Teacher Problem Solving Skills: Multiple Ways of Teaching and Learning Using Case-based Instruction

Dr. Katherine Mitchem  
West Virginia University, Morgantown, WV, USA  
Kate.Mitchem@mail.wvu.edu

Dr. Gail Fitzgerald  
University of Missouri-Columbia, Columbia, MO, USA  
fitzgeraldg@missouri.edu

Dr. Kevin Miller  
University of Central Florida, Orlando, FL, USA  
kjmiller@mail.ucf.edu

Dr. Kevin Koury  
California University of Pennsylvania, California, PA, USA  
koury@cup.edu

Dr. Candice Hollingsead  
Andrews University, Berrien Springs, MI, USA  
hollingc@andrews.edu

The series of papers in this symposium report on a three-year research project in the United States focusing on case-based instruction in higher education. The instruction incorporates the use of interactive, multimedia cases, the use of performance support tools to enhance transfer of knowledge and skills to real settings, and integration of online discussions and chats to support collaborative learning with the materials. There are ten authentic, interactive cases in the series designed to enhance teacher preparation to work with children with significant behavioral disorders. The research project is a collaborative research project involving five universities; it is funded as a Steppingstones Innovations in Technology grant from the U.S. Department of Education. The project is ongoing during the 2004-2006 time period.

The first paper, Project Overview: Implementation of Case-based Instruction in Multiple Teacher Preparation Contexts, provides an overview of the study, its implementation in multiple courses and instructional models, and the research procedures. The second paper, Interactive Multimedia Cases: Applications for Preparation of Teachers in Inclusive Settings, includes a description of the interactive cases being implemented in the research and a demonstration of a case involving a child served in inclusive settings. The third paper, Varied Models of Implementation: Findings from a National Project, describes two of the implementation models and initial quantitative and qualitative findings. References for all three papers are integrated into a final References section.
Paper #1: Project Overview: Implementation of Case-based Instruction in Multiple Teacher Preparation Contexts

Kate Mitchem

In the United States, institutes of higher education face significant challenges to produce sufficient numbers of fully qualified special educators to meet the needs of school districts (Billingsley, 1993; Boe, Cook, Bobbitt, & Terhanian, 1998). The Bright Futures Report (Council for Exceptional Children, 1998) indicated that while seasoned special education teachers are leaving the field at twice the rate of general educators, inexperienced and unqualified special educators with lower levels of commitment to the field are even more likely to leave. In rural communities, these challenges are exacerbated by limited resources, lack of access to high quality professional development or teacher education programs, the pervasive shortage of special education and related services personnel, and geographical and topographical barriers to a wide range of field placement options (Ludlow, 1998).

Recruiting and retaining teachers of students with emotional and behavior disorders (EBD) can be even more challenging. A study by Singh and Billingsley (1996) indicated that the highest burnout area in special education may be working with students with behavioral disorders. The difference in willingness to stay in the field was attributed to higher stress in EBD classes. This seems to be confirmed by Cegelka and Doorlag’s (1995) report on attrition of special education teachers. They found that dealing with severe behavior disorders and managing challenging behavior was one of four skill areas that teachers rated themselves as least well prepared. Although teachers burn out or leave teaching for complex and varied reasons, the training that teachers receive is believed to be a primary contributor to their success or failure (Farber, 1991; Wrobel, 1993). Thus, the need to identify effective and alternative methods of preparing preservice and inservice special educators to work with students with EBD is critical.

New Learner-Centered Approaches in Teacher Education

In re-designing teacher preparation programs that bridge the gap between what is experienced as a student and the reality of classroom teaching, teacher educators are searching for new instructional methods and materials that provide students more authentic learning experiences. The challenge is to deliver effective preparation to teachers-in-training to expand their knowledge and skill repertoires and enable them to ‘think like a teacher’ about problems of teaching (Cochran-Smith & Lytle, 1999; Wilson & Berne, 1999). The advent of newer technologies—case-based instruction, multimedia, electronic performance support tools, online discussion groups—provide teacher educators promising approaches for teaching in new ways and for students to learn in new ways. Case-based instructional approaches engage students in a more authentic environment to relate theory to practice (Elskind, 2001; Shulman, 1996). Multimedia cases allow interactive linking of multiple media such as images, videos, and sound within a case environment to create a totally realistic practice field for teachers to solve problems of teaching.
Introduced within the last decade, these innovations offer problem-centered pedagogies to engage novices in thinking like professionals (Merseth & Lacey, 1993). Multimedia cases provide the means to bring dilemma-laden, complex situations of teaching into training programs; electronic performance support tools and online discussions with practicing professionals provide supports for novices to apply, adapt, and evaluate effective instructional processes. These pedagogies allow novices to develop ‘case’ knowledge for use in ill-defined situations in the real world (Fitzgerald, Wilson, & Semrau, 1997; Fitzgerald, Semrau, & Deasy, 1997).

In special education, educators must learn to use problem-solving approaches for working with children with emotional and behavioral problems/disorders. These skills are difficult to learn and practice without supervised direct contact with children, parents, teachers, and other care providers. By learning and reflecting on these skills during the pre-professional training period, future educators are more likely to possess the knowledge, attitudes, and skills necessary for teaching these children.

Many national leaders in special education have produced a variety of forms of cases for use in teacher education over the last five years. In a federally funded Project of National Significance, Epanchin and Colucci led the development of a web-based case library filled with case dilemmas faced by teachers in school settings (Epanchin & Colucci, 1998). Gerber and colleagues used federal funding to develop CASELINK, a problem-based learning environment consisting of multimedia cases and learning supports (Gerber, English, & Singer, 1999). They described changes that occur when integrating their form of problem-based learning into teacher education. They found that more time is spent on the problem than direct instruction in classes; more time is spent in group engagement; and learners engage in a more constructive self-managed learning process. They concluded that multimedia and distance learning technologies offer excellent supports for learning.

Fitzgerald and Semrau (1993-1997; 1998-2000) produced a series of interactive, multimedia cases with embedded electronic performance support tools to assist pre-service teachers in knowledge and skills for working with children with EBD. These cases were produced as the Teacher Problem Solving Skills (TPSS) series. The effectiveness of learning with these multimedia cases has been documented. Pre-service teachers have responded positively to interactive cases and find the active engagement with the different media of the program beneficial. Overall, the empirical studies conducted with these multimedia cases demonstrated that well-designed learning systems, particularly those built from constructivist learning principles, provide equally effective learning environments for pre-professional students regardless of learner differences (Fitzgerald & Semrau, 1998; Kraus, Reed, & Fitzgerald, 2001).

Though case-based instruction has become popular in higher education, there have been no empirical studies to date that relate conditions of use to learning outcomes or the extent to which knowledge and skills transfer to professional usage. The current research study attempts to determine how to facilitate effective learning and transfer in multiple contexts using technology-enhanced case instruction.
Overview of the Research Study

The researchers in this project are studying technology-enhanced case instruction across a variety of courses and delivery modes involving approximately 250 preservice/inservice teacher education students. The research is designed to track what these teachers learn from cases and how they transfer new knowledge and skills to applied field work, student teaching, and job settings. Each researcher is implementing a minimum of two cases from the TPSS series into one course per semester over a two-year duration. A variety of technological supports are used to support case-based learning, including face-to-face, threaded discussion, and synchronous chat sessions; and performance support tools for adults and students in classrooms.

Following two years of implementation with the cases, 50 preservice and inservice teachers will be followed into job situations to evaluate transfer of knowledge and skills learned through the cases. During this follow-up year, an online support group will provide them consultation with project staff, opportunities for collaborative problem solving with other participants, and coaching on continued use of the electronic support systems. Further, a consumer focus group will be implemented the final semester of the project to discuss research findings that guide the effective utilization of practice field cases in preservice/inservice education.

Research Methodology

A grounded theory approach using qualitative methodology has been selected for this study because it is best suited to generate a research-based model to explain the effectiveness and outcomes of this innovation. Grounded theory uses scientific rigor to interrelate categories of information based on multiple data sources into a theory to guide practice (Creswell, 1998; Glaser & Strauss, 1967). Multiple methods of qualitative inquiry and analysis will be conducted within and across training groups to examine and interrelate the process of learning from practice field cases with learning outcomes and transfer of knowledge and skills in practice settings during training and independent use during employment.

A wide range of quantitative and qualitative data will be collected during this project. Data will be collected through review of case artifacts using rubrics, computer data generated by users while using the cases and performance support tools, qualitative comparison of concept maps created at training and transfer milestones, discourse analysis during online discussions, interviews with participants, and instructor field notes and researcher memos. A mixed-methods model will be used to measure and explain the effectiveness of case-based instruction occurring in multiple training programs where contexts and implementation will vary naturally.

The following table describes the major and sub-research questions for the study and the forms of data collection during the two phases of the research.
<table>
<thead>
<tr>
<th>Question</th>
<th>Sub-Questions</th>
<th>Data Collection</th>
</tr>
</thead>
</table>
| 1. How are practice field cases implemented effectively in teacher education? What implementation variables influence effectiveness in multiple contexts? | 1A  How are cases implemented?                                                 | • Syllabuses and assignments  
  • User audit trail records on disk collected while using cases  
  • User statistics during use of online discussion board or chats  
  • Records of materials usage  
  • Instructor field notes  
  • Researcher memos |
|                                                                        | 1B  What do students learn from cases?                                         | • Qualitative analysis of artifacts within cases using rubrics  
  • Concept map scores for maps created at multiple benchmarks during training  
  • Instructor field notes  
  • Researcher memos |
|                                                                        | 1C  What do learners perceive as the benefits and limitations of practice field case-based instruction? | • Semi-structured interviews  
  • Researcher memos |
|                                                                        | 1D  What changes are needed in preparing programs to utilize and sustain practice field cases in preservice/inservice training? | • Coding and theme analysis of online discussion with consumer focus group members  
  • Researcher memos |
| 2. How are practice field discussion groups offered effectively during training? What participation variables influence effectiveness in multiple contexts? | 2A  How does online discussion with other learners affect social construction of knowledge, skills, and problem solving? | • Discourse analysis of online discussions and chats through coding and theme identification  
  • Instructor field notes  
  • Researcher memos |
| 2B. | How does online discussion with field-based professionals and parents affect social construction of knowledge, skills, and problem solving? | ● Discourse analysis of online discussions and chats through coding and theme identification  
● Instructor field notes  
● Researcher memos |
|---|---|---|
| 2C. | What do learners perceive as the benefits and limitations of practice field discussion groups? | ● Semi-structured interviews  
● Researcher memos |

3. **How are knowledge and skills gained in practice field cases utilized in child services during training? What sustained outcomes emerge during guided practice?**

| 3A. | In what ways are knowledge and skills applied to child services during training? | ● Qualitative analysis of artifacts contained in instructional and intervention materials  
● User audit trail records on EPSS tool programs used in services  
● Concept map scores for maps created at end of applied practice  
● Observations by field supervisors  
● Instructor field notes  
● Researcher memos |
|---|---|---|
| 3B. | How do learners perceive the applicability of knowledge and skills developed in the practice field cases to child services? | ● Coding and theme analysis of online discussions and chats during guided practice phase  
● Semi-structured interviews  
● Interviewer field notes  
● Researcher memos |

4. **How are knowledge and skills gained in practice field cases transferred to child services in employment settings? What sustained outcomes emerge during employment?**

| 4A. | In what ways are knowledge and skills transferred to child services in employment settings? | ● Qualitative analysis of artifacts contained in teaching and intervention materials  
● User audit trail records on EPSS tool programs used in services  
● Concept map scores for maps created at end of follow-up phase  
● Researcher memos |
4B. How do practicing teachers perceive the applicability of knowledge and skills developed in the practice field cases to child services?

- Coding and theme analysis of online discussions and chats during employment phase
- Semi-structured interviews
- Interviewer field notes
- Researcher memos

Dissemination of Products and Outcomes

Presently, the entire TPSS series of multimedia cases and electronic performance support tools are available on CDs (both Macintosh and Windows formats) at reproduction costs for professional usage at [http://www.coe.missouri.edu/~vrcbd](http://www.coe.missouri.edu/~vrcbd). This web site provides descriptive information about the cases, teaching resources (discussion plans, observation forms, and user guides), access to an instructor listserv, research briefs and reports, and links for ordering the CDs. Enhancements will be made to this web site to disseminate the research project results, and include: 1) research briefs and reports, 2) implementer guides based on empirical findings; 3) implementation materials (additional lesson plans, discussion group materials, teaching resources, and rubrics for evaluating all learning artifacts), 4) samples of artifacts for all programs, and 5) a frequently-asked question forum.

**Paper #2: Interactive Multimedia Cases: Applications for Preparation of Teachers in Inclusive Settings**

*Gail Fitzgerald*

The TPSS multimedia case programs provide interactive learning environments that embed problem-solving activities into authentic cases. There are three titles in the series: (1) understanding children's behavioral disorders from multiple perspectives, (2) learning and practicing assessment and planning procedures, and (3) developing instruction and management plans as interventions. The ten cases in the series include videos of children in a variety of school settings; interviews with teachers, principals and parents; computerized case records; information databases; prompted activities; and performance support tools. The over-arching theme of TPSS is to provide flexible learning materials to enhance problem solving of teachers preparing to serve children with social, emotional, and behavioral disorders. The materials are appropriate for special educators, general educators, school psychologists, and other helping professionals involved in serving these children.

In this paper, one of the ten case programs will be described with screen shots to help the reader visualize the instructional and problem-solving components provided within the cases as well as a sample of the performance support tools. The case is *Amy*. This is one of the cases in **Program III: Instruction and Management in Emotional and**
Behavioral Disorders. In this case, the user takes the role of a teacher in planning instructional and cognitive-behavioral interventions for Amy in school and generalization settings. Problem-solving activities include identifying her needs, assessing classroom situations, designing management plans, planning therapeutic instruction, generalizing plans into home and community, and reflecting on one’s plans based on expert consultation. Multimedia materials include audio interviews with teachers and related service personnel, observation videos of Amy in a variety of classrooms, curriculum demos, and commentaries provided by experts in the field of special education. There are 35 template tools included for creating behavioral intervention materials for Amy provided in EPSS software named Teacher Resources and TeacherTools.

Amy is a ten year-old girl placed in a resource room program with inclusion in a fourth grade classroom. She has been in a behavioral disorders program for five years in three states. While her behavioral programming has become less critical, Amy still needs external management and support from teachers. She receives social skills instruction in integrated settings. The user navigates through the computerized case program from a main menu and pull-down menus.

The challenge is introduced to the user via Meet Amy. In a short video presentation, the user gets to meet with the director of special education who describes her current status and presents a challenge to the user. The special education director suggests that the user assess Amy’s needs, gain procedural information from case records and program resources, and then plan interventions for Amy.

In the Assess Needs section of the program, the user can listen to interviews with Amy’s teachers and resource personnel and observe Amy in a variety of settings. The multimedia formats provide authenticity and help the user gather information relevant to her needs.
The **Getting Information** section provides computerized case records and disciplinary policies for Amy’s school; these provide contextual information for creating realistic plans for Amy. The user can access poster sessions to view demonstration lessons in the areas of social skills training, conflict resolution, cognitive restructuring, and anger control training.

The **Plan Intervention** section contains four procedural activities. In **Identify Needs**, the program guides the user through a behavioral consultation in areas of need selected by the user, including academic, behavior, affective, social skills, problem-solving skills, daily living, recreation, transition, home/living, and other. In **Assess Settings**, the user can evaluate each setting factor and provide notes to justify his/her assessment of each setting factor.

When the user is ready to make plans for Amy, two planning templates are available: **Design Management** and **Plan Instruction**. The user’s notes and previous entries made in the program activities are fully accessible for use during planning.

The **Work with Others** section allows the user to get advice from experts. Their commentary focuses on processes to generalize intervention plans to aid Amy in other classroom settings, home, and community. This section stresses the importance of professional collaboration as well as shared responsibility for solving problems on a team.
In Evaluate Plans the user can listen to three experts who have reviewed the case of Amy. After listening to these experts, the user goes through a prompted activity to reflect on his/her intervention plans and make adjustments based on expert commentary, needs for generalization, and best practice standards in the field. All changes made by the user are retained in the user’s records.

In addition, electronic performance support tools are available with explanations of interventions and template tools for their construction. Each support tool contains background descriptive information, suggestions for developing and implementing the interventions in Teacher Resources, and examples of materials created with the First Step KidTools software program.

Design of Practice Field Learning Environments

The TPSS cases are designed as practice fields—a term introduced by Senge (1994). Practice fields focus mainly on situating content in authentic learner activities. In practice fields students engage in the kinds of problems and practices that they will encounter outside of school. Preparing practice fields involves creating realistic activities or experiences for the learner. These activities must be authentic; they must present most of the cognitive demands the learner would encounter in the real world, that is, authentic problem solving and critical thinking in the domain. Barab & Duffy (2000) list the design principles for creating practice fields as follows:

1. Doing domain-related practice.
2. Ownership of the inquiry.
3. Coaching and modeling of thinking skills.
5. Dilemmas are ill-structured.
6. Support the learner rather than simplify the dilemma.
7. Work is collaborative and social.
8. The learning context is motivating.

The TPSS cases provide opportunities for domain-related practice (principle 1) for preservice/inservice teachers: understanding the complexities of children’s behavioral disorders from multiple perspectives, assessing and planning to meet their needs, and
instructing and managing their behaviors in schools and clinical settings. The ten TPSS cases are completely authentic, requiring the application of domain knowledge to problems of professional practice.

The cases provide dilemmas that are ill-structured so that learners must define and solve problems (principle 5), thereby owning the inquiry (principle 2). Information in each case is loosely structured and requires the user to consider multiple sources of information from multiple perspectives, timelines, and varied solutions by previous service providers, teachers and parents. This provides real world practice in special education: much information exists that must be evaluated, synthesized, and utilized by individuals and by teams.

A variety of scaffolds are embedded within the case programs that coach the user in the problem-solving activities (principle 3), support the learner in working with the complex, ill-structured case rather than simplifying the case for the user (principle 6), and provide opportunities for reflection (principle 4). As the user completes the primary problem-solving activities of creating interventions, the case environment issues a series of “best practice prompts” that guide reflection and self-evaluation. The performance support tools serve as scaffolds that enable users to work as experts, and later, to help users to transfer and apply new knowledge and skills to actual job situations.

Providing a motivating (principle 8) and social, collaborative learning environment is critical in meaning making (principle 7). Within the constructivist-learning paradigm, meaning is defined as a process of continual negotiation with others who share points of view in a social environment (Jonassen, Peck, & Wilson, 1999). By creating a practice environment that simulates the dialogue and teamwork necessary in helping children with behavioral disorders, the learning context becomes both motivating and real. Beyond work within the case environments, users can participate in listserv discussion groups centered on the cases. By engaging in this process, new knowledge is socially constructed and shared in legitimate communities of practice.

**Research in Case-based Instruction**

Practice fields provide authentic learning experiences where users come to “know about problems and practices” faced in real professional practice. By dealing with multiple scenarios from multiple perspectives, learners move closer to thinking like experts: they learn to extract pertinent information, generate problem solutions in flexible ways, and transfer knowledge and skills to new contexts. However, virtual learning experiences are not the same as real ones.

The benefits of learning through practice fields are increased when practice fields involve real community participation, the community being the profession. A context is needed to provide meaning to the knowledge and skills gained in the practice field. Learning in practice fields and involvement in communities of practice both involve working collaboratively on shared tasks, but meaning making occurs in the broader context of the profession. Hence, the current research attempts to identify the contexts
and implementation strategies that are effective for producing transfer of new knowledge and skills to professional practice in real environments. This research goes beyond the case practice field into the real world to investigate multiple ways of teaching and learning, combining case-based instruction with communities of practice.

**Paper #3: Varied Models of Implementation: Findings from a National Project**

*Kate Mitchem and Kevin Miller*

The TPSS multi media case studies have been implemented in a variety of formats in multiple teacher preparation programs throughout the United States. During the first year of the research project, twelve different models of implementation have been studied in five different states. Contextual factors that have varied across models of implementation include: setting, offering, rank, structure and tech support, discussion format, online components, required application, the use of activities designed to serve as a bridge from the case to other assignments and real-world applications, use of EPSS tools, and grading.

Course offerings ranged from a mainstreaming course and behavior principles course for undergraduate students, to graduate courses in legal issues in special education, behavior management, methods in the field, and characteristics and methods for BD. Course delivery methods included (a) traditional face-to-face classes, (b) on site to practicing teachers, (c) a combination of interactive video and web-based modules, and (d) entirely on-line offered to practicing teachers in five different states. Learners varied across a number of different variables including: age, rank, prior computer experience, prior online experience, licensure, prior professional experience, and reason for taking course.

This paper describes two of the implementation models and discusses initial quantitative and qualitative findings. The first implementation model presented below was put into practice at the University of Central Florida (UCF) in Orlando, Florida. The second implementation model was carried out at West Virginia University (WVU) in Morgantown, West Virginia. Quantitative data were collected through semantic maps that students developed on the first day of class and on the last class session. The number of nodes and links on pre and post semantic maps were analyzed. The qualitative data analyzed included responses from five students per course that implemented the cases. The students were interviewed after course grades were submitted. A graduate research assistant interviewed each selected student using a semi-structured format.

**University of Central Florida Implementation**

The class consisted of eleven preservice teachers who had no classroom teaching experience, eight out-of-field teachers who were in their first or second year of teaching, and six teachers who were properly credentialed. Three cases, Matthew in Program I: Perspectives in Emotional and Behavioral Disorders (EBD), Amy in Program III: Instruction and Management Emotional and Behavioral Disorders (EBD), and DeAngelo in Program III: Instruction and Management Emotional and Behavioral Disorders (EBD) were selected for implementation in a graduate level Methods of Behavior Management course offered at the UCF. The cases were selected and integrated into the course using
the following the criteria: (a) alignment with course content, (b) alignment with textbook and required readings, and (c) alignment with required course assignments.

The course was offered using a face-to-face model that met once per week for two hours and 50 minutes on Tuesday nights for 15 weeks. The students were provided class release time to complete the first two cases. The DeAngelo case was used as an authentic assessment take home final exam.

The class met the first two weeks of the semester. Class did not meet the third week of the semester. Instead, one full class period of release time to work through the Matthew case study was provided as a thorough investigation of the case typically takes 4-5 hours. The students received the scoring rubric for the assignment and were directed to complete all embedded tasks. Students were informed that their data path would be tracked and to come to the next class session fully prepared to discuss all aspects of the case. The students also received a protocol for navigating the case and saving all the necessary information in a folder that was submitted for grading on a disk or CD.

The class met for the next seven weeks. The primary emphasis of instruction during this time was on how to conduct a functional behavior assessment and develop behavior intervention plans. For the eleventh class session students were provided release time to complete the Amy case from Program III: Instruction and Management EBD. The students were instructed to follow the same requirements as outlined for the first case, Matthew. The third case, DeAngelo, again from the Program III CD served as a take home final exam.

West Virginia University Implementation

At WVU, planning for the courses centered on the specific needs of our students, some of whom were working on emergency licenses across the state. We had recently begun a new certification program that leads to multicategorical certification in special education. In Spring 2004 a new graduate level course, Characteristics and Methods in Behavior Disorders, was offered for the first time with 50 percent of the course delivered through web-based modules. The class consisted of 19 preservice teachers who had no classroom teaching experience, two teachers working on an emergency license, and three teachers who were properly credentialed. Cases were selected and integrated into the course based on their alignment with course content, required readings, and assignments.

In this 3-semester hour course, students learn about the characteristics of emotional and behavior disorders, complete two cases from Program I: Perspectives in EBD, as well as activities related to conducting a functional assessment, developing a behavior intervention plan, and teaching a social skills unit. Students were shown how to navigate the case and save their work to a floppy disk and were provided a user guide for reference. They completed the first case on Matthew independently as the assignment for week four, a web-based week. Following this assignment, students spent the next five weeks learning about and conducting a functional behavioral assessment as well as completing a behavior intervention plan.
In week ten, students were asked to complete the second case study on Shawn as an independent web-based assignment. The next week in class, students completed a Jigsaw discussion activity that comprised three activities which were structured as follows. Each student drew a paper from a basket that indicated a role (principal, general education teacher, special education teacher, psychologist, and parent/grandparent) and base group (1, 2, 3) to which they belonged. The base groups consisted of one representative from each role group. For activity one, the principals met at one table, the special education teachers at another table, and so on. As a group of like professionals, they discussed the issues, concerns, and questions they had about the case. Role groups had about 15 minutes to discuss these concerns and summarize them on the discussion guide sheet. In activity two, students were directed to move from their professional role group to their base group and meet as a team to discuss Shawn, her present level of performance, develop some programming recommendations, and complete the report documenting their discussion. Finally, for activity three, students remained in their base group and discussed the questions from the written report embedded in the case that they completed independently the previous week.

Data were collected on: (1) user records for time, activity completeness, and navigation within the multimedia case and electronic performance support materials, (2) conceptual change measured by scoring of semantic maps and analysis of reflective writings by students, (3) and feedback compiled from semi-structured interviews with students.

**Initial Findings Across Implementations**

An analysis of pre and post semantic maps was conducted on participants in the research project by rank and major. A statistically significant difference between the number of nodes and links on the pre and post concept maps was found for graduate students in special education.

Semi-structured interviews were conducted with students after the course was completed and grades were submitted to the university. The student responses to the cases were very positive and indicated that students found the use of authentic cases to be useful in many ways. A number of themes emerged from the interviews including benefits of learning from the case, and real-world applications of case content. The students employed as teachers frequently related case information to children in their classrooms. Immediate application and transfer of the information to their teaching was evident. One student, a Kindergarten teacher who taught in an inclusive classroom setting, commented that she could see younger versions of the case study students in her classroom. Working through the cases provided her insight and strategies she immediately implemented in the classroom.

The cases aligned well with course objectives and content. One student stated, the cases are “good to use in this behavior class … you can relate to what you’re being told in the lectures with actually seeing cases and the tools we had to work with.” Previously, this
course used paper or video cases that were one-dimensional. The three multimedia cases implemented at UCF allowed the students an interactive and enhanced learning experience. One teacher commented, “I remember a lot more than if I had just read it out of a book. I think it made it real that the perspectives that these kids are real people, they’re not just so and so in a book, but you know to have the observations made them real.” In a similar fashion, students at WVU also noted that the cases helped them to understand the theoretical perspectives in a more interesting way than simply reading a textbook. Listening to experts discussing different perspectives helped students to apply these concepts to the use of different interventions for different students.

The interview responses from teachers with limited or no classroom experience revealed that they benefited from their experiences with the cases. Finding placements and providing experiences for novice teachers that include the spectrum of behavioral issues is next to impossible. Yet the challenge of preparing teachers to address students with a wide array of challenging behaviors exists. The interview comments indicate that the authentic cases used in this study offer a viable alternative. One novice teacher stated that “a program like this would be very beneficial to teachers teaching out of field who have no classroom experience at first, to help them learn how to make children do more in the classroom.” Another novice teacher remarked that the “best thing I learned was that you have to view a behavior that a child has from many different aspects … If you have a good team then you could probably come up with better solutions for the child.”

Overall, UCF and WVU students enjoyed interacting with the cases. Year one findings from both implementation models indicate the cases provided an anchor for rich classroom discussions, enhanced the learning experience, and were a welcome addition to the course. Additionally, the preliminary findings suggest that there was a transfer of knowledge to the classroom setting for some of the novice teachers interviewed. Furthermore, the cases provided practical information that was easily applied to the classroom setting. Several teachers incorporated strategies learned from interacting with the case study CDs in the behavior intervention plans developed and implemented as a course assignment.

Interview responses also revealed findings of importance to instructors using multimedia cases. Students commented that they would benefit from a more detailed orientation to the case and suggested that a class session be spent going through one of the cases together. Students also identified the importance of discussions to extending their own understanding of the case. One student noted that he would like, “some more of a like a class discussion to find out what other teachers would do in the situation or how they approached the situation.”

Recommendations

In addition to data supporting the benefits for learners, a number of recommendations for instructors using multimedia cases emerged from the semi-structured interviews and researcher field notes.
Consider learner levels and needs in determining what degree of structure to provide (direct vs. constructivist approach). As an instructor it is important to consider students’ experience and comfort with both the content and the technology. Providing too much structure may limit independent exploration by the student; providing too little may prevent students from fully engaging in the case.

Decide how to evaluate case learning and integrate into your grading structure. If case learning is implemented in a traditional, objectivist approach, learning outcomes may be evaluated in terms of activity completeness and quality of responses. If case learning is implemented as a constructivist learning approach, learning outcomes need to be broadened to include changes in personal knowledge structures, flexibility in thinking, problem analysis and solutions, and reflectivity. These are higher order learning outcomes and more difficult to evaluate and grade. These tensions are apparent in student desire for concrete, objective performance measures versus instructor desire for learning outcomes that are likely to be permanent and impact future performance in real settings.

Walk through orientation to courses and provide ongoing technical assistance as needed. It was evident that technology problems hampered student engagement in the case and impacted the quality of their responses. A detailed orientation to the cases at the beginning of the course as well as on-demand technical assistance allows students to focus on content, skills, and application.

Align cases with course content. When cases are not aligned with course content, students may perceive them as an add-on requiring less attention and thought. Aligned with course content, students identified how the cases helped them to understand material and apply it to students in ways that the textbook could not.

Provide bridging activities between cases and real-world use of knowledge and skills. Instructors needed to provide opportunities for students to apply knowledge and skills gained in the case to other situations, other cases, or real students.

User performance support tools to facilitate transfer. Students often were able to apply knowledge and skills through the use of KidTools or KidSkills performance support tools. Use of these tools in the cases appeared to provide students with specific examples of how they could apply knowledge and skills obtained in the case to real students.

References


Initial Findings

The class consisted of eleven preservice teachers who had no classroom teaching experience, eight out-of-field teachers who were in their first or second year of teaching, and six teachers who were properly credentialed. An analysis of number of nodes on pre and post concept maps was conducted. No statistically significant difference between the number of nodes on the pre and post concept maps was found.

Semi-structured interviews were conducted with students after the course was completed and grades were submitted to the university. The student responses to the cases were very positive. The students employed as teachers frequently related case information to children in their classrooms. Immediate application and transfer of the information to their teaching was evident. One student, a Kindergarten teacher who taught in an inclusive classroom setting, commented that she could see younger versions of the case study students in her classroom. Working through the cases provided her insight and strategies she immediately implemented in the classroom.

The cases aligned well with the Methods of Behavior Management course objectives and content. One student stated, the cases are “good to use in this behavior class … you can relate to what you’re being told in the lectures with actually seeing cases and the tools we had to work with.” Previously, this course used paper or video cases that were one-dimensional. The three multi media cases implemented in this study allowed the students an interactive and enhanced learning experience. One teacher commented, “I remember a lot more than if I had just read it out of a book. I think it made it real that the perspectives that these kids are real people, they’re not just so and so in a book, but you know to have the observations made them real.”

The interview responses from teachers with limited or no classroom experience revealed that they benefited from their experiences with the cases. Finding placements and providing experiences for novice teachers that include the spectrum of behavioral issues is next to impossible. Yet the challenge of preparing teachers to address students with a wide array of challenging behaviors exists. The interview comments indicate that the authentic cases used in this study offer a viable alternative. One novice teacher stated that “a program like this would be very beneficial to teachers teaching out of field who have no classroom experience at first, to help them learn how to make children do more in the classroom.” Another novice teacher remarked that the “best thing I learned was that you have to view a behavior that a child has from many different aspects … If you have a good team then you could probably come up with better solutions for the child.”

Overall, the UCF students enjoyed interacting with the cases. Year one findings from the UCF implementation model indicate the cases provided an anchor for rich classroom discussions, enhanced the learning experience, and were a welcome addition to the course. Additionally, the preliminary findings suggest that there was a transfer of knowledge to the classroom setting for some of the novice teachers interviewed. Furthermore, the cases provided practical information that was easily applied to the classroom setting. Several teachers incorporated strategies learned from interacting with
the case study CDs in the behavior intervention plans developed and implemented as a course assignment.