

## **Learning within Cases: A Comparison of Preservice and Practicing Teachers in General and Special Education**

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The United States (U.S.) federal legislation titled “Individuals with Disabilities Education Improvement Act” (IDEIA, 2004), ensures children with disabilities, including children in public or private institutions, are educated with children who are not disabled. Removal of children with disabilities from the general educational environment occurs only when the severity of the disability is such that education cannot be satisfactorily achieved with the use of supplementary aids (<http://www.cec.sped.org>). The U.S. inclusion movement began in the early 1980’s, and teacher-training programs initiated preparation of general and special education teachers for the provision of services to students with disabilities in general education settings. Essential components of this training have included competencies in understanding multidisciplinary assessment, collaborative team functions, and active participation on Individualized Education Program (IEP) Teams.

### **Rationale for Learning within Cases**

Shulman (2004) in his *Essays on Teaching, Learning, and Learning to Teach* presents the advantages of using cases over expository texts. It is his belief that learning goals for teachers should emphasize reasoning and collaborations around real problems. Cases are to “serve as building blocks” for discourse and reasoning. Case-based instruction can be a powerful method of facilitating explicit practice to theory connections. Thinking develops as learners analyze the case dilemmas presented. The use of videocases in preservice teacher education has been supported by empirical research as a means of assisting the learner in developing a meaningful understanding of classroom complexities and useful constructs for solving

dilemmas. A call for the potential use of hypermedia as a combination of videocases and written cases allows for the actions taken and data collected to be quickly and easily found as well as categorized (Lundeberg, Levin, & Harrington, 1999).

Hypermedia cases such as those created and housed at the VRCBD web site (<http://coe.missouri.edu/~VRCBD>) provide a rich hypermedia learning environment for teachers in training to explore and experience all aspects of programming for students with emotional/behavioral disabilities; thus, creating a familiar contextual situation for in-class study/activities in addition to out-of-class assignments/activities to simulate the activities professionals experience in the inclusive school setting.

A vital question asked by Elksnin (1998) mentioned that even though case-based instruction had an intuitive instructional appeal, research efforts were needed to determine if learners actually demonstrated growth. Is content learned, is a better understanding of the teaching process occurring, and are learners becoming better problem-solvers? Learning technologies contextualize the generalization of essential knowledge and skills from college/university settings into authentic classrooms. Closing the research to practice gap in educational instruction methods brings learners to a closer reality with generalization practice (Gerber, English, & Singer, 1999).

### **The Virtual Resource Center in Behavioral Disorders-Research Consortium**

VRCBD-RC is a three-year research project in the United States focusing on case-based instruction in higher education. The instruction incorporates the use of knowledge and skills to real settings, and integration of online discussions and chats to support collaborative learning with the materials. The research project is a collaborative 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. (Fitzgerald, Hollingsead, Koury, Miller, & Mitchem, 2004-2006). One strand of the investigations focuses on the comparison of preservice and practicing teachers in general and special education that have received case instruction.

Three VRCBD-RC hypermedia Programs were used in the delivery of instruction with preservice and practicing teachers. Program I: Perspectives in Emotional and Behavioral Disorders has four case studies and facilitates the learner to engage in numerous awareness activities in order to interact with a variety of perspectives presented. Program II: Assessment and Planning in Emotional and Behavioral Disorders includes two case studies. The program assists the learner in active classroom observation, data collection, and problem solving. Program III: Instruction and Management in Emotional and Behavioral Disorders has applications with four case studies. There are ten authentic, interactive cases in the series designed to enhance teacher preparation to work with children with significant behavioral disorders. Learner interaction involves needs assessments, data collection, intervention planning, and collaborative planning/evaluation. The over-arching themes are to provide flexible learning materials to enhance teacher problem solving skills in preparation for providing educational services to children with social, emotional, and behavioral disorders.

## Implementation of Learning within Cases

The collaborative training of preservice and practicing teachers crosses between general and special education program lines. This is in large part due to the needs of individual K-12 students and the requirements of “free appropriate education” (FAPE) under IDEIA, 2004. Federal U. S. law requires the general education teacher of a child with a disability to participate as a team member in the development of the Individualized Educational Program (IEP) for the child. This includes determination of appropriate interventions, services, program modifications, and supports (<http://www.cec.sped.org>). The IEP is developed in a collaborative team process. Thus, collaborative teacher training across general and special education is not only beneficial to K-12 students, teachers themselves become better adept at understanding multidisciplinary assessment, collaborative team functions, and active participation in the educational process. Hypermedia cases provide this general education link to special education applications. Case training provides for input from general education content experts, a thorough knowledge of the process, as well as IEP components in applied settings.

### a. Research Sample

For the purpose of this study, six different groups have been investigated. The total individuals consenting to be included in the study in the year 2004 were 235. The research pool selected was N = 151. Undergraduate participants were drawn from courses taught at two different universities and included general and special education preservice teachers. Graduate groups represented three universities and one online group. These groups also included general and special education teacher candidates. Additionally, one university used a field method model with graduate special education practicing teachers. This information is depicted in Table 1.

Table1: Research Sample

	Site	Semester 2004	Course Name
<b>I. UG Mainstreaming GE (N=17)</b>	CUP	Spring	Mainstreaming the Exceptional Learners (N=17)
<b>II. UG Special ED (N=30)</b>	AND	Fall	Introduction to Special Education (N=6)
	CUP	Fall	Behavior Principles (N=24)
<b>III. GR Intro GE (N=23)</b>	CUP	Summer	Introduction to Exceptionality
<b>IV. GR Methods SE (N=65)</b>	UCF	Spring	Methods of Behavioral Management (N=8)
		Fall	Methods of Behavioral Management (N=20)
	AND (ON)	Spring	Behavioral and Emotional Problems of Children (N=5)
	WVU	Spring	Characteristics and Methods of Behavioral Disorders (N=25)
Fall		Classroom Behavior Management (N=10)	
<b>V. GR Field Methods SE (N=7)</b>	AND (OFF)	<b>Spring</b>	Seminar: Behavioral and Emotional Problems of Children (N=4)
	AND	<b>Summer</b>	Advanced Studies: Legal & Ethical Issues in Special Education (N=3)

<b>VI. GR Online Methods SE (N=9)</b>	UMC	Summer	BD Online: Interactive Cases in Behavioral Disorders (N=9)
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### *b. Instructional Delivery Methods*

The research project's first year studied twelve different implementation models in five different states. Variations of contextual factors across implementation models included: setting, offering, rank, structure and tech support, discussion format, online components, required applications, 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. Additionally, course offerings varied from a mainstreaming course and behavior principles course for undergraduate students, to a graduate course on legal/ethical issues in special education and behavior disorders characteristics and methods classes. The exact course titles can be viewed in Table 1. Delivery techniques of course offerings also ranged: traditional face-to-face, onsite practicing teachers, combination interactive video and web-based modules, and, entirely online offerings to practicing teachers. Lastly, learners were diverse across a number of variables such as age, rank, prior computer skills and ability, prior online exposure, licensure, prior professional experience, and reason for course enrollment.

### *c. Data Sources*

Three sources of data were used to investigate the efficacy of using VRCBD-RC hypermedia cases in teacher preparation: (1) hypermedia navigation data collected within the software while the user explored the case, enabling the researcher to track engagement in case activities; (2) semantic maps at pre- and post- intervention were quantified as measures of learning; and (3) application artifacts from activities within the cases and in field experiences were evaluated using rubric ratings to determine generalization of knowledge and skills.

#### (1) hypermedia navigation data tracking engagement in case activities

Undergraduate general education students enrolled spent an average of 139 minutes per case study per student. Undergraduate special education students spent an average of 275 minutes per case study per student. Graduate general education students spent an average of 134 minutes of engagement time per case per student. Graduate special education students spent an average of 207 minutes of engagement time per case per student. For the field methods graduate special education the average of minutes engaged in case per student was 412 minutes. Lastly, the online graduate course had an average of 286 minutes per case for each student.

Undergraduate general education students enrolled had an average completion rate per case study per student of 84%. Undergraduate special education students had an average completion rate per case study per student of 87.6%. Graduate general education students had an average of 75.8% completion rate per case per student. Graduate special education students had an average of 83% completion rate per case per student. For the field methods graduate special education the average completion rate by case per student was 90.15%.

Lastly, the online graduate course had an average of 85.9% completion rate per case for each student.

In summary, general education students appear to spend less time engaged in the cases in terms of minutes and completion rates with compared to special education students. Even though the engagement figures are significantly higher for the field methods course, the n is not large enough at this time to draw any strong generalizations. Details of the data presented can be viewed in Table 2.

Table2: Engagement in Case Activities

	Site	Semester 2004	Course Name	Case#1 Time Complete	Case#2 Time Complete	Case#3 Time Complete
<b>I. UG Mainstreaming GE (N=17)</b>	CUP	Spring	Mainstreaming the Exceptional Learners (N=17)	Joyce 129 min. 81.7%	Jimmy 149 min. 86.3%	
<b>II. UG Special ED (N=30)</b>	AND	Fall	Introduction to Special Education (N=6)	Shawn (6) 272 min. 88.7%	Matthew (3) 235 min. 86.7%	Zach (3) 252 min. 83.3%
	CUP	Fall	Behavior Principles (N=24)	Zach 278 min. 89.3%	Shawn 340 min. 90.0%	
<b>III. GR Intro GE (N=23)</b>	CUP	Summer	Introduction to Exceptionality	Jimmy 139 min. 74.0%	Joyce 129 min. 77.6%	
<b>IV. GR Methods SE (N=65)</b>	UCF	Spring	Methods of Behavioral Management (N=8)	Matthew 164 min. 78.6%	Amy 331 min. 75.3%	
		Fall	Methods of Behavioral Management (N=20)	Matthew 256 min. 91.9%	Amy 396 min. 91.0%	Deangelo 298 min. 80.4%
	AND (ON)	Spring	Behavioral and Emotional Problems of Children (N=5)	Zach 318 min. 97.6%	Shawn 240 min. 92.8%	
	WVU	Spring	Characteristics and Methods of Behavioral Disorders (N=25)	Matthew 147 min. 88.8%	Shawn 114 min. 79.0%	
		Fall	Classroom Behavior Management (N=10)	Amy (10) 299 min. 75.8%	Martell (5) 123 min. 70.8%	Deangelo (5) 195 min. 74.6%
<b>V. GR Field Methods SE (N=7)</b>	AND (OFF)	<b>Spring</b>	Seminar: Behavioral and Emotional Problems of Children (N=4)	Zach 529 min. 89.3%	Shawn 503 min. 93.0%	
	AND	<b>Summer</b>	Advanced Studies: Legal & Ethical Issues in Special Education (N=3)	Jimmy 443 min. 84.0%	Joyce 172 min. 94.3%	
<b>VI. GR Online Methods SE (N=9)</b>	UMC	<b>Summer</b>	BD Online: Interactive Cases in Behavioral Disorders (N=9)	* Trisha (2) 179 min. 86.5% Matthew (5) 223 min. 77.0% Zach (2) 149 min. 73.0%	Shawn (2) 294 min. 82.0% Jimmy (2) 318 min. 100.0% Amy (3) 347 min. 87.0% Deangelo (2) 492 min. 96.0%	

## (2) semantic maps at pre- and post intervention quantified as measure of learning

The semantic maps taken as pre and post measures of learning with analysis of nodes and links indicate learning or conceptual change with significance using  $P < .05$  for undergraduate general education preservice teachers. Details of this analysis can be found in Table 3.

Table 3: Semantic Maps Conceptual Change

Semester	Site	Course Name	Rank (N)	Conceptual Change: Nodes – Pre, Post, Sig. ** Links – Pre, Post, Sig. **
2004 Spring	CUP	Mainstreaming the Exceptional Learners	UG (18)	Nodes: 16.3 – 22.1 (\$) Links: 18.1 – 24.0 (\$)
	AND (ON)	Behavioral and Emotional Problems of Children	GR (5)	Nodes: 49.4 – 62.4 (NS) Links: 55.8 – 65.8 (NS)
	AND (OFF)	Seminar: Behavioral and Emotional Problems of Children	GR (4)	Nodes: 42.8 – 60.1 (NS) Links: 50.8 – 69.3 (NS)
	WVU	Characteristics and Methods of Behavioral Disorders	GR (25)	Nodes: 34.2 – 39.2 (NS) Links: 38.4 – 43.4 (NS)
	UCF	Methods of Behavioral Management	GR (8)	Nodes: 31.75 – 33.13 (NS) Links: 32.88 – 35.63 (NS)
2004 Summer	CUP	Introduction to Exceptionality	GR (24)	Nodes: 26.2 – 27.7 (NS) Links: 31.4 – 30.4 (NS)
	AND	Advanced Studies: Legal & Ethical Issues in Special Education	GR (3)	Nodes: 38.7 – 49.7 (NS) Links: 45.3 – 67.7 (NS)
	UMC	BD Online: Interactive Cases in Behavioral Disorders	GR (9)	Nodes: 31.0 – 44.0 (NS) Links: 40.4 – 52.0 (NS)
2004 Fall	UCF	Methods of Behavior Management	GR (20)	Nodes: 48.5 – 53.5 (NS) Links: 55.7 – 61.7 (NS)
	WVU	Classroom Behavior Management	GR (10)	Nodes: 26.0 – 35.4 (NS) Links: 26.3 – 36.0 (NS)
	AND	Introduction to Special Education	UG (6)	Nodes: 45.8 – 48.7 (NS) Links: 57.5 – 53.7 (NS)
	CUP	Behavior Principles I	UG (24)	Nodes: 14.6 – 23.4 (S) Links: 15.3 – 24.0 (S)

## (3) application artifacts from activities within the cases and in field experiences

Application activities that extended from the case occurred in general and special education courses both at undergraduate and graduate levels. Levels of significance in learning occurring primarily in the extension of applications from the cases rather than guided transfers. Data analysis is depicted in Table 4.

Table 4: Extension Applications

Level of Usage	n	Change in Nodes			Change in Links		
		Pre	Post	sig	Pre	Post	sig
<b>1 – Learning within the case</b>	22	35.5	44.2	.027	41.2	49.2	.044
<b>2 – Extending from the case</b>	17	16.3	22.1	.002	18.1	24.0	.002
<b>3 – Guided transfer to simulation</b>							
<b>4 – Guided transfer to real students</b>							
<b>5 – Independent transfer to real</b>							
<b>1+2 – Learning and extending</b>	102	29.9	35.5	.000	33.8	39.4	.000
<b>1+3/+4 – Learning with guided transfer to simulation or real</b>	10	<b>44.6</b>	53.3	.142	54.8	59.9	.452

## Conclusion

The findings of the study to date have yielded results that would lead one to believe special education teachers are more apt to be engaged in the learning process when using special education multimedia case studies than general education students. It should be noted however that extension activities into authentic learning can impact the conceptual outcomes of the teacher candidate. The following suggestions for case-based instruction in teacher preparation programs.

1. Encourage students to view the problem from new or different vantage points
2. Structure activities for students to analyze the dilemma from alternative points of view
3. Use techniques to actively involve participants in the learning process
4. Case analysis may not solve the problem, but it can be used as a tool for solving problems (Kauffman, 2002).

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