

**Creation and Evaluation of Supplementary DVD Teaching Tools for the
Central Wisconsin Environmental Station**

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Abstract

The purpose of this research project was to create and evaluate the use of supplementary DVD teaching tools for use with practicum students at the Central Wisconsin Environmental Station. The study looked at incoming practicum students with limited or no teaching experience and ways that would increase their knowledge and skills to become better educators in an outdoor setting. Finding new ways to introduce material to incoming practicum students at the Central Wisconsin Environmental Station is essential due to limited training time. Practicum students spend four months at CWES gaining hands-on teaching experience working with K-12 students, leading the center's environmental education programs. Practicum students are trained during a brief three-day program and obtain other lesson information through a written lesson plan. For this study instructional information was offered to the students in a DVD format in addition to the traditional written format in order to accommodate for individual learning styles. Evaluations completed by the researcher and the individual practicum students was used to compare the lessons taught using the DVD support tools to lessons that only provided written information. The purposes of evaluating the use of supplementary DVD teaching tools in addition to written lesson plans for lesson preparation was to measure the effectiveness, if any, that the DVD's provide in assisting practicum students with lesson development. The supplementary DVD teaching tools were an attempt to provide practicum students with more resources while developing the skills and knowledge to effectively modify and teach outdoor environmental education lessons to K-12 students. The results indicated that practicum students preferred the option of using a supplementary DVD teaching tool but the tools were not effective in increasing the overall evaluation scores. The supplementary DVD teaching tools were utilized during lesson preparation but were not essential to practicum students' lesson development.

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Chapter One

Introduction

I. Importance of the Study

According to the North American Association for Environmental Education (NAAEE) Standards for the Initial Preparation of Environmental Educators, “a knowledgeable and well-prepared environmental educator” is able to “deliver instruction that effectively fosters environmental literacy” (NAAEE, 2007). In order to become a competent environmental educator NAAEE has developed a series of guidelines and standards for environmental education centers and universities that train undergraduate and graduate students in this field. It is important for universities that offer undergraduate and graduate degrees in Environmental Education (EE) to strive to meet the national standards designated by NAAEE. By following the NAAEE Standards for the Initial Preparation of Environmental Educators, universities are ensuring that they are meeting the needs of environmental education centers nationwide by providing qualified and well-trained staff.

The College of Natural Resources (CNR) at University of Wisconsin Stevens Point (UWSP) offers both a graduate and undergraduate degree in EE. Students enrolled in the undergraduate degree are required to attend a capstone course, called the practicum program. The practicum program allows the students to practice firsthand the theory they learn in the classroom at a UWSP field station called the

Central Wisconsin Environmental Station (CWES). CWES is a year-round outdoor environmental education center and residential facility that offers K-12 outdoor EE lessons to visiting schoolchildren. Undergraduate students at UWSP enrolled in the practicum program are responsible for teaching those lessons to schoolchildren visiting CWES.

Finding innovative ways to introduce teaching material to incoming practicum students at CWES is essential due to limited training time and the need for the center to provide high quality programs. CWES operates year round, which leaves a limited opportunity to train incoming students. Every practicum student has a different level of teaching experience and natural history knowledge when they enroll in the practicum course at UWSP.

Practicum students literally learn as they go. They are given a lesson plan and an age group to teach one week prior to the arrival of students from a K-12 school. Once they read over the lesson, they prepare and submit to CWES teaching staff a lesson preparation form (Appendix A) explaining the instructional procedures they will use while teaching that lesson. Often times it takes multiple teaching experiences for a practicum student to become comfortable with and knowledgeable of a specific lesson plan. When a practicum student is not ready or able to teach a subject properly, the learning experience for visiting students is often incomplete and may be ineffective.

This study looks at introducing a series of supplementary DVD teaching tools, which visually show each lesson being taught by a trained and experienced environmental educator. The supplementary DVD teaching tools allow practicum students an opportunity to observe the lesson instruction prior to teaching the lesson themselves. The DVD's may provide practicum students with more resources while

developing the skills and knowledge to effectively modify and teach outdoor environmental education lessons.

II. The Research Problem

To what extent does the use of supplementary DVD teaching tools assist practicum students at the Central Wisconsin Environmental Station in lesson preparation and teaching?

III. Objectives

1. Determine if supplementary DVD teaching tools could be beneficial in aiding practicum students in lesson preparation and teaching.
2. Create assessment instruments that will measure whether DVD teaching tools are being utilized by practicum students and determine if they are beneficial in aiding practicum students in lesson preparation and delivery.
3. Develop one supplementary DVD teaching tool to be used with the evaluation tools during a pilot study involving practicum students.
4. Edit the supplementary DVD teaching tool and self-evaluation form to accommodate student suggestions gained from the pilot study data.

5. Develop five additional supplementary DVD teaching tools based on different lesson plans from CWES and implement the teaching tools during the fall 2008 semester.
6. Use evaluation tools to record practicum students' reaction to the supplementary DVD teaching tools and record evidence of DVD use throughout each lesson.
7. Analyze the data to determine the effectiveness and practicum student preference of using the supplementary DVD teaching tools in combination with CWES lesson plans.

IV. Hypothesis

EE practicum students will prefer the option of using supplementary DVD teaching tools to assist them in lesson preparation and will be more familiar with the teaching materials and resources required to teach CWES lessons to visiting K-12 students.

V. Limitations

1. This study involves a small sample size of the NR 482 and NR 376 EE practicum students during the fall 2008 semester.
2. Due to a time constraint, it is necessary to evaluate a portion of the EE practicum students teaching lessons using video recordings.

3. Practicum students have varying degrees of teaching experience and teaching abilities.

VI. Definitions of Terms

1. Practicum Students - University of Wisconsin-Stevens Point students that are enrolled in Natural Resources 482 or 376 courses. These students are environmental education and interpretation majors and minors that spend a semester at the Central Wisconsin Environmental Station gaining practical hands-on EE teaching experience.

2. CWES - An acronym for the Central Wisconsin Environmental Station. CWES is a year-round outdoor/environmental education teaching facility that utilizes University of Wisconsin-Stevens Point environmental education practicum students, to teach kindergarten through twelfth grade, single-day or multi-day environmental education programs.

3. Supplementary DVD teaching tool - The supplementary DVD teaching tool will be approximately fifteen minute long DVD's that contain detailed information and examples of teaching styles for a particular CWES lesson plan.

4. Lesson preparation sheet - This is a form that is filled out and submitted by the EE practicum students to ensure CWES staff that the lesson plan has been thoroughly reviewed, and the practicum student is ready to present the information to students.

5. Comfort Level - EE practicum students have freedom from anxiety in regards to teaching curriculum objectives to K-12 visiting schools at the Central Wisconsin Environmental Station.

VI. Assumptions

1. Practicum students will use both the supplementary DVD teaching tool and the written lesson plan to assist them in completing their lesson preparation sheets.
2. Practicum students have access to the technology and time to view the supplementary DVD teaching tool.
3. Practicum students will honestly complete their teaching self-evaluations.
4. Practicum students have limited or no teaching experience prior to starting practicum.

Chapter Two

Literature Review

I. Introduction

The goal of this study is to create and evaluate supplementary DVD lesson plans to assist practicum students at CWES in lesson preparation and teaching methods. This literature review describes the academic requirements of CWES practicum students, the station's mission statement and goals, and how CWES is attempting to meet NAAEE standards in the training of professional environmental educators. Information on individual learning styles, support for new teachers, and using multiple intelligences to teach new material will be addressed as well as using effective assessment tools to evaluate teaching progress.

II. The Central Wisconsin Environmental Station

CWES is a field station of UWSP and the College of Natural Resources (CNR). As part of the CNR, it provides K-12 environmental education programs to schoolchildren between kindergarten and twelfth grade. CWES offers both residential and single day EE programs with lessons that range from native wildlife and environmental concepts such as food webs to programs on historical changes that have taken place on Wisconsin lands.

Located in Amherst Junction, Wisconsin, CWES was officially opened in 1975. The original property and facilities were leased to the UWSP foundation by the trustees of Camp Chickagami (Central Wisconsin Environmental Station Practicum Staff Manual, 2007). Additional land including an old parsonage near Minister Lake was

purchased more recently bringing the overall total acreage to 200. The teaching property includes: two lakes, pine plantations, deciduous forests, a frog pond, and a beaver habitat. All areas of the property are used in teaching lessons throughout the year including lessons taught on Sunset and Minister Lakes.

The overall vision of CWES is to “lead the way in developing and modeling roles that environmental centers may play in helping people build a sustainable balance between quality of life and quality of the environment” (Central Wisconsin Environmental Station Practicum Staff Manual, 2007). According to Strategic Planning and Implementation, a course offered at UWSP through the Environmental Education and Training Partnership (EETAP), a vision statement “represents the beliefs, values and philosophies which guide how the organization functions (EETAP, accessed March 21, 2008)”.

CWES created a mission statement in order to provide a model for program development, curriculum and training that should take place. The CWES mission statement states that the purpose of the organization is to “foster in adults and youth the appreciation, understanding, skill development, and motivation needed to help them build a sustainable balance between environment, economy, and community.” (Central Wisconsin Environmental Station Practicum Staff Manual, 2007) It clearly states that this is accomplished through a variety of tasks including:

1. “Training and mentoring University of Wisconsin- Stevens Point undergraduate and graduate students in environmental education in an effort to develop the most skilled and sensitive professionals possible.
2. Providing innovative environmental education experiences based on ecological principles, integrated natural resource management philosophies, balanced perspectives, and inquiry based methodologies.

3. Offering outdoor opportunities to recreate, rejuvenate and build strong personal connections to the waters, woods, wildlife and each other.
4. Demonstrating sustainable designs and practices based on current research and technology.
5. Promoting this leadership model to others across the state, nation and world”.

University of Wisconsin- Stevens Point undergraduate students enrolled in the Natural Resources 482 and 376 (Practicum students) lead the environmental education lessons for schools participating in one of the CWES programs. Natural Resources 482 students are Environmental Education and Interpretation majors and Natural Resources 376 students are Education majors, Youth Camp Management majors or Wildlife Education majors with a minor in Environmental Education and Interpretation. As part of a work experience program, practicum students are required to teach kindergarten through twelfth grade (K-12) students twice a week for a total of four months. This capstone class is designed to help students develop skills in providing, creating, and evaluating environmental education programs for youth (NRES 482 Course Syllabus, Spring 2007).

During the semester course, practicum students are required to read pre-determined lesson plans and complete a lesson preparation form prior to the arrival of a scheduled K-12 class. Lesson preparation forms (appendix A) are used to help CWES staff determine if practicum students have read the lesson plan thoroughly and are prepared to teach the lesson properly. A three-day training prior to the start of the semester allows practicum students an opportunity to see some of the material that they will teach during the semester. During the first week of the school semester practicum students are given

another training experience through peer observations. Each student is responsible for preparing a CWES lesson to teach to the other practicum students and gain feedback on their teaching strategies and lesson development. However, CWES has over 40 different lesson plans and the three-day training and peer teaching week does not allow enough time to review all of the lessons. This means that they often do not have an opportunity to see the lesson being taught or view the required materials prior to teaching the lesson themselves. This can be an issue for incoming practicum students with no prior teaching experience and varied learning styles.

III. NAAEE Standards of Professional Environmental Educators

In order to develop the “most skilled and sensitive professionals possible” (Central Wisconsin Environmental Station Practicum Staff Manual, 2007) CWES follows a series of guidelines for training environmental educators, developed by NAAEE. The *Guidelines for the Preparation and Professional Development of Environmental Educators*, “outline the experiences and learning that will help them (environmental educators) deliver instruction that effectively fosters environmental literacy” (NAAEE website, accessed March 2009). The standards layout a series of themes that help guide training programs in determining the abilities of experienced and inexperienced environmental educators enrolled in the program.

The six themes developed by NAAEE include: Environmental Literacy, Foundations of Environmental Education, Professional Responsibilities of the Environmental Educator, Planning and Implementing Environmental Education Programs, Fostering Learning, and Assessment and Evaluation. Emphasis will be placed

on Theme #4 – Planning and Implementing Environmental Education, and Theme #5- Fostering Learning, as it applies to this study.

The Fostering Learning theme states that “educator’ training should prepare them to foster an environment, including participant interactions, that is conducive to learning” (NAAEE website, accessed February 12, 2009). One of the sub-themes focuses on flexible and responsive instruction; it states educators should “know how to augment proper planning with the flexibility that allows them to take advantage of new instruction opportunities” (NAAEE website, accessed February 12, 2009). Practicum students at CWES are teachers, but they are students first and foremost, and insuring that they learn proper and effective teaching techniques and new instructional instruments is important to CWES.

The Planning and Implementing Environmental Education theme focuses on the educator being able to “combine the fundamentals of high-quality education with the unique features of environmental education to design and implement effective instruction” (NAAEE website, accessed February 12, 2009). Sub-theme 4.1 focuses on understanding how to approach and meet the needs of individuals with different learning styles. It states that educators should be able to “demonstrate an understanding of learning theories such as multiple intelligences and learning styles and organize environmental education instruction to accommodate different approaches to learning” (NAAEE website, accessed February, 17, 2009). Sub-theme 4.5 specifically highlights the use of instructional technology to assist different learners. Both of these sub-themes focus on ensuring that the participating EE undergraduates understand that students learn in different ways. Finding new means of teaching to accommodate different learners increases the chance for information to be retained. CWES is attempting to lead by

example through the introduction of different instructional material in the practicum program.

IV. Learning Styles

The preferred way of learning is often referred to by educators as a learning style. A learning style is defined as “a preference or predisposition of an individual to perceive and process information in a particular way or combination of ways” (Sarisin, 1999). There are a variety of learning style theories that include differing stages of processing information, but all of the theories premise that “learning styles depend on a variety of factors, and are individual to different people” (Sun, Joy and Griffiths, 2007). In education, it is essential to understand that students have different learning styles and that even for the same person their preferred learning style can change over time. New delivery methods are required in order to accommodate an expansion of higher education to a greater proportion of the population. This issue can be partially addressed by providing students with “self-paced, highly interactive teaching materials” (Sun, Joy, Griffiths, 2007). Delivering information by means other than the traditional lecture or through the written word encourages students to better process information.

One of the more prominent theories of learning styles is the idea of Multiple Intelligences developed by Dr. Howard Gardner in 1983. Eight intelligences were developed as a tentative model to explain different abilities and preferences in students’ learning styles. These intelligences include, but are not limited to: Verbal-Linguistic, Logical-Mathematical, Spatial, Bodily-Kinesthetic, Musical, Interpersonal, Intrapersonal and Naturalist (Gardner, 1993). Gardner believed that although each person is thought to possess all eight intelligences, the individual processes information more accurately and efficiently in their preferred learning style.

Another learning theory that helps explain the need for alternative ways of delivering information to students is the Felder-Silverman Learning Style Model. This theory places student's learning style preference in a "four-dimensional space with the following four independent descriptors:

- sensing (practical or concrete thinker) or intuitive (abstract thinker);
- visual (prefers visual representation, such as pictures, diagrams, charts) or verbal (prefers written or spoken explanations);
- active (learn by doing and working things out) or reflective (learn by thinking things through);
- sequential (learn in a linear process, in small incremental steps) or global (holistic thinking process, in large steps)". (Felder & Spurlin, 2005)

It is important to remember that "people never learn the same way" (Sun, Joy, Griffiths, 2007). Therefore it is essential to offer students the opportunity to process information in multiple ways to increase their chances of learning.

Both theories suggest that offering information to students both visually and through the written word increases the chance of a student processing the information even if those opportunities do not fit the entire learning curve. These new and adaptive teaching strategies are in high demand because it is the only way to improve the efficiency and effectiveness of the education process (Sun, Joy, Griffith, 2007).

V. Supporting New Teachers

Field experiences and student teaching are an integral part of teacher education programs because it takes the theory learned in the classroom and puts it into practice in the field. In educational facilities that use field experiences, it is important to know that "for a field experience program to be successful, it is critical that the persons engaged

in it be well trained to meet the challenges they face in competently fulfilling their responsibilities” (Slick, 1995). This includes the pedagogical ideas and theories they learned in the classroom but most importantly, it means providing individuals with the resources they need to continue their growth and development as educators.

When a new teacher with limited experience and practical knowledge of the subject matter begins teaching, they often feel overwhelmed and uncertain (Scherer, 1999). This reinforces the idea that providing support and resources to new educators is essential in the learning process. There are two main areas of support that should be offered to new educators: “ (1) instruction-related support that includes assisting the novice with the knowledge, skills, and strategies necessary to be successful in the classroom and in school and (2) psychological support aimed at building the protégé’s sense of self and ability to handles stress” (Scherer, 1999).

VI. Evaluation Techniques

Evaluation is “the systemic collection of information about the activities, characteristics and outcomes of programs to make judgments, improve effectiveness and inform decision makers (Patton, 1997). It is an important step in determining the effectiveness of information being transferred to the students, and can take place through a variety of tools including; questionnaires, focus groups, observation, surveys and alternative assessments. All of these approaches will provide quality feedback if they are pilot tested, use reliable and valid questions and incorporate the following standards:

- i. “Utility standards – intended to ensure that an evaluation will serve the information needs of intended users”.

- ii. “Feasibility standards- intended to ensure that an evaluation will be realistic, prudent, diplomatic and frugal”.
- iii. “Propriety standards – intended to ensure that an evaluation will be conducted legally, ethically, and with due regard for the welfare of those involved in the evaluation, as well as those affected by its results”.
- iv. “Accuracy standards – intended to ensure that an evaluation will reveal and convey technically adequate information about the features that determine worth or merit of the program being evaluated” (AEEPE: 1.3, Feb. 2009).

Questionnaires are “a written set of questions or statement designed to gather information from individuals” (AEEPE: 5.1, Feb 2008) on their attributes, knowledge of a subject area, attitudes, beliefs and behavior. They are a good tool to use for self-evaluation because they can provide both quantitative and qualitative data, are inexpensive and are easy for participants to fill out. Self-evaluations allow the individual to comment on his or her own work and give feedback in the areas that they believe need improvement. Teacher self-evaluation “contributes to improving academic results and life skills” (Cambra-Fierro, et al, 2007). When an individual is required to reflect on their own work the results are typically honest and accepted. Self-evaluations for teachers are increasingly being used as an alternative to external evaluations because external evaluations are more traditional, limited in scope and ignore individual student differences (Baartman, et. al, 2006).

However, “self-reported behaviors often reflect perceptions or beliefs on people’s behaviors rather than their actual behaviors” therefore, “collecting anecdotal reports and direct observations of behaviors in addition to self-reported measures lessens the problem of response bias” (AEEPE:5.1, Feb, 2008). Observations can provide an

outsider's perspective on occurrences or behaviors documented or absent in the questionnaires. Observations are time consuming and more expensive in regards to allocated staff time than questionnaires but increase the reliability and validity of the results if the data collected from observations was used in conjunction with other methods of evaluation.

Focus groups and interviews are other forms of evaluation that can be used to obtain information from individuals. Using a moderator, they guide a group of individuals through a discussion by using open-ended questions. Focus groups are done with multiple individuals, which allow "individuals to use the ideas of others as cues to more fully elicit their own views" (AEEPE: 4.2, Feb 2008). While this may help move the discussion along, it can also hinder information discussed if participants feel pressured into agreeing with the group.

VII. Summary

A part of the Central Wisconsin Environmental Station's mission is to help practicum students become better educators. Current research states that in order to accomplish this goal teachers need to realize that students' process information and learn in different ways. The best way to accommodate different learning styles is to vary the way information is disseminated. Offering the lesson plans in both the written word and through a visual aid will allow different learners a more equal opportunity to process information.

Chapter Three

Methodology

I. Introduction

The goal of this study was to create and evaluate supplementary DVD teaching tools for EE practicum student use at CWES. Data was collected through researcher observations, student reported self-evaluation forms, and focus groups. Quantitative data obtained through the self-evaluation and research observation forms was combined with qualitative data obtained through focus group comments. The quantitative data was then compared to the qualitative data and used to validate the results. The research question was addressed through seven objectives that are divided into tasks, outlined, and explained in this chapter.

II. Objective 1 - Determine if supplementary DVD teaching tools could be beneficial in aiding practicum students in lesson preparation and teaching.

Task 1.1 – Work with CWES Program Manager to determine if there is an interest in creating a supplementary DVD teaching tools and develop a validity panel contact list to determine content and structure of the DVDs.

The CWES Director, Program Manager, and the researcher met in the fall of 2007 to discuss the concept of creating supplementary DVD teaching tools to be used in combination with written lesson plans for the practicum program. In addition to discussing the possible use of DVD teaching tools, a contact list was generated of past

EE graduate and practicum students that had a working knowledge of CWES curricula and the practicum program.

Task 1.2 – Survey a validity panel of professional environmental educators with past CWES association to determine preferred DVD content.

Twelve individuals who had a strong knowledge of CWES curriculum and prior experience reading and teaching CWES lesson plans to K-12 students were invited to partake in the study. An email (Appendix B) was sent in February 2008 to the twelve individuals determined by the Program Manager and the researcher, inviting them to participate in the study. Included in the email was an introduction to the study (Appendix C), a consent form agreeing to participate and a brief survey (Appendix D) consisting of seven questions. The survey asked the validity panel participants their opinions on supplying practicum students with supplementary DVD teaching tools in combination with written lesson plans for lesson development. A reminder email (Appendix E) was sent out two weeks later thanking participants who already sent in their responses and encouraging those who did not to send in their responses as soon as possible.

III. Objective 2 – Create assessment instruments that will measure whether DVD teaching tools are being utilized by practicum students and determine if they are beneficial in aiding practicum students in lesson preparation and delivery.

Task 2.1 - Determine what evaluation tools would be beneficial in gathering data for this study.

Based on the literature review, a mixed method approach to evaluation, which provided the researcher with both qualitative and quantitative data, was used in order to ensure more reliable and valid results. Three evaluation tools including a self-evaluation questionnaire, a researcher observation form and a focus group questionnaire were designated as the data collection methods for this study. Using a current evaluation tool utilized by CWES staff in the practicum program, the researcher compared data obtained from surveying the validity panel with information from the researchers' literature review for the initial creation of the assessment tools used in this study.

Task 2.2 – Create and peer review the assessment tools.

In the spring semester of 2008, the self-evaluation questionnaire (Appendix G), researcher observation form (Appendix H), the focus group questionnaire (Appendix J) and interview questions (Appendix I) for the pilot study were created and peer reviewed through an online course titled “Applied Environmental Education Program Evaluation”. This course was taken through UWSP and put into place through the Environmental Education and Training Partnership (EETAP) and the U.S. Fish and Wildlife Service National Conservation Training Center. EE professionals from around the world reviewed the evaluation tools used in this study through this on-line EETAP course. The tools were also reviewed by and commented on by the CWES Program Manager and members of the researcher's committee.

IV. Objective 3 - Develop a supplementary DVD teaching tool to be used with the assessment tools during a pilot study.

Task 3.1 - Work with CWES staff to determine what lesson will be used during the pilot study.

During the spring 2008 semester a CWES Leaps and Bounds lesson was chosen to be video recorded and edited as the supplementary DVD teaching tool to be used in the pilot study. The lesson was chosen based on schedule availability of the researcher for filming purposes in addition to the schedule of participating practicum students and school groups. Leaps and Bounds was a lesson not yet taught by the spring practicum class and was scheduled to be taught in the middle of the semester and at the end of the semester. This allowed the researcher time to film the lesson being taught by an experienced CWES educator in the middle of the semester and ensure that it would be taught by practicum students at the end of the semester.

Task 3.2 -Record and edit one supplementary DVD teaching tool.

The Leaps and Bounds lesson was taught by the researcher in the middle of the spring 2008 semester to a group of twelve Kindergarten students. The lesson was video recorded by a practicum student who was not scheduled to participate in the pilot study. The video-recorded lesson was then edited using Adobe Premiere Pro CS3 editing software and placed onto a DVD. Members of the researcher's graduate committee including the CWES Program Manager viewed the DVD lesson and made suggestions on improving the quality and structure. Adjustments to the DVD format were made based on their comments and edits were made to the initial lesson, Leaps and Bounds.

Task 3.3 – Use the supplementary DVD teaching in combination with the self-evaluation form in a pilot study.

Three spring 2008 semester practicum students were selected to use the supplementary DVD and complete the self-evaluation form. They were selected based on their teaching schedule and because they had not yet taught or seen the Leaps and Bounds lesson. The practicum students were given the DVD's one week in advance of teaching that lesson, on the same day that they received their teaching schedule. This allowed the practicum students to take the DVD home and use it in combination with the written plan for the same amount of lesson preparation time as a normal program. After using the supplementary DVD teaching tool and completing a lesson preparation form (Appendix A), practicum students taught their scheduled lesson and filled out a self-evaluation form (Appendix G) based on that teaching experience.

Task 3.4 – Interview the practicum students who used the DVD teaching tool and self-evaluation form.

After the practicum students submitted their self-evaluation form, they signed a consent to participate and participated in an interview with the researcher using the pre-designed interview questions (Appendix I). The students were asked to comment on the DVD's practicality and helpfulness in teaching the required lesson plan in addition to making suggestions and comments on the structure of the DVD's and the self-evaluation form.

V. Objective 4 – Edit the supplementary DVD teaching tool and self-evaluation form to accommodate student suggestions gained from the pilot study data.

Task 4.1 – Analyze the data collected on the supplementary DVD teaching tool and self-evaluation form and edit the DVD lesson based on the pilot study.

The data collected from the pilot study was analyzed using a case study coding process (Yin, 2009). Comments made by practicum students were placed into an Excel document and given a proposition number. Similar propositions were then grouped together into subject categories, and four overall themes were created. The themes are discussed in Chapter four, with the individual propositions providing supporting details and evidence for additional needed changes to the DVDs. Changes were made to the Leaps and Bounds DVD and minor edits were made to the self-evaluation form. Comments from CWES program staff and members of the researcher’s advisory board were taken into consideration during the development of the remaining five supplementary DVD teaching tools.

VI. Objective 5 – Develop five additional supplementary DVD teaching tools based on different lesson plans from CWES and implement the teaching tools during the fall 2008 semester.

Task 5.1 – Work with CWES staff to determine a filming schedule based on program availability.

Based on data retrieved from the email survey and pilot study seven CWES lessons were chosen as possible supplementary DVD teaching tools for the research study. Once several lessons were selected, the researcher met with the CWES Program Manager to discuss schedule availability. The five lessons needed to meet the three following criteria in order to be used in the study:

1. The lesson must be available as a selection option for visiting school groups during both the spring 2008 and fall 2008 semester.
2. The researcher and one additional CWES staff member must be available for filming each of the lessons during the spring 2008 semester.
3. The lesson must currently be on the schedule during the spring 2008 semester.

Task 5.2 - Film and edit five CWES lesson plans.

The researcher and other CWES program staff filmed the footage used in the DVDs. The recorded lessons were not scripted and the instructors were CWES graduate students and the Program Manager who all had previous experience leading the lessons at CWES. The footage was then placed onto the researcher's computer and edited using Adobe Premiere Pro CS3 editing software. The DVD format followed the outline of the CWES lesson plan listed on the Desire To Learn (D2L) course software and accessed by practicum students during lesson preparation. The DVD's were previewed by the CWES Program Manager and members of the researcher's graduate committee prior to being implemented into the practicum program.

Task 5.3 – Implement the supplementary DVD teaching tools into the fall 2008 practicum course.

During the three-day practicum training held in the fall 2008 semester, students were informed of the research study and invited to participate. The students were given a brief introduction to the study and the process of using the DVD's and filling out the self-evaluation forms. The students were told that while it was not a class requirement to be included in the research study, it was a class requirement for them to fill out the self-evaluation form once a week. They were also informed that the researcher would be selecting five students (based on schedule availability) to be observed by the researcher at pre-designated times throughout the semester. The students were asked to sign a consent to participate form (Appendix J) and inform the researcher if there were any concern or issues with the DVDs'.

VII. Objective 6. – Use the evaluation tools to record practicum students' reactions to the supplementary DVD teaching tools and record evidence of DVD use throughout each lesson.

Task 6.1 – Collect and record self-evaluation forms from practicum students after each teaching experience.

Each practicum student completed a self-evaluation form once a week after their teaching experience at CWES. Practicum students were required to complete the self-evaluation tool as part of their practicum experience and course requirement. Students placed their completed self-evaluation forms in a labeled box in the practicum office. The evaluation forms were removed from the box at the end of the week and the information was placed into an Excel spreadsheet.

Task 6.2 – Observe practicum students teaching CWES lessons and record any evidence of DVD use throughout the lesson.

Five students out of the ten enrolled in the semester course were selected to be observed by the researcher. Out of the practicum students selected, three of the students were EE majors and two were EE minors. For each of those five students, the researcher attempted to complete four observations. Two of the observations were completed when the practicum student used a supplementary DVD teaching tool, and two observations were completed when they did not use a supplementary DVD teaching tool in lesson preparation. Due to time constraints, some of the researcher evaluations were completed using a video-recorded session of the practicum student's lesson and the content was observed and recorded at a later date.

Task 6.3 -Conduct a focus group with practicum students to determine their reaction in regards to the supplementary DVD teaching tools.

At the end of the fall 2008 semester all ten enrolled practicum students were asked to participate in a focus group session. The students were asked a series of questions on the practicality of using supplementary DVD teaching tools during lesson preparation and the overall layout of the DVD's. They provided information on their individual learning styles and their opinion on using the DVD teaching tools as a resource for the practicum program.

VIII. Objective 7 - Analyze the data to determine the effectiveness and practicum student preference of using the supplementary DVD teaching tools in combination with CWES lesson plans.

For the overall structure of this research project a case study approach was used and both qualitative and quantitative data was collected. A case study “can be used in many situations, to contribute to our knowledge of an individual, group, organizational, social, political, and related phenomena” (Yin, 2009). In this study, the case is the supplementary DVD teaching tools and multiple methods of data collection were used to understand the case and its use in the practicum program. “Many case study researchers, in their pursuit of the delicate and intricate interactions and processes occurring within organizations, will use a combination of methods” (Cassell and Symon, pg. 324) which help to triangulate data and find meaning.

Task 7.1 – Data was collected from the self-evaluation forms and used to determine how effective and useful practicum students rated the supplementary DVD teaching tool and their teaching experience when using the tools.

Quantitative data obtained through a series of ranking and Likert scale questions was placed into an Excel spreadsheet and the frequency, percentage and mean value was calculated for each question. The mean value from self-reported ratings of practicum student lessons when they used a DVD and when they taught a lesson with no DVD assistance were compared. An independent t-test was used to determine if there was a significant difference between the mean values. The data was then graphed to display the students overall opinion of the DVD teaching tools, areas where the DVD’s assisted the student in lesson preparation and areas where they did

not assist in lesson preparation and any significant difference between lessons where a DVD is used in lesson preparation and lessons where no DVD is provided.

Task 7.2 – Data collected from the researcher observation forms was used to identify any evidence of DVD use in practicum students lessons.

Quantitative data obtained through a series of ranking and Likert scale questions was placed into an Excel spreadsheet and the frequency, percentage and mean value was calculated for each question. The mean value from the researcher's observation ratings of practicum student lessons when they used a DVD and when they taught a lesson with no DVD assistance were compared. An independent t-test was used to determine if there was a significant difference between the mean values. Quantitative data was obtained and recorded to provide evidence of DVD use throughout the practicum students' lessons. The data was then graphed to show areas where the DVD's assisted the student in lesson delivery and areas where there was no significant difference between lessons where a DVD is used in lesson preparation and lessons where no DVD is provided.

Task 7.3 – Qualitative data collected from the focus groups was coded into propositions to create overall themes on the opinions and recommendations of practicum students using supplementary DVD teaching tools as a resource for lesson preparation.

Open-ended question responses obtained during the focus group were used to supplement the quantitative data placed in the Excel spreadsheet. The qualitative data went through a process called coding which essentially is the idea of moving from “unstructured messy data to ideas about what is going on in the data” (Janice M.

Morse, 2002). The coding process occurred in multiple steps. First propositions were created that showed thoughts and attitudes about the DVD's based on what practicum students said in the focus group. This allowed the researcher to take the raw data and organize it for a more in-depth look. The second step involved compiling the propositions and putting them into an Excel Spreadsheet table for comparison. Then, similar propositions were grouped into categories and the categories were placed into overall themes. The themes are discussed in detail in chapter 4 with the use of propositions for supporting evidence.

Task 7.4 - The results of the data were analyzed and compared to each other to prove that the assessment instruments were valid and the results accurate.

Through a process called triangulation, all three data sources were compiled and compared to each other. Data obtained from the self-evaluation forms and the researcher observation forms were compared to each other to see if the scores that the practicum students rated themselves matched the scores that the researcher gave the practicum students. This data was supported by quotes and propositions taken from the focus groups. Based on the analysis, recommendations were made on the continued use of the DVDs in the practicum program, further development of additional DVDs, editing of content, extension or decrease of DVD length, delivery method and practicality of DVD use by practicum students.

Chapter Four

Results

I. Objective 1 - Determine if supplementary DVD teaching tools could be beneficial in aiding practicum students in lesson preparation and teaching.

1.1 Email Survey

Twelve participants were invited to participate in an email survey for this portion of the research study. The researcher only received data from a total of three individuals (n=3) after a reminder email (appendix E) was sent out. Due to a time constraint, the research continued with the project using the data obtained from the three individuals. Two of the participants were CWES graduate students who actively taught CWES curriculum for four semesters and worked with training and assisting practicum students with lesson development. The other participant was a practicum student during the spring 2007 semester. All of the participants are currently working in other environmental education programs throughout the United States. The numeric data obtained from the survey was transferred into an Excel spreadsheet and written comments were recorded and used to assist the researcher in the development of the pilot study DVD teaching tool.

a. Benefits of Using a Supplementary DVD Teaching Tool

Survey participants were asked to read a brief research study abstract (Appendix C) and make comments on the introduction of supplementary DVD teaching tools into the practicum program, based on their CWES teaching experiences. Two of the three participants positively commented on the use of DVD teaching tools stressing the

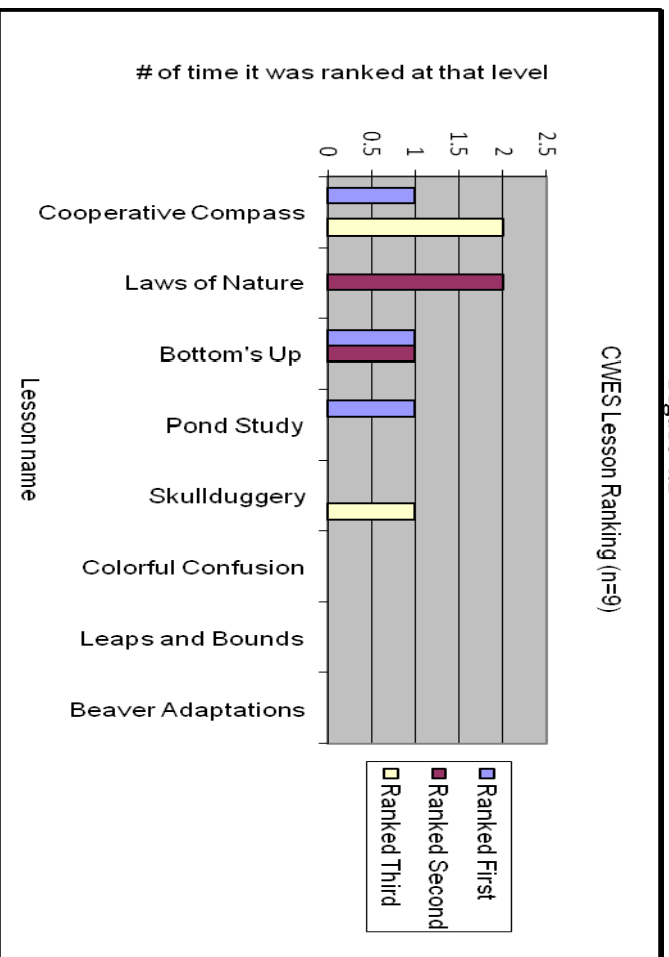
importance of offering as many resources as possible to practicum students during lesson development. One individual stated, “Students would feel more at ease if they could see the lesson before they taught it for the first time”. Another individual focused on the different levels of experience that each practicum student has prior to starting the program and how that experience directly influences their lessons. She stated that the introduction of supplementary DVD teaching tools “might increase their (students with less experience teaching) learning curve and give them a jump start”. However, concerns on “standardizing lessons” were also expressed. One individual did not think DVD’s would be a valuable resource because they were concerned that practicum students would see a DVD and “believe that is the only way the material can be taught”. This of course would deter students from being creative and overall it would “limit the growth of the students as future teachers”. The comments generated from the email survey were discussed with the CWES Program Manager and the researcher’s graduate committee prior to the creation of the pilot DVD.

b. DVD Content

Prior to the creation of the email survey, the CWES Program Manager and the researcher looked at CWES curriculum and created a list of possible lessons to use in the study. The lessons offered in the email survey could not be taken from the Changing of the Land, Winter Ecology or Forestry curriculum because those seasonal lessons would not be available in either the spring semester to be filmed or the fall semester to be taught. Eight lessons, Cooperative Compass, Laws of Nature, Bottom’s Up, Pond Study, Skullduggery, Colorful Confusion, Leaps and Bounds, and Beaver Adaptations were included in the email survey and participants were asked to identify which CWES lessons they believed would benefit practicum students to have a

supplementary DVD teaching tool by ranking their top three choices out of the eight provided. Figure 4.1 shows how the survey participants ranked the eight lessons.

Figure 4.1

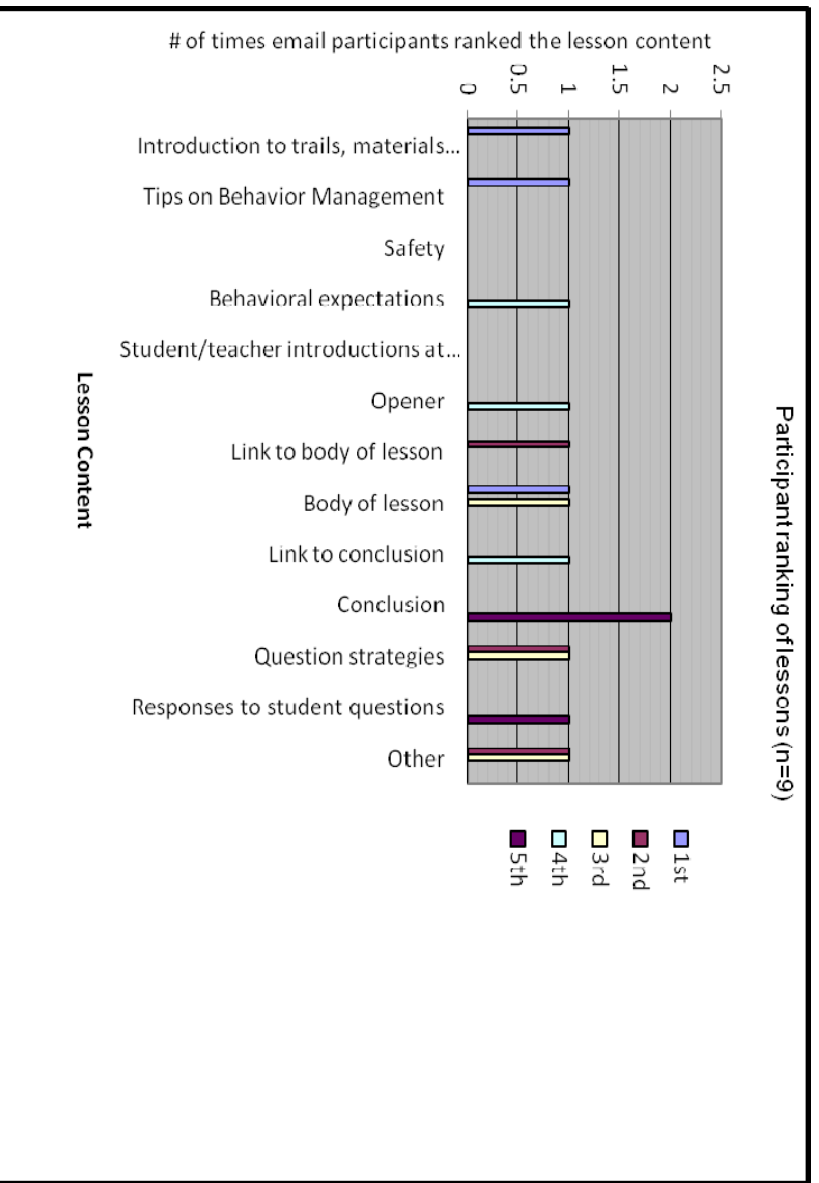


Bottoms Up, Pond Study and Cooperative Compass all received a first level ranking and were placed in the research study along with Skullduggery, which received a lower level ranking by one of the survey participants. Laws of Nature was ranked second by two different survey participants, but was excluded from the study because of scheduling conflicts. All of the lessons chosen by the survey participants were geared toward teaching older students. It came to the attention of the researcher and CWES Program Manager during a scheduling meeting that none of the participants chose lessons involving working with younger students. In order to better accommodate the different age groups that practicum students are required to work with, the CWES Program Manager and the researcher selected the Leaps and Bounds and the Colorful Confusion lessons to be included in the study.

Participants were given a list of twelve different aspects of a CWES lesson and asked to rank the top five that they believe should be included in the DVD teaching tools.

Figure 4.2 shows how survey participants' ranked information that they felt was essential to include in the DVD teaching tools.

Figure 4.2



The items ranked first by participants included an introduction to trails, materials and the set-up of the lesson, the body of the lesson, and tips on behavior management. The only sections that received more than one ranking included the body of the lesson, the conclusion of the lesson, and the section marked other. In the “other” category participants suggested different teaching styles, appropriate techniques to teaching EE at CWES, and how to explain different topics to students (for example, how to properly hold a compass).

c. *Format*

When asked how the information should be presented to students in the DVD teaching tools, the majority of the participants suggested offering the lessons in

segments with an option of viewing the lesson straight through. The suggested time frame for the videos included 10 minutes and 30 minutes. One participant explained that it would be different for each DVD based on the lesson content and number of activities included in that lesson. Overall, it was stressed in all the survey participants' comments that DVD's are a great idea but "should not replace practicum training, shadowing peers or lesson preparation forms" and it should be emphasized that "students can come up with their own creative way to present the information". The practicum students should be discouraged from following the DVD lesson exactly how it is seen or read. It was also suggested that it would be helpful to include an overall DVD on the various campfire programs, skits and songs.

II. Objective 2 – Create assessment instruments that will measure how beneficial supplementary DVD teaching tools are in aiding practicum students in lesson preparation and teaching.

The self-evaluation form (Appendix G) was created with a Likert scale format and open-ended questions. Practicum students used it each week after their teaching experience and completed a separate section if a DVD was provided in conjunction with that lesson plan. Section A of the self-evaluation form focused on the students' lesson preparation procedures, asking them to comment on the number of times they had seen or taught this lesson, how prepared they felt to teach the lesson, and the length of time it took them to prepare. Section B focused on the use of the DVD (if one was provided for that lesson). It asked the practicum students to rank on a scale from 1 to 5 what information the DVD provided, what ideas or activities they used from the DVD, and at what point during lesson preparation they used the DVD. Section C focused on

an overall critique of their teaching experience with an emphasis on group management, safety, delivery method and lesson content.

In addition to the self-evaluation form, a structured observation form (Appendix H) was developed to assist the researcher in recording observations of practicum student lessons. The observation form followed a similar format to the self-evaluation form and was used to provide additional evidence for or against the data submitted by the practicum students. It included four sections: basic lesson information, lesson preparation (set-up of teaching space and information obtained from their lesson preparation form), material knowledge, and a teaching assessment focused on group management, safety, delivery method, and lesson content.

The focus group questionnaire (Appendix J) was created using open-ended questions pertaining to the practicum students' likes and dislikes in regards to the DVD teaching tools. Although practicum students were asked to make recommendations on the supplementary DVD teaching tools in their self-evaluation forms, the focus group was designed to gain complete, question driven responses on the needs of the students and the benefits and disadvantages of using the DVDs. Practicum students were asked questions pertaining to DVD length, DVD structure, and what lessons should CWES should provide a supplementary DVD in addition to a written lesson plan.

III. Objective 3 - Develop a supplementary DVD teaching tool to be used with the assessment instruments during a pilot study.

The data gained from the email survey was used to assist in the development of the pilot study DVD. The email survey data on DVD format and content was discussed with the CWES Program Manager and used in the creation of a pilot study DVD. Based on the schedule availability of the researcher and the spring practicum students a Leaps

and Bounds lesson with Kindergarteners was filmed and edited for use during the spring 2008 pilot study.

3.1 DVD Content

The DVD lesson followed the original written lesson plan offered to practicum students and included an opener, links and transactions from activity to activity, the body of the lesson, and the conclusion. The edited lesson allowed practicum students to view major aspects of the lesson without being able to copy word for word what the instructor in the video is doing. It was designed so that practicum students would need to read the lesson plan in conjunction with the DVD in order to understand the material. The DVD did not show students questions, responses to lesson directions or interactions between the CWES educator and the students.

3.2 DVD Format

A Leaps and Bounds lesson was used as the pilot study DVD based on schedule availability of the researcher and participating practicum students. The data obtained from the email survey determined that the pilot study DVD would not exceed twenty minutes in length and that practicum students would have the option of viewing the lesson straight through without breaks. The pilot study DVD that was developed was edited to thirteen minutes in length and provided students with an option of viewing the thirteen minute lesson straight through or watching it in sections as they read through the written lesson plan.

3.3 Pilot Study

During the final teaching week of the spring 2008 semester, three practicum students used the Leaps and Bounds DVD teaching tool for lesson preparation. The three students consisted of two EE majors and one education major with a minor in EE. The students used the DVD to help them prepare their lesson and filled out the self-

evaluation form at the end of their teaching day. At the end of their teaching experience each student sat down with the researcher in an interview and answered a few questions in regards to the DVD teaching tool and their practicum experience that semester. The practicum students were asked questions regarding DVD length, structure and what lessons should or should not have a DVD component.

IV. Objective 4 – Analyze the pilot study data and edit the supplementary DVD teaching tool and self-evaluation form to accommodate practicum student suggestions.

For this portion of the study, the researcher organized and analyzed the data derived from the individual interviews with the three-practicum students that participated in the pilot study. The qualitative data obtained was used to guide the researcher in the refurbishing of the pilot study DVD and the creation of five additional DVD teaching tools. Individual attitudes and thoughts in regards to the supplementary DVD teaching tools were labeled and numbered as propositions (Appendix L). Overall, 35 different propositions were created and placed into a table for comparison. Propositions that were similar in content were grouped into categories and categories were further grouped into themes. Themes with supporting categories and propositions are outlined in Table 4.1. The categories and themes developed during this portion of the research are discussed in the next section with supporting evidence provided through individual propositions.

Table 4.1- Categories and Themes

Category 1. – Lesson Preparation

- Theme 1 - Familiarity with lesson content contributes to practicum student success in lesson development and delivery
- Theme 2 - Familiarity with lesson materials and site resources contributes to practicum student success in lesson development and delivery

Category 2. – DVD Use and Impact

- Theme 3 - DVD's provide an additional form of support for lesson development and delivery
- Theme 4 - Tailoring the DVD teaching tools to the needs and requests of the practicum students will increase student use and assist in lesson development

Theme 1 – Familiarity with lesson content contributes to practicum student success in lesson development and delivery

Practicum students stated that familiarity with lesson content directly contributed to their success in a well-developed and well-delivered lesson. Any previous knowledge on the lesson content assisted the students with leading lessons. This especially assisted students with lessons that were considered content heavy. One student remarked that one of the reasons he enjoyed teaching a bird lesson was because it “came out like I planned, but I had previous knowledge” (proposition 2).

Theme 2 – Familiarity with lesson materials and site resources contributes to practicum student success in lesson development and delivery

Another factor that practicum students suggested greatly impacts their ability to properly prepare and teach a lesson pertains to how familiar they are with the materials and trails that they will need to utilize during that lesson. For example, all three of the pilot study participants said that in developing and leading CWES lessons, the most useful assistance came from visually seeing the lesson being taught during staff training or through peer observations. Seeing the lesson taught prior to teaching it themselves allowed the students to observe the trails, materials and layout of the lesson. One of the students commented on the difficulty of teaching a GPS lesson because of its use of a technical equipment and hidden caches located throughout the CWES property. They said, “I never used this (GPS unit) before this lesson, I did not know where the boxes (caches) were and I had to learn to use the unit that morning” (proposition 3).

Theme 3– DVD’s provide an additional form of support for lesson development and delivery

In regards to the possible use of the supplementary DVD teaching tools, the practicum students had both positive and negative remarks on the impact the DVDs may have on lesson development and delivery. Two of the students highlighted the appeal the DVD’s would have for the visual learner, stating that some individuals may grasp the structure and flow of the lesson better by seeing it rather than reading it in a lesson plan. The practicum students said that the DVD was useful in seeing the materials in use and helping them to get a grasp on “the flow of the lesson” (proposition 27) which is something you can’t always decipher from a written lesson plan. One student used a specific example of when it was important to see a lesson prior to teaching it for clarification on activity materials. She mentioned that a DVD would have been helpful in comprehending the content and activities of a CWES lesson titled

“Spring Fling”. In reading the lesson plan, the student was confused by the use of the words “frozen salamanders” and unsure what the materials in the lesson box contained. This confusion made it difficult for her to complete her lesson preparation form. This student stated that the DVD’s help “ me visualize what things look like rather than just reading about them so things like the ‘frozen salamander’ would be less confusing” (proposition 6). Even though this student did not view a DVD for the Spring Fling lesson that she referenced, she stresses that it would have been beneficial if one existed.

One point of common concern between all three students is the effect that the DVD’s may have on the “creativity of the practicum students” (proposition 8). One student in particular felt that in watching the lesson on DVD he was less capable of coming up with his own activity ideas and directions. It reinforced him to do what was on the DVD (proposition 9). While the other pilot study students also agreed that the DVD’s could affect the creativity of the student, they also mentioned that copying was better than teaching a poorly structured and possibly incorrect lesson. One student stressed, ““My viewpoint is that some people will use the resource because they don't have that creative ability and if that means copying then that's okay, it's good for the visiting students" (proposition 11).

Whether the pilot study students stressed that the DVD’s would take away from the practicum program or aid the visual learners, they all agreed that the DVD’s should not replace practicum training. This information was also consistent with the data obtained through the email survey. The practicum students also agreed that while they might not use the DVD’s personally, they understand that “everyone is different and the DVD’s would be useful to some practicum students” (proposition 16).

Theme 4– Tailoring the DVD teaching tools to the needs and requests of the practicum students will increase student use and assist in lesson development

In addition to providing information on possible impacts that the supplementary DVD's would have on the practicum program, the three pilot study students were asked to comment on the structure and length of the DVD. They were also asked to provide names of lessons they believe need a supplementary DVD teaching tool to accompany the written lesson plan.

The pilot study DVD was 13 minutes in length and the student responses to this length varied greatly but the average maximum time length suggested for each DVD was about 20 minutes. One student mentioned that “it has to be longer than 15 minutes to make it beneficial” (proposition 25) while another stated that the 13 minute length of the “Leaps and Bounds video was perfect” (proposition 31).

Suggestions on content and DVD structure also varied greatly between students. However, some commonalities existed such as including a map of trail and teaching locations and including a still image of the materials found in each lesson box. Additionally, one student commented “I would like the DVDs to flow more easily. It is hard to see the flow of the actual lesson on the DVD and I wouldn't cut out so many parts” (proposition 18). One of the students made a suggestion on distributing the DVD's to practicum students through a “library checkout system” and stressing that they should not be a required assignment or students “wouldn't want to use them” (proposition 31).

There was a wide-ranging list of suggested lessons to convert to DVD teaching tools which included Have Seeds will Travel, Spring Fling, Bottoms Up, Challenge Course, Beaver Adaptations and Winter Lake Study. The suggested lessons seemed to be based on the students original responses to what made lesson preparation difficult. If

the student did not have any previous knowledge on the subject or the lesson was considered “content heavy” then they suggested that it should have a supplementary DVD teaching accompanying the written lesson plan. This means that the needs of the students will vary based on their own background knowledge and comfort levels with the curriculum. Evidence of this can be seen in two different student reactions to the same GPS lesson. One of the students said “the most difficult lesson I had to prepare for was GPS” (proposition 26) and suggested providing a DVD for that lesson. Another student said, ““I don't think some lessons need a DVD, like GPS, snowshoeing, beaver adaptation. Especially for GPS, I don't think I can watch a video on how to press buttons” (proposition 30).

VI. Objective 5 – Develop five additional supplementary DVD teaching tools based on different lesson plans from CWES and implement the teaching tools during the fall 2008 semester.

During the fall 2008 semester ten practicum students participated in the study. Four of the students were EE majors, one student was an EE graduate student and the remaining six were EE minors. The data gained from the pilot study and information meetings between the research and CWES program staff were used to construct five additional supplementary DVD teaching tools in addition to making changes to the Leaps and Bounds DVD.

5.1 DVD Content

Each DVD’s contains a menu with the option of playing the DVD straight through or selecting scene by scene which corresponds to the titles list in the written lesson plan. Teaching tips on material use and seasonal variations are included in the

beginning of each DVD. The Cooperative Compass and Pond Study DVD's include a section where the student can look at a highlighted map showing trails and teaching location that are essential to that lesson. The inside covers of the DVDs provide students with an image of the materials used in that particular lesson and all of the materials can be seen in use during the DVD's.

5.1 DVD Format

The five additional lessons including Cooperative Compass, Pond Study, Bottom's Up, Colorful Confusion, and Skullduggery were edited incorporating the changes and ideas gained from the pilot study. The DVD's differ slightly in length but average between 13 and 20 minutes but the overall format remains the same as the pilot study DVD. Each DVD contains a menu that allows the viewer to choose an option of playing the lesson plan straight through or selecting scenes that corresponds to the titles list in the written lesson plan. The supplementary DVD teaching tools were distributed weekly through a library check out system in the practicum office at CWES.

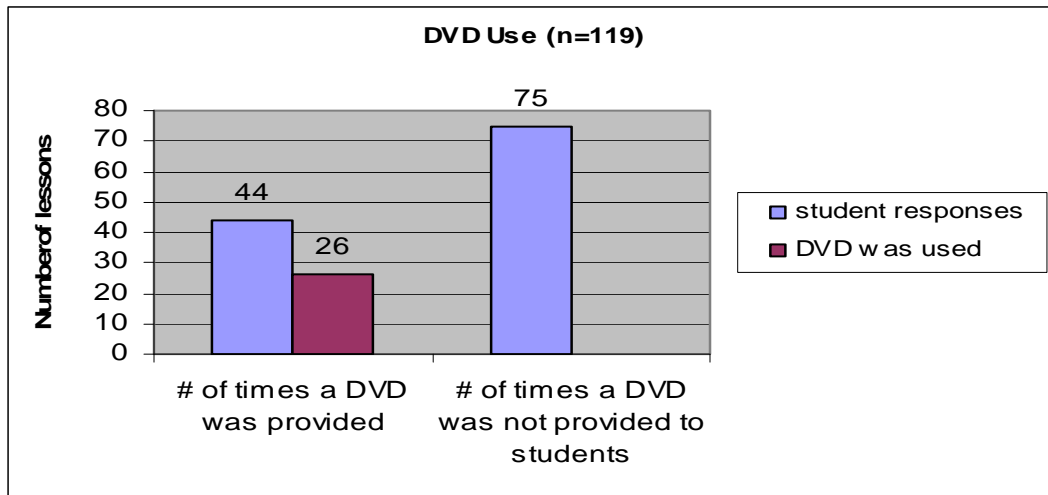
VII. Objective 6 – Use the evaluation instruments to record practicum students' reaction to the DVD teaching tools, and record evidence of DVD use throughout each lesson.

6.1 Self-evaluation Forms

A total of 119 self-evaluations were collected during the fall 2008 semester from the ten participating practicum students. Out of the 119 self-evaluation forms completed, a DVD option was available for use by practicum students 44 times (30%). Practicum students used the DVD 26 out of the 44 times available (Figure 4.3). Students listed multiple reasons for not using a supplementary DVD in conjunction with the written lesson plan. Most of the students opted not to use a DVD based on a

previous viewing of the lesson either by a peer in the program or through the staff training. Some students were required to teach the same lesson multiple times and chose not to use a DVD in lesson preparation because they already had experience teaching that lesson earlier in the semester at CWES or at another facility. This shows that students are only utilizing the DVD teaching tools during their first experience teaching that particular lesson.

Figure 4.3



6.2 Observation Forms

Nineteen total observation forms were completed by the researcher on practicum student lessons during the fall 2008 semester. Seven of the lessons observed were lessons where the student used a supplementary DVD teaching tool in lesson preparation. Ten observations were completed on lessons where the student did not have an option of using a supplementary DVD teaching tool in lesson preparation. The remaining two lessons were observed when a practicum student should have used a DVD in lesson preparation but either forgot or chose not to.

6.3 Focus Group

The focus groups were conducted during the last week of the fall 2008 semester after the students' final teaching lesson at CWES. Two focus groups were conducted with nine out of the ten participating practicum students. The focus groups were held in the CWES practicum office and were approximately an hour in length. Practicum students discussed in detail their likes and dislikes regarding the supplementary DVD teaching tools.

VII. Objective 7 - Analyze the data to determine the effectiveness and practicum student preference of using the supplementary DVD teaching tools in combination with CWES lesson plans and make recommendations to CWES Staff on overall integration of DVD teaching tools.

To assist with validity, triangulation was applied to the different data collected. The researcher looked at data compiled through the self-evaluation forms, researcher observation forms and focus groups and compared the results to each other looking for similarities and differences to show that the results are a true representation of the population. Several themes relating to DVD use and lesson preparation were created from the focus group data and compared to the self-evaluation and researcher data. The four overall themes developed and discussed in this section are: **Theme 1** -Familiarity with lesson content contributes to practicum student success in lesson development and delivery. **Theme 2** – Familiarity with lesson materials and site resources contributes to practicum student success in lesson development and delivery. **Theme 3** – DVD's provide an additional form of support for lesson development and delivery. **Theme 4** –

Tailoring the DVD teaching tools to the needs and requests of the practicum students will increase students use and assist with lesson development.

7.1 Focus Group Data

For this portion of the study data was collected in a manner similar to objective 4. The researcher conducted two focus groups during the last week of the fall 2008 semester. Nine of the ten practicum students were present at the focus group. One student was unable to participate due to a schedule conflict that week. Individual attitudes and thoughts in regards to the supplementary DVD teaching tools were labeled and numbered as propositions (Appendix L). Overall, 55 different propositions were created and placed into a table for comparison. Propositions that were similar in content were grouped into categories and categories were further grouped into themes. Themes with supporting categories and propositions are outlined in Table 4.2. The categories and themes developed during this portion of the research are discussed in the next section with supporting evidence provided through individual propositions.

Table 4.2 – Categories and Themes Derived from Focus Group Data

Category 1. – Lesson Preparation

- **Theme 1** -Familiarity with lesson content contributes to practicum student success in lesson development and delivery
- **Theme 2** -Familiarity with lesson materials and site resources contributes to practicum student success in lesson development and delivery

Category 2. – DVD Use and Impact

- **Theme 3** -DVD's provide an additional form of support for lesson development and delivery

- **Theme 4** -Tailoring the DVD teaching tools to the needs and requests of the practicum students will increase student use and assist in lesson development

Theme 1 – Familiarity with lesson content contributes to practicum student success in lesson development and delivery

The practicum students listed various reasons for struggling with and succeeding in the development and delivery of a CWES lesson. Several students commented specifically on the lesson itself, saying that it was difficult when the lesson itself was incomplete or confusing (proposition 24), content heavy (proposition 4) or simply “difficult to teach when they are out of season” (proposition 5).

Areas that assisted practicum students in lesson preparation were similar to those highlighted in the pilot study. Practicum students agreed that they were more comfortable teaching lessons where they had previous knowledge of the subject matter (proposition 1). This was especially useful in lessons that practicum students stated were content heavy such as forestry, bird identification and the changing of the land curriculum. However, the DVDs did assist some students in lesson development even in situations where the practicum student was familiar with the lesson content. One student was commenting on what made teaching a Bottom’s Up lesson easy to prepare for. They stated, “I had previous knowledge of Bottoms Up, but it (DVD) helped out with the ground rules” (proposition 6).

Each lesson is different for each individual due to prior knowledge and past teaching experiences. Some practicum students were very comfortable teaching Group Initiatives and Challenge Course activities because they had previously worked as camp counselors leading similar lessons. Other practicum students were comfortable with

lessons such as Cooperative Compass or GPS because they taught similar lesson at other environmental education centers. These factors also contribute to how the individual practicum student perceived changes in lesson preparation procedures throughout the semester. Some of the practicum students stated that the time it took to prepare for a lesson changed from the beginning of the semester to the end (proposition 29). One student commented that “it took half the semester before I was comfortable teaching” (proposition 30). Other students said that the time it took for them to prepare a lesson did not change over the course of a semester (proposition 46).

Theme 2 – Familiarity with lesson materials and site resources contributes to practicum student success in lesson development and delivery

Aside from prior knowledge, practicum students stressed the importance of being able to see the lesson taught prior to teaching it themselves. They expressed that they felt more comfortable with lessons that they have seen taught before (proposition 2). It was helpful for them to see lessons during training (proposition 3), walk the paths on site, and learn the general area (proposition 32). One student struggled with a skullduggery lesson saying, I have “never seen skulls before and I wanted to take the time to be familiar with each one” (proposition 47).

Specifically the DVDs assisted practicum students in certain areas of lesson development. The most obvious area of assistance was in material knowledge, and on-site resources. Practicum students listed several ways that the DVDs provided assistance in this area including “providing maps” (proposition 34), “reminder of boundaries when you get out to a site” (proposition 35), and “seeing the size of the materials you will carry” (proposition 39).

Theme 3 – DVD’s provide an additional form of support for lesson development and delivery

Practicum student comments on using the supplementary DVD teaching tools during lesson preparation show that there are mixed feelings in regards to using the DVDs but the overall response is positive. Several students commented on the DVD’s as being “another resource” (proposition 10) available to students. The DVD’s would benefit “visual learners” (proposition 7) more than others, but “it wouldn’t hurt to have one (DVD) for everyone (lesson)” (proposition 11). Practicum students also emphasized that the DVDs provided them with “different name learning activities” (proposition 37), “teaching tips” (proposition 33), reminders of “what to say and do” (proposition 36) and it “helped provide a different way of structuring the lesson” (proposition 38).

While the DVDs offered students some positive ideas and solutions to lesson preparation, it also brought up some areas of concern. Similar to the comments made in the pilot study interviews and in the email survey, practicum students are concerned that the DVD’s may limit their creativity (proposition 14). While none of the students admitted to copying their lesson directly from the DVD themselves, they did think that other students might be tempted too in the future. Several of the students also expressed their concern with the creation and use of the DVD’s replacing the 3-day trainings held at the beginning of the semester. Stressing that the use of DVDs in lesson preparation is good but the “DVDs can’t replace seeing it in training” (proposition 12).

Theme 4 – Tailoring the DVD teaching tools to the needs and requests of the practicum students will increase student use and assist in lesson development

The focus group offered practicum students a chance to make suggestions and recommendations on the structure, format, length and content of the supplementary DVD teaching tools. Practicum students offered several suggestions on how to improve the DVDs but the responses varied from student to student. Some practicum students made comments referring to specific DVDs such as, “if something is referred to in the DVD it needs to be in the written lesson plan as well. For example: in the Skullduggery DVD teaching tool, the instructor leads a ruler activity that was not found in the lesson plan” (proposition 41). This student stressed that she was very confused by the DVD because she could not find the activity in the written lesson plan. She wanted to lead that activity but had no information on it aside from the small section shown in the DVD. The other students agreed that the activities and information found in the DVD should coincide with the information provided in the written lesson plan.

Several students also commented on the teaching tips located at the beginning of each DVD. The teaching tips were designed to inform practicum students on safety reminders, possible outdoor teaching locations to use with that lesson and seasonal changes that may affect the structure of the lesson. Most of the practicum students found the teaching tips useful but would have liked to have seen that section carried throughout the DVD (proposition 40) and they also wanted to ensure that all of the DVDs would have a teaching tip component (proposition 48). Some of the suggestions for the teaching tip area of the DVD include offering more options for lesson locations and freedom of lesson structure. One individual wanted the teaching tips to provide “more locations” (proposition 8) while another students wanted “more encouragement on structuring lessons however you want” and reminding them that the DVDs are a resource that can be used any way the student wants (proposition 55).

One of the common complaints of the DVDs was that the DVDs showed very limited interaction between the educator and the students. Practicum students wanted to see the “behavior management of the student groups” (proposition 9). The original idea behind excluding student reactions in the DVD teaching tools was to keep the time down. However, practicum student explained that by adding the reaction of the students in the DVD it would assist them in understanding how to handle different situations (proposition 21).

When the practicum students were asked to comment on the length of the DVDs the responses varied but provided the researcher with suggestions for improvement. While some students agreed that the length of the DVD should depend on the lesson (proposition 23), others stressed the importance of showing more behavior management of the students and including student reactions to activities and questions. Adding this component to the DVD would add to the overall length of each lesson and some students are aware of this saying “they may need lengthening” (proposition 17). However, not all of the students liked the idea of lengthening the lessons. Some stated, “I’m glad the DVD’s are short” (proposition 16) because this make additional time commitments for lesson preparation. One student was confused by the short length of the DVDs saying, “the length of the actual lesson is misleading, because it's only a 15 minute DVD and the timeframe for your lesson is sometimes an hour to an hour and a half” (proposition 19). The other students disagreed with his comment and one remarked “I disagree with the misleading part. You have to read the lesson plan” (proposition 20). All of the other practicum students agreed that you cannot use the DVD alone in lesson preparation, it is important to read the entire lesson plan.

In addition to providing the researcher with feedback on the structure and quality of the supplementary DVD teaching tools, the practicum students also had some

suggestions on which CWES lessons they think should and should not have a DVD component, and when a DVD is not useful to practicum students. The lessons that practicum students suggested for offering a DVD component were also the lessons they listed as the most difficult to teach because it was either content heavy, they did not know a lot about the subject or it was an inappropriate season to teach the lesson. These lessons included; forestry, birds, changing of the land curriculum, and GPS (propositions 50-53). Several of the students also suggested that a helpful addition to practicum would be to include a general DVD (proposition 49) at the beginning of the semester that included all of the trail systems and building locations.

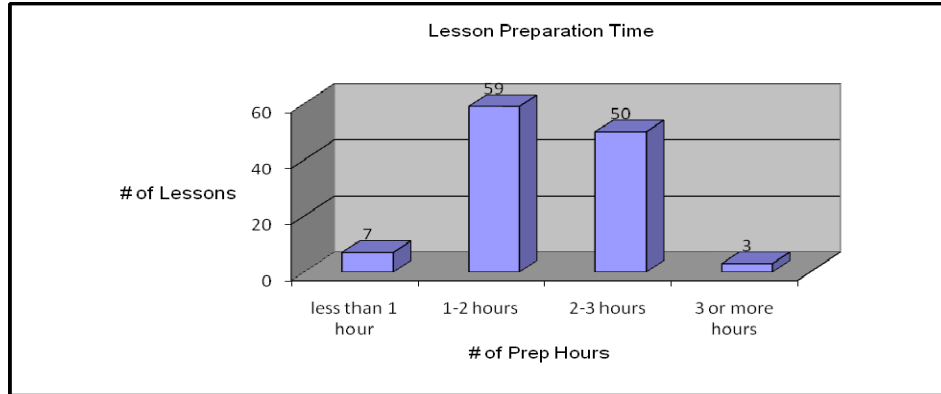
7.2 Self-Evaluation Form Data

The following data was obtained through self-evaluation questionnaires based on 119 responses from ten practicum participants during the fall 2008 semester. The self-evaluation form (Appendix G) was divided into three sections, lesson preparation, supplementary DVD teaching tool, and teaching skills and strategies. As indicated in Chapter 3, practicum students were asked to respond to a series of statements within the three sections. Evidence provided in the following section directly aligns with **Theme One, Theme Two** and **Theme Threee**.

1. Lesson Preparation: Students were asked a series of questions in regards to their lesson preparation routines, procedures, comfort level teaching the material and corresponding experience with that particular lesson. Figure 4.4 shows that in preparing for teaching a lesson the majority (91%) of their lessons required between one and three hours of preparation. This included reading the lesson plan, creating higher thinking level questions,

organizing the structure of their lesson and watching a supplementary DVD teaching tool (when provided).

Figure 4.4



Practicum students were also asked to rank how well prepared they were to teach that days lesson with “1” being the least prepared and “10” being the most prepared. Figure 4.5 shows that the students ranked a majority (97%) of their lessons over 5 which indicate that they felt comfortable with the material and structure of the lesson. Very few individuals (3%) scored themselves at a 5 or lower.

Figure 4.5

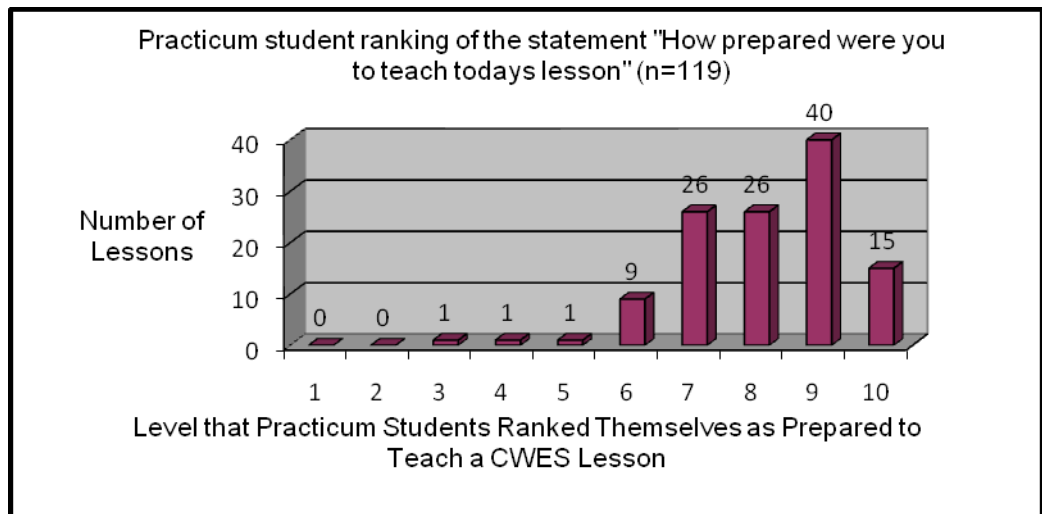


Table 4.3 shows the mean value of how the individual practicum students scored themselves when they used a DVD in lesson preparation and when they did not use a DVD in lesson preparation. In order to find out if the difference between the two scores were statistically significant (< 0.05 or 95%), the researcher completed an independent (2-tailed) t-test to locate the p-value. However, the number of variables for the times DVD's were used (n=26) was less than the variables for the evaluation completed when no DVD was used (n=93). In order to run the T-test the researcher first took a random sample of the data collected when no DVD was used in lesson preparation. While the mean score is slightly higher when a practicum student used a supplementary DVD teaching tool in lesson preparation the difference is not significant. The p-value shows that using a DVD during lesson preparation does not significantly effect how the practicum students ranked their individual preparation score.

Table 4.3 Individual Ratings of How Prepared a Student Felt to Teach a CWES Lesson

Mean Score with DVD (n=26)	Mean Score without DVD (n=26)	P-Value
7.96	7.87	0.92

2. Supplementary DVD Teaching Tool: The supplementary DVD teaching tools were used 26 times (n=26) during the semester. When a DVD was used in lesson preparation, practicum students filled out an additional section on the self-evaluation form. This provided the researcher with data on what information the DVD's provided to students and how the practicum students used the DVDs during lesson preparation.

The practicum students were asked to record when they were using the DVD teaching tools. They were given a series of four options and asked to mark all that apply each time they used a supplementary DVD teaching tool. Therefore, the total number of responses (n=55) is more than the total number of DVD evaluation forms (n=26)

reported earlier in objective six. More responses were listed because some of the practicum students chose more than one option available in this section of the evaluation form. Table 4.4 shows the frequency and percentage of all four options offered to students. The table shows that practicum students were utilizing the DVD lessons equally throughout their lesson development. There was no preference for using a DVD prior to reading the lesson plan or after reading the lesson plan.

Table 4.4. When a DVD was utilized during lesson preparation (n=55)

Prior to reading the lesson plan	13	24%
After reading the lesson plan	13	24%
Prior to writing the lesson preparation form	14	25%
After writing the lesson preparation form	15	27%

Practicum students were also asked to comment on a series of 10 statements using a five-point Likert scale with the lowest option being “1” (strongly disagree) and the highest option “5” (strongly agree). Figure 4.6 shows that 73% of the time, practicum students agreed or strongly agreed with the statement “the supplementary DVD helped me prepare for today’s lesson” while only 8% disagreed and 19% marked neither agree nor disagree (Theme 3).

Figure 4.6

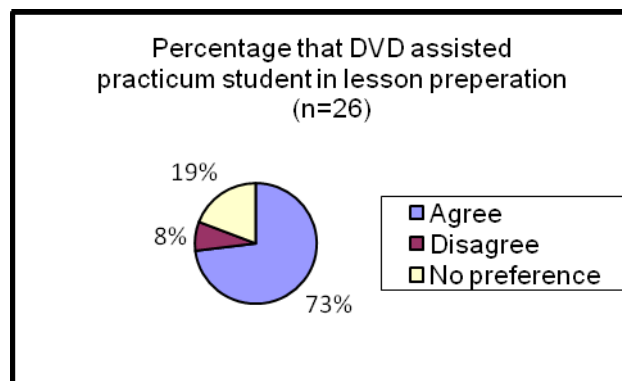


Figure 4.7 shows that the majority of practicum responses (73%) indicate that the DVDs provided them with activities or ideas that were not found in the original lesson plan (Theme 3).

Figure 4.7

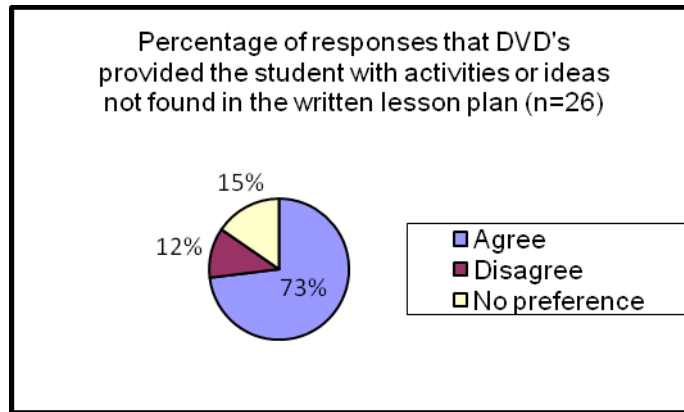
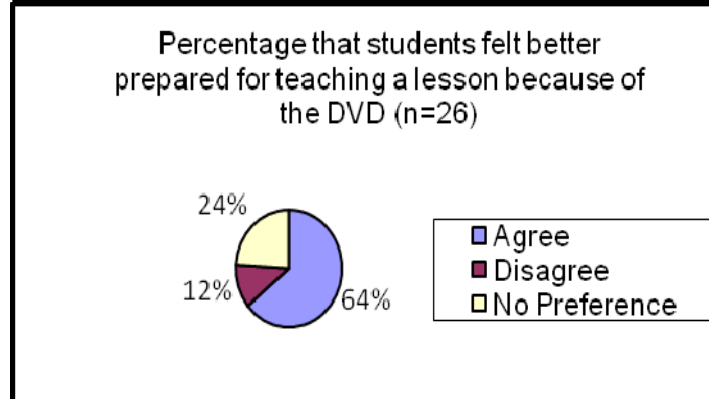


Figure 4.8 shows that 64% of the responses taken from the self-evaluation form ranked agreed or strongly agreed for the statement, “I felt better prepared to teach that lesson because of the DVD teaching tool”. Overall, the practicum student responses indicate the supplementary DVD teaching tools assisted or provided them with information that was useful in lesson preparation (Theme 3).

Figure 4.8



Specifically, the DVD’s assisted practicum students in knowledge of lesson materials, trails, and activity directions. Table 4.5 shows the mean score when practicum students stated they integrated ideas, directions, activities or strategies from the DVD’s into their own lesson plans. The statements were ranked by students using a Likert scale with “1” (strongly disagree) as the lowest and “5” (strongly agree) as the highest. The practicum students agreed that they were utilizing the material and site

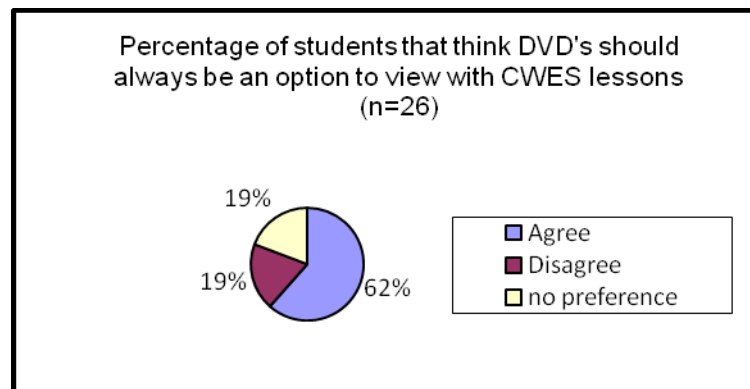
resources found in the DVD's (Theme Two) in addition to the activity directions and some of them used questioning strategies and safety procedures found in the DVD teaching tools (Theme One). However, on average they were not using safety procedures and behavioral management techniques. As indicated in the focus group data, this was because the DVD's did not provide this information.

Table 4.5 Results from DVD integration into practicum lesson plans. (n=26)

Statement	Percent that agreed with this statement
The supplementary DVD teaching tool increased my awareness of materials and on site resources (trails, lakes, etc) utilized in this lesson	84%
I integrated activity directions from the DVD lesson into my own lesson	88%
I integrated questioning strategies from the DVD lesson into my own lesson	54%
I integrated safety procedures from the DVD lesson into my own lesson.	50%
I integrated behavioral management strategies from the DVD into my own lesson	23%

When students were asked if they thought that supplementary DVD teaching tools should always be an option to view for lesson preparation only 62% of the responses listed agree or strongly agree (Theme Three), with the remaining 38% split evenly among no preference and disagree or strongly disagree (Figure 4.9).

Figure 4.9



The information obtained from this section varied slightly from the data obtained in the lesson preparation section of the self-evaluation forms. In the lesson preparation section the data did not significantly show that practicum students scored themselves higher in terms of level prepared when they used a DVD during lesson preparation and when no DVD was used. The data obtained in this section shows that a majority of the time (64%) practicum students said they were more prepared when they used a DVD in lesson preparation and that the DVD's were useful in providing some lesson information. The practicum students also mentioned that they would like the option of using a DVD to prepare for a CWES lesson. A few of the students mentioned the idea of learning styles in the comment sections of the self-evaluation forms. One student said, "I found the DVD good for cleaning up small confusions I had, however, not my preferred learning method. I think having the DVD's as an option is great for students". Another student also mentioned learning styles but commented that it worked for their favored method stating, "I am a very visual person so the DVD helped me get a better grasp on the lesson".

3. Teaching Skills and Strategies: In addition to providing responses to questions relating directly to the DVDs and their use in lesson preparation, practicum students were also asked to evaluate their lesson delivery. Students rated themselves on group management and safety supervisions, and lesson content and delivery method, both when using a DVD and when a DVD was unavailable. The practicum students were asked to evaluate their teaching skills and strategies using a rubric. They were presented a series of statements and asked to rate themselves based on how well they related to each statement. The rubric consisted of a scale with "1" used when they never identified with the statement during their lesson, "2" when they sometimes identified

with that statement and “3” when they always identified with the statement. Another option available was N/A for situation when the statement did not apply to that lesson. Table 4.6 shows the mean score of student’s responses with any answers marked N/A thrown out and the p-value calculated using an independent t-test. Any p-value < 0.05 shows a statistical significance between the two data sets. For this section the researcher took a random sample of the scores given when a DVD was not used, because the variables for the two data set were originally unequal with n=26 for responses recorded using the DVDs and n=93 for responses recorded when a DVD was not used. There is no significance difference between the mean scores in the self-reported evaluation scores regarding group management and safety supervision, when a practicum student uses a DVD during lesson preparation and when they do not use a DVD.

Table 4.6 Individual Ratings of Group Management and Safety Supervision (n=26)

Statement	Mean Score with DVD	Mean Score without DVD	P-Value
I clearly communicated and enforced behavioral expectations and boundaries to students	2.58	2.58	1
I stopped inappropriate and potentially dangerous behavior early, effectively, and appropriately without teacher intervention *(n=24)	2.71	2.71	1
I created a positive, comfortable and fun atmosphere for learning	2.81	2.85	0.72
I used an effective attention getting strategy	2.62	2.62	1
I was able to keep the group on task despite challenging students/situations	2.62	2.62	1
I accounted for all students, and kept the group together especially when utilizing CWES trails *(n=24)	2.88	2.96	0.31
I clearly communicated to students potential hazards and how to prevent accidents and injuries *(n=25)	2.80	2.72	0.56

* Answers with an N/A were excluded, therefore the number of responses decreased

The results of the students' evaluation on lesson content a delivery method show similar results to their responses regarding safety procedures and behavioral management. Table 4.7 shows the mean score of student's responses with any answers marked N/A thrown out and the p-value calculated using an independent t-test. Any p-value < 0.05 shows a statistical significance between the two data sets. For this section the researcher took a random sample of the scores given when a DVD was not used because the variables for the two data set were originally unequal with $n=26$ for responses recorded using the DVDs and $n=93$ for responses recorded when a DVD was not used. There is no significant difference in self-scores between using a supplementary DVD teaching tool and lessons presented when a DVD was not utilized.

Table 4.7 Individual Ratings of Lesson Content and Delivery Methods (n=26)

Statement	Mean Score with DVD	Mean Score without DVD	P-Value
I was able to answer student questions regarding lesson content	2.58	2.65	0.61
I effectively used teachable moments and demonstrated knowledge gained through the Nature Navigator site *(n=25)	2.64	2.60	0.80
I set and vocalized appropriate time durations for all the activities in the lesson	2.19	2.54	0.07
I provided a creative and engaging introduction and took a few moments to learn the students' names *(n=25)	2.96	2.92	0.56
I provided activities that were well sequenced with proper links	2.65	2.62	0.79
I used an unbiased questioning pattern (male/female and calls on students in all areas of the room)	2.85	2.77	0.49
I reacted to student responses in a variety of ways (accept responses, extend responses, probe responses)	2.73	2.96	0.06
I changed my voice as necessary for management and emphasis in teaching	2.85	2.88	0.69
I gave clear and concise directions for all activities *(n=25)	2.60	2.48	0.40
I stayed on time and completed all activities designated in my lesson preparation form *(n=25)	2.40	2.56	0.33
I used a teaching style and pace that was appropriate for the grade level *(n=25)	2.72	2.84	0.32
I used multiple teaching methods in order to meet the needs and styles of learners *(n=25)	2.48	2.48	1
I employed good closure techniques and reviewed lesson objectives *(n=25)	2.60	2.64	0.79

* Answers with an N/A were excluded, therefore the number of responses decreased

The overall results of the self-evaluation forms show that practicum students prefer the option of using a supplementary DVD teaching tool during lesson preparation and they integrate activities and ideas found in the DVD's into their own lesson. However, there is no evidence to show that the DVD's assist the students in creating stronger lessons for the visiting schoolchildren. Comments made by the practicum students on their self-evaluation forms indicate that the quality of their lesson is heavily influenced by the temperament and knowledge of the visiting schoolchildren.

Low scoring lessons were often followed by comments such as “Lots of bullying from student peers to others. Some rotten attitudes ruined it for the bunch” or “Difficult day for me... The students were very full of energy and didn't seem to grasp concepts”. Weather also seemed to affect if a student perceived the lesson as a success or failure and scored their evaluation low. Several comments focused on seasonal aspects such as “not all parts of the lesson are appropriate for the winter season”, “I had a very hard time because of the rain” or “It was cold. The kids had been here for three days. It was hard for them to focus”.

7.3 Researcher Observation Form Data

The following data was obtained through structured observation of five of the ten-practicum students during the fall 2008 semester. The five students were chosen to be observed based on the researcher's schedule availability. The researcher gathered 19 (n=19) observations from the five selected practicum students. Seven of the observations took place when a supplementary DVD was used and twelve observations took place on lessons that did not have a supplementary DVD teaching tool or a supplementary DVD teaching tool was provided but not used. Data collected from the structured observation forms (Appendix H) are divided into four sections: basic information, lesson preparation and material knowledge, teaching skills and strategies, and information on the use of the supplementary DVD teaching tools (if provided for that lesson). The basic information section was used to gain general background information on the lesson, grade level, seasonal or weather conditions that may have affected the lesson and any experience the student may have had with that lesson material. Evidence provided in the following section directly aligns with all four themes developed during the focus group.

1. Lesson Preparation: This section was completed by viewing the practicum students completed lesson preparation form prior to lesson instruction. The data recorded in this section specifically helped the researcher identify how prepared a practicum student was to teach a CWES lesson by looking at their lesson preparation forms to see if they were using age appropriate vocabulary, activities, and objectives, and asking age appropriate questions. Table 4.8 shows the average score and the p-value for each section where the researcher rated the individual practicum lesson from a 1 (no the behavior was not observed) to a 3 (the behavior was observed), a score of 2 indicated that the behavior was sometimes observed. Two of the students who were supposed to use a supplementary DVD in lesson preparation admitted that they did not use the tool so their responses were recorded in the mean score without a DVD section. A random sample of observations where a DVD was not used in lesson preparation was taken prior to calculating the mean score. The results show a significant increase in three of the mean scores that utilized a DVD teaching tool (Theme one).

Table 4.8 Observation ratings of practicum student lesson preparation (n=7)

Behavior observed	Mean Score with DVD	Mean Score without DVD	P-Value
Lesson preparation sheet was submitted on time	2.43	1.86	0.32
Adjustments were made to the lesson preparation sheet based on instructor's comments	2.14	2.14	1
Activities were age appropriate	3	2.43	**0.03
Activities were modified from the written lesson plan to accommodate the allotted time for the lesson	3	2	**0.002
Lesson contains age appropriate vocabulary	3	2	**0.002
Lesson contains age appropriate objectives	3	3	1
Lesson contains age appropriate questions	3	2.57	0.08
Lesson contains varied questioning strategies	3	2.57	0.08
New/creative facts or activities were added into the lesson preparation form that were not included in the lesson plan or DVD	2.43	2.29	0.74
Lesson in practicum students own style Lesson plan is not mimicked directly from a previous observation of the lesson	3	2.71	0.36

** Significant difference in mean scores

The researcher also looked at how prepared each practicum student was to teach a lesson by looking at their lesson set-up, if they used the lesson materials correctly and if they utilized the correct outdoor teaching areas and trails. Table 4.9 shows the mean score and p-value of the students material knowledge when they used a DVD teaching tool and when a DVD teaching tool was not provided. A random sample (n=7) of the original twelve observations was taken to obtain the mean scores of lessons observed without a DVD and an independent t-test was used to show any significant difference in the mean scores when a student used a DVD and when no DVD was provided. Significant p-values

are any number < 0.05 . The results indicate that lesson set-up and trail location scores on practicum students significantly increased when they utilized a DVD during lesson preparation. The researcher rated each student on a scale from 1 to 10 with 1 being the least prepared to teach and 10 being the most prepared based on how their lesson was set-up and their general knowledge of lesson materials and trail locations utilized during that lesson (Theme Two).

Table 4.9 Observation scores of practicum students lesson material knowledge (n=7)

Behavior Observed	Mean Score with DVD	Mean Score without DVD	P-Value
Lesson set-up is complete and conducive to learners needs	3	2.50	**0.03
Practicum student has a clear understanding of all the lesson materials and their proper use	2.71	2.33	0.13
Practicum student clearly knows the locations of all trails and outside teaching areas utilized during the lesson	2.83	2.16	**0.009

** Significant difference in mean scores

Table 4.10 shows that there was no significant difference between the values recorded showing how prepared a student was when they used and DVD and when they did not use a DVD. The mean scores for this section were very close to the scores that the individual practicum students assigned themselves on their self-evaluation forms. This shows that the data the researcher collected was similar to the data that the individual practicum students reported.

Table 4.10 Observed Ratings of How Prepared a Student was to Teach a CWES Lesson. (n=7)

Mean Score with DVD	Mean Score without DVD	P-Value
8.71	8	0.13

2. Teaching Skills and Strategies: This section looked for certain behaviors that are expected to be observed in every practicum student lesson according to CWES evaluation standards. It is divided into two groups: group management which includes safety supervision, and lesson content and delivery method. The students were rated on a 3 point scale. They were given “!” (3 points) if the behavior was observed or is readily inferable within the duration of the observation. The students were given a “√”(2 points) if the behavior was not seen but was not problematic within the duration of the observation and “?” (1 point) was awarded when the behavior was not observed within the duration of the observation and should have been present. Table 4.11 shows the mean score and p-value for the lesson content and delivery method section obtained from the researchers’ observations. In order to perform an independent t-test and find out if the difference of the mean scores were statistically significant, the researcher first took a random sample of the observation scores where a DVD was not used in lesson preparation. The results indicate that in most of the observed behaviors, there is no significant difference between using a DVD in lesson preparation and not using a DVD. However, there is one area where the use of a DVD in lesson preparation significantly increased the mean score. The researcher observed that students were more likely to give clear and concise activity directions when they used a DVD in lesson preparation (Theme one).

Table 4.11 Observation ratings of group lesson content and delivery methods (n=7)

Behavior	Mean Score with DVD	Mean Score without DVD	P-value
Instructor was able to answer student questions regarding lesson content	2.71	2.71	1
Instructor effectively used teachable moments and demonstrated knowledge gained through the Nature Navigator site	2	2.14	0.76
Instructor set and vocalized appropriate time durations for all the activities in the lesson	2.29	2.14	0.75
Instructor provided a creative and engaging introduction and took a few moments to learn the students' names	3	3	1
Instructor provided activities that were well sequenced with proper links	2.71	2.71	1
Instructor used an unbiased questioning pattern (male/female and calls on students in all areas of the room)	3	3	1
Instructor reacted to student responses in a variety of ways (accept responses, extend responses, probe responses)	3	3	1
Instructor changed their voice as necessary for management and emphasis in teaching	3	3	1
Instructor gave clear and concise directions for all activities	2.29	1.29	**0.05
Instructor stayed on time and completed all activities designated in their lesson preparation form	2.86	2.71	0.67
Instructor used a teaching style and pace that was appropriate for the grade level	3	2.71	0.36
Instructor used multiple teaching methods in order to meet the needs and styles of learners	2.57	2.71	0.69
Instructor employed good closure techniques and reviewed lesson objectives	2.86	2.71	0.67

** Significant difference in mean scores

Table 4.12 shows the mean score for behavior management and safety supervision observed by the researcher. The observation scores of group management and safety supervision show similar results to the observation scores of lesson content and delivery

methods. For most of the observations there is no significant difference when a practicum student uses a DVD in lesson preparation and when a DVD is not used except for two areas: using an effective attention getting strategy and stopping inappropriate and potentially dangerous behavior early. The observed mean score for using an effective attention getting strategy was significantly higher when a practicum student used a DVD than the mean score observed when a DVD was not used (Theme Three). Another area of interest is the mean scores for stopping inappropriate and potentially dangerous behavior early without teacher intervention which revealed a significant difference in the mean scores. However, this difference showed that the researcher scored practicum student higher when a DVD was not used in lesson preparation. Both areas scored low in this section which the researcher attributes to their presence during the lesson. Practicum students may have been hesitant to discipline students in front of the researcher because the researcher was also a teaching assistant (TA) for the practicum class and had an active role in grading their work. Although the students were told they would not be graded for these observation, the researcher as both a TA and non-participating observer is a confounding factor for the study.

Table 4.12 Observation ratings of group management and safety supervision

Behavior	Mean Score with DVD (n=7)	Mean Score without DVD (n=7)	P-value
Instructor clearly communicated and enforced behavioral expectations and boundaries to students	2.57	2.71	0.74
Instructor stopped inappropriate and potentially dangerous behavior early, effectively, and appropriately without teacher intervention	1.43	2.29	**0.03
Instructor created a positive, comfortable and fun atmosphere for learning	3	3	1
Instructor used an effective attention getting strategy	2.57	2	**0.03
Instructor was able to keep the group on task despite challenging students/situations	2.14	2.29	0.66
Instructor accounted for all students, and kept the group together especially when utilizing CWES trails	2.29	2.71	0.37
Instructor clearly communicated to students potential hazards and how to prevent accidents and injuries	2.43	1.57	0.10

** Significant difference in mean scores

The researcher also observed and recorded behavior of the practicum students using activities, strategies or questions that were found in the supplementary DVD teaching. This data was recorded on a scale of “1” (strongly disagree) to “5” (strongly agree) with “3” (neither agree nor disagree) in the middle. For the seven observations where the practicum students were observed teaching after using a supplementary DVD teaching for preparation, all of the areas scored above average except for two, behavior management and safety procedures (Table 4.13) which indicates that the DVD’s are not providing the students with behavioral management or safety strategies. This data correlates with the information provided by practicum students in the focus groups that the DVD’s are not providing these aspects and they should be

incorporated into the DVD teaching tools. Tailoring the DVD's to the needs of the practicum students will help increase DVD use and assist students in other areas of lesson development and delivery (Theme Four).

Table 4.13 Observation results of DVD integration into practicum student lesson plans (n=7)

Behavior Observed	Percent that Agreed with this Statement
The practicum student integrated activities found in the DVD into their lesson	72%
The practicum student integrated behavioral management strategies found in the DVD into their lesson	14%
The practicum student integrated safety procedures found in the DVD into their lesson	42%
The Practicum student integrated questioning strategies found in the DVD into their lesson	57%
The practicum student mimicked teaching strategies found in the DVD into their lesson	71%

Summary of Results

The four themes identified in this section include **Theme 1** -Familiarity with lesson content contributes to practicum student success in lesson development and delivery. **Theme 2** – Familiarity with lesson content contributes to practicum student success in lesson development and delivery. **Theme 3** – DVD's provide an additional form of support for lesson development and delivery. **Theme 4** – Tailoring the DVD teaching tools to the needs and requests of the practicum students will increase students use and assist with lesson development. The themes and supporting evidence shows when a DVD is likely to be used, when it will provide additional support and what information the DVDs are not currently providing to practicum students.

The themes indicate that practicum students prefer to have the supplementary DVD teaching tools as an optional resource in lesson preparation. On average, the students are utilizing the DVD's for lessons that they had not previously viewed or

taught during their CWES semester. However, they are not using the DVDs to assist with lesson preparation where they have prior knowledge of the lesson content and materials. They are also not using DVD teaching tools for lessons that they previously viewed during a peer observation or taught during a previous experience.

While practicum students are utilizing activities and materials direction located in the DVDs in their own lessons, the DVD's are not statistically improving the quality of their lessons or their comfort level with the lesson material. There is no significant increase in evaluation scores when a practicum student uses a supplementary DVD teaching tool. The DVD teaching tools provide an optional way of accessing lesson information and are more often utilized by the practicum students who consider themselves visual learners.

Chapter Five

Conclusions and Recommendations

This study was designed to provide CWES staff with feedback in regards to providing supplementary DVD teaching tools to incoming practicum students as an additional resource in lesson development. The following section contains the conclusion of the study and recommendations by the researcher to the CWES program staff on the integration and use of supplementary DVD teaching tools in the practicum program. It also suggests possible future research in regards to the practicum program and student lesson development derived from the data obtained in this study.

I. Conclusion

CWES is continually looking for new ways to provide high quality EE programs to school groups and community members and allow practicum students the opportunity to gain hands-on educational experience. Derived during this study were four overall themes developed from practicum student self-evaluations, researcher observations of practicum student lessons and direct quotes given during a focus group with practicum students. The four overall themes were; **Theme 1** -Familiarity with lesson content contributes to practicum student success in lesson development and delivery. **Theme 2** – Familiarity with lesson content contributes to practicum student success in lesson development and delivery. **Theme 3** – DVD’s provide an additional form of support for lesson development and delivery. **Theme 4** – Tailoring the DVD teaching tools to the needs and requests of the practicum students will increase students use and assist with lesson development.

The four themes and supporting evidence described in Chapter Four of this study indicate when and why a practicum student is likely to utilize an additional lesson development tool such as the supplementary DVD teaching tools developed in this study. In addition, they provide the researcher and CWES program staff with reasons the DVDs are not being utilized and how they can be improved to better assist practicum students with lesson development and delivery. While the supplementary DVD teaching did not increase practicum student evaluation scores, they did provide students with another resource that focused on different learning styles. The tools were typically utilized when a student had no prior knowledge of the lesson content, materials or on-site resources at CWES.

As an optional resource, the DVD's can provide practicum students additional assistance in developing and delivering quality environmental education programs. With the knowledge gained during this study, CWES staff can make informed decisions on the conversion of their curricula to DVD format, the structure of their lesson plans and additional ways to assist different practicum students in lesson development and delivery. All of the recommendations detailed in the next section derived from the four overall themes developed during this study.

II. DVD Recommendations

The practicum students provided the researcher with multiple suggestions for improving the content, length and structure of the supplementary DVD teaching tools. Information obtained through the focus group analysis was used to provide specific details on areas of DVD improvement. The researcher also used low scoring sections on the teaching skills and strategies section to offer suggestions for DVD improvement.

The length of the DVDs was a concern in the beginning of the study both for the researcher and for the CWES staff. After sending out the initial email survey, it was discussed with CWES staff and the researchers committee that none of the DVDs would be over 20 minutes in length. This was an attempt to minimize the probability of practicum students copying the lesson that they viewed on the DVD and not reading the lesson plan in its entirety. However, after reviewing the data obtained during the study, it is evident that the students are more likely to use the DVD's as a supplementary resource and not as a method to complete a lesson preparation form. They stressed the importance of explaining to incoming practicum students that the lesson plans are subject to creativity and the activities in the lesson plans and in the DVD's can be rearranged to fit the needs of the practicum student. In order for the DVD teaching tools to be an asset to practicum students, they need to contain more footage of educator and student interactions. The practicum students would like to see how the educator in the DVD handles problem situations, difficult questions and safety reminders to students. Including student reactions and responses to the lesson will significantly increase the length of each DVD teaching tool.

It is recommended that the supplementary DVD teaching tools are not held to a specific time limit of 20 minutes. Content heavy lessons such as Bottom's Up and Cooperative Compass require detailed explanations of material use and additional teaching tips. The content heavy lessons are also well-known for multiple student-generated questions. Due to the time constraint, the student questions and portions of the material uses were left out of the Bottom's Up lesson. Adding in these components would increase the time length but provide practicum students with the information and examples that they considered useful in lesson preparation. **It is recommended that all of the supplementary DVD teaching tools be edited to follow the lesson plan**

structure and allow the practicum student to watch how the educator and students interact. This will make the time length for each lesson significantly different considering the content of each lesson varies by grade level and subject matter. Some of the lessons will end up being longer than 20 minutes and others will be shorter.

Each practicum student enters the program with a varying degree of teaching and natural history knowledge. This makes it very difficult to determine what CWES lessons should also provide a supplementary DVD teaching tool option. Practicum students recommended lessons that they think should have a DVD component and others that they felt did not need a DVD component. These responses were varied and often crossed over with other students responses. For example, one student suggested having a DVD on the GPS lesson because they never used a GPS unit prior to teaching the lesson and they were uncomfortable with the locations of the geocaching boxes. Another student mentioned that they would never use a DVD on GPS because they are very familiar with its use and are comfortable explaining it to students. **In order to meet the needs of different practicum students it is recommended that a supplementary DVD teaching tool be designed for every CWES lesson and offered to the students as an optional lesson development resource.**

One of the issues that arose during the data collection process was the availability of the supplementary DVD teaching tools. Several copies of each of the five DVD lessons were recorded and placed in the practicum office at CWES. In order to use a DVD in lesson development, the practicum students would have to remember to sign-out a DVD one week prior to teaching. Several instances occurred where the practicum student forgot to pick-up the DVD prior to leaving CWES for the week. Therefore they were not able to use the DVD in lesson development. **In order to increase the feasibility that a practicum student will utilize this resource it is recommended**

that the DVDs be offered to the students in a different format. Several options are available for accessing the supplementary DVD teaching tools on-line in a format similar to how practicum students access their lesson plans and lesson preparation forms. Placing the DVD's on public folders, through a specified computer drive, or on the D2L course website would allow the students to access the lesson plans at any point during their preparation week on campus or through a home computer. Increasing the availability of the DVDs increases their chances of assisting practicum students in lesson preparation.

Aside from the DVD lessons, several suggestions were made for additional DVDs that would assist the practicum students in their CWES experience but are not specifically tied to a CWES lesson plan. One of the suggestions for a DVD was creating an interactive map that would allow practicum students to navigate through trails and classrooms. This would assist the practicum students when developing their lessons by allowing them to preview classrooms and trails that they may want to incorporate into their lessons. Another suggestion was converting all of the campfire songs and skits onto a DVD so that practicum students could select which ones to piece together during an evening program. **In addition to converting all of the CWES curricula to a DVD format, it is recommended that the CWES staff also create a DVD map of the facilities and a DVD on campfires and skits for use with the evening programs.**

III. Future Research Suggestions

Many future research ideas materialized during the course of this study. Several ideas derived specifically from the comments and suggestions made by practicum students on their self-evaluation forms. Other ideas materialized when the researcher

was analyzing the data. All of the ideas expressed directly focus on the CWES practicum program and the professional growth of its participants through lesson development.

First, the findings generated in this study can be looked at during a much longer time period and involving more practicum students. One of the limitations of the study was the number of responses generated. The supplementary DVDs were only used 26 times throughout the fall 2008 semester. One of the possible reasons that no significant difference was found between lesson evaluation scores that utilized a DVD and lesson scores that did not, can be attributed to the low sample size. Increasing the sample size may provide results that are more accurate. The researcher suggests only using self-evaluation reports in obtaining this data because the results from this study indicate the student reported results and researcher results were similar. The self-evaluation scores submitted by practicum students were an accurate representation of the quality of lesson they were providing.

In addition to increasing the sample size and lengthening the time frame of the study, the researcher suggests investigating further the option of viewing a lesson with no edits. Several students suggested that they would have liked seeing the entire lesson from start to finish. Self-evaluation forms can be used to obtain information on the students' lesson quality in addition to their preference of viewing the DVDs prior to lesson preparation.

Another option for future research directly relates to the lesson plans provided to practicum students during lesson preparation. Student responses during the focus group indicate a desire to have more flexibility when it comes to lesson development. Students want to know that they have the freedom to structure their lessons anyway that they see fit based on the materials (lesson plan and DVDs) provided to them. A

possible future research project would be to re-structure the DVDs and corresponding lesson plans so that they are providing lesson ideas and not the structure of the lesson. Each activity within the lesson would be explained thoroughly in the lesson plan and shown in the DVD but no order would be provided. Using self-evaluation forms, data could be collected on lesson content and delivery and student preference to the provided materials.

IV. Implications

The creation of an entire center's curriculum to DVD format can be a time consuming and expensive process. While the data collected in this study pertains only to the ten practicum students that participated in the study during the fall 2008 semester, it can be duplicated in other centers with a high turnover rate of volunteers, interns or staff. The data resulting from this study may provide EE centers like CWES with the justification to fund the conversion of their center's curriculum to a DVD format in order to more accurately provide staff and volunteers with multiple ways of obtaining lesson information.

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Appendices

Appendix A

CWES Daily Lesson Prep Form

Name:	Lesson:
Date:	Teaching Location:
Today's Theme:	Grade Level:

Lesson Objectives: Upon completion of the lesson, students will be able to...

- 1.
- 2.
- 3.

Vocabulary Words and Definitions:

- 1.
- 2.
- 3.
- 4.

Outline

Introduction (Time _____) Grabber or POW!	Questions for the Introduction:
Link to body: Body (time _____) Activities for Body: (try to have at least 3) 1. 2. 3.	Questions for Body:
Link to conclusion: Conclusion and Wrap up: (time _____) Activities for Conclusion:	Questions for Conclusion:

Examples of Questioning Strategies you plan to use...
1. Knowledge (Defines, describes, identifies, matches, recalls, recognizes, states):
2. Comprehension (Defends, distinguishes, estimates, explains, generalizes)
3. Application (Demonstrates, discovers, modifies, predicts, relates, solves):
4. Analysis (Compares, contrasts, differentiates, distinguishes, identifies, illustrates, separates):
5. Synthesis (Categorizes, combines, creates, designs, explains, relates):
6. Evaluation (Assesses, concludes, critiques, interprets, judges, summarizes, supports):
7. Questions or ways to relate this lesson to the students' lives...
The "BIG Idea"...what do you want the students to take home?
Link to daily theme and other lessons of the day (do the lessons tie together?):
Back up activities if you have extra time and/or extension activity:
Phenology/Teachable Moment:
Teaching goals for today:

--

Grading Rubric	Points
Completed Background Information Table	1
3-4 Objectives clearly stated in own words	2
Vocabulary words well stated in age appropriate language	2
Grabber is unique and contains well thought out/ strong questions for introduction	2
Body of lesson is organized by activity, clearly describes all activities and demonstrates a clear understanding of activities, includes vocabulary and contains age/activity specific questions	8
Activities meet stated objectives	2
Conclusion contains appropriate questions and reiterates concepts and objectives	2
Links are present between introduction and body, between body activities and between body and conclusion	2
Times for introduction, body and conclusion are accurate	1
Questioning Strategies Section contains questions from outline cut and pasted into each area. Questions are designated to appropriate sections	2
The “Big Idea” relates to the lesson, and contains a larger concept you aim to get across to the students	1
Lesson prep is clearly linked to the theme and other lessons	1
Back up activities are lesson specific and meet the objectives	1
Phenology/Teachable Moment is lesson/site specific and blends well into the lesson.	1
Teaching goal changes from week to week, relates to your own teaching ability and is measurable	2
Total Points:	30
If a lesson prep is turned in late, there is a loss of 10 points.	

Appendix B

Email Invite for Professional EE Educators

Hello past CWES participants,

My name is Stefanie Miller and I am a UWSP graduate student currently working on a project at the Central Wisconsin Environmental Station to aid practicum students in lesson preparation and teaching skills.

As past CWES participants, either as staff, past practicum or graduate students, you are familiar with the CWES practicum program. I am looking for your input on a series of DVD teaching tools that I will be creating on CWES lesson plans. For my research, supplementary DVD teaching tools will be given to practicum students along with a written lesson plan to help them in lesson preparation. I would like to get your opinion on information that may be included in the DVD's as well as what lessons are most in need of a supplementary DVD teaching tool.

Attached to this email is an abstract of my project and a consent form with a brief seven-question survey. Please take a moment to complete the survey. The information gathered from this survey in addition to a focus group with current practicum students will be compiled and used to create a series of supplementary DVD teaching tools that will be tested during the Fall 2008 semester. The information you submit will remain anonymous. If you have any questions or comments about the project or the survey, please contact me at smill363@uwsp.edu.

Please send your replies by April 23, 2008.

Thank you for your time and consideration,

Stefanie Miller
Graduate Assistant
University of Wisconsin-Stevens Point
Smill363@uwsp.edu
310-947-2190

Appendix C

Email Abstract

Creation and Evaluation of Supplementary DVD Teaching Tools for the Central Wisconsin Environmental Station

Abstract

The purpose of this research project is to create and evaluate the use of supplementary DVD teaching tools for use with practicum students at the Central Wisconsin Environmental Station. . The study looks at incoming practicum students with limited or no teaching experience and ways that will increase their knowledge and skills to become better educators in an outdoor setting. Finding new ways to introduce material to incoming practicum students at the Central Wisconsin Environmental Station is essential due to limited training time. Practicum students spend four months at CWES gaining hands-on teaching experience working with K-12 students, leading the center's environmental education programs. Practicum students are trained during a brief three-day program and obtain other lesson information through a written lesson plan. For this study instructional information will be offered to the students in a DVD format in addition to the traditional written format in order to accommodate for individual learning styles. Evaluations completed by the researcher and the individual practicum students will be used to compare the lessons taught using the DVD support tools to lessons that only provided written information. The purposes of evaluating the use of supplementary DVD teaching tools in addition to written lesson plans for lesson preparation is to measure the effectiveness, if any, that the DVD's provide in assisting practicum students with lesson development. The supplementary DVD teaching tools are an attempt to provide practicum students with more resources while developing the skills and knowledge to effectively modify and teach outdoor environmental education lessons to K-12 students

Definitions

- CWES – An abbreviation for the Central Wisconsin Environmental Stations. CWES is a year round outdoor/environmental education teaching facility associated with the University of Wisconsin – Stevens Point College of Natural Resources.
- Practicum Students – University of Wisconsin – Stevens Point students that are enrolled in Natural Resources 482 or 376. These students are environmental education, environmental interpretation or education majors that spend a semester at CWES gaining practical hands on teaching experience.
- Supplementary DVD teaching tool – A DVD that contains detailed information and examples of teaching styles for a particular CWES lesson plan.



Informed Consent to Participate in Human Subject Research

Stefanie Miller, a graduate student pursuing a Masters degree in Environmental Education and Interpretation at the University of Wisconsin-Stevens Point would appreciate your participation in a research study being designed to evaluate Supplementary DVD teaching tools as a resource tool to aid practicum students in lesson preparation at the Central Wisconsin Environmental Station. You are being asked to complete a brief survey that should take approximately 10 minutes of your time. There is no anticipated risk associated with your participation in this study other than the inconvenience of the time needed to complete the survey.

Your participation in the study will help assist the Central Wisconsin Environmental Station and the researcher in the development of supplementary DVD teaching tools for incoming practicum students.

The information that you provide in this questionnaire will be kept confidential. All completed surveys will be stored in a private, password-protected computer and will not be available to anyone not directly involved in the study.

Once the study is completed, Stefanie would be happy to send you a digital copy of the results. In the meantime, if you have any questions, please contact:

Stefanie Miller
College of Natural Resources
University of Wisconsin-Stevens Point
Stevens Point, WI 54481
310-947-2190

If you have any complaints about your treatment as a participant in this study or believe that you have been harmed in some way by your participation, please contact:

Dr. Jason Davis, Chair
Institutional Review Board for the Protection of Human Subjects
Department of Business & Economics
University of Wisconsin-Stevens Point
Stevens Point, WI 54481
(715) 346-4598

Although Dr. Davis will ask your name, all complaints are kept in confidence.

Your completion and submission of the survey to the researcher represents your consent to serve as a subject in this research.

Supplementary DVD Teaching Tool **Questionnaire**

Thank you for taking the time to read the questionnaire and answer a few questions. This questionnaire will take approximately 10 minutes to complete. Please try to answer all of the questions on the survey to the best of your knowledge. You do not need to include your name in the survey.

Directions

- **Answer all of the questions on this form and save the document as “DVD questionnaire” to your desktop or document folder.**
- **Open your email account and begin a new email.**
- **Create a new message addressed to smill363@uwsp.edu.**
- **Attach the completed questionnaire that you saved on your desktop.**
- **Type “DVD questionnaire” into the subject box. You do not need to include your name or a message in the email.**
- **Hit the send button.**

1. Briefly describe your experience with CWES and the Practicum Program.

2. CWES is planning to create recorded DVDs of lessons to accompany the written lesson plans. The goal of this project is to develop something that will aid practicum students in lesson preparation. Do you believe that supplementary DVD teaching tools would be a valuable resource for practicum students? Why?

3. CWES staff has identified a few lessons that they believe will benefit practicum students to have a supplementary DVD teaching tool accompany the written lesson plan. Please rank the following list with 1= your first choice, 2 = second choice and 3 = your third choice in order of what lesson you believe is in most need of a supplementary DVD teaching tool.
 - _____ Cooperative Compass
 - _____ Laws of Nature
 - _____ Bottom’s up
 - _____ Pond Study
 - _____ Skullduggery
 - _____ Colorful Confusion
 - _____ Leaps and Bounds
 - _____ Beaver Adaptations

_____ I am sorry, I do not remember these lessons and therefore cannot answer this question.

4. What lesson specific information should be included in the supplementary DVD teaching tools? Please rank 5 of the categories in order of importance with 1 being the most important to include in the DVD's and 5 being the least important to include in the DVD's.

____ Introduction to trails, materials and set-up of the lesson
____ Tips on behavior management
____ Safety
____ Behavioral expectations
____ Student/teacher introductions at the beginning of the lesson
____ Opener
____ Link to body of lesson
____ Body of lesson
____ Link to conclusion
____ Conclusion
____ Question strategies
____ Response to student questions
____ Other _____

5. Should the information on the DVD's be broken into segments or should the information be presented as one continuous shot? (please check one)

____ Broken into segments
____ One continuous shot

6. What do you consider a reasonable length of time for each of the supplementary DVD teaching tools? (Please circle only one)

10 minutes 15 minutes 20 minutes 25 minutes 30 minutes Other _____

Please give a brief explanation of your reasoning behind choosing that length of time for the supplementary DVD teaching tools.

7. Any other comments or suggestions related to this DVD project?

Thank you for Participating!

Appendix E
Reminder for Email survey

Hello past CWES participants,

Thank you to those of you who submitted your survey form by April 23, 2008. If you have not yet turned in your form, there is still time! Please send in your completed survey by May 15, 2008.

As past CWES participants, either as staff, past practicum or graduate students, you are familiar with the CWES practicum program. I am looking for your input on a series of DVD teaching tools that I will be creating on CWES lesson plans. For my research, supplementary DVD teaching tools will be given to practicum students along with a written lesson plan to help them in lesson preparation. I would like to get your opinion on information that may be included in the DVD's as well as what lessons are most in need of a supplementary DVD teaching tool.

Attached to this email is an abstract of my project and a consent form with a brief seven-question survey. Please take a moment to complete the survey. The information gathered from this survey in addition to a focus group with current practicum students will be compiled and used to create a series of supplementary DVD teaching tools that will be tested during the fall 2008 semester. The information you submit will remain anonymous. If you have any questions or comments about the project or the survey, please contact me at smill363@uwsp.edu.

Please send your replies by May 15, 2008.

Thank you for your time and consideration,

Appendix F

Informed Consent to Participate in Human Subject Research

Stefanie Miller, a graduate student pursuing a Masters degree in Environmental Education and Interpretation at the University of Wisconsin-Stevens Point would appreciate your participation in a research study being designed to evaluate supplementary DVD teaching tools as a resource tool to aid practicum students in lesson preparation at the Central Wisconsin Environmental Station. You are being asked to participate in the study by completing a self-evaluation form after you teach a class. Your lesson may also be evaluated by the researcher up to four times during a regular teaching session. There is no anticipated risk associated with your participation in this study other than the inconvenience of the time needed to complete the form.

Your participation in the study may help you in your development of lesson preparation forms and in your overall lessons.

The information that you provide in the self-evaluations and information acquired through the researcher evaluations will be kept confidential. All completed evaluations will be stored in a private, password-protected computer and will not be available to anyone not directly involved in the study.

Once the study is completed, I would be happy to send you a digital copy of the results. In the meantime, if you have any questions, please contact:

Stefanie Miller
College of Natural Resources
University of Wisconsin-Stevens Point
Stevens Point, WI 54481
310-947-2190

If you have any complaints about your treatment as a participant in this study or believe that you have been harmed in some way by your participation, please contact:

Dr. Jason Davis, Chair
Institutional Review Board for the Protection of Human Subjects
Department of Business & Economics
University of Wisconsin-Stevens Point
Stevens Point, WI 54481
(715) 346-4598

Although Dr. Davis will ask your name, all complaints are kept in confidence.

I have received a complete explanation of the study and I agree to participate.

Name _____

Date _____

(Signature of subject)

Appendix G

**NR 482/376 CWES Practicum Program
Self-Evaluation**

Part A: Lesson Preparation

1. Lesson

Title: _____

2. How long did it take you to prepare for this lesson? (Circle the required time)

Less than 1 hour

1-2 hours

3-4 hours

5+ hours

3. Did you view this lesson during the 3 day training or peer-teaching week? (circle)

Yes No

4. Place a check mark in the box corresponding to your experience with this lesson plan

Lesson Experience	Never	1	2	3 or more
How many times have you seen this lesson taught by another educator?				
How many times have you taught this lesson prior to today?				
How many times did you teach this lesson today?				

5. Please rank the following statement on a scale of 1 to 10. With 1 being the least prepared and 10 being the most prepared. How prepared did you feel to teach today's lesson? (circle)

1 2 3 4 5 6 7 8 9 10

Part B: Supplementary DVD teaching tool

6. Did you use a supplementary DVD teaching tool in lesson preparation? (circle) Yes
 No
 (If you answered no for this question, please skip to part C)

7. During lesson preparation when did you watch the supplementary DVD teaching tool?
 (please check all that apply)

- Prior to reading the lesson plan
- After reading the lesson plan
- Prior to writing my lesson preparation form
- After writing my lesson preparation form

8. We would like your opinion on the supplementary DVD teaching tool, and how it was used in lesson preparation and teaching. For each of the following statements, place a check mark in the box that best describes your level of agreement with the statement.

	Strongly Agree	Agree	Neither Agree or Disagree	Disagree	Strongly Disagree
The supplementary DVD teaching tool helped me prepare for today's lesson.					
The supplementary DVD teaching tool increased my awareness of the materials and trails utilized in this lesson.					
I integrated behavioral management strategies from the DVD lesson into my own lesson.					
I integrated safety procedures from the DVD lesson into my own lesson.					
I integrated activity directions from the DVD lesson into my own lesson.					

I integrated questioning strategies from the DVD lesson into my own lesson.					
I felt better prepared for today's lesson because I used the supplementary DVD teaching tool to help me write the lesson preparation form.					
I think supplementary DVD teaching tools should be provided for all CWES lessons.					
It took me less time to prepare for today's lesson because I used a supplementary DVD teaching tool.					
The DVD provided information and ideas that I did not get from the written lesson plan.					

Comments:

DVD recommendations:

Part C: Teaching skills and Strategies

Please use the following section to evaluate your teaching skills and strategies regarding to the lesson you taught. Using the rubric provided, rate the following statements based the lesson you taught.

Rubric

3 = Always

2 = Sometimes

1 = Never

N/A = Not applicable to this situation

GROUP MANAGEMENT AND SAFETY SUPERVISION

_____ I clearly communicated and enforced behavioral expectations and boundaries to students.

_____ I stopped inappropriate and potentially dangerous behavior early, effectively, and appropriately without teacher intervention.

_____ I created a positive, comfortable and fun atmosphere for learning.

_____ I used an effective attention getting strategy.

- _____ I was able to keep the group on task despite challenging students/situations.
- _____ I accounted for all students, and kept the group together especially when utilizing CWES trails.
- _____ I clearly communicated to students potential hazards and how to prevent accidents and injuries.

Comments:

Areas for improvement:

LESSON CONTENT AND DELIVERY METHOD

- _____ I was able to answer student questions regarding lesson content.
- _____ I effectively used teachable moments and demonstrated knowledge gained through the Nature Navigator site.
- _____ I set and vocalized appropriate time durations for all the activities in the lesson.
- _____ I provided a creative and engaging introduction and took a few moments to learn the students' names.
- _____ I provided activities that were well sequenced with proper links
- _____ I used an unbiased questioning pattern (male/female and calls on students in all area of the room).
- _____ I reacted to student responses in a variety of ways (accept responses, extend responses, probe responses).
- _____ I changed my voice as necessary for management and emphasis in teaching.
- _____ I gave clear and concise directions for all activities
- _____ I stayed on time and completed all activities designated in their lesson preparation form.
- _____ I used a teaching style and pace that was appropriate for the grade level.
- _____ I used multiple teaching methods in order to meet the needs and styles of learners.
- _____ I employed good closure techniques and reviewed lesson objectives.

Comments:

Areas for improvement:

Part D: Lesson Information

Practicum Student Name:
Location:
Trails used:
Grade Level(s):
present:

Date:
Time Period:
of Students:
Chaperones/teachers

Any additional comments or suggestions:

****Thank you for taking the time to complete this questionnaire****

For researcher use only
Student Code # _____



**Researcher Observation Form for
Practicum Student Teaching Experience**

Part A: Basic Information

Practicum Student Name:

Date:

Observer Name:

Location:

Lesson Topic/Activity:

Time Period:

Grade Level(s):

of Students:

Chaperones/teachers present:

Was a supplementary DVD teaching tool used in lesson preparation? (Circle) Yes No

Was this lesson viewed during the 3 day training or peer teaching week? (Circle) Yes No

Were any accommodations or adjustments made to the lesson for weather or student needs (hunger, comfort or energy level)? (circle) Yes No

If yes, please list:

Part B: Lesson Preparation and Material Knowledge (information observed prior to the start of a lesson)

Place a check mark in the column with the appropriate corresponding behavior. If a “Somewhat”, “No” or “N/A” behavior is observed please explain in the comment section below.

Lesson Preparation

Behavior	Yes	Somewhat	No	N/A
Lesson preparation sheet was submitted on time and adjustments made based on instructor’s comments.				
Activities were modified from the written lesson plan to accommodate time frame and age of students.				
Lesson contains age appropriate vocabulary.				
Lesson contains age appropriate SMART objectives.				
Lesson contains age appropriate questions and varied questioning strategies.				
New/creative facts or activities were added into the lesson				
Lesson is in practicum students own style and not mimicked directly from a previous observation of the lesson				

Comments:

Please summarize any adaptations the practicum student made to the original lesson plan to make it unique.

Place a check mark next to the Questioning strategies used in this lesson (mark all that apply).

- ___ Recall
- ___ Process
- ___ Synthesis
- ___ Application

___ Evaluation

Material Knowledge

Behavior	Yes	Somewhat	No	N/A
Lesson set-up is complete and conducive to learners needs.				
Practicum student has a clear understanding of all the lesson materials and their proper use				
Practicum student clearly knows the locations of all trails and outside areas that are utilized during the lesson.				

Comments:

Using a scale of 1 to 10, with 1 being the least prepared and 10 being the most prepared. How prepared was the practicum student to teach today's lesson? (circle)

1 2 3 4 5 6 7 8 9 10

Comments:

Part C: Teaching Skills and Strategies

? = Indicates behavior was not observed within duration of observation and should have been present.

√ = Indicates behavior was not seen but was not problematic within duration of observation

! = Indicates behavior was observed or is readily inferable within duration of observation

GROUP MANAGEMENT AND SAFETY SUPERVISION

- ? √ ! Instructor clearly communicated and enforced behavioral expectations and boundaries to students.
- ? √ ! Instructor stopped inappropriate and potentially dangerous behavior early, effectively, and appropriately without teacher intervention.
- ? √ ! Instructor created a positive, comfortable and fun atmosphere for learning.
- ? √ ! Instructor used an effective attention getting strategy.
- ? √ ! Instructor was able to keep the group on task despite challenging students/situations.
- ? √ ! Instructor accounted for all students and kept the group together especially when utilizing CWES trails.
- ? √ ! Instructor clearly communicated to the students any potential hazards and how to prevent accidents/injuries.

Observations / comments:

LESSON CONTENT AND DELIVERY METHOD

- ? √ ! Instructor was able to answer student questions regarding lesson content.
- ? √ ! Instructor effectively used teachable moments and demonstrated knowledge gained through the Nature Navigator site.
- ? √ ! Instructor set and vocalized appropriate time durations for all the activities in the Lesson.
- ? √ ! Instructor provided a creative and engaging introduction and took a few moments to learn the students' names.
- ? √ ! Instructor provided activities that were well-sequenced with proper links
- ? √ ! Instructor used an unbiased questioning pattern (male/female and calls on students in all areas of the room).
- ? √ ! Instructor reacted to student responses in a variety of ways (accept responses, extend responses, probe responses).
- ? √ ! The instructor changed their voice as necessary for management and emphasis in teaching.
- ? √ ! Instructor gave clear and concise directions for all activities
- ? √ ! Instructor stayed on-time and completed all activities designated in their lesson preparation form.
- ? √ ! Instructor's teaching style and pace was appropriate for the grade level.
- ? √ ! Instructor used multiple teaching methods in order to meet the needs and styles of learners.
- ? √ ! Instructor employed good closure techniques and reviewed lesson objectives.

Observations / comments:

Part D: Supplementary DVD teaching tool

For each of the following statements, place a check mark in the box that best describes your level of agreement with the statement.

	Strongly Agree	Agree	Neither Agree or Disagree	Disagree	Strongly Disagree
The practicum student integrated activities found in the DVD into their lesson.					
The practicum student integrated behavioral management strategies found in the DVD into their lesson					
The practicum student integrated safety procedures found in the DVD into their lesson					
The practicum student integrated questioning strategies found in the DVD into their lesson.					
The practicum student mimicked teaching strategies found in the DVD into their lesson.					

Recommendations for DVD:

For researcher use only

Student Code # _____



Interview Questions for Practicum Student use of Supplementary DVD Teaching Tools in Lesson Preparation

Interviewer:

Date:

Time:

Location:

Practicum student in attendance:

Welcome and thank you for taking your time to view the supplementary DVD teaching and answer a few questions regarding its content and role in the practicum program. Currently I am working on creating a series of DVD teaching tools that will complement the CWES lesson plans you find on D2L. The goal in creating these supplementary DVD teaching tools is to aid practicum students in lesson preparation and teaching. Your comments today will help me adjust the DVD's to better fit the needs of practicum students. This interview will take approximately one hour.

In front of you will find a consent form to participate in this study. Your signature on that form means that you have read and agree to participate in this study. Please let it be known that this session will also be video and audio recorded so that the researcher can ensure accuracy when translating your comments to paper. If at any time you are uncomfortable answering a question please let me know that you do not wish to respond.

There are no right or wrong answers to the questions that I am about to ask. You will not be graded on your responses nor will your grade be affected in any way by the comments that you make today. Please answer the questions honestly and to the best of your ability. All of the responses given will be taken into consideration when creating additional DVD's and making changes to the current DVD.

Introduction:

Please introduce yourself, briefly share what your ideal job in EE would be, and the most memorable incident that happened from the best lesson that you taught at CWES.

How much time did you spend preparing for this “best lesson”?

Questions:

1. How much time on average did you spend preparing for teaching all your CWES lessons?

Probe – Did that change from the beginning of the semester to the end?

2. What lesson did you find the most difficult to prepare for during the practicum experience?

Probe – What made that lesson difficult for you to prepare for?

3. What information was presented to you during training that you felt aided you in lesson preparation and teaching skills during the semester?

Probe – What information was not presented during training that you feel would have been useful or that you needed?

Let's talk a little about the pilot DVD you previewed earlier today.

4. Which of the needed training we listed on the flip chart was included in the DVD teaching tool?

Probe – What strategies and ideas were present in the DVD that were not present in training or in the written lesson plan on D2L?

Probe – What benefits are there to seeing materials and trails on the video versus reading about them in a lesson plan?

5. What additional (if any) information would you include in the supplementary DVD teaching tools to assist practicum students in lesson preparation and teaching skills?

6. Which of the CWES lessons that you think would most benefit practicum students to have on a supplementary DVD teaching tool

Probe – What lessons do not need a supplementary DVD teaching tool to accompany them?

8. What do you think is a reasonable amount of time to ask practicum students to spend watching a supplementary DVD teaching tool?

9. Is there anything else that you would like to comment or make suggestions about related to the DVD or practicum training?

Interviewer should summarize information obtained during the focus group and check for misunderstandings.

Thank you for your participation in this interview. Your assistance in developing supplementary DVD teaching tools to aid practicum students in lesson preparation and teaching is greatly appreciated.



Focus Group Guide for Practicum Student use of Supplementary DVD Teaching Tools in Lesson Preparation

Interviewer:

Date:

Time:

Location:

Practicum students in attendance:

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.
- 7.
- 8.
- 9.
- 10.

Welcome and thank you for taking your time to view the supplementary DVD teaching and answer a few questions regarding its content and role in the practicum program. Currently I am working on creating a series of DVD teaching tools that will complement the CWES lesson plans you find on D2L. The goal in creating these supplementary DVD teaching tools is to aid practicum students in lesson preparation and teaching. Your comments today will help me adjust the DVD's to better fit the needs of practicum students. This focus group session will take approximately two hours, please feel free to help yourself to pizza and drinks throughout the session.

In front of you will find a consent form to participate in this study. Your signature on that form means that you have read and agree to participate in this study. Please let it be known that this session will also be video and audio recorded so that the researcher can ensure accuracy when translating your comments to paper. If at any time you are uncomfortable answering a question or commenting on another person's response please let me know that you do not wish to respond.

There are no right or wrong answers to the questions that I am about to ask. You will not be graded on your responses nor will your grade be affected in any way by the comments that you make today. Please answer the questions honestly and to the best of your ability. All of the responses given will be taken into consideration when creating additional DVD's and making changes to the current DVD.

Because we want everyone here to feel comfortable and open to answering all of the questions as well as recording your responses and answers accurately, we have created a list of ground rules for the session.

1. What is said in this room, remains in this room and is not to be shared with individuals outside of this session.
2. Everyone should feel safe to speak his or her mind.
3. Only one person should speak at a time.
4. Everyone will be given a chance to answer all of the questions but please do not feel pressured to answer.
5. We will not answer questions in any particular order.
6. Any other rules you would like to add to our focus group discussion

Introduction:

Please introduce yourself, briefly share what your ideal job in EE would be, and the most memorable incident that happened from the best lesson that you taught at CWES.

How much time did you spend preparing for this “best lesson”?

Questions:

7. How much time on average did you spend preparing for teaching all your CWES lessons?

Probe – Did that change from the beginning of the semester to the end?

Average Time		
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8. What lesson did you find the most difficult to prepare for during the practicum experience?

Probe – What made that lesson difficult for you to prepare for?

Average Time	Lessons-difficult to prep for	Characteristics –difficult to prep for
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9. What information was presented to you during training that you felt aided you in lesson preparation and teaching skills during the semester?

Probe – What information was not presented during training that you feel would have been useful or that you needed?

GOT	Training	NEEDED
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Let’s talk a little about the pilot DVD you previewed earlier today.

10. Which of the needed training we listed on the flip chart was included in the DVD teaching tool?

Probe – What strategies and ideas were present in the DVD that were not present in training or in the written lesson plan on D2L?

Probe – What benefits are there to seeing materials and trails on the video versus reading about them in a lesson plan?

11. What additional (if any) information would you include in the supplementary DVD teaching tools to assist practicum students in lesson preparation and teaching skills?

12. Which of the CWES lessons that you think would most benefit practicum students to have on a supplementary DVD teaching tool

Probe – What lessons do not need a supplementary DVD teaching tool to accompany them?

8. What do you think is a reasonable amount of time to ask practicum students to spend watching a supplementary DVD teaching tool?

10. Is there anything else that you would like to comment or make suggestions about related to the DVD or practicum training?

Interviewer should summarize information obtained during the focus group and check for misunderstandings.

Thank you for your participation in this focus group. Your assistance in developing supplementary DVD teaching tools to aid practicum students in lesson preparation and teaching is greatly appreciated.

Appendix K
Pilot Study Propositions

- P1- Watching the examples of staff teaching and peer observation was helpful
- P2- The lesson "came out like planned, but I had previous knowledge".
- P3- "I never used this before this lesson. I do know where the boxes were and I had to learn how the unit that morning".
- P4- DVD's are good/important for visual learners
- P5- "applies to my own learning style".
- P6- "It helps me visualize what things look like rather than just reading about them so things like the frozen salamander would be less confusing".
- P7- lesson was difficult because of the content
- P8- "I'm concerned with the creativity of the student"
- P9- "I think that I was less capable of coming up with my own solutions. It reinforced me to do what was on the DVD".
- P10- "I'd rather have good quality lessons copied from the video in a bad quality lesson In this case, it's just better to copy the video. It could be bad for the practicum, but good for the students who come to CWES".
- P11- "My viewpoint is that some people will use the resource, because they don't have that creative ability and if that means copying. Then that's okay, it's good for the students lesson".
- P12-It took more time to prepare for the lesson in the beginning of the semester.
- P13- "the DVD gave me a different way to see information than in the lesson plan".
- P14- "Spring fling lesson plan is not described well".
- P15- Preview of the lesson box needed
- P16- Everyone is different and the DVD's would be useful to some practicum students.
- P17- DVD's should have a map of locations/trails
- P18- "I would like the DVDs to flow more easily. It is hard to see the flow of the actual lesson on the DVD and I wouldn't cut out so many parts".
- P19- " I listened to the CD and would like to have a DVD of the evening programs".
- P20- "yes it was useful. I got to see props used during the leaps and bounds lesson",

- P21- " It would be more beneficial for other lessons like Spring fling or have seeds will travel".
- P22- might be useful to have a DVD for "beaver or have seeds will travel".
- P23- Max of 20 minutes.
- P24- the length was good, "I didn't feel like I wasted my time watching it".
- P25- "It has to be longer than 15 minutes to make it beneficial".
- P26- "the most difficult lesson I had to prepare for was GPS".
- P27- "I think the DVD definitely gave you the flow of the lesson. You can't read a lesson plan and find the flow. You need to see it all together'.
- P28- "Also the equipment and tools that were used. Simple things like how far to line kids up".
- P29- "I think lessons that would most benefit students would be winter lake study because of all the equipment, bottoms up, and the challenge course".
- P30- "I don't think need a DVD, GPS, snowshoeing, beaver adaptation. For GPS. I don't think I can watch a video on how to press buttons".
- P31- "The max amount of time, or a video should be 15 minutes. The 13 minute leaps and bounds video was perfect".
- P32- "It would be useful if you have a library checkout system and don't require them then they wouldn't want to use them".
- P33- "Time is really a factor, but the shorter DVDs actually save time and writing the lesson plan".
- P34- "It made reading the lesson plan easier for me and I thought the DVD was professionally done".
- P35- "You still need to read the lesson plan because it was only 15 minutes. I knew I needed to look up the".

Appendix L
Focus Group Propositions

P1-I am comfortable with lessons that I had previous knowledge in

P2-I am comfortable with lessons that I have seen taught before

P3-It was helpful to see lessons taught during training

P4-I struggle with content heavy lessons

P5-lessons were difficult to teach when they were "out of season"

P6-"I had previous knowledge of bottoms up, but it (DVD) helped out with the ground rules".

P7-DVD is good for visual learners

P8-DVD should "include more locations"

P9-The DVD's should show more "behavior management of student group".

P10-DVD "is always another resource"

P11-"It doesn't hurt to have one (DVD) for everyone (lesson)".

P12-"however, DVD's can't replace seeing it during training".

P13-"They (DVD) can reinforce it (the lesson)".

P14-DVD can limit someone's creativity

P15-"maybe have different people teaching or I don't know how it can be done to stop that (hurting creativity)".

P16-I'm glad the DVD's are short

P17-The DVD's may need lengthened

P18-DVD should be 20 to 25 minutes at the most

P19-"the length of the actual lesson is misleading, because it's only a 15 minute DVD and the timeframe for your lesson is sometimes an hour to an hour and a half".

P20-I disagree with the misleading part. You have to read the lesson plan

P21-Adding reactions of the students in the DVD would help practicum students figure out how to handle a situation

P22-Adding reactions of students would spur creativity.

P23-DVD length should depend on the lesson

P24-The lesson plan was incomplete or confusing

P25-No reason to "double-up" if you have already seen the DVD

P26-Everyone is different and the DVD would be useful to someone

P27-Lesson preparation time depends on the lesson

P28-Lesson preparation time depends on the individual

P29-The time it took to prepare changed from the beginning of the semester to the end

P30-"it took half the semester before I was comfortable teaching"

P31-D2L helped with lesson preparation

P32-Walking the paths and learning the general area helped with lesson preparation.

P33-It was good the DVD provided teaching tips

P34-it was good the DVD provided maps

P35-DVD's helped with "reminder of boundaries when you got out to the site".

P36-DVD's were a "reminder on what to say and do".

P37-DVD's provided "different name learning activities".

P38-DVD's helped provide "different ways of structuring a lesson"

P39-DVD's helped "see the size of the materials you will carry".

P40-DVD's should provide "teaching tips throughout the lesson".

P41-"if something is referred to in the DVD it needs to be in the written lesson plan as well. For example; in the skullduggery lesson, Tom leads a ruler activity that was not found in the lesson plan".

P42-"DVD's are not necessary, but a map is"

P43-"bottoms up lesson should be longer"

P44-"colorful confusion should be shorter".

P45-None of the DVD's should be shorter

P46-lesson prep time did not change over the semester

P47-Something that made the lesson difficult to prepare for was that I've "never seen skulls before and I wanted to take the time to be familiar with each one".

P48-"Teaching tips were useful, just make sure they are in all the DVD's".

P49-"a general DVD would be good, maybe something you get in the beginning".

P50-You should have a DVD on the Forestry lessons

P51-You should have a DVD on Birds

P52-You should have a DVD on Changing of the Land

P53-You should have a DVD on GPS

P54-DVD's should show you "how to use the tools in action".

P55-"more encouragement on structuring lessons however you want. Like these are the resources, use them to structure the lesson whatever order you want to".