

EXAMINING PRESERVICE TEACHERS' COGNITIVE ENGAGEMENT,
KNOWLEDGE, AND SELF-EFFICACY OF CULTURALLY RESPONSIVE
TEACHING USING A WEB-BASED CASE STUDY MODULE:
A MIXED METHODS APPROACH

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ABSTRACT

EXAMINING PRESERVICE TEACHERS' COGNITIVE ENGAGEMENT, KNOWLEDGE, AND SELF-EFFICACY OF CULTURALLY RESPONSIVE TEACHING USING A WEB-BASED CASE STUDY MODULE: A MIXED METHODS APPROACH

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This mixed methods study was designed to examine preservice teachers' cognitive engagement, knowledge of culturally responsive teaching competencies and self-efficacy through an instructional web-based tool using case studies. Guided by the literature from Culturally Responsive Teaching, Case Studies, Cognitive Engagement, Cognitive Load, and Self Efficacy, a web-based case study module was developed to examine the effectiveness of delivering the content in an alternative way. The module was administered to a sample of preservice teachers in the Midwest. The purpose of the study was fivefold. First, it sought to examine the difference between control, text, and video groups on cognitive engagement and mental effort scores. Second, it attempted to view the differences between groups on the Culturally Responsive Teaching Competencies Assessments. Third, it sought to investigate the relationship between the Culturally Responsive Teaching Self Efficacy Scale and Cognitive Engagement Scores amongst groups. Fourth, it was designed to understand the characteristics that would improve the module, based on participants' feedback. Finally, a qualitative supplement was used to support the quantitative results.

The quantitative data were analyzed using Analysis of Variance (ANOVA), t-tests, and correlations. Thematic analysis was utilized for the qualitative data. The results of the analyses reflect (1) a significant difference between groups on mental effort, and the Culturally Responsive Teaching Competencies Assessment (CRTCA) scores. (2) A significant relationship between mental effort and cognitive engagement scores, as well

as mental effort and Culturally Responsive Teaching Self Efficacy (CRTSE) scores. (3) Findings provided feedback from participants to improve the module, and (4) triangulation of quantitative data by qualitative data. The implications of these findings are discussed.

PREVIEW

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PREVIEW

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PREVIEW

CHAPTER I

INTRODUCTION

Culturally Responsive Teaching

In many of today's American public schools, children are falling behind academically. Furthermore, a significant number of the children falling behind are culturally and linguistically diverse students (Delpit, 1996; Taylor 2000). Many hypotheses have been generated as to why students do poorly in school, but the problem still remains. Not surprisingly, these hypotheses have resulted in a number of proposed interventions. One variable that may contribute to children of color not performing as well as other students could be that many of their teachers do not have the same cultural background, resulting in their missing out on critical educational and cultural connections (Irvine, 1990). According to Irvine & Armento (2001), "by the year 2020, about 40 percent of the nation's school age population will be students of color, and students of color already represent 70 percent of the student population in the 20 largest school districts" (p. 3). Although students of color will be the majority population in some school districts, it is time to hold teacher education departments and school districts accountable for *all* students reaching their potential by assisting preservice teachers to develop the skills necessary to teach culturally diverse students in school districts nationwide (Brandon, 2003).

Culturally responsive teaching (CRT) is the process of "using the cultural knowledge, prior experiences, frames of references and performance styles of students from diverse backgrounds to make learning environments more relevant to and effective for them. It is culturally validating and affirming" (Gay, 2000, p. 2). Culturally

responsive teaching is a catalyst to improve instruction, as well as incorporate a new model of teaching for preservice teachers. Preparing preservice teachers to become more culturally responsive can provide a bridge between the lack of cultural similarities of students and teachers and potentially reduce cultural mismatch.

The promise of culturally responsive teaching cannot come into fruition until teacher educators are competent in teaching cultural responsiveness to preservice teachers. In order for teacher educators to teach the skills necessary for them to be culturally responsive in the classroom, a set of principles to guide instruction need to be in place. One mechanism to assist teacher educators and preservice teachers to become more culturally responsive are the Culturally Responsive Teaching Competencies (Siwatu, 2007). The competencies are objectives that describe behaviors or characteristics of culturally responsive teachers. The competencies are broken down into four categories: classroom management, assessment, curriculum, and instruction. These competencies can become the benchmark for teacher educators and preservice teachers alike to become culturally responsive in their teaching.

Culturally Responsive Teaching Competencies (CRTC) can advance preservice teachers and teacher educators in becoming competent and accountable to teach culturally diverse students. Practice with the competencies themselves can be supplemented by using other activities that are designed to provide vicarious experiences to increase self-efficacy and knowledge about culturally responsive teaching. Teacher educators' behaviors and beliefs send powerful messages to future teachers (Leavell, Cowart, & Wilhem, 1999). The need for those messages to be positive about students of color is imperative. If teacher educators have no experience with culturally diverse

students, or their biases and attitudes negatively influence malleable preservice teachers, then teacher educators are doing more harm than good (Kea & Utley, 1998). Using the competencies can provide a guideline not only for preservice teachers, but teacher educators alike. Modeling and vicarious experience can provide opportunities for preservice teachers to strengthen their understanding and efficacy about teaching culturally diverse students in addition to actual classroom experiences.

Typical of teacher education courses is an immersion experience where preservice teachers are placed in schools that are culturally diverse as a component of practicum and a requirement for multicultural education experience. The problem with immersion experiences to promote cultural awareness is that if preservice teachers are not properly prepared, it oftentimes provides an opportunity for preservice teachers to reinforce their stereotypes or perceptions of students, as opposed to challenging their personal beliefs and attitudes (Kleinfeld, 1998; Brandon, 2003). To prepare preservice teachers, low risk and low emotionally engaging tasks would benefit them before they are placed in classrooms where the situation is higher risk and more emotional. One mechanism that looks promising for providing such studies is case studies, which can provide an opportunity to engage in authentic application.

Case Studies

One format to allow preservice teachers to increase guided practice would be to analyze a case study. Effective case studies include examining a scenario to generate solutions or describe how a task was completed in depth (Bodvarsson, PytlikZillig, Bruning, Horn & Liu, 2007). Case studies can also provide a demonstration of how the theory preservice teachers have learned translates into teacher behavior or practice in a

classroom (Yadaf & Koehler, 2007). One type of case study presentation is the video case study. A video case study is a classroom scenario or situation in which preservice teachers observe a teacher modeling a skill, task, or behavior, versus reading it. Creating a video case study takes advantage of the affordances of a multimedia environment to facilitate learning. Preservice teachers can also benefit from video case studies that provide a model of teacher behavior they may not yet have learned (Proctor, Rents & Jackson, 2001). Baslev, de Grave, Moistens, and Schreiber (2005) believe that video cases can add a significant dimension of learning and analyzing as they provide characteristics, signs, and symptoms that are representative of actual situations. Another advantage of using case studies is that they provide an opportunity to scaffold questions providing a somewhat structured environment for preservice teachers to be guided throughout the module. Horn, PytlikZillig, Glider, and Bruning (2008) define structured engagement as “student exertion of productive effort on structured activities that have been carefully designed to enhance effective self-regulated engagement (p. 6).” Case studies that are created for preservice teachers should be engaging, have an appropriate cognitive load, and be challenging to provide that most benefit to students.

Cognitive Engagement

To ensure that preservice teachers are prepared to become the best teacher they can be, they should be engaged in their coursework. What can teacher educators do to get preservice teachers more engaged with their course content? Some offer the suggestion of creating multimedia or online environments in this electronic era (Richardson & Newby, 2006; Zhu, 2006; Land, 2000). Providing a learning environment that takes advantage of this generation of learners who use technology and internet more

than any other generation, may influence them to not only use technology for daily living, but also daily learning.

Teacher educators are not naïve enough to believe that technology alone will influence student learning, but technology has affordances that can be used by teachers to create realistic experiences (Kozma, 1994). Students need an environment that reflects their multimedia preferences, but also an environment that promotes cognitive engagement in the online environment. Ravindran, Greene, and DeBacker (2005) refer to cognitive engagement as “the amount of effort and type of processing strategies that students use for learning” (p. 222). Based on a semester long study utilizing cases applying educational psychology concepts, students who participated in structured on-line case studies did a better job of analyzing case studies particularly when asked to apply educational concepts (Bodvarrson, et. al, 2007). Within this study, a major emphasis was on the structured questions that were included in the task to reduce cognitive load since the students were novices when it came to working with on-line case studies and educational psychology. The researchers generated questions within the task that scaffolded participants as they worked. This was a format to structure the environment for participants to maximize learning and storage of new information. The findings suggest that when the questions asked in the multimedia environment promoted critical thinking, which is a critical component of cognitive engagement, students performed better than the group that just engaged in classroom discussion.

Cognitive engagement influences the amount of effort students expend on classroom tasks and is recognized as a common indicator of motivated behavior according to Richardson and Newby (2006). Fostering cognitive engagement, which

focuses their attention, involves providing students with the opportunity to use their prior knowledge and schemata on specific information (Stoney & Oliver, 1999). Instruction that stimulates engaged learning is designed to allow students to take an active role in their learning versus a passive role (Dickey, 2005). Educators designing activities and environments that allow learners to be engrossed in meaningful and real life activities can promote engaged learning by reflecting on prior knowledge and exerting effort to complete the task.

Cognitive engagement is necessary not only for preservice teachers to exert effort and process information to learn, but providing activities that promote cognitive engagement and generally authentic experiences also help them to become more efficacious. Ravindran et al. (2005) share that preservice teachers who perceive their current learning as instrumental and meaningful to their future success as teachers also set more challenging learning goals and reported greater intrinsic valuing of their learning than did their peers. Once preservice teachers experience an effective learning environment, it becomes the catalyst for them to engage with the content in a more substantive way, which in turn may build self-efficacy. Higher levels of cognitive engagement are associated with better learning, and higher levels of achievement (Linnenbrink & Pintrich, 2003). Cognitive engagement studies also show that if students are cognitively engaged in their task, it can lead to an increase in efficacy (Linnenbrink & Pintrich, 2003). As used in Zhu's (2006) study, cognitive engagement is clarified as attention to related readings and effort in analyzing and synthesizing readings. Cognitive engagement will be operationalized in this study as a type of processing and mental effort

spent to understand and attend to content detail and to answer questions about the case study.

Self Efficacy

Bandura (1977) defines self-efficacy as “an individual’s beliefs about their capability to produce designated levels of performance that exercise influence over events that affect their lives” (p.193). Self-efficacy is also domain specific, therefore teachers can be efficacious in classroom management, or instructional techniques, but *not* efficacious in being culturally responsive. There are four sources of efficacy; mastery experience, vicarious experience, verbal persuasion, and physiological arousal, as outlined by Bandura (1977). The source of efficacy that was the focus for this study was vicarious experiences. Vicarious experiences allow students to observe others succeeding or failing through their efforts at a task (Bandura, 1977). From observing others, one forms a conception of how new behavior patterns are performed, and on later occasions the symbolic construction serves as a guide for action (Bandura, 1971). Ravindran et. al (2005) state that teacher education programs require students to integrate multiple sources of knowledge and experiences to develop sufficient expertise to begin a professional practice. By using vicarious experiences, efficacy has the opportunity to develop. Self-efficacy was paramount to focus on in this study because it was important to the development of the skills necessary to successfully analyze a case study that is representative of a real classroom. It is also vital for preservice teachers to be efficacious in the content and skills needed to be culturally responsive. Generating multiple opportunities for preservice teachers to develop their self-efficacy in CRT before getting into a real classroom should assist in providing a better immersion experience as they will

go into a classroom with knowledge and self-efficacy that they might not otherwise have had. A mixed method study is needed to examine the components of a cognitively engaging and efficacy developing case study module.

Mixed Methods Research

Gaps in the literature showed that researchers are searching for strategies and standards to make preservice teachers culturally responsive (Siwatu, 2007), but there have not been any tools created to support developing preservice teachers' culturally responsive teaching self-efficacy and beliefs about teaching culturally diverse students. These deficiencies called for using mixed methods to examine quantitative and qualitative aspects of creating a tool to increase preservice teachers' CRT knowledge and self-efficacy. To examine how to increase cognitive engagement, and knowledge of CRT competencies by using video and text-based case studies, a mixed methods approach was needed. Mixed methods allowed the researcher to conduct an experiment to assess preservice teachers' cognitive engagement, culturally responsive teaching self-efficacy (CRTSE) and knowledge acquisition, as well as acquire information to improve the video case study module. The audience that would benefit from studying this problem is teachers, teacher educators, administrators, and policy makers who work in or with culturally diverse environments.

There was a need to collect both quantitative and qualitative data to explore how and what is needed for teachers to become culturally responsive. The development of an innovative tool to support educators who do not have experience in preparing preservice teachers would benefit all. Integrating an electronic tool that can support culturally

responsive teaching self-efficacy within instruction is a benefit to any preservice teacher or teacher educator.

The need to provide quantitative and qualitative forms of data collection was twofold. A singular form of data collection would be inefficient by itself to address the issue of cognitive engagement, preservice teachers' knowledge of culturally responsive teaching competencies and culturally responsive teaching self-efficacy, and examining the module's effectiveness between groups. By using quantitative methods, the researcher was able to explore the cognitive engagement of preservice teachers along with culturally responsive teaching knowledge and self-efficacy. Qualitative data was used to examine preservice teachers' perception of the effectiveness of the module. Moreover, the data from this module was used to continue to improve the module, therefore potentially increasing students' cognitive engagement and CRTSE.

Purpose of the study

The purpose of this study was to examine preservice teachers' cognitive engagement and recall, and address preservice CRTSE and knowledge while using a text or video case study module. An experimental embedded mixed method design was used, a design in which the qualitative data set provides a supportive, secondary role in a study based primarily on the quantitative data set (Creswell & Plano Clark, 2007). The primary purpose of the study examined text versus video presentation methods, and cognitive engagement, mental effort, and CRT competencies knowledge to test the construct of cognitive engagement and CRT knowledge acquisition in multimedia environments, which the researcher predicted that a video case study with scaffolded questions would positively influence preservice teachers cognitive engagement and CRT Competencies

knowledge. Other scales were the culturally responsive teaching self-efficacy scale, and a module quality questionnaire. A secondary purpose was to concurrently gather qualitative open-ended questions that explored preservice teachers cognitive engagement, CRT competencies knowledge and self-efficacy, and module evaluation. The reason for collecting the secondary qualitative database was to examine the module's effectiveness and influence to increase preservice teachers' engagement, recall, and CRT Competencies knowledge.

Definition of Terms

Cognitive engagement. Cognitive engagement refers to the amount of effort and type of processing strategies that students use for learning (Ravindran, Greene, & DeBacker, 2005).

Culturally responsive teaching. Culturally responsive teaching is the process of “using the cultural knowledge, prior experiences, frames of references and performance styles of students from diverse backgrounds to make learning environments more relevant to and effective for them (Gay, 2002, p. 106).”

Culturally responsive teaching self-efficacy (CRTSE) and beliefs. An individual's belief in his or her capabilities to execute the practices associated with culturally responsive teaching (Siwatu, 2007b).

Self-efficacy. The degree to which an individual possesses confidence in his or her ability to achieve a goal or complete a task (Bandura, 1977).

Text-based case study. A third person narrative account of a particular happening (Shulman, 1992).

Video case study. A case study in which the context of the case is in video format.

PREVIEW

CHAPTER II

REVIEW OF LITERATURE

Culturally Responsive Teaching

Even as classrooms are become more diverse, there is a decline in the number of teachers of color (Irvine & Armento, 2001). With the population of the teacher workforce remaining to be White women who may or may not have many cultural and socioeconomic similarities as the students they may teach (Leavell, Cowart & Wilhem, 1999), statistics show that preservice teachers will continue to join the workforce with the same similarities (Gormley, McDermott, Rothenberg, & Hammer, 1995). In light of preparing *all* preservice teachers to teach in culturally diverse classrooms regardless of socioeconomic background or ethnicity, teacher educators have moved towards culturally responsive teaching.

Culturally responsive teaching (CRT) is the process of “using the cultural knowledge, prior experiences, frames of references and performance styles of students from diverse backgrounds to make learning environments more relevant to and effective for them. It is culturally validating and affirming” (Gay, 2000, p. 2). Culturally responsive teachers use the strengths of students and their cultural identifications to provide an optimal learning environment for students. It is evident in the research that preservice teachers could have many more opportunities to become culturally responsive if teacher education programs provided outlets to do so (Sleeter, 2001; Villegas & Lucas 2002). Scheirer (1998) declared, “preservice elementary teachers require both cognitive and emotional support throughout their experiences as they re-construct their views of

teaching, learning, knowing, and knowledge within their professional preparation programs” (p. 1).

Culturally Responsive Teaching and Teacher Education

Fortunately, some teacher education programs nationwide have moved away from the singular multicultural education course solution to more comprehensive programs that revolve around culturally responsive teaching programs, curricula, and competencies (Gay & Kirkland, 2003; Irvine, 2003; Sleeter, 2001; Siwatu, 2007; AACTE, 1986), throughout the program. These programs have produced teachers that are more culturally responsive, and have aided preservice teachers in their decision and commitment to teach in urban schools (Proctor, Rentz, & Jackson, 2001). Without preservice teacher preparation in culturally diverse environments with effective models of CRT, teacher turnover in urban schools remains high because teachers feel unprepared to teach in urban environments. Teacher education departments must provide copious opportunities for preservice teachers to develop their CRTSE to teach in any environment.

The modeling provided by teacher educators must first reflect depth of knowledge about culturally diverse students, but then move away from superficial or “band-aid” type solutions for preservice teachers who will encounter culturally diverse students. When teacher educators have limited experiences with culturally diverse students (Sleeter, 2001), they may not have the skills or knowledge to make CRT come to life for preservice teachers.

Unfortunately, many teacher educators, preservice and inservice teachers view CRT as an abstract and theoretical process (Barnes, 2006; Talbert Johnson, 2006). Teacher educators must have a more thorough knowledge of culturally responsive

teaching to illustrate not only its importance in teaching, but also to teach the skills needed to be culturally responsive. Teacher educators can provide the link between theory and practice for their students. One method is to teach preservice teachers the basic principles related to CRT. Siwatu's (2007) CRT Competencies are one mechanism to accomplish this goal. Culturally responsive teaching competencies are a series of objectives that preservice teachers and teacher educators should be able to execute to reflect culturally responsive teaching in a classroom. For teacher educators, inservice as well as preservice teachers, even if they are not yet culturally responsive, a set of guidelines are available for them to begin to the process of becoming culturally responsive.

Siwatu (2007) created culturally responsive teaching competencies (CRTC) that align with the culturally responsive teaching self-efficacy (CRTSE) scale. The competencies, as Siwatu (2007) states, "describe the practice (e.g., knowledge and skills) of teachers who have been successful teaching students from culturally and linguistically diverse backgrounds and whose pedagogical approach is considered culturally responsive" (p. 5). Siwatu also offers ideas for the competencies to be placed in teacher education programs that are being revamped or are new programs. Other options could be to use the competencies to align teacher education curriculum, or evaluate preservice teachers' efficacy and beliefs about culturally responsive teaching before leaving a course or beginning practicum or student teaching. Being responsive supports transforming the curriculum to end educational inequalities (Ladson-Billings, 1995) and increase the academic success rate of students of color.