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Implementing Universal Design for Learning in the Inclusive Early Childhood Classroom

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Implementing Universal Design for Learning in the Inclusive Early Childhood Classroom

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Capstone Project: An Action Research Project

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Abstract

The purpose of this action research project was to determine what makes implementation of Universal Design for Learning (UDL) effective in the early childhood classroom. Participants were a class of sixteen preschoolers including five students with identified disabilities, one student with a possible disability, and five students who are Dual Language Learners. Qualitative data was collected twice a week to mark and observe strategies being used during large group and small group instruction times. Notes were collected within qualitative data to note how each strategy was implemented and compared with lesson plans. An emergent themes analysis was done on all collected data. Analysis of qualitative data revealed that implementation of UDL is most effective under three conditions. The strategies implemented are selected based upon data, are planned intentionally, and have materials in place. Data analysis determined that when one condition was missing, implementation of UDL strategies was less effective. Limitations and opportunities for future research are discussed.

Keywords: Universal Design for Learning, implementation, early childhood classroom
**Introduction**

Classrooms are evolving to become increasingly diverse and inclusive, with students who are English language learners, have disabilities, and students with various other learning needs. This can be a large task for teachers. However, Universal Design for Learning (UDL) is a framework developed to meet the needs of diverse students. UDL is heavily rooted in neuroscience, cognitive psychology, and learning sciences (CAST, 2018). The framework consists of three components: multiple means of engagement, multiple means of representation, and multiple means of action and expression (CAST, 2018).

Many existing organizations recognize Universal Design for Learning as an effective practice to utilize in today’s inclusive classroom. In the early childhood setting, the National Association for the Education of Young Children’s (NAEYC) Developmentally Appropriate Practices (DAP) and Division for Early Childhood’s (DEC) Recommended Practices have recognized the importance of using UDL in order to meet the needs of all learners in the classroom and make learning accessible (Lohmann et al., 2018). In many early childhood settings, an increasing number of students with varying needs are being welcomed into the classroom, and teachers are being trained to be dual certified in special education and general education to meet the students’ needs in the inclusive setting. Research by Zhang et al. (2022) showed that when UDL is implemented in the elementary classroom and teachers reflect on their teaching, student engagement increases, including students with disabilities who normally are disengaged and do not have a voice. Another study found a teacher whose students were highly engaged in the classroom and readily accepted new challenges when UDL was implemented (Almumen, 2020). The problem is, there is little to no research looking at how teachers move from including UDL strategies in their lesson plans to consistently implementing strategies in the
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classroom (Rusconi & Squillaci, 2023). Most research also looks at kindergarten through grade
12, as well as college. No studies were found that look at the use of UDL in the early childhood
classroom.

The purpose of this action research study is to turn theory into practice within the
inclusive early childhood setting. Research indicates UDL is aligned to NAEYC’s DAP and
DEC’s Recommended Practices (Lohmann et. al., 2018) and is embedded within various policies
such as Every Student Succeeds Act (Basham et. al., 2020). However, there is little research
indicating what it looks like for teachers to practically and effectively apply UDL in inclusive
settings (Almumen, 2020). The action research conducted in this study strives to collect
qualitative data that indicates how teachers can take newfound knowledge of UDL strategies,
intentionally plan for them within small group and whole group instruction, and then apply the
strategies to the classroom during these times.

Research for the literature review was collected through DeWitt Library at Northwestern
College and ProQuest. All primary sources used were peer-reviewed articles, from scholarly
journals, and published within the last ten years. The author focused their research on
effectiveness of UDL in various classroom settings, how to train teachers on UDL, and strategies
that align with the UDL framework and learning networks. Twenty studies served as sources that
provided a foundation for the researcher’s understanding of UDL as it has been researched in the
classrooms. Additional sources served as a foundation for understanding UDL in the early
childhood inclusive setting.

The author believes that when early childhood teachers are given knowledge, practical
plans, and strategies, UDL implementation will occur. This can be done through coaching on the
UDL components, lesson planning, and intentionally finding strategies to implement. The belief
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is that when co-teachers in an inclusive preschool classroom work together to learn and include UDL in their lesson plans, and develop a plan for implementation, the use of UDL in the classroom will increase. Strategic and practical planning of UDL will increase the effectiveness of putting theory into practice.

The author has organized the literature review into key themes found in the research. First, the literature review will provide an overview of UDL and its three principles. Next, the literature review will look at how to train teachers and the importance of teachers knowing and understanding why we use UDL. The third theme will examine lesson planning for UDL. The final theme will examine the effects of classroom implementation. The third and fourth themes allowed the researcher to identify the gap in how we get teachers from lesson plans to the effectiveness of implementation.

Review of the Literature

Universal Design for Learning Principles

Universal Design for Learning (UDL) is a framework in which instruction is intentional and proactive in order to make the curriculum accessible to everyone (Lohman et al., 2018). There are three principles: multiple means of engagement, multiple means of representation, and multiple means of action and expression. Multiple means of engagement identifies that students need to be motivated to learn, and learners have different ways in which they become interested and motivated (CAST, 2018). Gauvreau et al. (2019) identifies multiple means of representation as how the information in the curriculum is shown and provided to students. The third and final UDL principle is multiple means of action and expression, which CAST’s (2018) research determined is necessary for students to express what they know. Lohman et al. (2018) concluded that in early childhood, educators must keep in mind the National Association for the Education
of Young Children (NAEYC) developmentally appropriate practices (DAP) and the Division of Early Childhood Recommended Practices when planning for instruction. Both of these organizations recognize UDL as an important component of teaching young children, and refer to UDL within their documents and position statements. However, most research does not focus on early childhood education, choosing to look at UDL in K-12 and post-secondary education.

UDL principles in classrooms has been researched across age levels in and out of the United States. Almumen (2020) conducted a study to examine Universal Design for Learning principles within inclusive classrooms in Kuwait. The study involved five teachers ranging from kindergarten through 11th grade, who had at least one student with a disability (i.e., ADHD, Down syndrome, hearing loss, and dyslexia) in their classroom. Almumen (2020) found that UDL provides the groundwork needed for all students to receive instruction in the classroom. This study identified that multiple means of engagement, multiple means of representation, and multiple means of action and expression- are a means in which to provide the necessary scaffolds and supports for students, especially those with disabilities (Almumen, 2020). Findings from Almumen’s (2020) research suggests that use of UDL is essential to make the classroom inclusive.

On a different level, Espada-Chavarria (2023) examined UDL principles in post-secondary education in sign language classes in Spain. This quantitative study followed 108 students across academic years at Alcorcón and Madrid-Quintana university campuses. Students in the study were hearing, deaf, and some had the need for extra educational supports due to dyslexia and ADHD. The use of UDL in the classroom and how that impacted students was the focus of the research. The study showed that multiple means of representation and multiple means of action and expression were present in the classes, which gave students the supports
they needed in order to access the curriculum and demonstrate their knowledge effectively. This also increased their motivation to participate in the class.

Furthermore, Hall et al. (2014) explored the UDL principles multiple means of action and expression and multiple means of representation within middle school English language Arts classrooms in the United States. Two hundred eighty-four students participated in the study, 73 of which were identified as having disabilities and in need of an IEP, with eight more students having a learning disability needing a 504. They found that teachers implementing UDL were reviewing data and making data-based decisions more often, and student engagement increased as did their reading comprehension, especially for those with disabilities. Similar to Hall et al.’s (2014) research, Espada-Chavarria (2023) and Alnumen’s (2020) studies demonstrates that UDL principles in the classroom provide a means for students to achieve educational goals within their classroom. These studies occurring within classrooms of students from kindergarten through post-secondary suggests UDL principles can be learned, intentionally planned for, and implemented by teachers of all age groups. To support implementation, teacher training should be viewed as a necessary component to build their understanding of UDL.

**Teacher Training**

Craig et al. (2019) looked at the differences between teachers who attended a five-day training focused on improving UDL in the classroom, and teachers who did not attend the training. This training took place in a district with approximately 12,000 students across eleven elementary schools, two middle schools, and three high schools. One hundred forty-three teachers across all grade levels and subject areas participated in the study, with 73 of those teachers attending the training and the other 70 not attending the training. A rubric was used to measure UDL implementation observed in the classroom prior to training and after training. The
results of the study found that teachers who participated in the training showed significant improvements in their practices of using and implementing UDL in the classroom, whereas the teachers who did not participate in the training showed no improvements (Craig et al., 2019). The results of this study suggest that when teachers are provided with training on UDL practices over the course of multiple days, the use of UDL in the classroom improves.

Teacher training is suggested to help teachers find the value in UDL. A quantitative study done by Almutairi and Alsuwayl (2023) surveyed five elementary teachers in Saudi Arabia. The survey had positive and negative statements about UDL with a Likert scale to determine teachers’ knowledge and how they perceive UDL. When teachers had more knowledge, they rated a statement more favorably than when they had limited knowledge about UDL. Factors such as age, gender, and experience did not impact their views of UDL, indicating that when teachers are knowledgeable, they are more likely to utilize and see value in UDL. These findings are similar in a study done by Black et al. (2014) in which a survey was given to 73 professors and associate professors. This quantitative study provided survey questions relating to use of UDL principles, or strategies similar to UDL, and perceptions of students with disabilities. The majority (71%) of faculty were unfamiliar with UDL and UDL principles (Black et al., 2014). However, those with positive perceptions of students with disabilities, especially faculty in the education department, were more likely to utilize teaching practices related to UDL, such as choices in assessment and use of a variety of instructional tools such as lectures, videos, and guest lecturers. The findings of the research also found faculty had misconceptions of accommodations based on assumptions rather than facts. This research, similar to Almutairi and Alsuwayl (2023), suggests that teachers need more knowledge and training of UDL strategies and principles in order to see the value and increase implementation.
In another study, Craig et al. (2022) used a mixed-methods study to determine the effectiveness of coaching teachers in UDL. Fifteen teachers participated in a coaching cycle, while twenty-four teachers were the comparison group. The fifteen teachers who received coaching made weekly documentation of their knowledge, understanding, and application of UDL. While quantitative data did not indicate any significant effects in coaching, the qualitative data showed that teachers valued coaching and felt it had significant influence on their knowledge and application (Craig et al., 2022). Teachers felt that their coach was a critical resource in understanding UDL, getting materials, and knowing techniques to use in the classroom. Similarly, Evmenova (2018) completed a mixed-methods study on educators enrolled in graduate programs for learning technology and assistive technology. Educators within the study were mostly in-service general education and special education teachers across preschool-twelfth grade. The educators were in a course about UDL, which broke it into multiple modules to dive deeper into the three principles, designing curriculum, enhancing instruction, and progress monitoring. Findings showed that teachers were able to observe their own classrooms and identify barriers to learning that could be met with UDL strategies, and were able to plan for UDL. Educators within the study indicated that more professional development around UDL should be provided (Evmenova, 2018). These studies indicate that training in UDL is important in helping educators to better understand and implement a UDL framework in the classroom.

**Lesson Planning for UDL**

One important component of UDL is intentionally planning to overcome barriers to learning (Lowery et al., 2017). As teachers learn about UDL and develop their knowledge and understanding, their ability to plan with UDL in mind should increase, according to a study done by Lee and Griffin (2021). This mixed-methods study followed eight teacher candidates in a dual
certification program for special education and general education. During the study, all teacher candidates were enrolled in an online graduate course with modules focused around UDL, and then developing plans for UDL. The planning portion of the course was cautious to avoid the use of case studies, and encouraged teacher candidates to consider the students in their student teaching placements. This allowed for better application of UDL knowledge to lesson plans. Overall, the findings of the study noted that when teachers understand UDL their lesson plans better reflect that knowledge. Within the lesson plans, more options were provided for students to access the learning content in a way that fit the needs of the students in their respective classrooms.

Another study by Root et al. (2019) looked at using UDL for math interventions for middle school students with special needs. Three middle school females identified with intellectual disabilities and struggled in math content participated in this study. After the interventionist learned more about the students and their unique needs and interests, they intentionally planned lessons keeping this information in consideration, along with effective instruction that was given to provide students with access to the general curriculum. Knowledge of UDL allowed the interventionist to plan strategies, lessons, and materials that appealed to the students along with daily goal-setting and self-monitoring. The application of UDL knowledge to plan interventions allowed for students to better engage in the lessons and achieve mastery in the content. An important factor of this was that lesson planning was intentional and also reflective. When students did not demonstrate mastery, instructional strategies changed to better meet the needs of the students. This further suggests that an understanding of UDL allows for application to lesson planning.
A qualitative study of six teacher candidates in special education or dual certification special education and general education looked at their understanding of UDL and how that impacted their lesson planning (Takemae et al., 2018). In discussions with the teachers, they were able to explain UDL according to CAST, which supported their lesson planning in accordance with CAST. All of the lesson plans were carefully developed to ensure the three principles were addressed and all of the lessons included learner-centered activities (Takemae et al., 2018). In contrast, a qualitative study by Lowery et al. (2017) looked at seven general education teachers and their understanding of UDL. While they all acknowledged that with UDL what can be done for one can benefit all learners and they were able to overcome learning barriers in their lessons, however, inconsistent comments were made about UDL indicating that they did not need to intentionally plan for it as it already fits what they are doing in the classroom. This contradicts the intentional planning component that is critical to UDL, and that is found in other studies in which teachers had been formally taught or trained in UDL. There was also the belief that using technology in lessons was considered UDL, when that is not the only strategy. In Takemae et al.’s (2018) study, teachers had a unique approach, as technology was viewed as a tool to make content accessible to all learners, but was one of many UDL strategies planned. The contrasts in these two studies indicate that in order to successfully create lesson plans that utilize UDL, knowledge of the principles and the framework is necessary, and planning must be intentional.

**Effects of Implementing UDL**

Implementing UDL in the classroom has been reported to have positive effects across multiple studies. Katz (2015) looked at the impact of implementing UDL. Six hundred students and 58 teachers from 1-12 grade in an inclusive model participated in this study. Findings
showed that when UDL was implemented, there were several positive effects such as reduction of challenging behaviors, students were more engaged and willing to take more risks, and students experienced more positive interactions. While the quantitative data did not show any significant changes, qualitative observational data found an increase in differentiated instruction and student-led inquiry alongside a decrease in whole-class instruction. Teachers also reported that they felt less stress and felt more confident in their ability to meet the needs of their students (Katz, 2015). Furthermore, Sokal and Katz (2015) saw in their study of 183 students in third-eighth grades that classrooms which implemented UDL had increased rates of social and intellectual engagement, which maintained over the course of the study. This suggests that UDL helps to prevent years in which student engagement would normally decrease, particularly in the middle grades leading into high school (Sokal & Katz, 2015).

Zhang et al. (2022) conducted research in a third-grade classroom and supported the teacher in implementing UDL. A component of UDL is that the teacher reflects on their teaching and student responses to lessons and strategies used. In this study Zhang et al. (2022) gave the students an assessment to monitor and track their engagement with the class. Throughout the intervention, it was found that the student assessment allowed the teacher to reflect on their teaching and find ways to maintain student engagement, which in turn further increased engagement. This assessment also unveiled that when UDL is used in a reflective manner and students are given input, they feel more empowered and students who normally would not have a voice, have one (Zhang et al., 2022).

Cumming and Gilyani (2023) also found in an alternative school in Australia that when UDL was implemented, students experienced increased levels of engagement. Fourteen students in eighth through twelfth grades participated in this qualitative study looking at the barriers and
effects of implementing UDL. These students also felt that overall, they were more prepared for when they would return to their mainstream school environment (Cumming & Gilyani, 2023). The three teachers who participated in the study identified they felt more confident and were able to describe the principles and how they provided students with choices in their learning. An identified barrier was time to plan for the implementation of UDL.

Rusconi and Squillaci (2023) completed a qualitative study of current research studies surrounding UDL training, planning, and implementation. Ten of the studies included mainstream teachers either in their own classroom or in a co-teaching environment with a special educator, and two studies were only focused on special educators. Within this research, Rusconi & Squillaci (2023) found that training was effective in getting teachers to plan for UDL, and there is existing literature to show the positive effects of implementation of UDL. However, moving from planning to implementing the framework is not well documented research, showing a gap in how teachers can successfully move from training and lesson planning for UDL, to actually implementing it in order to experience the positive effects.

**Methodology**

The following research question was studied in this action research plan:

**Question 1:** How can teachers effectively implement UDL in the early childhood classroom?

The independent variables being monitored within this research were the planned UDL strategies. UDL strategies were selected and planned for by the teachers within planning sessions. UDL strategies materials were prepared as needed to fit the lesson plans and target the necessary strategies. The dependent variables of the study include the extent to which the UDL strategies were implemented, as planning for UDL strategies does not always lead to effective
implementation. Student responses to these strategies were noted as well as some strategies might work better for some students over others and how this impacted the results of the study. The way students responded to strategies and instruction impacted future strategies chosen as well.

Setting

Research took place in an early childhood inclusive classroom that is located in a small district in the Midwest. The classroom consisted of sixteen students, five of which had Individualized Education Plans (IEPs) with a diagnosis of Autism Spectrum Disorder and moderate to severe needs. Five of the students were Dual Language Learners, all having a Spanish speaking parent in the home, and one having a second parent who spoke Pohnpeian, a Micronesian language. One of the female students was being closely monitored for future discussions related to parent concerns about ADHD. Within the classroom there were five staff: the main classroom teacher, a co-teacher, the teacher associate, and two paras who supported student needs in accordance with their IEPs. The main classroom teacher was the direct participant along with the researcher, as the co-teachers expressed a desire to improve their practice for the benefit of students in the classroom. The impact to the students within the classroom was positive, as UDL is evidence-based and the strategies that were chosen and implemented are supported by research on the topic.

The research took place over the span of six weeks during the spring semester. Prior to beginning research, the researcher observed and collected information on what they saw in the classroom during small group and large group times that were aligned with research based UDL strategies. The researcher and their co-teacher who implemented UDL in the classroom selected strategies based upon this information and based upon what they felt were the needs of the
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classroom. Strategies were discussed and written in lesson plans. Materials were made as needed, and an anecdotal log was kept of the discussion and included the reasoning behind the strategy selected and the goal for implementing that specific strategy.

This action research study received an Institutional Review Board exemption through Northwestern College, Orange City, Iowa. Normal educational practices were implemented as part of the research project by using research-based strategies that are meant to improve teaching practices in the early childhood classroom. The research did not adversely impact student learning.

**Data Collection**

Data was collected using a checklist with anecdotal notes of which strategies were present during the designated times and how they were present in that lesson. The checklist included strategies found in research from Lohmann (2018), Gauvreau (2019), and Hovey (2022) that were suggested for implementing the three learning networks in UDL. The checklist is found in Appendix A. Data was collected on Mondays and Thursdays, to see how the strategy was implemented at the beginning of the week compared to the end of the week, and if it was consistent. The observations were noted as soon as the lesson was completed to ensure accuracy of reflection on strategies, as more time away from the data and relying on memory of what actually took place can skew data.

A baseline was collected to determine which strategies were already being used in the classroom consistently. Baseline data was collected on Monday and Thursday during large group and small group, as those were the days the researcher planned to collect data during the research period to determine the use of strategies and their consistency at the beginning and end of the week. The baseline data collected was used to determine which strategies were already in place
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so the researcher could effectively select strategies for implementation across the research period.

Universal Design for Learning has three different learning networks: multiple means of action and expression, multiple means of representation, and multiple means of engagement. Lohmann (2018), Hovey (2022), and Gauvreau (2019) have carefully researched these three areas and identified strategies that are important for teachers to implement in the early childhood classroom. All strategies align with NAEYC and DEC’s Recommended Practices. Table 1 highlights the strategies for each network that were observed and used to collect data. The data collected was in the form of anecdotal notes.

Table 1

<table>
<thead>
<tr>
<th>Multiple Means of Action and Expression Strategies</th>
<th>Multiple Means of Representation Strategies</th>
<th>Multiple Means of Engagement Strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Technology tools</td>
<td>1. Pairing verbal instructions with visual representations</td>
<td>1. Choices in activities</td>
</tr>
<tr>
<td>4. Hands-on learning activities</td>
<td>4. Think alouds</td>
<td>4. Classroom materials that reflect student culture</td>
</tr>
<tr>
<td></td>
<td>5. Modeling of skills</td>
<td>5. Classroom materials that reflect student interests</td>
</tr>
<tr>
<td></td>
<td></td>
<td>6. Building relationships with students</td>
</tr>
</tbody>
</table>

After baseline data was collected the researcher and classroom teacher determined which strategies they felt were important to implement during the research period. As the research
period progressed, continuous data was collected through the UDL strategy checklist, general observations, and parent interviews. In the early childhood setting, most data is collected through observations and parent interviews particularly at home visits, conferences, and IEP meetings. Parent/Teacher conferences were held during the research period, and this influenced switching one of the strategies to being the representation of home language in the classroom, as during conferences multiple parents expressed that they wanted their child to speak more Spanish instead of English only. When these conversations were completed, this strategy was implemented during small group and large group.

The teacher and co-teacher regularly discussed what was being observed in the classroom as students responded to the strategies and what felt successful or unsuccessful. The teachers reviewed GOLD data that was collected and how the UDL strategies impacted the observations. With that information the teacher and co-teacher would determine which UDL strategies to implement moving forward. This was a dynamic and flexible process due to the nature of the early childhood classroom and the needs of students changing or being identified as research continued.

In this preschool program, students attend Monday through Thursday, with Fridays being a day for teachers to have planning time and various meetings. Every Friday morning, the teacher and co-teacher met to discuss the UDL strategy used that week, the collected data, and the next step. This designated time to intentionally debrief and plan was crucial to effective implementation of UDL in the classroom. One of the Fridays there were meetings which interrupted planning time, and as a result the strategy- hands-on learning activities- was not found to be implemented well during large group time on Monday, and partially implemented during small group time. With some after school planning, by Thursday, the strategy was more
effectively implemented at small group and large group. Another week we did not have school on that Friday, so there was no planning time until we came back from spring break. As a result, no data was collected on that Monday. Lessons were taught in the way they had been taught prior to research beginning.

The implementation of UDL strategies required that all materials were prepared and in place prior to instruction. Due to the nature of the needs of students in the early childhood classroom and the research-based strategies, the use of visuals was critical to effective implementation. Visual supports were required for the use of multiple strategies so that students with disabilities and dual language learners could access the learning environment. After planning the strategy and the lesson, the teachers developed a plan and divided tasks. The main classroom teacher gathered necessary materials that would have been used or in place prior to the research period, whereas the co-teacher created materials that reflected the needs of the UDL strategy in connection with the lesson. When the teachers had uninterrupted planning time, visual supports were meaningful and intentionally used during the lesson.

On the other hand, the days when meetings interrupted planning or school was not in session districtwide, materials were not prepared to ensure effective implementation. Previously made visual supports, such as visuals for how to request an item from a peer or waiting for a turn were used to support the continuation of previously used strategies; however they did not meet the needs of the new strategy.

**Data Analysis**

The data for this study was analyzed following the emergent themes method (Efron & Ravid, 2020) for qualitative studies. In emergent themes analysis, a holistic approach is taken in
order to develop a better understanding of findings within the research. This requires the researcher to notice the details while still maintaining the larger picture of the research (Efron & Ravid, 2020). The researcher compiled the qualitative notes collected over the course of six weeks to determine how the notes related to each other. As the researcher looked for those relationships, notes were color coded based on the similarities to identify patterns. Frequency of the codes used indicated the themes that emerged in analyzing the details of the notes. The three themes found within the research were data driven decisions, intentional planning, and materials in place.

**Data Driven Decisions**

Data driven decisions was the first theme noticed, as it became apparent that strategies could not be successfully implemented without data to support why that strategy had been selected. The goal of UDL is to make the learning environment accessible to everyone, meaning that if strategies had been selected without the data to support the need for that strategy, implementation would not have been meaningful or effective. In each week’s data, the strategy was designated and data or needs assessments were cited as the reason for the strategy being selected. One strategy this was especially evident in was selecting representing the home language in the classroom. Family input was collected as data to support the need for this strategy to be present in the classroom. Another strategy indicating data driven decisions was important to strategy selection was pairing verbal instructions with visual representations. Observations and IEP data indicated that this strategy was a significant need in the classroom during core instructional times. The use of visuals were observed to be present in the room during centers and the arrival routine. Additionally, observations of students demonstrated that they were more likely to follow instructions when a visual was presented at the same time. The
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A researcher saw this as a need during small group and large group, as well as other times of the day to support the need to implement this strategy during those instructional times as well. The result of using data to decide which UDL strategies to implement was the ability to effectively implement strategies because there was a reason for them as an additional support in the classroom.

**Intentional Planning**

A key finding during the research period was that for UDL to be effective, strategies needed to be an intentional part of the planning process. Prior to research starting, UDL strategies were not discussed as an effective means for making the lessons accessible to all learners. During the research period, there were multiple weeks in which the teacher and co-teacher discussed the strategy that would be implemented during the following week and what the research said about the strategy and how it would benefit students. In rare circumstances with meetings or no school, planning time was limited and the discussion of the use of UDL strategies was brief, or did not happen. As a result, the use of strategies in the next week was limited to later in the week after additional planning time was added in by the teacher and co-teacher choosing to stay late to plan the strategy. When this occurred, there was little to no data collected in accordance with the planned methodology. The weeks of less data collection due to the lack of planning indicate that UDL strategies are effectively implemented when teachers have time allotted for planning strategies.

**Materials in Place**

The third pattern noticed within the data was having materials in place. In the inclusive early childhood setting the use of visuals is reinforced as an effective means of supporting instruction, and is seen in multiple UDL strategies. Visual supports might mean a schedule, a
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routine, expectations, checklists for monitoring progress, or story maps that allow all learners to independently access the environment and instruction. As a result of intentionally planned UDL strategies, it was critical to prepare materials that matched and supported the implementation of the strategy. In the strategies pairing verbal instructions with visual supports and home language translation and representation, the researcher had time to develop visuals that matched the needs of the learners, the lesson planned, and the strategies. For home language translation the researcher took time to determine which phrases would be translated and conferred with native Spanish speaking staff to ensure the translations were correct and pronunciations were accurate. This allowed for effective implementation of UDL strategies in the classroom during instructional times. However, when the teacher and co-teacher did not have time for preparing materials, the implementation of UDL strategies was not effective. When the strategy was monitoring student learning, a visual checklist was planned to help students during to identify where they were in their learning. However, the Friday prior to this week’s strategy was a Friday in which teachers had meetings that impacted the allotted time for preparing materials. As a result, visuals for monitoring learning were not created for the beginning of the week, and implementation was not as effective as it had been during other weeks. The first day the strategy was to be implemented, there was little data to provide evidence of implementation. Later in the week, after more time of preparing materials, the visual checklists were developed and evidence of students monitoring their own learning was present. This trend of material preparation impacting the effectiveness of using UDL was found throughout the research period.

**Discussion**

**Findings**
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Overall, the study found that in order for teachers to effectively implement UDL in the early childhood classroom, three components are necessary: (a) strategies need to be selected based upon data that demonstrates need; (b) there needs to be planning that is intentional in how to use the strategy during a lesson; and (c) materials to support the strategy need to be prepared and in place prior to instruction. In the weeks of research, these were the three themes that were frequently found in the data for strategies that were successfully implemented. Within the study there were weeks that were less successful than others, reinforcing that incorporating UDL into the early childhood classroom has specific conditions that make it successful.

The implementation of UDL strategies was done entirely within the inclusive early childhood classroom that the researcher co-teaches in, making it more consistent to plan and put strategies into practice. An allotted amount of time was given to plan strategies on Fridays. When meetings did not impede planning time, the researcher was able to ensure that strategies were planned to a degree in which it would be successful. Having this time to intentionally plan allowed for strategies to be fully understood by the teacher in order to know what needed to be done and to support preparing materials. The task of preparing materials was divided into the teacher looking for materials that were premade and stored in specific spaces while the co-teacher worked on the computer to find or create new materials that further reinforced the selected strategy and how it would be implemented in the classroom. Time for planning and preparation were critical in ensuring that UDL strategies were effectively implemented in the early childhood classroom.

**Impact**

The teacher and co-teacher found that when UDL was implemented, visuals were more consistently used and having materials that engaged students became an expectation. There was
also an incidental result of UDL strategies transferring to other parts of the day. The strategy
pairing verbal instructions with visuals, for example, a new visual schedule was made using real
pictures of the classroom and placed at a level where the students could reach it. With this, a new
routine began in which a visual was held up while verbally asking, “Are we at welcome
meeting?” and the response was either “No, welcome meeting is all done” or “Yes, we are at
welcome meeting.” This routine developed for each transition of the day and shortly after
beginning it, students took over and began to monitor their learning in the classroom and
transitioning completely independently. The teacher stated that she felt other visual routines such
as how to request and how to share were also more consistently used and applied during centers,
which is a developmentally appropriate and significant time of day for students to learn and
apply social skills that have been taught. The teacher developed a positive attitude towards UDL
and feels more prepared to implement it in the classroom more consistently as she has seen the
ways in which it makes the learning environment more accessible to all students. Students who
are autistic and dual language learners became more engaged in
the classroom by attending to
the teachers during the lessons and peers during centers, arrival, recess, and snack.

Limitations

The biggest limitation was the longevity of the study. The research was conducted over
the course of six weeks including the collection of a baseline. Due to this shorter amount of time,
strategies had to be planned and implemented over a shorter duration than would be ideal for
ensuring that a strategy is understood and prepared well enough to be fully utilized. Ideally, this
would take place over the span of two weeks before adding a new strategy to give two planning
sessions to learn a strategy, prepare for it, and practice using it in the classroom for a variety of
large group and small group lessons. Another limitation was interrupted planning time due to
meetings with the Area Education Agency and administration. The decreased time spent planning and preparing for the implementation of UDL strategies impacted the research as some strategies were not utilized to the extent that other strategies were used in the classroom. Interrupted planning time is not always foreseen as meetings come up on short notice or take longer than initially planned. To make up for this, some planning was done at a delayed time, and was not done to the same extent due to other teaching duties. This could be combatted with lengthening the amount of time devoted to each strategy or developing a backup plan for materials that could be used in order to implement the strategy.

**Conclusion**

When UDL is implemented in the classroom students are more likely to stay engaged in the learning activities as the learning environment becomes accessible to everyone. Students who are historically disengaged were observed to be more engaged due to lessons that were designed to support UDL strategies, which supports student learning. UDL in the early childhood classroom can be effectively implemented as long as the teacher is making data driven decisions for which strategies are beneficial to their students; there is allotted time for intentionally planning lessons; and the necessary materials are in place. The most successfully implemented strategies had all three of these components in place. When one component was missing, the lessons were less successful in implementing UDL strategies, or implementation did not happen at all. This suggests that when teachers choose to implement UDL strategies in the classroom, having the adequate amount of time to plan and prepare for it is critical.

**Future Research**

Future research would benefit from increasing the amount of time of the study, including increasing the amount of time spent implementing strategies. Increasing the time spent putting
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strategies in place would allow for research to determine if there are other themes or components necessary to effectively implementing UDL strategies. Lengthening the time spent on each strategy would also increase teacher knowledge of UDL, which previous research has found to be effective in the use of UDL in the classroom setting (Almutairi & Alsuwayl, 2023). Research on the impact of co-teaching versus teaching independently while implementing UDL in the early childhood classroom would also be beneficial. The teacher in this study expressed several times that she felt the implementation of UDL was largely successful due to having a co-teacher who could help process the expectations and create necessary materials. Her concern that she vocalized is if UDL would be less effective with only one teacher. This suggests that research on the effectiveness of UDL in a classroom with a co-teacher versus a classroom with one teacher is potentially worth pursuing.
References


https://doi.org/10.1177/2158244020969674


https://doi.org/10.1080/2331186X.2023.2270295


https://doi.org/10.1108/ijmce-01-2022-0001

Craig, S. L., Smith, S. J., & Frey, B. B. (2019). Professional development with universal design for learning: Supporting teachers as learners to increase the implementation of
UDL. *Professional Development in Education, 48*(1), 1–16.
https://doi.org/10.1080/19415257.2019.1685563

https://doi.org/10.1017/jsi.2023.7


https://doi.org/10.3390/educsci13060620


https://scholarworks.lib.csusb.edu/cgi/viewcontent.cgi?article=1083&context=josea

https://doi.org/10.1177/0731948714544375

Hovey, K., Gauvreau, A., & Lohmann, M. (2022). Providing multiple means of action and expression in the early childhood classroom through a universal design for learning
Implementing Universal Design for Learning

Katz, J. (2015). Implementing the three block model of universal design for learning: effects on teachers' self-efficacy, stress, and job satisfaction in inclusive classrooms K-12,

*International Journal of Inclusive Education*, 19:1, 1-20, DOI:

10.1080/13603116.2014.881569

Lee, A., & Griffin, C. C. (2021) Exploring online learning modules for teaching universal design for learning (UDL): Preservice teachers’ lesson plan development and implementation,

*Journal of Education for Teaching*, 47(3), 411-425, DOI:

10.1080/02607476.2021.1884494


https://doi.org/10.1177/0741932519887235


Appendix A

UDL Checklist

Small Group       Large Group

Multiple means of engagement
☐ Choices in activities

☐ Self-monitoring and self-evaluations

☐ Problem-based learning

☐ Classroom materials that reflect student culture

☐ Classroom materials that reflect student interests

☐ Building relationships with students

Multiple means of representation
☐ Pairing verbal instructions with visual representations

☐ Home language translation and representation in the classroom

☐ Hands-on learning activities

☐ Think alouds

☐ Modeling of skills

Multiple means of action and expression
☐ Technology tools
- Visual representations

- Offering choice

- Hands-on learning activities