The comments provided for this competency suggest that principals require previous knowledge and understanding of the assessment and teaching practices that are to take place.

In regard to Competency 2.3, "Teachers know a variety of effective classroom management strategies" the principals voiced concerns over the physical proximity of teacher to student and questioned the validity of managing discipline in videoconference lessons. They stressed that the "physical presence of the teacher is important to classroom management." The importance of proximity to effective discipline saw to it that the pre-service teachers were rated consistently low on this competency by the principals. In one case a principal pointed out that there was "[no] visible" evidence of strategies to manage discipline. Addition study is required to identify potential management strategies at a distance and to determine how best to apply them.

Physical proximity aside, in regard to the competencies of the second domain, the matters that the principals were concerned about are readily attributed to the particulars of the study to hand. The acquisition of information about the pre-service teachers' knowledge of the subject matter, their knowledge of the curriculum and the assessment strategies that are to be used could be addressed in a dialogue between the pre-service teacher and the person conducting the assessment both prior to the study and over the course of a series of videoconference lessons. Further research is required to determine how many videoconference sessions would be required to meet the concerns that the principals held toward the competencies of this domain.

The third domain, *Teaching Practice* focuses on ongoing assessment and evaluation, communication, and use of professional knowledge to promote learning.

The first competency (3.1), "Teachers use their professional knowledge and understanding of pupils, curriculum, legislation, teaching practices and classroom management strategies to promote the learning and achievement of their pupils" garnered comments such as "slang," "talks to others in the videoconference when kids can hear," and "not safe practice." These issues could be addressed as per a traditional teaching situation, with the principal pointing out concerns to the teacher in question. One of the comments, "hard to do with this format" pertained to a particular indicator of this competency, "encourages students to know about, reflect on, and monitor their learning." It suggests that observing a single lesson in the absence of a pre-observation session limits the usability of this scale.

Competency 3.2, "Teachers communicate effectively with pupils, parents, and colleagues" generated comments such as "slang" and "pre-service teachers talking in background." These matters could be addressed simply by pointing out that they are inappropriate. One principal noted that the expectations for the lesson must be "clearly articulated at the beginning of the lesson." Addressing this comment is likely best approached by providing instruction and examples of sound practice prior to the start of the videoconference lessons.

Finally, the comments for Competency 3.3, "Teachers conduct ongoing assessment of their pupils' progress, evaluate their achievement and report results to pupils and parents regularly" suggest that the pre-service teachers did "somewhat facilitate the process." The comment that "over time" the pre-service teachers may use a variety of appropriate assessment techniques suggests again

that a single observation limits the depth of assessment that a principal rater can conduct.

Summary of feedback on the revised scale. Exploration of the principals' commentary suggests that improvements in the application of the modified scale can be achieved if:

- Pre-service teachers submit their lesson plan to the principal reviews prior to the start of the videoconference sessions,
- Principal raters engage in pre-study interviews (via videoconference) with pre-service teachers to determine their knowledge of the subject matter, the curriculum and the assessment strategies that they intend to use,
- Pre-service teachers engage in a number of pre-study videoconference sessions with the students to learn their names, their abilities and to develop a relationship with them, and
- Pre-service teachers deliver a series of lessons so that principals can rate their competencies over a period of time.

The above processes would address most of the concerns that the principals expressed toward the use of the modified scale as it was applied in this study. It may also be necessary to provide pre-service teachers with more in-depth training prior to the start of videoconference sessions. For example, it was suggested that training was required to point out to the pre-service teachers that it is important to maintain a dialogue with students over the course of a lesson. More challenging than the provision of training is the issue of classroom management. It may in fact

be the case that the removal of physical proximity from videoconference teaching impedes the application of classroom management strategies. Even if this is the case, however, videoconference lessons still hold value in regard to their ability to provide situated, experiential learning experiences during the academic portion of teacher education. By law, a qualified teacher must be present in a classroom when the pre-service teachers deliver their lessons. The physical presence of the in-service teachers affords the pre-service teacher opportunities to experience the mechanics of lesson delivery in the absence of classroom management issues. Thus the pre-service teacher is able to "feel" how a lesson might progress when a class is appropriately managed. The memory of such a "feel" would be of assistance during practicum and actual teaching placements. In the practicum, absence of the "feeling" can be placed at the feet of the in-service associate teacher. In a teaching placement, absence of the "feeling" suggests that the teacher's classroom management practices are awry and need attention.

CHAPTER FIVE

Conclusions

This chapter provides consideration of what was achieved in the study, how successfully the research question was answered, and how this information can be of use. The chapter terminates with consideration of the limitations of teacher performance assessment in archived DVC lessons.

What was Achieved in the Study

This work sought to answer the question of whether a teacher appraisal tool, the Ontario "Teacher Performance Appraisal Manual," (TPAM) could be modified to the assessment of pre-service teacher competencies as viewed in archived videoconference lessons delivered from a Faculty of Education to students in a classroom. It has been suggested that the scale has been modified successfully. Three lines of evidence have been presented to support this suggestion. First, the nature of the competencies of the modified scale conforms to observations made in earlier research wherein the types of competencies that might manifest in videoconference sessions were described (the social atmosphere of the classroom, the teaching context, instructional practices and verbal and visual interactions between and amongst teachers and students). Second, the principal raters, experienced and expert in the use of the TPAM, suggested that the indicators where suited to video-based assessment. Third, the principals were able to generate competency scores along a 4-point rubric of unsatisfactory to exemplary for the pre-service teachers as they observed their performance in the VCDs. The latter reasoning held even if the principals were unable to rate

performance against a particular indicator for their utility ratings of all of the indicators of the modified TPAM suggested that they could imagine situations in which the performance indicators might be assessed in archived videoconference lessons.

How Successfully was the Research Question Answered?

The previous section of this chapter suggests that the research question was answered with some degree of success. The fact that the principals can and did provide performance ratings for the majority of the indicators of the modified scale for all six lessons is perhaps the strongest line of evidence for this reasoning.

It was found that a number of the indicators received performance ratings of "not applicable." It has been pointed out that this rating does not mean that these indicators cannot be measured in archived DVC lessons, the principals did after all rate all of them as being suited or highly suited to video-based assessment. What a rating of "not applicable" does mean is that the exercise the pre-service teachers were asked to perform failed to provide evidence of performance of those indicators. Unfortunately, without additional studies in which pre-service teachers perform exercises that generate the requisite performances, the best this study can do is argue that the indicators of the scale that were associated with ratings of "not applicable" may be measured in archived DVC lessons because both the principals' and the professors' utility ratings of the suitability for video-based assessment indicate they can. This rather unsatisfactory situation limits the degree to which the research question was successfully answered.

How the Information Derived from this Study Might be Used in the Future

Comments provided by the principals were used to suggest means by which the modified scale can be applied to better effect in the future. The suggestions tended toward the replication of normal practices regarding the application of the TPAM. Pre-study videoconference sessions between the principals and the pre-service teachers and multiple videoconference lessons between the pre-service teachers and the students are required to establish relationships between the participants. Lesson plans and assessment practices need to be discussed by the principals and the pre-service teachers. Such practices are normally in place when the TPAM is applied in face to face teaching scenarios. It would be relatively easy for a professor to implement such practices in any Faculty of Education class that runs during the academic term and in which pre-service teachers would benefit from practicing the theoretical aspects of what was learned in the class with real students in a real classroom. If such practices where put in place and the modified TPAM was found, over time, to provide acceptable ratings of teacher performance, the modified scale might be used to track pre-service teacher performance in the classroom over the course of delivering multiple lessons. That is, trends in performance scores for individual indicators could be used to identify where a pre-service teacher exhibited teaching weaknesses and strengths. Those findings might then be used to provide pointed mentorship to guide the pre-service teacher toward improved performance in the classroom.

Limitations of Video-based Teacher Performance Assessment

A limitation of video-based application of the modified scale is that of physical proximity and classroom management. It has been suggested, in the case of lessons such as those of this study where delivery involves pre-service teachers, that this limitation is attenuated by the fact that an in-service teacher must be in a classroom during the videoconference lesson. Shifting the onus for classroom management onto the in-service teacher makes it possible to give pre-service teachers a taste of "the feel" of a class wherein their pedagogical techniques might be implemented more successfully.

Video-based assessment involving DVC runs into problems when it comes to the limitations of the technology. For instance, unlike room-size videoconference systems DVC cameras cannot capture images of an entire classroom. Even in the case of this study, where groups of only three students were involved in the work, it was often the case that one or more students would wander outside of the field of view of the camera. Adding to the limited angle of capture is the fact that the DVC camera used in this study lacked remotely controlled pan tilt and zoom capabilities. Consequently, unless the in-service teacher moved the camera when the school children dropped their parachute onto a target, the pre-service teachers in the Faculty of Education could only see one or the other of the start of the drop or the end. Thus, the pre-service teachers were limited as they either could not tell if the students were dropping the parachute consistently, or they could not follow the nature and pattern of the drop itself. Today this matter may very well be tackled by way of the auto

tracking functions that come as add on capabilities of modestly priced DVC cameras. At the time of the study, such functions were not available to the researcher. Adding to the limitations of the DVC camera is the fact that even if the camera had had pan, tilt, and zoom functionality (or auto tracking), it would still not have been possible to determine with any degree of accuracy what the students were doing as they constructed their parachutes. Simply put, the camera lacked the resolving capability to provide very clear pictures of anything but the gross details of the happenings in the classroom during parachute construction.

To compensate for lack of clarity in the images provided by the cameras, the pre-service teachers asked the students to describe what they were doing as they constructed their parachutes. While this teaching technique resolved some of the difficulty, it was marred by the fact that the microphones were fixed to the base of the camera, not very sensitive, and would, frustratingly, cut out randomly as the lesson progressed. The first of these problems meant that the pre-service teachers could not hear the students if they moved more than a few feet away from the microphones. Second, if the students were chatting amongst themselves while constructing the parachutes, the microphones lacked the sensitivity to make it possible for the pre-service teachers to determine everything that was being discussed. Finally, the only options available when the microphone cut out were either to try piecing together what the students had said and carry on with the lesson, or ask the students to repeat themselves. The first option risked introducing error into the pre-service teachers' interpretation of student work and their

understanding of the lesson. The second led to frustration on the part of both parties.

In spite of the limitations, this study is considered to have been successful in that an assessment scale, the Ontario Teacher Performance Appraisal Manual (TPAM), has been successfully modified for teacher performance assessment in archived videoconference teaching sessions.

APPENDICES

Appendix One

Ontario TPAM and 4-Point Assessment Rubric

Ontario

Appendix H
Rubric to Describe the Levels of Performance

The principal should discuss this instrument with the teacher during the pre-observation meeting. It should be used in conjunction with the Performance Indicators "Look-Fors" to allow for the proper appraisal of a teacher's performance during an evaluation period.

DOMAIN: Commitment to Pupils and Pupil Learning				
COMPETENCIES	LEVEL OF PERFORMANCE			
	EXEMPLARY	GOOD	SATISFACTORY	UNSATISFACTORY
Teachers demonstrate commitment to the well-being and development of all pupils	The teacher always demonstrates commitment to the well-being and development of all students.	The teacher consistently demonstrates commitment to the well-being and development of all students.	The teacher generally demonstrates commitment to the well-being and development of all students.	The teacher infrequently demonstrates commitment to the well-being and development of all students.
Teachers are dedicated in their efforts to teach to support pupil learning and achievement	The teacher always demonstrates dedication in his or her efforts to teach and support student learning and achievement.	The teacher consistently demonstrates dedication in his or her efforts to teach and support student learning and achievement.	The teacher generally demonstrates dedication in his or her efforts to teach and support student learning and achievement.	The teacher infrequently demonstrates dedication in his or her efforts to teach and support student learning and achievement.
Teachers treat all pupils equitably and with respect	The teacher always treats all students equitably and with respect.	The teacher consistently treats all students equitably and with respect.	The teacher generally treats all students equitably and with respect.	The teacher infrequently treats all students equitably and with respect.
Teachers provide an environment for learning that encourages pupils to be problem-solvers, decision-makers, life-long learners and contributing members of a changing society	The teacher always provides an environment for learning that encourages students to be problem-solvers, decision-makers, life-long learners and contributing members of a changing society.	The teacher consistently provides an environment for learning that encourages students to be problem-solvers, decision-makers, life-long learners and contributing members of a changing society.	The teacher generally provides an environment for learning that encourages students to be problem-solvers, decision-makers, life-long learners and contributing members of a changing society.	The teacher infrequently provides an environment for learning that encourages students to be problem-solvers, decision-makers, life-long learners and contributing members of a changing society.

Note:

Although there are five rubrics (one for each domain), and the wording for each domain is specific to each individual competency, the levels of performance for each rubric are consistent. To view all five performance rubrics visit: http://www.edu.gov.on.ca/eng/teacher/manual.pdf, where the full Teacher Performance Appraisal Manual is available.

Ontario

Appendix F
Performance Indicators - "Look-Fors"

All of the Performance Indicators - "Look-Fors" must be taken into account during a teacher's performance appraisal.

DOMAINS	COMPETENCIES (Ontario Regulation 99/02)	"LOOK-FORS"
1. Commitment to Pupils and Pupil Learning	1.1 Teachers demonstrate commitment to the well-being and development of all pupils	The teacher: 1. applies knowledge effectively about how students develop and learn physically, socially, and cognitively 2. responds to learning exceptionalities and special needs by modifying assessment processes to ensure needs of special students are met 3. shapes instruction appropriately so that it is helpful to students who learn in a variety of ways 4. effectively motivates students to improve student learning 5. seeks and effectively applies approaches for helping students' cognitive, affective and social development 6. models and promotes the joy of learning 7. provides responsive and thoughtful feedback on assignments 8. effectively uses student work to diagnose learning difficulties and provides appropriate remediation 9. effectively supports and/or assists students in meeting their academic, social and emotional needs by addressing their individual needs 10. demonstrates a positive rapport with students 11. recognizes student difficulties by employing effective assessment strategies 12. 13.

Performance Indicators - "Look-Fors" Page 2

All of the Performance Indicators - "Look-Fors" must be taken into account during a teacher's performance appraisal.

DOMAINS	COMPETENCIES (Ontario Regulation 99/02)	"LOOK-FORS"
1. Commitment to Pupils and Pupil Learning, *continued*	1.2 Teachers are dedicated in their efforts to teach and support pupil learning and achievement	The teacher: 14. assists learners in practising new skills by providing opportunities for guided practice 15. provides for active student participation in the learning process 16. employs appropriate balance of student and teacher directed discussion/learning 17. establishes an environment that maximizes learning 18. encourages students to excel to the best of their ability 19. utilizes a variety of teaching strategies suited to the individual needs of students 20. 21.
	1.3 Teachers treat all pupils equitably and with respect	The teacher: 22. demonstrates care and respect for students by maintaining positive interactions 23. promotes polite and respectful student interactions 24. addresses issues of equity and diversity by planning appropriate experiences 25. differentiates curriculum expectations and teaching strategies to meet the needs of all students 26. addresses inappropriate student behaviour in a positive manner 27. respects individual needs of students by providing appropriate experiences 28. communicates information from a bias-free, multicultural perspective

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Performance Indicators - "Look-Fors" Page 3

All of the Performance Indicators - "Look-Fors" must be taken into account during a teacher's performance appraisal.

DOMAINS	COMPETENCIES (Ontario Regulation 99/02)	"LOOK-FORS"
1. **Commitment to Pupils and Pupil Learning, *continued***	**1.3 Teachers treat all pupils equitably and with respect, *continued***	29. *ensures and models bias-free assessment to address equality* 30. values and promotes fairness and justice by adopting anti-discriminatory practices in respect of gender, sexual orientation, race, disability, age, religion and culture 31. 32.
	1.4 Teachers provide an environment for learning that encourages pupils to be problem solvers, decision-makers, life-long learners and contributing members of a changing society	**The teacher:** 33. provides learners with appropriate opportunities for independent practice of new skills 34. employs effective questioning techniques that encourage higher level thinking skills 35. provides guidance and appropriate feedback to learners on attainment of new concepts/skills 36. encourages feedback, risk-taking, questioning and experimentation by establishing a non-threatening learning environment 37. encourages students to be cognisant of their personal strengths and capabilities to pursue possible career paths 38. assists students in preparation for life by assisting them to develop an appetite for life-long learning 39. promotes student self-esteem by reinforcing positive behaviours 40. 41.

All of the Performance Indicators - "Look-Fors" must be taken into account during a teacher's performance appraisal.

DOMAINS	COMPETENCIES (Ontario Regulation 99/02)	"LOOK-FORS"
2. Professional Knowledge	**2.1 Teachers know their subject matter, the Ontario curriculum and education-related legislation**	**The teacher:** 42. teaches the Ontario curriculum by exhibiting an understanding and ability to explain subject areas 43. demonstrates mastery of subject knowledge and related skills 44. presents accurate and up-to-date information 45. uses a variety of effective resources to enhance learning 46. implements and effectively explains statutes and regulations with regards to student safety and welfare 47. knows, follows and explains appropriate legislation, local policies and procedures 48. 49.
	2.2 Teachers know a variety of effective teaching and assessment practices	**The teacher:** 50. provides constructive criticism as part of evaluation 51. aligns assessment strategies with learning objectives 52. uses appropriate diagnostic techniques to assess student difficulties 53. employs formative and summative assessments to check for understanding 54. uses a variety of appropriate teaching techniques to engage students 55. uses a variety of assessment strategies and instruments to make both short-term and long-range decisions to improve student learning 56. 57.

All of the Performance Indicators - "Look-Fors" must be taken into account during a teacher's performance appraisal.

DOMAINS	COMPETENCIES (Ontario Regulation 99/02)	"LOOK-FORS"
2. Professional Knowledge, *continued*	2.3 Teachers know a variety of effective classroom management strategies	The teacher: 58. organizes instructional time by providing for the needs of all students 59. systematizes routine procedures and tasks to engage students in varied learning experiences 60. teaches scheduled class/subject for allocated time periods with effective student engagement 61. displays student work appropriately for a variety of teaching/learning experiences 62. considers the individual needs of students, the learning environment and teacher skills when selecting resources 63. seeks and uses various resources to achieve and reinforce expectations 64. provides opportunities for students to share their interests and demonstrate their involvement in learning 65. ensures that all students have the opportunity to learn by planning purposeful assignments 66. uses appropriate strategies to manage discipline 67. implements the behaviour code with consistency 68. differentiates instruction to meet diverse student needs 69. 70.

All of the Performance Indicators - "Look-Fors" must be taken into account during a teacher's performance appraisal.

DOMAINS	COMPETENCIES (Ontario Regulation 99/02)	"LOOK-FORS"
2. Professional Knowledge, *continued*	2.4 Teachers know how pupils learn and factors that influence pupil learning and achievement	The teacher: 71. uses different motivational strategies to encourage students in developing competence in all areas 72. takes into account various learning styles with the selection of materials/media 73. adapts to groups or individual students with flexible grouping practices 74. modifies programs to fit student needs by making topics relevant to students' lives and experiences 75. knows special education IEP and IPRC processes and provides appropriate experiences for student achievement 76. 77.

All of the Performance Indicators - "Look-Fors" must be taken into account during a teacher's performance appraisal.

DOMAINS	COMPETENCIES (Ontario Regulation 99/02)	"LOOK-FORS"
3. Teaching Practice	3.1 Teachers use their professional knowledge and understanding of pupils, curriculum, legislation, teaching practices and classroom management strategies to promote the learning and achievement of their pupils	The teacher: 78. makes effective links between daily lesson plans and long-range plans 79. uses practices which successfully promote the development of higher order thinking skills 80. develops clear and achievable classroom expectations with the students 81. models and promotes effective communication skills 82. demonstrates flexibility in teaching strategies by addressing the needs of all students 83. chooses pertinent resources for development of instruction to address student needs 84. varies learning instruction based on student needs, curriculum expectations, teaching-learning strategies 85. implements with success the requirements of statutes and regulations with regards to student safety and welfare 86. uses instructional time in a focussed, purposeful way 87. establishes and maintains standards for student behaviour that support learning and respects the dignity of the students 88. organizes subject matter into meaningful lessons 89. relates specific lesson topics to major subject matter concepts and generalizations 90. incorporates appropriate curricular guidelines meaningfully into lessons 91. encourages students to know about, reflect on, and monitor their own learning 92. assists students to develop and use ways to access and critically assess information 93. communicates effectively information from a bias-free, multicultural perspective 94. uses a clear and consistent format to present instruction 95. 96.

All of the Performance Indicators - "Look-Fors" must be taken into account during a teacher's performance appraisal.

DOMAINS	COMPETENCIES (Ontario Regulation 99/02)	"LOOK-FORS"
3. Teaching Practice, *continued*	3.2 Teachers communicate effectively with pupils, parents and colleagues	The teacher: 97. provides ongoing feedback to parents, for example, through newsletters and bulletins 98. demonstrates a positive, professional attitude when communicating with parents, students and colleagues 99. follows school/board guidelines on reporting with diligence 100. conducts effective teacher-student conferences 101. communicates clear, challenging and achievable expectations for students 102. 103.
	3.3 Teachers conduct ongoing assessment of their pupils' progress, evaluate their achievement and report results to pupils and parents regularly	The teacher: 104. uses a variety of appropriate techniques to report student progress 105. uses a variety of appropriate assessment and evaluation techniques 106. engages in meaningful dialogue with students to provide feedback during the teaching/learning process 107. uses ongoing reporting to keep both students and parents informed and to chart student progress 108. gathers accurate data on student performance and keeps comprehensive records of student achievements 109. 110.

All of the Performance Indicators - "Look-Fors" must be taken into account during a teacher's performance appraisal.

DOMAINS	COMPETENCIES (Ontario Regulation 99/02)	"LOOK-FORS"
3. Teaching Practice, *continued*	3.4 Teachers adapt and refine their teaching practices through continuous learning and reflection, using a variety of sources and resources	The teacher: 111. assesses and reviews program delivery for relevancy 112. uses provincial achievement standards and competency statements as a reference point for evaluation of teaching 113. reflects on teaching effectiveness that is shaped by human development and learning 114. integrates curriculum expectations effectively into teaching practice 115. modifies programs effectively to respond to needs of exceptional students 116. effectively demonstrates knowledge of trends, techniques and research relevant to their teaching 117. 118.
	3.5 Teachers use appropriate technology in their teaching practices and related professional responsibilities	The teacher: 119. uses technology appropriately to improve efficiency and effectiveness in planning, instructional delivery, reporting procedures and decision-making 120. models and promotes effective use of technology to promote student learning 121. demonstrates effective use of technology as it relates to school operations and board expectations 122. 123.

DOMAINS	COMPETENCIES (Ontario Regulation 99/02)	"LOOK-FORS"
4. Leadership and Community	4.1 Teachers collaborate with other teachers and school colleagues to create and sustain learning communities in their classrooms and in their schools	The teacher: 124. learns with and from colleagues and others in the community of learners 125. pursues and effectively shares knowledge about current thinking, trends, and practices in education with colleagues 126. works co-operatively with colleagues to solve student, classroom and school concerns 127. participates as an effective team member and shares expertise with others, for example, by acting as mentor, peer coach or associate teacher 128. participates effectively by contributing to grade, division and/or subject teams 129. effectively leads portions of staff meetings 130. plans worthwhile professional development activities for school-based professional development days 131. participates effectively on committees by organising school-based activities, for example, school/parish initiatives, graduation, theme days 132. shares instructional strategies that have worked successfully with colleagues 133. shares instructional strategies that improve student performance on standardized tests 134. shares learning acquired through participation on system-wide or provincial initiatives with colleagues 135. serves as a resource to colleagues, for example, in the effective use of technology, assessment strategies and classroom management

DOMAINS	COMPETENCIES (Ontario Regulation 99/02)	"LOOK-FORS"
4. Leadership and Community, *continued*	4.1 Teachers collaborate with other teachers and school colleagues to create and sustain learning communities in their classrooms and in their schools, *continued*	The teacher: 136. creates worthwhile opportunities for students, their parents and community members to share their learning, knowledge and skill with others within the class or school 137. acts as a moderator for electronic discussion groups or best practice database 138. 139.
	4.2 Teachers work with professionals, parents and members of the community to enhance pupil learning, pupil achievement and school programs	The teacher: 140. reaches out to parents and to diverse local communities inviting them to share their knowledge and skills in supporting effective classroom and school activities 141. engages others effectively through shared problem-solving and conflict resolution 142. acknowledges and celebrates the efforts and success of others 143. initiates contact with other professionals and community agencies to assist students and their families, where appropriate 144. cooperates and works readily with the school's support team 145. serves on school council as teacher advisor 146. sets up partnerships, for example, with local library, music, science centre, business recreation centre and/or career centre, to develop resources to enhance career opportunities and student achievement 147. contributes research to professional publications, subject councils and/or other professional organizations 148. participates, presents and effectively organizes conferences, workshops and/or institutes to enhance student achievement

DOMAINS	COMPETENCIES (Ontario Regulation 99/02)	"LOOK-FORS"
4. Leadership and Community, *continued*	4.2 Teachers work with professionals, parents and members of the community to enhance pupil learning, pupil achievement and school programs, *continued*	The teacher: 149. initiates and/or participates in school/community-based activities, system-wide or provincial committees/writing teams to acquire skills and knowledge to enhance student achievement 150. 151.
5. Ongoing Professional Learning	5.1 Teachers engage in ongoing professional learning and apply it to improve their teaching practices	The teacher: 152. seeks input from colleagues, consultants and/or other appropriate support staff and effectively applies it to enhance teaching practices 153. identifies areas for professional growth, attends workshops, appropriate seminars or courses to respond to changes in education/policies and practices and effectively applies information to enhance teaching practices 154. participates willingly and effectively in professional learning, study groups and in-service programs to enhance skill development and/or broaden knowledge 155. observes other teachers, acquires best practices and effectively applies new information/techniques to enhance teaching practices 156. volunteers and effectively works on skill development or curriculum committees at school or board level 157. reads professional journals, books, Internet sites, or any articles related to the educational contexts and effectively shares with peers 158. keeps a portfolio recording his or her learning experiences and effectively relates them to the educational contexts

All of the Performance Indicators - "Look-Fors" must be taken into account during a teacher's performance appraisal.

DOMAINS	COMPETENCIES (Ontario Regulation 99/02)	"LOOK-FORS"
5. Ongoing Professional Learning, *continued*	5.1 Teachers engage in ongoing professional learning and apply it to improve their teaching practices, *continued*	The teacher: 159. conducts and publishes educational research as a member of a professional organization and effectively collaborates with educational researchers to enhance teaching practices 160. participates in provincial assessments and curriculum-writing and effectively applies skills to enhance teaching practices 161. participates in workshops, seminars, courses, in-service programs, or reads books, articles, journals, and internet sites, or reflects with others to better understand human nature and be a model for students 162. explores ways to access and to use educational research 163. taps into websites that describe best practices, acquires successful teaching strategies and applies to teaching practices 164. 165.

Appendix *Two: a*

School Principal Video-Assessment Instruction

Lakehead UNIVERSITY

ERIC FREDRICKSON - FACULTY OF EDUCATION

Development of Performance Indicators in Videoconferencing Sessions

First, thank you for your assistance with this project. You are helping to develop a teacher performance assessment tool for use with on-line videoconferencing, and that help is greatly appreciated. Your first role will be to guide me in the selection of appropriate evaluation criteria of video, based on the Ontario Teacher Performance Appraisal Manual. The selected criteria will be assembled to form a new assessment scale that you will apply (in your second role) to videos of teachers' performances.

Included in this package is:

- A CD-Rom containing a video of two student teachers leading a small group through a Science experiment. Any PC running Windows 95, 98, 2000, or XP with a CD-Rom drive should play this file. If you are not able to view this video by loading it into the CD drive and accessing it with 'My Computer', please let me know, and I will provide media that suits your specific needs.
- A set of assessment sheets with many of the Performance Indicator Ratings from the T.P.A. (note that some have been removed that were deemed inappropriate from the outset). The standard rating scale from the T.P.A. from Exemplary to Unsatisfactory (and N/A) appears, and to the right of this, a Likert scale indicating the suitability of that particular indicator for video-based teacher assessment.

Your task:

1. Watch enough of the video to give you a sense of how well the student teachers are doing in their interactions with the students.
2. Evaluate the teachers against each of the performance indicators to the best of your ability (imagine they are just one teacher if you like). If you cannot reasonably determine the quality of performance in regard to a particular indicator, please indicate N/A. Please use the full performance scale (unsatisfactory to exemplary) even if your school board does not. This will help keep the data standardized.
3. Rate the suitability of each performance indicator for video assessment based on how appropriate you feel it could be used to appraise teacher performance (not just its suitability as evidenced on this video). Some of the indicators will be obviously unsuitable to this initial video session.
4. Record any observations or comments in the space provided. Indicate if you think there is a performance indicator that has been removed which is (or could be) relevant.

Please keep in mind:

- This was the first video session archived during this research project, and there were some technical difficulties. As a result, the sound is poor, and about one quarter of the way through the session one of the teachers made an adjustment to their computer that shut off the video feed of themselves. From that point on, you can only assess them based on their verbal interactions with the students.
- The video sessions that you will watch in your second role (once the assessment scale has been assembled) involve the student teachers in a second run at teaching the lesson they taught on the first video. Prior teaching this lesson the first time, the teacher candidates had no prior knowledge on which to draw experience or lend advice. First and second run teaching sessions allowed a related research project to take place which, in part, will measure the difference between teaching with and without prior knowledge of a task. The presence (or lack) of prior knowledge should not concern your future assessments, but is worth bearing in mind while you consider this initial video session.

Please return the completed rating sheets and the CD-Rom back to me at your earliest convenience. If you have any questions or require further information, feel free to contact me at Algonquin or through Group Wise at eric_fredrickson@lakeheadschools.ca.

Thank you again for your help!

Appendix Two: b

School Principal Introduction Letter

FREDRICKSON Lakehead UNIVERSITY

169 Anten Street, Thunder Bay, ON P7B 5J5 807.346.8565 ericfredrickson@shaw.ca

Dear

Currently, I am completing the research portion of my Master of Education with Lakehead University. The focus of my thesis is the possibility of assessing teacher-candidates on placements using internet-based videoconferencing technology. As you are aware, it is only on rare occasions that student teachers are formatively evaluated by their advisors from the Faculty of Education at Lakehead. A scoring rubric has been developed based on the Teacher Performance Appraisal Manual "look-fors". This scale will be used to evaluate teacher candidates on their placements.

I am hoping that you might assist me in two areas in the final evaluation of data for my thesis. While there are no short term tangible benefits to you or your school for participating in this process, there are broader implications. These include the possibility of teacher assessments where geographical limitations prohibit a school administrator from visiting a classroom, virtual placement assessment where student teachers are more closely monitored by their advisor, and the development of more effective internet-based distance education utilizing videoconferencing.

Currently, we have a short video segment of a teacher candidate delivering a lesson to intermediate students using technology similar to what might be used to archive and then analyse a practicum. First, the assessment rubric needs to be critiqued by school administrators who have experience using the T.P.A. "look-fors". Your initial comments and critique will be used to further refine the scales and criteria selected for the assessment rubric. Once a final set of suitable "look-fors" has been chosen, you will be given a set of five short video segments with different student teachers delivering the same lesson to intermediate students. You will again assess the teacher-candidates' competencies as well as the suitability of the rating scale. The initial scale evaluation needs to be done over the next couple of weeks. The five teacher sessions will be evaluated over the spring and/or summer at your convenience.

Any input provided by you will be strictly anonymous. No information about you, your school, or will be used in this study. If you have any other questions about this study, please feel free to contact me at any time.

Thank you for your consideration. Drop me a note on GroupWise or in the courier if you are able to help.

Eric Fredrickson

Appendix Two: c

Graham Passmore at Lakehead University supported by the Social Sciences and Humanities Research Council (SSHRC) is conducting a study entitled "Identifying and providing a critical set of virtual practicum experiences." The objectives of this study are to (1) identify specific subject matter that student teachers need to have delivered (in training classes) before they be allowed to work in the classroom (2) identify specific teaching and learning strategies that student teachers need to have delivered (in training classes) before they be allowed to work in the classroom (3)identify specific disciplinary procedures that student teachers need to experience (in training classes) before they be allowed to work in the classroom (4) identify aspects of education that pertain to children with special needs that student teachers need to have experienced (in training classes) before they be allowed to work in the classroom (5) identify specific aspects of cultural sensitivity that student teachers need to have experienced before they be allowed to work in the classroom. In each case above, the intent once identification of the critical practicum experiences has been made is to seek means for assessing the level of competency that student teachers exhibit. The assessments will be made by recording the student teacher's performance in the classroom with a web camera and subsequently burning the videoconference sessions to DVD for repeated viewing.

You are a critical source of information for this study and you are invited to participate by allowing portions of your practicum experience to be video recorded with a small unobtrusive web camera. All of the videos, comments and data are confidential. They will be collected for research purposes only and kept in a locked cabinet in the researcher's office in DVD format for seven years. Publication of the research will be in aggregate format such that all identifying features of the participants will be removed. These measures are taken to protect your anonymity.

Consent form for Teacher Candidates

I have read the above information and agree to participate in the research project entitled "Identifying and providing a critical set of virtual practicum experiences."

I submit the signed consent form to Graham Passmore (or a delegate), RE: Identifying and providing a critical set of virtual practicum experiences, Faculty of Education, 955 Oliver Road, Thunder Bay ON, P7B 5E1. For any questions or comments please don't hesitate to contact Graham at graham.passmore@lakeheadu.ca or by telephone 807 343 8702.

I understand the conditions of my involvement such that:
I understand the title and purpose of this project
The investigator has been identified and I know how to contact him
All data collected is confidential and will only be presented in aggregate form through scholarly publications
I am able to withdraw at any time regardless of reason
Data from this study will be securely stored for seven years

Teacher Candidate email

Signature Date

Appendix Two: d

Graham Passmore at Lakehead University supported by the Social Sciences and Humanities Research Council (SSHRC) is conducting a study entitled "Identifying and providing a critical set of virtual practicum experiences." The objectives of this study are to (1) identify specific subject matter that student teachers need to have delivered (in training classes) before they be allowed to work in the classroom (2) identify specific teaching and learning strategies that student teachers need to have delivered (in training classes) before they be allowed to work in the classroom (3)identify specific disciplinary procedures that student teachers need to experience (in training classes) before they be allowed to work in the classroom (4) identify aspects of education that pertain to children with special needs that student teachers need to have experienced (in training classes) before they be allowed to work in the classroom (5) identify specific aspects of cultural sensitivity that student teachers need to have experienced before they be allowed to work in the classroom. In each case above, the intent once identification of the critical practicum experiences has been made is to seek means for assessing the level of competency that student teachers exhibit. The assessments will be made by recording the student teacher's performance in the classroom with a web camera and subsequently burning the videoconference sessions to DVD for repeated viewing.

You are a critical source of information for this study and you are invited to participate by allowing portions of a practicum experience to be video recorded with a small unobtrusive web camera. All of the videos, comments and data are confidential. They will be collected for research purposes only and kept in a locked cabinet in the researcher's office in DVD format for seven years. Publication of the research will be in aggregate format such that all identifying features of the participants will be removed. These measures are taken to protect your anonymity.

Consent form for Students and Parents

I have read the above information and agree to participate in the research project entitled "Identifying and providing a critical set of virtual practicum experiences."

I submit the signed consent form to Graham Passmore (or a delegate), RE: Identifying and providing a critical set of virtual practicum experiences, Faculty of Education, 955 Oliver Road, Thunder Bay ON, P7B 5E1. For any questions or comments please don't hesitate to contact me at graham.passmore@lakeheadu.ca or by telephone 807 343 8702.

I understand the conditions of my involvement such that:

I understand the title and purpose of this project

The investigator has been identified and I know how to contact him

All data collected is confidential and will only be presented in aggregate form through scholarly publications

I am able to withdraw at any time regardless of reason

Data from this study will be securely stored for seven years

Parent/Guardian	email
Signature	Date
Student	email
Signature	Date

Appendix Two: e

Graham Passmore at Lakehead University supported by the Social Sciences and Humanities Research Council (SSHRC) is conducting a study entitled "Identifying and providing a critical set of virtual practicum experiences." The objectives of this study are to (1) identify specific subject matter that student teachers need to have delivered (in training classes) before they be allowed to work in the classroom (2) identify specific teaching and learning strategies that student teachers need to have delivered (in training classes) before they be allowed to work in the classroom (3)identify specific disciplinary procedures that student teachers need to experience (in training classes) before they be allowed to work in the classroom (4) identify aspects of education that pertain to children with special needs that student teachers need to have experienced (in training classes) before they be allowed to work in the classroom (5) identify specific aspects of cultural sensitivity that student teachers need to have experienced before they be allowed to work in the classroom. In each case above, the intent once identification of the critical practicum experiences has been made is to seek means for assessing the level of competency that student teachers exhibit. The assessments will be made by recording the student teacher's performance in the classroom with a web camera and subsequently burning the videoconference sessions to DVD for repeated viewing.

You are a critical source of information for this study and you are invited to participate by allowing portions of a practicum experience to be video recorded with a small unobtrusive web camera. All of the videos, comments and data are confidential. They will be collected for research purposes only and kept in a locked cabinet in the researcher's office in DVD format for seven years. Publication of the research will be in aggregate format such that all identifying features of the participants will be removed. These measures are taken to protect your anonymity.

Consent form for Associate Teacher

I have read the above information and agree to participate in the research project entitled "Identifying and providing a critical set of virtual practicum experiences."

I submit the signed consent form to Graham Passmore (or a delegate), RE: Identifying and providing a critical set of virtual practicum experiences, Faculty of Education, 955 Oliver Road, Thunder Bay ON, P7B 5E1. For any questions or comments please don't hesitate to contact me at graham.passmore@lakeheadu.ca or by telephone 807 343 8702.

I understand the conditions of my involvement such that:

I understand the title and purpose of this project

The investigator has been identified and I know how to contact him

All data collected is confidential and will only be presented in aggregate form through scholarly publications

I am able to withdraw at any time regardless of reason

Data from this study will be securely stored for seven years

Associate Teacher email

Signature Date

Appendix Three

Student Lesson Handout – *courtesy of Dr. G.M. Bowen*

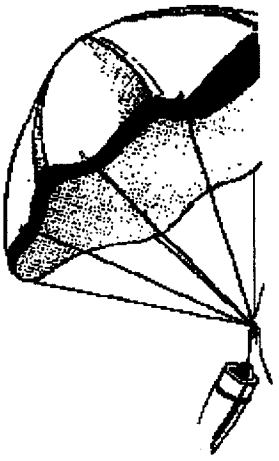
Exploration, Inc., has been contracted by the International Red Cross to develop a parachute delivery system for deploying emergency food and medical aid into areas where natural disasters (such as floods, earthquakes and volcanoes) have occurred that damaged roads and airports. The Red Cross must be able to drop these aid packages both accurately (so as not to further damage any buildings vehicles, etc or have them fall into areas where they are unreachable or might be destroyed) as well as with as little downward force as possible (so that the payload container doesn't split open or the medical supplies get damaged).

Your company's job is to manufacture a parachute that will provide both accuracy and a gentle landing. You decide that your first step is to design model parachutes and test them to see how to achieve both of these goals.

Your company's model parachutes will be test-dropped from a standard height. Hangtime (release to landing) and distance from the target will be measured. The company producing a chute with the longest hangtime under load that is closest to the target upon landing will win the contract (and other perks) to produce the needed parachutes, creating thousands of new jobs in the region.

Specifications: Model parachutes will be constructed out of materials provided by the company, which includes plastic sheeting, paperclips in a paper cup (to act as a payload), string, and tape.

Good luck!
Carty O. Grapher, president
Exploration, Inc.



Drop Zone Challenge
Event Rules

Goal: To construct a parachute (using only the materials listed below) that will have both the **longest "hangtime"** in seconds and **best accuracy** (be closest to target) when dropped from a predetermined height.

Materials: For each team: a plastic sheet (cut from a garbage bag, metal paperclips (to represent the "payload"), 1 paper cup (to carry the "payload"), string, masking tape and scotch tape and duct tape, a stopwatch, a hole punch, & a metre stick.

Procedure: Each group will be provided with the materials and allowed at least 50 minutes to build and test their devices. Each parachute constructed by the team should have three trials. For each trial, the payload must be dropped from a consistent height (between 2 and 5 meters). The time between the moment of release until the "payload" container hits the floor will be the **hangtime** (in seconds). The distance from the paper cup to the center of the target (in centimeters) will also be measured for **accuracy**.

Scoring:

The best score for a parachute is calculated using the following formula ...

Score = Hangtime (seconds) + (200 - distance from center (cm))

NOTE: If the distance is more than 200 cm from the drop zone, no score will be recorded for that trial.

Idea adapted from Terry McCormick (via Internet) and J. Lawrence Bencze (OISE/UT)

Drop Zone Score Sheet, Parachute #____

Trial #	Accuracy (cm)	Time(s)
1		
2		
3		
Average:		

Calculated Score:

Drop Zone Score Sheet, Parachute #____

Trial #	Accuracy (cm)	Time(s)
1		
2		
3		
Average:		

Calculated Score:

Drop Zone Score Sheet, Parachute #____

Trial #	Accuracy (cm)	Time(s)
1		
2		
3		
Average:		

Calculated Score:

Possible variables to change on the parachutes:

Which variable(s) was changed on your parachutes?

Which parachute had the best score? (Why do you think this happened? … What was it about the design of the parachute that helped with this? What variable change might have contributed to this?)

How could you represent with a visual image a comparison between the different parachutes that were tested? (a graphic says a thousand words…)

How could you find out if there was a relationship between the average time it took each parachute to fall and how accurately it fell? What is the relationship? What is the most convincing way of depicting this relationship?

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