

K- 12 Teacher Education and
The Universal Design for Learning

Robin Webb

University of Alabama at Birmingham

Abstract

This paper seeks to identify the awareness of UDL and the use of the universal design for learning in K-12 classrooms. UDL was included in the reauthorization of the IDEA (2004), the law specifically included the development and use of technology with universal design principles, and the application of these principles in teaching and learning. The purpose of this study was to find out why there is a gap between instructional design and teacher awareness/ implementation of UDL. Research articles were reviewed to find the reason for this gap. The articles that were selected for review help to identify weak areas in implementation that can be strengthened to help close the gap in the future. Findings showed that lack of knowledge of UDL from cooperating teachers and preservice teachers hindered UDL implementation in K-12 schools. Lack of time and materials also caused teachers to use other pedagogical approaches.

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Introduction

The Universal Design for learning is defined as an educational framework based on research in the learning sciences, including cognitive neuroscience that guides the development of flexible learning environments that can accommodate individual learning differences. Throughout the last 40 years, teachers have been faced with both positive advancements and challenges that have shaped how they perform and their receptiveness to new instructional strategies. Therefore, in this paper, teacher education of the Universal Design for Learning (UDL) was targeted due to the lack of teacher knowledge and implementation of the UDL framework. The historical background regarding teacher's education and implementation of UDL that stemmed from the movement to provide greater access for all students, regardless of their academic abilities, will also be reviewed. Research related to this topic has been organized according the eras of teacher education and implementation related to UDL, using chronological publication progression.

Historical Background and Legal Foundation of UDL in K-12 Schools (1970-2006)

Since the 1970s, policy and litigation have pushed educators to think of better ways to educate students with disabilities in school. Hehir (2009) stated that the legal foundation on which both inclusion and UDL have been based predates these concepts. The passage of Section 504 of the Rehabilitation Act in 1974 and IDEA in 1975 laid the foundation for UDL by

emphasizing the need to educate students with disabilities in the “least restrictive environment” (LRE).

On November 29, 1975, President Ford opened a new avenue for education that would be transformed the United States educational system for years to come. He signed the Education of All Handicapped Children Act (EAHCA, Public Law 94-142) into law. It mandated that children and youth with disabilities be allowed an opportunity to have a free and appropriate public education, individualized programming, parental participation in the decision making process, nondiscriminatory identification and evaluation, instruction in the least restrictive environment, while ensuring families due process rights and responsibilities (Jimenez & Graf, 2007).

In the 1980s, parents became vocal about the separation of their children from the other students. They pushed harder for their children to be in a least restrictive environment and argued that segregation was inconsistent with the least restrictive environment ruling from the 1970s. In 1981, *Campbell v. Talladega* led a charge by questioning the efficacy of segregation and questioning low expectations. The ruling of this case required that students with disabilities have contact with nondisabled peers which established inclusive education. This ruling presented another mandate that required teachers to change their teaching strategies to help all of the students in their classrooms learn.

Jimenez & Graf (2007) included that in the 1990s, Congress prepared for the next reauthorization of P.L.94-142, its members reviewed research demonstrating higher performance by students with disabilities when provided greater access to general education curriculum. The

law's reauthorization happened in 1997 and was renamed IDEA (Individuals with Disabilities Education Act). Hehir (2009) emphasized that IDEA mandated the inclusion of students with disabilities in state accountability systems. UDL was included in the reauthorization of the IDEA (2004), the law specifically included the development and use of technology with universal design principles, and the application of these principles in teaching and learning. Hehir considered the UDL framework in addressing the question of how we can best include students with disabilities in assessment systems and restructured this question by asking, "How can we design assessments to anticipate the needs of and be accessible for students with disabilities?"

One approach to making general education curriculums and assessments more accessible to diverse learners regardless of ability, learning style, language, or culture is the application of Universal Design for Learning (UDL). "Grounded in research of learner differences, the capacities of new media, and the most effective teaching practices and assessments, UDL provides a framework for creating more robust learning opportunities for everyone" (Rose & Meyer, 2006, p. viii). Pisha and Coyne (2001), added to this idea by motioning that by using a UDL approach in the classroom, teachers design their instruction to meet the needs of a diverse group of learners rather than make ongoing adjustments for individual students with special needs. This approach can cut down on preparation time or lesson planning time, allowing more time for more quality student- teacher interactions.

K-12 Teacher Preparation Pertaining to UDL (2007-2016)

Evans, C., Williams, J. B. King, L., & Metcalf, D. (2010), reviewed examples of faculty modeling, guided instruction, and preservice teacher application of UDL components with case

studies and K-12 students in their practicum experiences. Seen under their review, CAST (2007) identified UDL as a promising approach for addressing increasingly challenging classrooms. By 2007, some teachers and preservice teachers had been introduced to this approach for instruction. UDL is not a new concept for teaching students in K-12 schools. However, most teachers are unfamiliar with UDL and its qualities. According to Gargiulo and Metcalf (2010), there are many examples of how to apply the UDL framework in the domains of assessment, classroom environment, and instructional planning. On the contrary, teachers in K-12 schools do not see their actions as UDL as instructional designers would. The education of UDL among teachers must first be initiated in the post- secondary setting. Researchers, Spooner, Baker, Harris, Ahlgrim-Delzell, & Brower (2007), conducted a study that investigated the effectiveness of instructing preservice teachers how to incorporate components of UDL into lesson planning. As a result of the study, the findings showed that after receiving specific instruction in UDL, student teachers effectively planned lessons using the UDL components. Evans, C., Williams, J. B. King, L., & Metcalf, D. (2010) explained that it is up to teacher educators in post- secondary settings to provide the link between UDL research and practice in the K-12 schools. This is especially important for teachers in rural communities that face particular challenges because of lack of resources, isolation, geographic barriers, collaboration with parents and other educators.

Murphy (2012) included in her article an example of how a school system has integrated UDL into its educational framework to increase academic accessibility for all students. She mentioned that the increased accessibility mindset did not reach the educational sector until the beginning of the 21st century. In the early 2000s, Kentucky, New York, California, and Ohio adopted UDL as their educational guiding principle to address the needs of their students with

physical disabilities (Muller and Tschantz 2003). More recently, the concept of UDL in education has been expanded to address the needs of other types of students, with the very recent adoption of UDL to meet the needs of ELs (A Route for Every Learner 2011). Teachers will need to have instruction be delivered through a multisensory approach. Meaning that when designing their instruction, teachers need to be intentional about using a variety of modes of presentation. The lack of training in ESL mainstream classroom teachers represents one of the major reasons for ELs' lack of academic success (August and Shanahan 2006; Brown and Doolittle 2008), especially at the high school level. Infusing UDL into the regular teacher education curriculum at the secondary level will involve a number of adjustments to the training of future teachers, including the areas of teachers' attitudes, teachers' knowledge regarding ELs, and instructional practices in ESL. The implementation of UDL will be most successful when it reaches beyond the individual classroom teacher to include entire schools, school divisions, or even states (Edyburn, 2010). One example of large- scale implementation of UDL is the Maryland state school system (A Route for Every Learner 2011). Maryland expanded to encompass all student groups and their specific needs. To design flexible and various approaches to instructional design and assessment, the state looked at brain- based research pertaining to how individuals identify, collect, and categorize information, how they organize and express ideas, and how they become motivated and engaged in a task. Edyburn (2010) recommends that instructional designers develop diversity plans that are inclusive and sensitive to the major needs of different student populations. He also noted that without a clear understanding of the major needs of diverse students and those will inform the instructional design, it can very likely to find UDL implementation rather challenging.

Murphy (2012) suggested that there are some teachers that may feel that they are already implementing universally designed techniques in their teaching. However, more teachers and preservice teachers need to familiarize themselves with the principles of UDL to increase curricular accessibility to all learners, including EL students.

According to Vitelli (2015) recent studies have shown that preservice general education teachers typically feel that they are not prepared to implement UDL components because they lack the skills and knowledge to be successful. (Fuchs, 2010; Gill, Sherman, 2009; Lohrmann & Bambara, 2006; Silverman, 2007; West, 2009). This shortcoming is reflected in the postsecondary and academic outcomes of this population. A challenge, noted by McGuire-Schwartz and Arndt (2007), in working with cooperating teachers who did not have significant experience working with the UDL framework. Mundorf (2009) found that teacher preparation faculty who resisted incorporating UDL into their preservice general education teaching courses. Lastly, it was also noted that general education instructors may view UDL narrowly as topic relevant to only special education, UDL is too expensive, and that UDL will compromise the integrity of the general education curriculum. As authorized by the Higher Education Opportunity Act of 2008, the U.S. ED has provided funding to teacher preparation programs to include UDL in their curricula.

Therefore, Vitelli (2015) conducted a study that focused on surveying faculty in preservice general education teacher programs where such instruction of UDL is most likely to occur. The study included a total of 30 questions that gathered information about participant's characteristics, awareness and knowledge of UDL, and practices that are consistent with UDL guidelines for participants who had no knowledge of UDL. 773 individuals participated in the

study. According to the study, the instruction of UDL is being taught to preservice general education teachers in 21 states. Individuals that indicated that they had no knowledge of UDL (n= 327) reported that they taught pedagogical practices that are consistent with UDL.

Knowledgeable UDL participants (22.13%) indicated that the instruction of the framework has yet to be implemented as a standard topic in preservice general education teacher preparation programs. Depth of UDL knowledge presented a challenge for other participants. Overlapping of pedagogical approaches and lack of time and materials also presented a challenge. McQuire-Schwartz and Arndt (2007) noted that cooperating teachers were only able to provide very little feedback on student's UDL-based lessons.

Methods/ Standards

For this study, the University of Alabama at Birmingham (UAB) online database was used to find research articles that focused on UDL and teacher education. The database search was focused the last 35 years to gather the most amount of research due to this topic being lightly researched. All of the articles used in this review were also peer reviewed.

Questions for Further Research

How will the same level of modeling and guided instruction of UDL for preservice teachers be presented to students in online courses? There are tons of online programs and they preservice teachers in those programs need the same modeling and guided instruction as face-to face courses.

There are lots of teachers that will be working in low- income schools so are UDL components being taught also using low- tech and affordable materials? Most universities have an abundance of technology to use for preservice teachers to use in their instruction.

Further research should also focus on examining the sustainability of effective UDL instruction over time and best methods to implement widespread implementation of UDL.

Conclusions/ Recommendations

Exploring UDL usage in schools identified that there is a gap between teachers using other pedagogical approaches when developing instruction and the use of UDL components in K-12 schools. Changes in the instructional approaches' teachers use stem from what is being taught in preservice teacher education programs. Further investigation into UDL awareness and the teaching of UDL may expose useful information for schools of education seeking to incorporate instruction of the framework into their curricula. Even though UDL is in the process of finding a place within K-12 schools, there is a significant deficient of research supporting this effort. The majority of research behind UDL implementation in schools tapers off after 2014. Hopefully, research related to UDL in K-12 schools will continue to be developed. However, in order to successfully implement UDL inK-12 schools, teachers need support in the classroom and training to understand the fundamental UDL components.

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