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Putting Together the Pieces of The Differentiation Puzzle: Educators' Current Understandings, Beliefs, And Experiences Regarding Differentiated Instruction

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Abstract

Differentiated instruction addresses students' learning needs in which educators adjust what and how they teach. While it is critical educators are well-versed in understanding and applying differentiated instruction practices, not all teacher preparation programs provide the same interpretation when it comes to differentiation. This study, prompted by a state accreditation visit of one Teacher Preparation Program, focused on developing a shared understanding of what and how differentiation is shared with pre-service teachers. Researchers conducted a questionnaire of educators in various roles examining how participants define, explain, teach, and/or implement differentiated instruction. Overall, findings indicated most participants recognized student learning can differ, and that differentiated instruction can meet student needs; however, levels of understanding differentiation varied. This indicates more work is needed to ensure a consistent understanding of differentiated instruction among educators to effectively apply it in classrooms to best meet student needs.

Keywords: differentiation; teacher education; diverse learner; instructional practice; PreK-12 education

1: Introduction

The beauty of learning is that everyone learns differently. Learning what works for us can have a profound effect on how we learn new information and how successful we are at applying that learning to various contexts. Why then, is adjusting instruction to meet a student's needs such a complex idea fraught with misconceptions? In education, why are we so hesitant to embrace differentiated instruction to best serve students as they work toward their full potential? This reticence to adjust instructional practices prompted reflection as to how aspiring educators are prepared to embrace this necessary instructional approach. From PreK-12 teachers and administrators, teacher preparation faculty, and pre-service teachers (PSTs), there is a need for a clear and consistent understanding of what it means to differentiate instruction. In this article, the authors examine how these groups define, understand, and implement differentiation with the goal of a shared understanding of differentiation for these varied groups, along with support mechanisms to help further develop and strengthen this aspect of their teaching practice.

2: Literature Review

Students bring varied, unique strengths and needs to the classroom. Differentiation is an instructional strategy that helps educators adjust what and how students engage with the content and skills so they can enjoy and absorb learning new things, be successful, and grow toward their potential (Tomlinson, 2000). This review will address what differentiation is, the relationship between differentiation and student diversity, and why it is important to prepare educators to use differentiation to support student success in their learning.

2.1: What is differentiation?

Original understandings of differentiation were introduced to address student learning needs by altering content (what is taught), process (how students engage in instruction), and product (what is produced to demonstrate learning) based upon readiness, interest and learning profiles (Tomlinson, 1999; Tomlinson et al., 2003, 2014). Key elements of differentiation include how proactive teachers respond to student needs and how their practices are shaped by the teacher's mindset (Tomlinson, 2003). Differentiation includes modifying curricula, teaching methods, resources, learning activities, and student products to address student needs and maximize the learning for all children (Tomlinson, 2003; Van Tassel-Baska, et.al, 2020).

2.2: Who needs differentiation?

Differentiation was initially embraced in the fields of gifted and special education because these populations required alternative approaches to meet students' unique needs (Tieso, 2005). However, the need for differentiated instruction extends beyond these populations to all students. "Learning ability," including the ability to find resources, collaborate with others to gather information to create a solution or product, ability to test the product, and the capacity to improve one's work, was identified by the Google organization as the most important indicator of predicted success (Darling-Hammond, 2024). This indicates that the world of work seeks individuals who can identify and solve problems, communicate and collaborate effectively, and develop ways of improving outcomes. As such, leaving the use of differentiation practices for only students identified as exceptional learners inadequately prepares many PreK-12 students for their future. It is essential for all students to engage in learning at the appropriate entry point, regardless of where that might be, so they can access the content and skills required to grow in their learning and abilities to become contributory citizens (Darling-Hammond, 2024).

2.3: Why do they need differentiation?

It is critical to recognize and address the mutual relationship found in the practice of differentiation and the goal to address diversity of students in PreK-12 classrooms. Both concepts seek to address cultural identity while embracing differences students bring to school through a variety of instructional strategies and best practices to support growth and learning (Ball & Ladson-Billings, 2020). The need to address academically diverse learners and other differences including cultural, linguistic, ethnic, and social differences in what and how we present and interact with students cannot be ignored and requires the use of pedagogical practices of differentiation (Tomlinson et al., 2003).

The role of individual diversity was first recognized in the historic legal decision of Brown v. Board of Education (1954) where the "separate but equal" precedent established nearly 60 years earlier in Plessy v. Ferguson (1896) was deemed unconstitutional. Following this, the Civil Rights Act (1964), along with the Justice Department, started the desegregation process. While this landmark legislation was intended to improve access to quality education for all, attention to students' learning needs remained a missing piece. In 1975, the Education for All Handicapped Children Act (PL 94-142), became federal law, which stated that all children were entitled to a free appropriate public education. The law also required that students with disabilities be educated to the greatest extent possible in the least restrictive environment (i.e., the general education classroom). Despite these positive changes, the skills for differentiation necessary to support students' varying instructional needs did not become prevalent in instruction, even with updated legislation such as IDEA (United States Department of Education, n.d.) and the Every Student Succeeds

Act (2015). Today, there is a continued need for the recognition of differences, both cultural and intellectual, which must be realized and addressed to support the unique learning needs of students in PreK-12 classrooms.

2.4: Equipping educators for differentiation

Teacher preparation programs seek to equip future teachers with knowledge, skills, and understanding of best practices to support learning. However, not all programs provide the same interpretation of learning experiences (Santangelo & Tomlinson, 2012). Teacher preparation candidates may encounter varying field placements, differing opinions about the usefulness of differentiation, and how differentiation is presented in coursework (Dack, 2019). These experiences can detract PSTs from implementing key principles and practices of differentiation when they become in-service teachers. A lack of alignment in preparation experiences often leaves future teachers with a limited ability to use differentiation as a responsive instructional tool (McCray & McHatton, 2011). It is the responsibility of teacher preparation programs to develop content and practices that instill deep learning. They must identify a clear vision, including knowledge of learners and the social contexts that shape them, a flexible understanding of pedagogy, and a wide array of teaching strategies to differentiate what happens in classrooms and create a healthy learning community (Darling-Hammond et al., 2019).

Not only do teacher preparation programs need to address diverse learners' needs, but current PreK-12 teachers and administrators must do so as well. To better equip classroom teachers to differentiate instruction, they must be well-versed in the idea of inclusive education, which is defined by five areas of teacher practice: collaboration and teamwork, instructional practices, organizational practices, social/emotional/behavioral practices, and determining progress (Finkelstein et al., 2019). While some improvement in awareness on the part of school administrators has emerged (Darling-Hammond et al., 2022), it is essential these future leaders have access to content concerning leading instruction, meeting the needs of diverse learners, supporting teachers, and building a positive school culture for all.

2.5: Summary

Differentiated learning requires a shift from “one-size-fits-all” instruction to individualized teaching and learning with the inclusion of practices reactive to all students’ learning needs (Lindner & Schwab, 2020). The recognition of inclusive pedagogy is imperative as educators work to meet students’ needs and ensure they grow in their learning. It is only through implementation of these practices that we see positive change and student growth. Diverse and inclusive practices in education are a reality, but if students’ needs are not met, their ability to learn is at a disadvantage (Belfi et al., 2012).

3: Methodology

This examination of differentiation understandings and practices within future and current PreK-12 educators and teacher preparation faculty was developed in response to a state accreditation visit of one Teacher Preparation Program. During this visit, a question arose regarding unification and consistency as to what and how differentiation was shared with PSTs. The need to have a unified approach prompted the development of a differentiation committee (i.e., the authors) to review current understandings and practices, and identify areas for suggested improvement in the instruction of differentiation. With this charge, the committee sought to determine the current knowledge, skills, and understandings of differentiation among teacher preparation faculty, PreK-12 administrators, and current and future PreK-12 teachers. Ultimately, the committee's goal was to support PreK-12 student growth as they engage in differentiated instructional practices to help them reach their full potential. To this end, a questionnaire was administered to teacher preparation faculty, PreK-12 administrators, and current and future PreK-12 teachers to gather baseline data regarding their understanding of differentiated instruction. The questions that drove this study focused on determining how participants define, explain, teach, and/or implement differentiated instruction in educational settings. The information gained will help teacher preparation faculty better prepare and support PSTs to implement quality differentiated instruction.

3.1: Questionnaire Creation

The differentiation committee utilized a questionnaire from Author (2013) that was previously created and had undergone content validation. Then, the committee updated and added questions to obtain data based on the specific research focus of this study.

3.2: Participants

After Institutional Review Board (IRB) approval, the differentiation questionnaire was sent to PreK-12 administrators and teachers working within an eight-district region, alumni of the College of Education & Human Development (COEHD), and current PSTs and teacher preparation faculty within the COEHD. The questionnaire was administered through Qualtrics and began with a consent form. If participants consented, they were automatically directed to the questionnaire, which began with demographic questions, including the participant's role in education and where they received their teacher preparation. Next, participants were asked for their definition of differentiation. This was followed by short-answer questions focused on strategies and tools used, ranking scenarios reflecting their definition of what differentiation "looks like" within a classroom, and ranking features that must be present to implement differentiation within a classroom setting. The questionnaire applied the same differentiation principles to all participants; however, subsections were adjusted by participant role. For example, administrators were asked what they look for in a classroom that uses differentiation as a tool, while PreK-12 teachers were asked which tools they use and how they differentiate. Individuals who completed the questionnaire were not included in data analysis if: 1) they were not graduates, current students of, or faculty members of the COEHD, or 2) if they were retired educators or indicated that they were not currently serving in an educational role.

3.3: Analysis

The constant comparative method was used to guide analysis (Creswell & Creswell, 2018; Strauss & Corbin, 1998). For closed-ended questions, the research team conducted descriptive statistical analysis to identify frequencies within and across subgroups. For the open-ended question, an initial read was completed to determine emergent codes. Iterative reads led to a refinement of codes, including deductive codes, which were condensed into categories. From here, data were analyzed separately for the different participant sub-groups as the researchers sought to discover categories, patterns, and themes in the data (Morse & Mitcham, 2002; Patton, 2015). Throughout the analysis process, all members of the research team worked together to identify emerging key ideas (Levitt et al., 2018). Frequencies from the closed-ended items were analyzed with the open-ended question themes to determine overarching study findings.

4: Results

To develop a clearer shared understanding of differentiation, the following four groups who completed the Perceptions of Differentiated Instruction questionnaire were the focus of this study: 1) PreK-12 teachers who were alumni of the university's teacher preparation program, 2) PreK-12 administrators who were alumni of the university's teacher preparation program, 3) PSTs within the university's teacher preparation program, and 4) faculty within the university's teacher preparation program. In total, 352 individuals consented to be part of the study; however, only 202 individuals met the inclusion criteria detailed in the methodology section. As such, results presented only include these individuals. In total, there were 133 PreK-12 Teachers, 23 Pre-K12 Administrators, 20 Teacher Preparation faculty, and 18 PSTs included in study analysis.

4.1: Educational Scenarios and Alignment to Sub-groups' Conceptions of Differentiation

Study participants were presented with various educational scenarios and asked to indicate how closely each aligned with their definition of differentiation using a Likert scale (not at all, slightly, somewhat, extremely). Table 1 displays the top four scenarios participants indicated as "extremely" aligned to their definition of differentiation. As shown in the table, for PreK-12 teachers and teacher preparation faculty, the scenario in Mrs. Smith's classroom was the most frequently selected as "extremely" aligned with their definition of differentiation. For PreK-12 administrators, the scenario in Mr. Steib's classroom was the most

frequently chosen as "extremely," and PSTs indicated the scenario in Ms. Foster's classroom as "extremely" aligned to their definition of differentiation. While the scenario in Ms. Brown's classroom ranked in the top four, none of the sub-groups chose it most frequently as "extremely" aligned with their definition of differentiation. Also notable is that of all four educational scenarios, none of the questionnaire respondents responded "not at all" to the Mr. Steib scenario, suggesting everyone believed this was at least slightly aligned to their definition of differentiation.

Table 1 Top four scenarios in which participants indicated the scenario was "extremely" aligned to their definition of differentiation

	Not at All		*Slightly*		*Somewhat*		*Extremely*	
	n	*%*	*n*	*%*	*n*	*%*	*n*	*%*
In Mrs. Smith's 1st grade class, students read varied texts, have tiered lessons, work in interest development centers, and are compacted out of lessons that they have already mastered.								
PreK-12 Teacher; *n=46*	4	8.70	6	12.76	8	17.39	28	60.87
PreK-12 Administrator; *n=12*	2	16.67	1	8.33	2	16.67	7	58.33
Teacher Prep Faculty; *n=14*	0	0	1	7.14	4	28.57	9	64.29
Pre-service Teacher; *n=3*	0	0	0	0	1	33.33	2	66.66
Mr. Steib breaks up learning for his junior-level students into content chunks and provides tools to help students work with the content at their level of understanding. (ex: Preview a text, discuss essential vocabulary, or chunk the text and read and discuss during instructional time.)								
PreK-12 Teacher	0	0	7	15.22	21	45.65	18	39.13
PreK-12 Administrator	0	0	3	25	1	8.33	8	66.67
Teacher Prep Faculty	0	0	1	7.14	6	42.86	7	50
Pre-service teacher	0	0	0	0	2	66.67	1	33.33
Ms. Foster's 4th-grade class has activities that target students with musical, visual-spatial, linguistic, logical-mathematical, bodily-kinesthetic, intrapersonal, interpersonal, and naturalistic abilities.								
PreK-12 Teacher	4	8.69	8	17.39	14	30.43	20	43.47
PreK-12 Administrators	0	0	1	8.33	5	41.67	6	50
Teacher Prep Faculty	1	7.14	0	0	9	64.29	4	28.57
Pre-service teacher	0	0	0	0	0	0	3	100
In 5th grade, Mrs. Brown asked her students during science class period to write three things they had learned in their recent study of climate change and why they thought this change was essential to monitor. Mark was permitted to complete his response on a computer in the lab using speech-to-text software due to his motor impairment.								
PreK-12 Teacher	7	15.21	10	21.74	10	21.74	19	41.30
PreK-12 Administrator	0	0	3	25	3	25	6	50
Teacher Prep Faculty	1	7.14	2	14.29	5	35.71	6	42.86
Pre-service teacher	0	0	2	66.67	0	0	1	33.33

4.2: Sub-groups' Beliefs and Experiences about Differentiation

All participants were asked to select the Likert response (not at all, slightly, somewhat, extremely) that best addressed their belief about or experience with differentiation for 13 different statements. The statements included principles of differentiation (e.g., knowledge of students), specific methods to differentiate (e.g., changing complexity, early finisher work), and supports for differentiation (e.g., permission, planning time).

Findings indicated the majority of PreK-12 Teachers (75%) and PreK-12 Administrators (80%) rated the statement "understanding of the standards" as extremely important. These percentages were much higher compared to Teacher Preparation Faculty (50%) and PSTs (33.33%). With that said, every participant rated this statement as "somewhat" or "extremely" important except one pre-service teacher who indicated this was "not at all important."

For this item, which addressed beliefs about or experiences with differentiation, there was alignment among the sub-groups for several statements. Specifically, the following statements were rated "extremely" important by 60% or more by *each* of the sub-groups: 1) planning time to make adjustments, 2) being able to innovate, 3) knowledge of students' readiness to learn specific content, and 4) knowledge of different ways to process specific content. In other instances, there was not consistent alignment among the sub-groups. For example, most teacher preparation faculty identified the following as "extremely" important: 1) permission to choose appropriate assessments to inform instruction, 2) permission from the district, and 3) permission from building-level administration; however, 50% or fewer of participants in the other sub-groups rated the same item as "extremely" important. Most participants indicated the various statements were at least "somewhat" important, except for "giving more work to early finishers," which was deemed "not at all" important by at least 20% of respondents from each sub-group.

4.3: Differentiated Instruction Practices: Frequency, Value, and Knowledge

Each sub-group was presented with a list of 19 different instructional practices with questions varying based on their sub-group. PreK-12 teachers and teacher preparation faculty were asked about the frequency in which they engage in the practices, administrators were asked about value placed on the practices, and PSTs were asked about their knowledge of the practices.

Of the 19 items, the PreK-12 Teacher sub-group (n = 43) indicated the frequency with which they engage in various differentiated instruction practices. Based on the frequency scale (never/rarely, occasionally, frequently, always), participants were *most* likely to indicate the following four statements as things they "frequently" or "always" do within their classroom: 1) I can tell when a student needs more concrete examples. (43/43 = 100%); 2) I use real-world examples. (42/43 = 97.67%); 3) I help students learn how content connects to their life outside of school. (38/43 = 88.37%); 4) I allow students to work on group projects alone if they prefer. (36/43 = 83.72%). They were *least* likely to indicate the following three statements as things they "frequently" or "always" do within their classroom: 1) I give different homework assignments. (15/43 = 34.88%); 2) I group students by their interests. (16/43 = 37.21%); 3) I give students class time to explore self-selected topics. (21/43 = 48.84%). The teacher preparation faculty (n = 12) also indicated the frequency with which they engage in these same practices. This sub-group was *most* likely to indicate the following as things they "always" do within their classroom: 1) How to adjust lessons based on individual student needs. (9/12 = 75%); 2) Ways in which student's interest can help students connect to unfamiliar content. (8/12 = 66.67%); 3) How to provide opportunities to practice using real-world examples to explain concepts. (8/12 = 66.67%). On the other hand, these participants were *least* likely to indicate the following three statements as things they "always" do within their classroom: 1) How to design assignments to challenge students at different readiness levels. (1/12 = 8.33%); 2) Approaches for giving different homework assignments based on student understandings. (3/12 = 25%); 3) How to design assignments to challenge the highest achieving students. (3/12 = 25%).

PreK-12 administrators were given 19 parallel items and asked about the value they placed on each. Based on the Likert scale (not at all valuable, slightly valuable, somewhat valuable, extremely valuable), this sub-

group (n = 10) was *most* likely to indicate the following statements as "extremely valuable": 1) Teachers help students learn how content connects to their life outside of school. (9/10 = 90%); 2) Teachers allow students to create various products to demonstrate what they learned. (9/10 = 90%); 3) Teachers use real-world examples to explain concepts. (9/10 = 90%). They were *least* likely to indicate the following three statements as "extremely valuable": 1) Teachers group students by their interests. (1/10 = 10%); 2) Teachers give students class time to explore self-selected topics. (2/10 = 20%); 3) Teachers allow students to work with a partner during independent work. (3/10 = 30%).

Notably, only 3 of 18 (16.67%) PSTs responded to the question asking them to indicate their knowledge regarding the 19 different instructional practices. As such, this data is too small to be reported and interpreted.

4.4: Defining Differentiation

Immediately following demographic data at the start of the questionnaire, all participants were asked to "Define differentiation or describe differentiated instruction." This was the first differentiation-specific question so participant responses would not be influenced by information included in the items that followed. Based on data gathered for this item, the research team coded participants' definitions of differentiated instruction using the following three categories: (1) levels of knowledge, (2) how and why to differentiate, and (3) other differentiated instruction factors to consider. For *levels of knowledge*, researchers included latent understandings (e.g., a general acknowledgement of meeting students' needs), emergent (e.g., more references to specific strategies or specific student needs), and manifest (e.g., a recognition of students' needs and strengths, specific information on ways to learn about students, and adjusting instruction based on that knowledge). The category, h*ow and why to differentiate* included codes for content, process, product, readiness, interest, and learning profile/learner preferences. These codes are all embedded in Tomlinson's (1999; 2003) definition of differentiated instruction. The final category, *other differentiated instruction factors to consider,* included codes for meeting students' needs, role of data/assessment, flexibility, and adjusting instruction.

The research team examined participant definitions of differentiation to examine what trends, if any, emerged within and between the sub-groups. Of the 85 participants who completed this item, only one participant's (from the Teacher Preparation Faculty sub-group) definition exhibited characteristics that demonstrated a recognition of students' needs and strengths, specific information on ways to learn about students, and adjusting instruction based on that knowledge, fitting the category of "manifest." Overall, there was a fairly even split between latent and emergent understanding of differentiated instruction from all sub-groups, except for PSTs, who all demonstrated a latent understanding of differentiation.

When considering how and why to differentiate, process was the most likely (more than 40%) to be referenced in participants' definitions of differentiation. In fact, the PST sub-group only referenced process as a way to differentiate and only referenced learning profile/learner preferences as a reason to differentiate. Within the Teacher Preparation Faculty sub-group, interest was referred to most frequently (35.71%) to differentiate instruction, but in general, interest was not frequently addressed among the other sub-groups. For reasons to differentiate, student readiness was the factor most frequently referred to in participant definitions, with 50% or more of teacher preparation faculty and PreK-12 teachers addressing this component.

In all sub-groups, most participants recognized that "meeting student needs" (more than 85%) and "adjusting instruction" (more than 60%) were key components of differentiation. However, the "role of data/assessment" and "flexibility" were referenced much less frequently, with no PSTs addressing either of these components within their definitions. Additionally, no administrators mentioned "flexibility" in their definition. PreK-12 teachers were more likely to reference "flexibility" as compared to the other sub-groups, but this was still less than 20%. Similarly, teacher preparation faculty were most likely to reference data in their definition, yet this was below 25% of the sub-group. See Table 2.

5: Discussion

The goal of this research was to learn how educators, including current educators within PreK-12 and university settings, as well as PSTs, understand the concept of differentiation/ differentiated instruction. Through questionnaire data, the research team sought to determine how participants define, explain, teach, and/or implement differentiation in educational settings.

5.1: Bright Spots

In reviewing study results, a few positive elements emerged that could contribute to the development of differentiation at a more intense level. All sub-groups valued planning time, opportunities for innovation, and knowledge of students. This indicates a base-level understanding and agreement among the sub-groups of what is critical to effective differentiation. Furthermore, this consensus aligns to Tomlinson's definition (1999; 2000; 2003) making this a great place to continue building a shared understanding of differentiation.

In the questionnaire item that provided participants with different scenarios and asked them to indicate the extent to which it aligned to their definition of differentiation, the scenario with Mrs. Smith was most strongly aligned to Tomlinson's definition. More than half of all sub-groups indicated this scenario as "extremely" aligned to their understanding of differentiation. Administrators and in-service teachers also cited the importance of being able to help students learn how content connects to the real world/life outside of school. While these components are not specifically described as differentiation, they do suggest a positive foundation and potential opportunity for current teachers to enhance differentiation within their classrooms, and administrators would likely support the same. This also suggests PSTs would have opportunities to witness and experience the foundations and value of differentiation at its most basic level during their field experiences.

“Knowledge of students” was highly valued by all, with a clear nod to the work of Tomlinson, as this item referenced the language of "readiness, interest, learner profile/ preferences." However, it is uncertain whether the participants truly felt this was one of, if not the most important factor, or if they simply recognized educational "buzz words." Relatedly, there were several inconsistencies that need to be addressed.

5.2: Inconsistency

Participants were presented with various educational scenarios and asked to indicate how closely each aligned with their definition of differentiation. When reviewing the four sub-groups and the scenarios that “extremely” align with their definitions, the variation among scenarios suggests varied understandings of differentiation and how it manifests in the classroom. Additionally, the scenario with Mr. Steib, which could involve accommodations and/or modifications, suggests supporting different groups of students, which all educators indicated they value. Interestingly, Ms. Brown's classroom scenario also addressed an accommodation; however, it was specific to an individual student, and the PreK-12 Teacher sub-group was less likely to see it as differentiated instruction.

In total, 18 PSTs consented to participate in the study; however, most did not respond to all questionnaire items. Notably, this sub-group's attrition was the greatest of all, with only three (16.67%) PSTs completing the questionnaire. Possible reasons for this attrition may include a lack of exposure to the topic, limited or no experience implementing differentiation, or being dissuaded by the narrative question at the start of the questionnaire which asked for their definition of differentiated instruction.

Participant responses within the questionnaire indicated awareness of key elements needed to differentiate but did not indicate an understanding of how to implement differentiated instruction. As such, all sub-groups could benefit from expanding their knowledge and understanding of what differentiation is and *how* they can differentiate instruction. It is also interesting to note that while nearly all participants indicated the importance of understanding standards to differentiate, sub-groups currently embedded in PreK-12 school systems (i.e., PreK-12 teachers and PreK-12 administrators) responded with higher rates of "extremely"

important as compared to those in the university setting, where there might be more autonomy in developing curriculum and/or curricular materials in higher education as opposed to PreK-12 schools. It was also noted that teacher preparation faculty indicated higher rates of importance than all other sub-groups regarding various differentiated instruction "permissions." Teacher preparation faculty may have misinterpreted or misunderstood the role permission plays within the PreK-12 classroom. Alternatively, PreK-12 teachers and administrators might have been less likely to agree with the statements because the word "permission" often carries negative connotations.

Another inconsistency was noted between teacher preparation faculty responses, which indicated a focus on differentiation based on student interests. Conversely, PreK-12 teachers did not indicate a strong focus on student interest. This disconnect is worth considering, as it may reflect a discrepancy between beliefs about differentiation and the differentiation practices implemented by both subgroups. It is also worth further examination of the contexts of public schools, which may have less autonomy to differentiate based on student interests.

5.3: Application and Misconceptions

The ways in which differentiated instruction is applied in classroom settings and the misconceptions among research participants suggest this is another area of focus for the committee moving forward. For instance, PreK-12 teachers were most likely to indicate that they “frequently” or “always” are able to determine when students need concrete examples, use real-world examples, aid students in making connections between content and their own lives, and allow students to work on group tasks independently if they prefer. These are all examples of low-prep differentiation, requiring less preparation for the teacher, or are instructional decisions/actions that happen “in the moment,” making them easier to implement. On the other hand, high-prep differentiation is generally more time-intensive since it requires more planning. These were also the same items teachers were least likely to indicate that they “frequently” or “always” engage in (e.g., giving different homework assignments) or ranked as the least important factors when differentiating in their classrooms (e.g., compacting). PreK-12 administrators’ responses about what was most valued aligned with the practices that PreK-12 teachers indicated they implemented most frequently (i.e., connecting content to life outside of school, using real-world examples to explain concepts). In the context of schools today, these elements are considered valuable by both teachers and administrators. While this can be a starting point, these practices generally function as "add-ons," rather than changing instructional practices at a more fundamental level.

Misconceptions surrounding differentiation also need to be addressed so differentiated instruction is leveraged to maximize student success rather than serving as a classroom “add-on.” While participants across the sub-groups demonstrated a very basic understanding of the importance in meeting student needs, a more in-depth understanding of how and why to differentiate to achieve this was not clear for many. This was evidenced in the low rating for choosing appropriate assessments to inform instruction, suggesting that more conversations regarding the role of assessment may be needed to develop a greater understanding of the importance of this factor in informing differentiated instructional practices. Furthermore, in the open-ended question in which participants were asked to define differentiation, there were categories of "how and why to differentiate" and "other differentiated instruction factors to consider" that few or no participants addressed, making it unsurprising that there were not many examples of “manifest” understanding of differentiation. As such, there is a need to address the fundamentals of differentiated instruction and expand participants’ understanding to include all key aspects, not just the broad idea of “meeting student needs.”

6: Implications

This study found most participants (i.e., PreK-12 teachers and administrators, teacher preparation faculty, and PSTs) recognized that student learning can differ. Findings also suggest that participants recognized the need for some degree of differentiation. However, varying levels of knowledge about differentiation among the sub-groups was identified. This inconsistency suggests there is work to be done. If the goal is to

help students reach their potential, teachers must have the tools and permission to differentiate what and how they teach to help students learn. The implications of this study reflect a long-term challenge: differentiation is not systematically in place and needs to be embedded in the instruction of all students.

The continuation of limited understanding and use of differentiation practices is not a new phenomenon. In 1993, Westberg et al. examined the level of support for gifted students in the regular classroom. The results indicated little change was occurring in instruction for these students. Recently, Nicholas and colleagues (2024) conducted a review of reports on 38 findings spanning 2000-2022 on approaches to differentiation that have been used to support high-ability students, finding 15 effective teaching approaches were reported as being used. Despite this, they suggest more research is needed across countries.

If change is going to begin, it must begin with preparation. PSTs must receive consistent instruction on what and how to use differentiation throughout their teacher preparation program. Additionally, opportunities for practicing these newly learned skills must be provided. This also calls for a shared understanding amongst teacher preparation faculty regarding what and how they teach differentiation. To do this, teacher preparation faculty can begin by teaching low-preparation differentiation strategies, and then extend PST thinking by introducing high-preparation strategies, which require more significant adjustments to instruction. This may require time for professional learning/development to establish a shared understanding on how to best help PSTs gain this knowledge and skills to successfully differentiate. Differentiation practices must be seen as a process that is on-going and not the use of one strategy and done. Effective teachers must use skills that enable them to differentiate and to expect and receive from their students the best in learning and achievement (Mastropieri & Scruggs, 2021).

The second change is the need to support PreK-12 teachers in using differentiated instruction for all students in their classrooms. With numerous limitations on what and how teachers deliver instruction today, teachers and administrators must come together to learn effective practices. It is the responsibility of professionals to collaborate and develop a unified understanding of differentiation to serve all students. As educators, whether in higher education or PreK-12, whether current or pre-service, whether teacher or administrator, we need to support all students, so they learn at a rate and depth that enable them to reach their potential.

7: Limitations

There were several limitations that may impact the results of this study. The most evident limitation is the small sample in the PST sub-group. Second, there was attrition from start to end of the study, where some individuals in the other sub-groups began the questionnaire but did not answer all questions. Some possible reasons for these incomplete questionnaires include an individual's lack of exposure to the topic of differentiation, having limited/no experience implementing differentiated instruction, or being dissuaded by the narrative question at the start of the questionnaire and not completing the subsequent items. Finally, while differentiation has been a focus in education for years, including as a topic for in-service and professional learning community (PLC) offerings, and most participants could define the term vaguely, many of the definitions shared were not grounded in how to incorporate differentiation into their teaching. Limited practice in using differentiation as an instructional tool may have led to skeletal responses in the questionnaire, expected answers, and limited evidence of its accurate use.

8: Conclusion

One goal of this study was to determine participants' understanding of differentiation across all subgroups. A second goal was to discover what teacher preparation faculty know, understand, and can do regarding differentiation, and to find a path to create a shared understanding and consistent explanation within this group. The findings are a good starting point, not only with the teacher preparation faculty, but within all sub-groups. This suggests that, with continued emphasis on differentiation, PSTs should experience specific instruction to enable them to recognize what is good differentiation when they see it, how to create lessons using differentiation, and how their future students can improve in their academic performance when their needs are met. This will equip these future teachers to begin to implement quality differentiated instruction

within their future classrooms. PreK-12 teachers and administrators will still need latitude to use differentiation within classrooms in consideration of the context of current school and testing expectations. Gaining greater insight into how differentiation can help students may be the needed focus to allow this change to occur.

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Table 2 *Frequency of Elements Referenced in Participants' Differentiation Definition*

	PreK-12 Teacher *n=56*		PreK-12 Administrator *n=12*		Teacher Prep Faculty *n=14*		Pre-service teacher *n* = 3	
	n	%	*n*	%	*n*	%	*n*	%
Content	7	12.5	0	0	3	21.43	0	0
Process	25	44.64	9	75	6	42.86	2	66.67
Product	6	10.71	2	16.67	4	28.57	0	0
Readiness	32	57.14	3	25	7	50	0	0
Interest	8	14.29	0	0	5	35.71	0	0
Learning Profile/ Learner Preferences	10	17.86	0	0	3	21.43	2	66.67
Meeting Student Needs	50	89.29	12	100	13	92.86	3	100
Role of Data/ Assessment	5	8.93	3	25	3	21.43	0	0
Flexibility	11	19.64	0	0	2	14.29	0	0
Adjusting Instruction	41	73.21	11	91.67	9	64.29	2	66.67