

# Preparing for Learning and Teaching: Incorporating UDL and Mindset into Teacher Preparation Programs

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**Abstract:** This conceptual article highlights the use of instructional practices based on the Universal Design for Learning framework and a focus on promoting effective mindsets in two teacher preparation courses (Classroom Management and Introduction to Developmental Psychology & Learning Theory). These practices have anecdotally demonstrated potential to promote students' understanding and practices in both learning and teaching. A review of research and personal experience as a K-12 teacher, administrator, and teacher educator in a university-based teacher preparation program guided this work.

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## Introduction

Teacher educators have been working to address the challenges of the diverse needs reflected in classrooms in order to best prepare future teachers. Given that instructors play a critical role in the learning experiences of their students and this in turn strongly relates to academic achievement (Darling-Hammond, 2006), teacher preparation programs must continue to explore ways to address learner variance and prepare our pre-service teachers to meet the holistic needs of K-12 students (academic, social, emotional, and cultural). Inclusive strategies that focus attention to one's own learning and mindset to assist in drawing meaning from instructional practices can help with this preparation. The purpose of this conceptual article is to highlight the use of the Universal Design for Learning (UDL) framework (CAST, 2018; Grant & Perez, 2018; Meyer et al., 2014) with a focus on promoting effective mindsets in two teacher preparation courses (Classroom Management and Introduction to Developmental Psychology & Learning Theory). These instructional practices have anecdotally revealed potential increases in students' understanding and practices in both learning and teaching. A review of research and personal experience as a K-12 teacher, administrator, and teacher educator in a university-based teacher preparation program guided this work.

The practices used in the two courses has developed over several years and are based on the research-based framework of Universal Design for Learning (UDL) with deliberate incorporation of effective Mindset strategies and curriculum to meet the holistic needs of students. The goal has been to intentionally use these instructional practices to build relationships between students and educators, developing expert learners while increasing student achievement, and creating a community of learners where everyone

feels safe, valued, and empowered (intellectually, socially, and emotionally) in order to be best prepared to serve as effective teachers. Based on anecdotal feedback (student academic performance, student comments, and instructor evaluation reports), experiential outcomes (when utilized in courses and professional development sessions), and observational data, these practices have been enhancing the learning experiences and preparation of pre-service teachers. It is intended that pre-service teachers will thus be prepared to use these practices within their own K-12 classrooms to the benefit of their future students.

Ensuring that teacher preparation programs have a holistic approach including deliberate instruction in mindset while utilizing UDL with an emphasis on removing barriers to learning, providing choice, promoting social emotional learning, and offering multiple pathways to learning can be beneficial. Instructional techniques and strategies are critical, however so are the overall belief systems of the pre-service teachers. Teachers have an important influence over the way students think about their self-efficacy (Stuart & Thurlow, 2000). The approach they have with students and the way they word and provide feedback can be impactful (Yeager, et al., 2014). Similarly, teachers need to know and believe that all students can learn and that they can teach all students. They must be willing to go through the struggle of figuring out the approach and strategies that work for their individual students. Conveying a mindset that highly values challenges, effort, perseverance, and mistakes is an important aspect of teaching that should be modelled and included in teacher preparation curriculum. Pre-service teachers will benefit from these instructional practices as students and by receiving the training to implement them in their own future K-12 classrooms. These deliberate and intentional instructional techniques should

enhance the learning experience of all learners.

### **The Role of UDL in Teacher Preparation**

Universal Design for Learning is a framework that designs curricular materials and activities for teaching, learning, assessment, and curriculum to have the flexibility to match learner strength and needs so they can reach their learning goals. As defined by CAST (a nonprofit research and development organization that works to expand learning opportunities for all individuals through Universal Design for Learning), “Universal Design for Learning (UDL) is a research-based set of principles to guide the design of learning environments that are accessible and effective for all” (CAST, 2018). It includes guidelines for identifying specific, evidence-based options in designing instruction while removing potential barriers to learning. Many findings in brain-based research such as multiple intelligences, learning styles, and differentiated instruction are reflected in the UDL framework. CAST (2018) recommends a three-part framework for how the brain works using the three separate networks of the brain that are interconnected in the learning process.

The first part of the UDL framework is the *recognition network*, which identifies patterns in the brain and is considered the “what” of learning. The *strategic network* constructs personal meaning to information and sorts/classifies it. It involves metacognition or “thinking about your thinking” and is considered the “how” of learning. The *affective systems* consider the engagement or social interaction of the learner and involves the emotional system responsible for long-term memory, making connections between emotions, and cognitive learning and memory. It drives attention (which drives meaning and memory) and requires engagement to make learning meaningful and for it

to be internalized. It is considered the “why” of learning. These networks are used in the three essential qualities of UDL that must be considered when designing curriculum to meet the needs of all learners: Representation, Engagement, and Action and Expression (CAST, 2018; Meyer et al., 2014). Pre-service teachers can benefit from reflecting on their own thinking and learning experiences and how these experiences may influence their instructional practices.

*Representation* involves providing students in a variety of ways to receive and interpret information. Oral presentation, watching a video, reading text, attending a field trip, using technology, and/or involvement in a role-play are a few examples. Intentional use of the course Learning Management System (LMS) in providing choice and multiple pathways to content has helped students to organize and interact with materials in various formats.

*Engagement* involves knowing students so that their interests can be matched to their learnings. Examples of engagement processes include purposeful use of technology, highlighting, listening, using manipulatives, and participating in discussion groups. Creating assignments that help students to make the connection between their own learning preferences and struggles can highlight considerations that will need to be made in their own instructional planning.

*Action and Expression* accommodates the strategic and motor systems by reflecting on different ways students may respond using the information they have received (CAST, 2018; Meyer et al., 2014). Poster presentations, oral or written reports, demonstrations, productions, and technology use are some examples of ways for students to express their understanding.

Classes designed using UDL provide students with multiple means of representation to gain information, multiple means to engage and motivate students, and multiple

ways to demonstrate what they have learned (CAST, 2018; Grant & Perez, 2018; Meyer et al., 2014; Orkwis & McLane, 1998). For example, for assignments that are not measuring writing outcomes, it can be beneficial to allow students choice in how they demonstrate their learning. Accepting reflections through oral recordings, videotape recordings, or presentation documents can allow students to express their understanding more freely. Students have shared that having these options helps lower their anxiety about assignments, builds their confidence in their work, and empowers them to experience deeper learning.

Along with the described practices, lessons within the two courses encourage students to recognize the impact of UDL on their learning experiences and challenge them to reflect on ways it can be used in their classroom management and instructional practices. Students are expected to identify barriers that may exist in lessons and use the UDL framework to help remove them. Assignments require thoughtful and strategic use of methods that will address the holistic needs of students and encourage multiple pathways to reaching learning objectives.

UDL is an important part of instruction in that it utilizes brain-based practices as well as honors choice and multiple pathways to learning outcomes to meet diverse learning needs. However, it cannot stand-alone. Pre-service teachers must also deliberately consider mindset and its role in learning and teaching. Without utilizing an effective Mindset for themselves as learners, students may not be fully benefitting from the learning, which limits the potential of the UDL framework.

### **The Role of Mindset in Teacher Preparation**

Mindset, for the purposes of this article, refers to more than the growth vs fixed mindset described by Carol Dweck (2006). She emphasized the underlying beliefs people have about abilities and intelligence as well as the profound impact it can have on behavior. According to Dweck, those with a growth mindset recognize that mistakes are part of learning, effort is necessary, and that deficiencies can be overcome; whereas those with a fixed mindset believe that failure is a reflection of ability and a need for effort or apparent deficiencies reflect ability.

Mindset included in the described approach, which is based on this author's experience and review of research, also includes the attitudes, belief systems, perceptions, relationships, dispositions, and approaches demonstrated by students and teachers. Student mindset involves the conscious and unconscious beliefs students hold about their ability to learn and to master challenging concepts as well as the beliefs they perceive others hold about them. Teacher mindset involves the conscious and unconscious beliefs the teacher has about their students' ability to learn as well as about their ability to reach and teach their students.

Included in this concept of mindset are being trauma informed, culturally responsive, and sensitive to the social emotional needs of students. As indicated by the Institute on Trauma and Trauma Informed Care (2015), teachers must approach students and their behaviors from a place of curiosity and compassion, rather than from a place of judgement of character. They must understand the impact of trauma on the individual and be careful not to re-traumatize. Modelling and teaching pre-service teachers' self-regulation and other social emotional strategies is a key aspect of the proposed practices with the purpose of empowering them to self-regulate and to be prepared to assist their future students as well.

Students need to be in a regulated state and feel safe and empowered in order to maximize learning. Mindset is a critical piece of teacher preparation because it has a powerful influence on how well we do a given task. It also influences attitudes and the quality of the critical teacher-student relationship.

These mindsets are influential to instructional practices used by teachers and learning outcomes demonstrated by students (Stuart & Thurow, 2000). Therefore, pre-service teachers should be taught about mindsets and their impact on learning. Giving students specific opportunities to reflect on their belief systems and to be aware of struggle and mistakes as a part of the learning process is important as is sharing strategies to promote effective mindsets in their students. For example, pre-service teachers can be taught about process praise (versus outcome praise) and how to help students identify the strategies that lead to success.

There are neurological underpinnings to mindset, which show that our beliefs can physically change our brain networks (Murphy et al., 2015). Beliefs influence whether our brains continue to work on developing new pathways (believing they are capable of the learning or completing the task) or whether they stop the process (by believing they are not able to learn or complete a task). Helping students to understand their brains' capacity to change due to the learning process and providing them with learning strategies can empower learners. Teaching about mindset and how the brain works can increase motivation, improve self-regulated learning, reduce anxiety when learning, improve academic performance, and increase enjoyment in learning (Hattie & Anderman, 2020; Mesler et al., 2021).

How feedback is phrased, praising process rather than product, and teaching students how to reach high standards makes a difference. Small interventions in mindset

have shown great benefits. For example, there have been seminal studies that demonstrated that changing just one line of feedback from product oriented (“you must be very smart”) to process oriented (“you must have worked really hard”) influences students' performance and willingness to engage in difficult tasks (Dweck & Legget, 1988). Similarly, another study demonstrated that the teacher indicating his belief in the students with one line (“I'm giving you this feedback because I have high expectations of you and I know you can achieve them”) had similar positive performance outcomes (Yeager, et al., 2014). These findings have been consistent with the feedback received from pre-service teachers in the courses in which the described practices have been applied.

Furthermore, teachers need to be aware of their own mindsets and the influence they can have on students' mindsets. Specific to growth vs fixed mindsets, research has shown that teachers with a fixed mindset perceive students who struggle as not sufficiently bright, talented, or smart in the subject. Low achievers in classrooms of teachers with a Fixed Mindset left as low achievers at the end of the school year (Rheinberg, 2001; Mesler et al., 2021). Teachers with a growth mindset perceive struggling students as a challenge – learners who need feedback and guidance on how to improve. Low achievers in classrooms of teachers with a growth mindset moved up and became moderate, and in some cases, high achievers (Rheinberg, 2001; Mesler et al., 2021).

For this reason, it is very important for teachers to be aware of their feelings and thoughts about teaching and about the students they teach. Faculty in teacher preparation programs, therefore, need to model these practices and teach this described concept of mindset to the pre-service teachers. Teacher attitudes as well as the teacher-

student relationship are a critical piece to learning. The best instructional strategies will not be maximized without them and therefore, must be explicitly addressed. These concepts have been explicitly taught and are embedded throughout the two courses. Students have indicated an understanding and appreciation of them in their own learning experiences. Furthermore, the students have shared a commitment to utilizing them in their future classrooms.

### **Using UDL and Mindsets Focused on Learning and Teaching**

To use UDL and mindsets effectively, each stage of the curricular and instructional design – including planning, implementation, assessment, and reflection – has been carefully considered. First and foremost, the language used in course syllabi is deliberate and intentional in using growth and strength-oriented language. Conveying a belief in the intentions and capability of the learner through the wording in the syllabi sets the stage of high expectations with ongoing support rather than a focus on consequences and deficit-based language. The focus is on the competencies that will be built and ways to ensure success, rather than on consequences for falling short of expectations. For example, the following statement is used as an introduction to the syllabi:

*Please treat this syllabus as a guide to your success. In this course, we will work together and discuss tools to strengthen our ability as teachers as well as our overall intellectual ability, problem solving skills, and critical thinking as learners. Using the course content and teaching and learning strategies, we will practice to become more aware and stronger as individuals, students, and teachers*

*toward solving real life problems. My hope is that the course will be a shared joyful and rewarding learning experience full of challenge and growth. My role here is as a facilitator during this journey of academic and professional growth, to which I am fully committed. You are the real players. By putting forth your best, purposeful effort through the use of learning strategies, you will succeed!*

Time is also spent promoting effective mindsets and building community within the classes to help ensure that each learner feels safe (physically, cognitively, emotionally, and socially) and to help teachers create a social-emotional partnership with students that leverages deeper learning and trust to help students rise to higher expectations. Students need to be in a holistically good productive state for learning which includes a willingness to take risk and go beyond their comfort zones (where growth can occur). The pre-service teachers are asked to note how the mindset and community building experiences influence their learning and are provided with strategies to use in their future classrooms. The importance of ensuring positive teacher-student relationships is emphasized, as is the need for constant communication. Students are encouraged to communicate with the instructor so they can be partners in the learning experience. High expectations denote a belief in the capabilities of the learners but are also backed up by a commitment in providing support.

Consideration of each brain network and the three essential qualities within the framework of UDL is essential while planning courses and individual lessons in order to remove potential barriers to learning and to empower the students as learners. Understanding the barriers that may exist for each learner requires an awareness and mindset

that not only offers choice during learning, but also focuses on getting to know the students and honoring them within each of their own contexts; a critical aspect to being culturally responsive and trauma informed. It has been noted by students that they appreciate knowing what to expect when they come to class. Each class is started with an opportunity for students to share their recent experiences, feelings, and concerns. Students are encouraged to ask questions and to express themselves freely so that they are in a good emotional and cognitive place in which to learn. They are also presented with a clear agenda noting the objectives and activities for the class period. Students are given the opportunity to ask for clarifications or to note any concerns about the structure of the lesson. Students have shared informally and in evaluation reports that they looked forward to coming to class because they knew their needs would be addressed and they would be given the opportunity to prepare for learning.

Similarly, it is essential that educators consciously reflect on their own mindset regarding their belief systems and expectations for themselves and for their students (Stuart & Thurow, 2000). Therefore, faculty in teacher preparation programs not only need to model this practice, but also explicitly teach their students strategies for doing so. It is important that teachers believe in students' ability to learn and in their ability to teach all students. Through reflection, teachers can internalize a growth mindset and model it in ways such as pushing through "fear of failure" and promoting ongoing growth and improvement. Mindset should be a deliberate part of lesson planning and reflection through consciously checking one's belief systems and using a growth-oriented focus. Pre-service teachers should be taught ways to incorporate growth mindsets so that they have the resources and understanding to use it effectively in their

classrooms. This should be used to empower people with knowing that they can develop their own potential by persevering through challenges.

Each lesson prepared for pre-service teachers must be thoughtfully designed and provided in a manner that demonstrates the practices and instructs the students in how to use it themselves – as learners and as future educators. These practices are rooted in the explicit utilization of instructional strategies at each phase of instructional design, delivery, assessment, and reflection that helps the students enhance their learning and provides them with instructional approaches to use in their future classrooms. It includes the building of genuine and positive teacher-student relationships that promote the learning of all and bring these deliberate actions to the awareness of pre-service teachers as they are experiencing it as learners.

### **Example of a Typical Class Session**

As noted earlier, each class begins with an informal "check-in" with students. It is a time when students are asked to reflect on their mindsets and to share any concerns and/or ask questions in order to ready themselves for the learning process. Sometimes a quote relevant to the objective or a question about a current event will also be used to prompt their thinking and orient them to relevant topics for the lesson. An agenda is shared verbally and visually with the students so that they know what to expect during the class session. Similarly, the objective is explicitly shared to demonstrate that there is a clear purpose and specific outcome intended. Students are asked to reflect on the previous lesson and how it may connect with the current objective to activate prior knowledge. Content is shared through multiple delivery methods including, at a minimum, a PowerPoint presentation and captioned videos followed by small group

learning activities in which the students collaborate to use the new information. Everything used in the class is also available in the learning management system along with additional resources for students to explore. The end of the class is used for students to reflect on the following: their progress toward the learning objective, their ability to summarize the key takeaways from the lesson, their experience as learners, and how the experience may influence their future instructional practices. Students are often provided prompts such as “why do you think we did this activity today?” or “what did today’s lesson mean to you as a learner and/or as a future teacher?”

Assignments in the courses include options in how they express their understanding and the meeting of the outcomes. They also include student reflections on their learning experience, the meaning they drew from them, and the connections they made to the overall teaching and learning process.

### Conclusion

Given that faculty play a critical role in the learning experiences and academic achievement of students, teacher preparation programs recognize the need to address the holistic needs of our students and to prepare our pre-service teachers to meet those needs of students in K-12 classrooms. Deliberate inclusion of the UDL framework and mindset into teacher preparation curriculum and the intentional use of instructional strategies that focus on removing barriers to learning, providing choice and multiple pathways to learning, and promoting effective mindsets and social emotional learning has the potential to benefit pre-service teachers holistically as learners. Additionally, receiving intentional training in these practices provide them with strategies to utilize in their future

K-12 classrooms in order to benefit their future students.

Anecdotal feedback and personal experience has shown this approach to have great promise in addressing the holistic needs of learners. Research deliberately focused on utilizing these instructional strategies based on the UDL framework while teaching and promoting effective mindsets is still needed. The more we can learn about purposefully and effectively implementing these practices, the better prepared teacher education faculty will be to implement them in their classrooms to benefit their students as learners and, ultimately, to train and bring the instructional awareness to pre-service teachers.

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