Universal Design for Learning Principles in a Hybrid Course: Perceptions and Practice

Rebecca Elder Hinshaw[1] and Suad Sakalli Gumus[2]

Abstract

Universal Design for Learning (UDL) is a promising approach of differentiating instruction to meet the needs of all students. While differentiation is not unique to special educators, it is an expectation of the profession that special educators know ways to differentiate instruction to meet the needs of diverse learners. Furthermore, as more practicing educators seek out online education opportunities offered by teacher education programs, it is beneficial that instructors understand how these participants interpret what they learn and translate it into practice. This article focuses on a case study of the experiences of five special educators who participated in a hybrid graduate course using UDL concepts. The case study design utilized interviews, observation, and course products. Inductive data analysis uncovered three emerging themes that corresponded to the participants' perception and practice of UDL.

Keywords

Universal Design, hybrid, teacher education

Introduction

It is well documented that our K-12 schools contain a growing number of diverse learners, with data indicating that nearly six million students with disabilities spend a portion of their school day in inclusive settings (U.S. Department of Education, 2002). A promising approach to addressing the needs of students with disabilities in the general education classroom is Universal Design for Learning (UDL; Jackson, Harper, & Jackson, 2001). The Center for Applied Special Technology (CAST; http://www.cast.org) notes that, "UDL provides a blueprint for creating flexible goals, methods, materials, and assessments that accommodate learner differences." In designing their UDL model, CAST used information on brain processing and their own brain research. From this, they deducted that while each brain processes information in a unique manner, there are three specific areas or networks of the brain associated with learning. Their UDL model provides educators with ways to support students in each of these identified brain networks and also promotes the use of technology as a key component for teaching and learning in diverse classroom environments.

The UDL model aligns with No Child Left Behind Act (NCLB; 2001) and Individuals With Disabilities Education Act (IDEA; 2004) by promoting the use of ongoing assessment and usage of scientifically researched strategies to support students. Furthermore, IDEA (2004) mandates that universal design be used as an intervention to assist students with disabilities in participating more fully in the general education curriculum. Equally important, research focusing on the needs of special educators indicates that special educators benefit from training in adapting curriculum and working collaboratively with general educators, coteaching, and providing necessary supports to promote learning for students with disabilities in inclusive classrooms (Brownell, Ross, Colon, & McCallum, 2005; Fisher, Frey, & Thousand, 2003). With this in mind, we created a hybrid special education course that used UDL and made it available to graduate students of special education.

This article focuses on a case study of the experiences of five special educators who participated in our hybrid course that incorporated the UDL model. The case study design allowed us to gather rich, descriptive data that illuminated the experiences of the special educators and helped us understand how they interpreted what they learned in the course and translated it to practice. In an executive summary report on teacher education for the American Educational Research Association, Cochran-Smith and Zeichner (2005) point out the need for this type of case study research to shed light on "what teacher education students learn from the opportunities they are provided within their programs" (p. 30). We begin with a description of the course construct. The

[1]Indiana State University, Terre Haute, USA
[2]Mustafa Kemal University, Antakya, Turkey

Corresponding Author:
Rebecca Elder Hinshaw, Indiana State University, 7th street, Terre Haute, IN 47809, USA.
Email: rebecca.hinshaw@indstate.edu

"Method" section follows with information about the study and design. We will then present the results in relationship to the three themes. We will conclude with the discussion of implications.

Course Construct

Online teaching and learning has become a vital part of higher education programs and a necessity for adult learners who not only want to continue their education but also have job commitments that make face-to-face course attendance difficult (Cowie & Nichols, 2010). Our hybrid design allowed us to have some face-to-face contact with the participants, but the majority of the course was in an online platform. The course had two face-to-face group meetings, online communication via scheduled discussions and reflective journal postings, a drop box area for completed projects, and web access to a text by David H. Rose and Anne Meyer (2002), *Teaching Every Student in the Digital Age: Universal Design for Learning*. Because the course had a practicum element, the instructor also observed each participant teach two lessons; the first was a lesson of choice and the second was a lesson that was part of their culminating UDL projects.

Method
Setting

The hybrid course was a culminating graduate course in special education, taught at a midwestern university. The course was designed as the final course in fulfillment of requirements for a master's degree in special education.

Objectives

The objectives of this study were to provide insight into the experiences of special educators who participate in the course and to discover how they perceived and practiced UDL. Because the special educators had varied undergraduate backgrounds, skills, and teaching assignments, a portrait of their experiences was valuable to our understanding of how learning is transferred to practice.

Instructor

At the time of the study, the instructor (pseudonym, Annah) was a doctoral student who had been a special educator in Turkey. She had taught and supervised both undergraduate and graduate students in a variety of courses, including distant education courses. She was known for her versatility, attention to details, and innate ability to provide encouragement and supportive, constructive feedback to her students.

To provide a glimpse into her relationship with each of the graduate students in the course, examples of her interactions are included in the following section.

Participants

All five of the special educators enrolled in the course agreed to participate in the study. Four of the participants held positions as special educators in various locations within a 3-hr radius of our campus, while the fifth one was not working and was placed in a local school for the practicum component of the course. Four of the participants were female and one was male. They were all in their mid- to late 20s. Pseudonyms were used in place of the special educators' names. A brief introduction of each and their experiences in the course follows.

Heather worked as a special educator in a large, rural high school. She began the course with anxiety over the course material. In the first meeting, she took extensive notes while Annah explained the passed out materials, presented information about UDL through PowerPoint presentations, and explained the course expectations, plans, and answered questions. Heather asked questions about UDL and the project, which Annah responded to, reassuring her that she would understand more once she began reading the text. Throughout the course, Heather read her assignments, was actively engaged in the online communications with Annah and the other graduate students, and readily applied what she had learned to her coteaching experience. Heather ended the course with seeing the benefits of the flexibility that UDL advocates for students and teachers alike.

Connie was a full-time international student from Taiwan who was placed in a local fourth-grade elementary classroom for the practicum experience. While Annah chose Connie's placement and general educator, Connie was pleased with the selection and spoke favorably of the general educator in her online communications. Annah responded to Connie's postings and was happy that Connie was pleased with the placement and the teacher. As for UDL, Connie saw it as a method of reaching out to all students through multimedia and technology—especially those with English as a second language.

Ally worked as a special educator in a midsized, urban city elementary school, K-6. In the first meeting, she greeted Annah with a smile and hug and related her delight in having Annah for an instructor again. Ally was confident in her ability to successfully complete all of the course requirements. Being a practicing coteacher, she was able to have ready access to all the students in the general education classroom as well as a working relationship with a collaborative general educator. In her online communications, she often shared her own teaching strategies in the general education classroom and pointed out how they corresponded with UDL.

Deanna worked as a special educator at a local, private, postsecondary facility created to support young adults diagnosed with Asperger's Syndrome and other forms of autism. She began the course with an idea of what UDL involved and was intrigued by the concepts presented. In her first online forum, she requested more information on how the three

brain networks functioned and Annah responded by providing Deanna with a link to an online version of a book on neuroscience that referenced brain research and conclusions similar to UDL. Annah gave Deanna specific pages to read and also suggested that the references cited in the book might provide additional resources. Concerning collaboration and coteaching, Deanna was the only one unable to work as a coteacher. In her online journal, Deanna posted her frustrations and Annah responded by sympathizing with her situation and encouraging her to continue persevering. She expressed her sadness in the fact that Deanna was not able to collaborate. Annah pointed out that as professionals, teachers are constantly being expected to collaborate with paraprofessionals, parents, and other members of the community. She suggested that Deanna make a renewed effort to try to work with the other teacher and include him in her planning and teaching. Although she did not coteach, Deanna did successfully complete the course.

The last participant was Steve, who worked as a learning disabilities (LD) teacher in a midsized, urban city middle school. He began the course with apprehension about UDL because he had little opportunity to coteach. In the first meeting, he talked about his unique teaching environment and was worried about how he could complete the project. He solicited Annah for ideas on how to fulfill the project requirements of collaborating with a general education teacher given that he worked with students only in his resource room and none in the general education classrooms. Annah assured him that everything would work out and she would be there to help him. They talked about ways to approach the general educators in his school. He agreed that he was hopeful that he would find someone with whom to work. He did find a coteacher and ended the course with describing how the UDL project and technology enabled him to coteach on a more permanent basis.

Data Collection and Analysis

The first author conducted three semistructured audiotaped interviews and four observations of the participants, at various points in the course. To maintain confidentiality, code numbers rather than names identified all data, and audiotapes were erased after transcripts were completed. The participants' course products were also instrumental in understanding their perceptions. With their permissions, the following products were obtained: transcripts of the two asynchronous (forum) and one synchronous (chat) discussions, weekly reflective online journal entries, and the course project involving a four-lesson unit plan applying UDL principles. Identifying information on all products was also removed and the products were coded.

Data analysis was conducted using the procedures described in qualitative research texts (McMillan & Schumacher, 2001; Merriam, 1998). This involved organizing the data, analyzing the data using the constant comparative method, and interpreting the results. To organize the data, separate folders for data sets were created for each participant, along with folders for the transcripts of each of the two discussion forums and one discussion chat. All data in each set were read several times, with ideas noted in the margins of the data sets. These noted ideas were used to create a topic list Word document for each data set. Data set topic lists were compared with one another, duplications of topics were eliminated and similar topics were combined into a broader topic and renamed to reflect the combined idea. A master Word document topic list encompassing all the data sets was created. This Word document topic list contained 14 initial topics. Using the constant comparative method, each topic document was reexamined, commonalities between topics compared, and data reduction occurred due to the overlapping and collapsing of topics. The resulting topics were then developed into categories. These categories "reflect the purpose of the research" (Merriam, 1998, p. 183) and were exclusive. All data were reexamined using the categories, and data not assigned to categories, simply responses and restatement of textbook information, were put aside and not used. Further analysis of these categories resulted in the emergence of three major themes. Eisner (1998) relates that themes are "those recurring messages construed from the events observed" (p. 189).

The issue of trustworthiness was addressed using three methods: triangulation, peer debriefing, and member checks. Triangulation was accomplished by using multiple participants and cross-participants analysis of interview data, course artifact collection, and classroom observations. During the interpretation phase, a peer debriefer read drafts of the coded information and provided questions for further interpretation. She judged the coding and theme analysis as being consistent and representative of the data overall. Member checks involved enlisting the help of interviewees in reviewing and determining the accuracy of transcripts and information derived from interviews (Brantlinger, Jimenez, Klingner, Pugach, & Richardson, 2005). The interviewed participants received a copy of one of their transcripts and a copy of their case information. They were asked whether they agreed with their transcript and their case information. Minor discrepancies were noted on two of the cases, and changes were made to reflect the accurate information.

Results

Three common themes emerged from the cross-case data. These themes appeared across data types and represented the participants' perceptions and practice of UDL.

Theme 1: Making the Connection

Reflection is a key element in teaching and also a key component of the course. The design of the hybrid course allowed interaction and reflection to occur with the instructor, between the participants and in reference to the

material. The participants were expected to reflect on their learning and teaching, throughout the course. The idea that reflection provided an opportunity to connect and apply what they have learned in their own teaching was sometimes apparent in the ways that some participants responded. Some consistently sought out ways to connect what they were learning about UDL with prior knowledge and present teaching experiences. Supporting the practicum reflection, Heather stated in an interview, "I like some sort of weekly reflection, whether it is the chat or the journal. I like reading other peoples thoughts." Like Heather, Ally valued learning and connecting with her fellow graduate students through reading the online postings: "being able to listen to what they were having problems with and what they were really enjoying and it kind of made you thankful of what you had or that would be neat to try."

In her second journal entry, Heather reflected on the assigned reading and then connected the ideas with a teaching situation:

> Chapter five really put into perspective of how I am going to align goals with standards using UDL. The goals need to be broader. For example in an English class where the goal is: "Write a five paragraph essay about your future goals in life." Why does the prompt have to be about goals or why does it necessarily need to be five paragraphs? Students may have trouble writing and five paragraphs are too much or they may feel anxious about the future. The teacher should first identify what he/she really wants students to accomplish, such as: being able to write a thesis statement with a supporting paragraph.

In Journal 3, Steve reflected on the ideas presented in the text and then discussed ways he could apply them to his own teaching:

> I can do a couple of different things to customize my curriculum and instruction to cater to the brain networks . . . The first is providing multiple examples to the students to provide them a variety of ways to hear the same concept that we are covering. The second one that I use is providing multiple media and formats for the students to learn the concept.

In her fourth journal entry, Ally wrote about a resource about teaching strategies and how she used the described activity in her own teaching:

> I really enjoyed the kind of "pre-test" that the teacher did at the beginning to see how much the students already knew about each of the strategies. I myself am a big fan of pre-test/post-test data and information.

The pre-test can help me with what each individual student's weaknesses and strengths are which will help me guide my instruction and grouping for lessons. The post-test also shows the growth of the students and who still needs some work and the areas that they need that work.

Whereas most used reflection as a way to connect and evaluate their teaching experiences, some did not. For instance, in Deanna's online communications, she frequently wrote about the brain networks but did not reveal if the UDL information was important in her present teaching environment. Although Connie did discuss the benefits of using UDL to support students, she rarely shared her prior learning or prior teaching experiences.

Across the data sets and types, the participants also consistently talked about teaching and meeting the needs of students. Upon learning about the UDL concepts of recognition, strategic, and affective networks, the participants readily used the information to describe how they taught and how their students learned. They could see the connection between what they were learning about UDL, with ways to teach their students. With their UDL projects, they had an opportunity to apply their UDL information to a teaching situation. As with reflection, there was variability to the extent that the course provided them with new information about teaching diverse students. Hence, the UDL components incorporated in the course did provide them with ways to support their diverse learners, but only two participants described ways UDL enhanced their teaching. For example, Heather talked about learning and applying the UDL concepts in an interview:

> I really like it, I mean I thought well this is kind of stuff we do anyway like when I first read it. But it really breaks it down to more specifics and it gives you the purpose, you know, why is the strategic network important? Why should we teach to this network? So really kind of laid out for me, like oh yeah now I know and when I applied it I could see how it worked.

And in her first journal entry, Connie wrote this about the recognition network and teaching students:

> For example, when we are at school, we teach students new things and new words everyday. If there is a student who cannot recognize different things, words or sounds clearly, it will be so hard for this student to learn new things and make connections between old things and new things. This student will feel confused and frustrated when he/she is at school. This student cannot understand what they should do at which time.

Theme 2: Teaching and Efficacy

The ability to collaborate and work with others to share resources and skills are important attributes of special educators. With the course's online interaction, the participants became a cohort or community of learners working and collaborating together. With their UDL projects, the participants had to collaborate and coteach with a general educator. The ability to collaborate in each of these venues allowed the participants to validate and strengthen their own teaching skills and self-worth.

Overall findings indicate that the practicum component of the course provided them with an opportunity to learn about collaboration. In their online communications, projects, and interviews, they talked about the characteristics of their general educators and even challenges of their collaborative relationships. Ally gave her experienced insights into collaborating in Forum 1: "Some teachers who have been teaching for a while may not be as open and willing to change. Even some general education teachers find it difficult to share and open their classroom to another teacher." In the same forum, Heather had this to say about implementing UDL:

> My fear is that general education teachers may think that special education teachers only do the special ed. part and gen. ed only does their part, and therefore it won't end up being practical UDL but just a special ed teacher "helping out."

Heather later reported in her Project D, her initial struggles with her coteacher:

> She initially seemed excited to be involved with this project, but once we started I felt like I was doing more of the work. She didn't seem to give much input and always said, "I'll do whatever you want to do" . . . She never worked with a special education teacher before because she taught at a private school and there weren't any students there who received special services. That could be one reason why she and I started off struggling, because she wasn't use to working with someone else.

Although challenging, the participants did relate the rewards of the collaborative experience that the practicum made available to them. They talked about the virtues of being in the general education classroom and working side by side with the general education teacher. For example, through observation data, both Heather's and Connie's second lessons using UDL proved to be far better for them and their students, thereby enhancing their self-efficacy. Connie's students were engaged, listening and participating in the lesson. For Heather, the change came in how she was teaching and interacting with the students. She was not acting as simply support, but had a true partnership in teaching the lesson. Heather related this in Part D of her project:

> But, despite our initial struggles we soon were on track and working side by side. She really came to the forefront of this project when we started planning lessons. She had all sorts of ideas and was excited to integrate them. She also kept me on my toes by always thinking about how we could change it to make it better and she would immediately reflect on a lesson after we taught it to see if we should change anything for the next class coming in. She was supportive of my ideas and I was of hers. We also worked great together when it was time to teach. We had fun and so did the students. We both think classes always go so much better when both of us are able to teach and manage the class. I'm really glad we were able to work well together because I think we put out a great UDL project.

Ally also believed that the collaboration gave her an opportunity to share UDL. In her last interview, when questioned about collaborating and using UDL for the following school year, Ally said, "Well, we're going to have those strategies from the UDL, the planning technique. Identifying the barriers and things like that that are definitely going to influence our planning and we're going to think about that."

For Steve, the collaborative experience brought desired changes in his teaching for the next school year. He related in his last interview that he would be coteaching four classes for the following school year with the coteacher he had worked with on the project. Concerning UDL and the collaboration that the practicum required, he wrote in Section D of his project,

> The project opened up the door to a co-teaching opportunity that I may not have had otherwise. I think had I just asked for a teacher to co-teach together, I don't think I would have the response I had asking for some help to complete my project for this class. My cooperating teacher's initial response was sure, "I'll help you." I don't think she was expecting the kind of experience that she received from the actually helping me. I did really get a chance to debrief like I had hoped. My overall impression from my cooperating teacher was that she had a very positive experience in the co-teaching. I believe that she gained some insight about UDL principles and the effect they can have on student learning.

Theme 3: Tools to Teach

A key component of the course and UDL was the use of technology to support learning and teaching. With the hybrid course, the participants were expected to access information

about UDL and interact with one another. In designing their UDL projects, the participants were required to include elements of technology in their teaching. All were familiar with the use of computers and multimedia in their own learning and related this in their online communications and interviews. They acknowledged the benefits of using technology as a tool to teach. Specifically, Connie, Deanna, and Ally used technology to support their instruction. Heather had her students use computers to access online information, and Steve used his laptop and portable projector in teaching and had the students use computers to take tests.

Deanna talked about using computers as a tool for her students' learning in an interview:

> What I've learned, which I guess it's changed in the 10 years since I went and got my undergrad, is the huge emphasis on on-line, and how what a difference that makes . . . it's how everything is out there, it's on-line. If you're doing any kind of research of any kind, you start there.

Steve, who was very comfortable with technology, was observed using an overhead projector and his personal computer in the observation of his first lesson. In an observation of his UDL lesson, he used his computer and digital projector to give a PowerPoint presentation and also had the students take a posttest on their computers. Before his UDL lesson, Steve wrote in Journal 6,

> My collaborating teacher is excited about integrating the technology into the unit and also into her classroom. We have not yet taught any part of the unit yet but I think she is excited to try the technology. I hope to have her administer the post-test on Blackboard at the conclusion of our unit. Also with the use of our tablets and the digital projector I think she will find a new way to utilize her tablet in her own classroom the remainder of this year.

Implications

Data indicate that the graduate students in this case study demonstrated improved understanding and use of UDL after this hybrid class. Also, the reflection requirements of the course assisted in the establishment of a cohort of learners who jointly constructed an understanding of the UDL concepts. The formats of the online group discussions and resulting collaborative responding allowed the graduate students to provide support and encouragement to one another. The online communication was also a place for them to share stories of their teaching experiences. As they learned more about the UDL model, some correlated the new UDL information with their own teaching techniques, reflected on their individual experiences

of using UDL at their practicum sites, and shared information about their UDL projects.

As the graduate students continued to apply the UDL model in collaboration, they related in their online communications and project sections, feeling a sense of empowerment when they were able to plan instruction in the general education classroom for all students, share knowledge about using technology, and work as a coteacher. In their online communications and interviews, most referenced the new ideas of using technology that supported each of the three brain networks and discussed how they could use technology to offer greater support to their students.

The case study also revealed the important role that the instructor played in the hybrid course. Supportive and active field experience supervisors are an essential element of best practices in teacher education programs (Wideen, Mayer-Smith, & Moon, 1998). This study indicated that the instructor's nurturing nature, encouragement, and knowledge of UDL and the practicum requirements, all came together to provide the graduate students with the support they needed to succeed. She was a mentor, a confidante, a disciplinarian—a teacher. Her continual attention let them know that they were not alone in their endeavors and that she not only believed in them but also supported them.

Our case study data indicated that the UDL model introduced in the course provided the graduate students with a welcomed instructional format to enhance the learning experiences of their students with disabilities in inclusive settings, an effective means to support a collaborative coteaching partnership in the general education classroom, and opportunities to explore greater integration of technology in their teaching. Teacher education programs and instructors can reference this study as a way to support skill acquisition and practicum obligations in a hybrid course. This study also adds to the literature on developing the infrastructure in schools to meet the needs of students with disabilities in the general education classroom.

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Author Biographies

Dr. Elder Hinshaw teaches undergraduate and graduate courses at Indiana State University. Her research interests include special education teacher education, assistive technology, UDL, differentiated instruction, collaboration and co-teaching.

Dr. Sakalli Gumus is an Associate Professor of Special Education at Mustafa Kemal University in Turkey. Her research interests are students at risk, students with high incidence disabilities, students with Autism, assistive technologies, teacher education, assessment, universal design for learning and curricular design.