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## Pre-Service Teacher Perceptions and Knowledge Regarding Professional Development: Implications for Teacher Preparation Programs

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This research study discusses results from a mixed-methods study of  $N=164$  pre-service teachers' perceptions of and involvement in professional related activities and organizations related to students with special needs. Results found similarities between special education and general education certification seekers perceptions of beneficial training topics and perceived roadblocks to professional development participation. Since the job-related duties of teachers is vast and attrition rates of highly qualified special education teachers indicate that they leave the classroom at approximately twice the rate of their general education counterparts (Mitchell & Arnold, 2004), suggestions for increased training and professional opportunities are discussed specific to teacher preparation programs.

*Keywords:* Professional Development, Teacher Preparation, Pre-Service Teachers

The quality of teacher preparation programs is fundamental as teacher quality is inseparably linked to all aspects of student learning (Berry, 2010). Whether special or general education, there is a growing consensus that the single most important influence in the education of a child is a well-prepared, caring, and qualified teacher (O'Shea, Hammittee, Mainzer, & Crutchfield, 2000). Looming at the epicenter are the pre-service teachers whom are faced with the challenge of

navigating various roles that include teaching, assessment, and sustaining levels of accountability for all children (Goos & Moni, 2001; Valli, Rath, & Renpert-Ariev, 2001; Cooper, Kurtts, Baber, & Vallecorsa, 2008). Although research has indicated a positive relationship between student success and the quality of teacher education programs (Brownell, Ross, Colon, & McCallum, 2005), several areas such as collaboration with families (Brownell, Ross, Colon, & McCallum, 2005), teaching social

skills (Pavri, 2004), and collaboration among professionals (Greenwood & Abbott, 2001) are not sufficiently addressed. These aspects of teacher responsibilities become even more significant when competencies are examined related to the teaching behaviors necessary for teachers to effectively work in inclusive learning environments (Council for Exceptional Children, 2004). Furthermore, educator preparation programs must also prepare pre-service teachers in the many facets of inclusive classrooms. With an increased emphasis on educating students with disabilities in inclusive classroom environments, it is imperative that teachers become knowledgeable about the unique and individualized needs of all students. Teacher preparation programs must present and assess knowledge, provide examples of differentiated instruction, and then “promote necessary individual adaptation methods and practice opportunities in these skills” (Shade & Steward, 2001, p. 40).

Many educational reforms rely on improvements in instructional quality to mediate the effect of teacher knowledge on increased student learning (Cohen, McLaughlin, & Talbert, 1993) in addition to national and state policies requiring teachers to establish subject-matter content knowledge through credentials, professional development, or assessments (U.S. Department of Education, 2013). With the increase in rigor and revisions to educational policy, the importance of finding ways to support the dynamic facets of the teaching profession through effective professional development has never been so high. It is no question that well-prepared teachers produce higher student achievement, are more likely to remain in the field of teaching and are well-developed

in the knowledge and skills they need to be successful in the classroom (NCATE, n.d.).

### **Professional Development & Its Importance for Pre-Service Teachers**

Professional development is “a process of increasing participation in the practice of teaching and becoming knowledgeable in and about teaching” (Adler, 2000, p. 37) and can also be defined in terms of how a teacher learns a particular set of knowledge and skills within a specific context of situations (Koellner & Jacobs, 2015). In order to improve teacher preparation programs, institutions of higher education must support additional professional development opportunities for teacher candidates, which focus on areas of need specific to the community/school and/or specific individualized classroom supports such as utilization of evidence-based practices. It is essential that teacher preparation programs look at opportunities to further teacher candidate knowledge and skills by implementing a variety of professional development opportunities outside of their prescribed course work and degree plans. “There is evidence that teachers learn distinctive things from different programs and feel differentially well prepared for specific aspects of teaching (Darling-Hammond, Chung, & Frelow, 2002; Denton & Lacina, 1984), and certain program features (i.e. pre-service teacher professional development opportunities) appear to make a difference in candidates’ preparation (Darling-Hammond, 2014).

The National Council for Accreditation of Teacher Education (NCATE) concluded that one of the fundamental shifts needed in teacher education is to “move to programs that are fully grounded in clinical practice” (Blue Ribbon Panel, 2010, p.ii) and other onsite professional

learning opportunities (Ronfeldt, 2012), which have been shown to matter for later teacher effectiveness (Desimone, Hochberg, & McMaken, 2016). Providing teacher candidates with knowledge and skills to meet the diverse needs of all students thus becomes an essential component of teacher preparation programs (Hutchinson & Martin, 1999; Sindelar, Bishop, Brownwell, Rosenberg, & Connelly, 2005; Yellin, Yellin, Claypool, et al., 2003). However, providing classroom experiences that enables teachers to apply what they are learning is not sufficient.

“Recent studies of learning to teach suggest that immersing teachers in the materials of practice and working on particular concepts using these materials can be particularly powerful for teachers’ learning” (Darling-Hammond, 2014, pg. 551). Thus, in order for pre-service teachers to acquire the breadth and depth of understanding needed to apply such principles in addition to content delivery, we can assume that pre-service teachers need: a) Practice in application over different contexts and time, b) Honest, focused, frequent, skilled, and informed

feedback about their practice; and, c) Sufficient practice of their emerging skills, so that their knowledge and skills are sufficient to transfer to different settings, where the same type of support and guidance is not present (Epanchin, & Colucci, 2002). “In this way, prospective teachers learn the fine-grained stuff of practice in connection to the practical theories that will allow them to adapt their practice in a well-grounded fashion, innovation and improvising to meet the specific classroom contexts they later encounter” (Darling-Hammond, 2014, pg. 552).

Koellner and Jacobs (2015) posited a ‘theory of action’ referencing professional development including four domains: 1) PD for teacher leaders, 2) PD for teachers, 3) Improved quality of teaching, and 4) Improved student learning (pg. 55). Within the context of this research study, the researchers in this study recommend an additional step that will increasingly prepare pre-service teachers to be prepared for their own classroom; we advocate to include: ‘PD for Pre-Service Teachers’ (see Figure 1).



*Figure 1. Updated ‘Theory of Action’ to Include PD for Pre-Service Teachers (Adapted from Koellner & Jacobs, 2015)*

*Note.* PD=professional development.

“To bring about sustained implementation of research-based practices, ongoing professional development is critical” (Klingner, 2004, p. 252). Special educators view general educators as possessing knowledge and expertise in curriculum, and general educators reciprocally view special

educators as having knowledge and expertise in the education of individuals with exceptionalities” (CEC, 2012, pg. 11), thus the intersection of increased professional development for both general and special education pre-service teachers is fundamental.

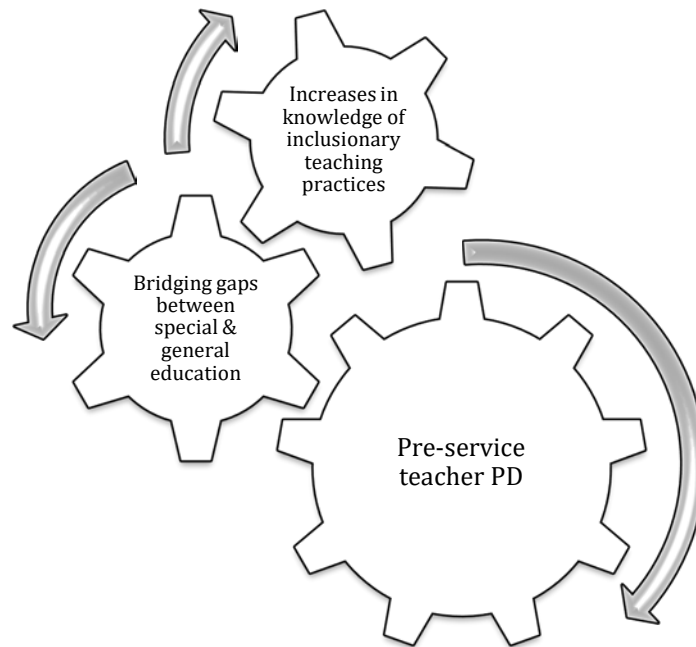


Figure 2. Professional Development Conceptual Framework.

### Purpose

The purpose of the present study was to determine pre-service teacher knowledge of professional development as a whole and the extent to which involvement in professional development occurred within teacher preparation programs in two university campuses in Texas. Specifically, our research questions aimed to help gain a better understanding of teachers’ perceptions.

1. What are pre-service teachers’ perceptions of the foci/purposes of professional development?
2. What do pre-service teachers

perceive as barriers to professional development?

3. Which professional development topics do pre-service teachers perceive are most beneficial to them now during their teacher preparation?
4. Which professional development topics do pre-service teachers perceive will benefit them in the future as in-service practitioners?

### Research Design

#### Instrumentation.

After completing a comprehensive review of the literature, a questionnaire

was developed taking into account relevant issues mentioned by various authors. The draft versions of the questionnaire were submitted to four teachers and five teacher educators in higher education with instructions to examine the instrument for content validity, clarity, and relevance (Oppenheim, 1992). Those reviewing the questionnaire were provided opportunity to suggest modifications. Several relevant suggestions were incorporated in the final version of the questionnaire. Including select demographic information, the final version of the instrument contained items designed to obtain pre-service teachers' perceptions and experiences regarding their professional development. For this section of the questionnaire, respondents were asked to respond on a Likert scale with options of "not at all important", "somewhat important", "not sure", "important", and "very important". Finally, participants were given an opportunity to answer five open-response items which provided data on participants' depth of understanding of professional development.

#### **Participant selection.**

The experiences and perceptions of general and special education pre-service teachers were obtained face-to-face via a questionnaire at two Texas universities; one located in north Texas and the other in south central Texas. Selection of participants for the purpose of this study was based on a convenience sample due to the researcher's location and availability to gather data within courses taught throughout the semester. Additionally, both teacher preparation programs were similar in student enrollment size. Researchers explained the present study, provided informed consent, and invited students to participate. The sole criterion

used for participation in this study was the desire to obtain undergraduate initial teacher certification. Participation was not limited by gender, age, race, or ethnicity. There were 164 respondents to the questionnaire.

#### **Quantitative Results**

Descriptive statistics were used to describe the sample and the subgroups within the sample. Descriptive data analysis measured frequencies of responses to better understand respondents' perceptions and experiences with professional development during their teacher preparation program. Only completed questionnaires were utilized in the analysis. Data was collected to better understand pre-service teachers' perceptions of the foci/purposes of professional development, pre-service teachers perceived barriers to professional development, and what pre-service teachers know about the purposes of professional development. Moreover, descriptive statistics assisted with identification of sample characteristics that may have influenced the conclusions of this study.

**Demographic information.** The study sample consisted of 164 participants: males ( $n = 17$ ; 10.4%), females ( $n = 135$ ; 82.3%), preferred not to answer ( $n = 12$ ; 7.3%). The racial/ ethnic makeup of the participants was Caucasian ( $n = 76$ ; 51.4%), African American ( $n = 11$ ; 7.4%), Asian ( $n = 3$ ; 2.0%), Hispanic ( $n = 52$ ; 35.1%), and other ( $n = 22$ ; 7.3%).

Respondents ranged in their university classification with the majority of study respondents being juniors or seniors: freshman ( $n = 3$ ; 1.6%), sophomores ( $n = 21$ ; 14.5%), juniors ( $n = 80$ ; 56.5%), and seniors ( $n = 28$ ; 25.8%). Study participants reported seeking: all level special education ( $n = 27$ ;

21.8%), general education elementary ( $n = 84$ ; 67.7%), and general education secondary ( $n = 13$ ; 7.5%).

As previously noted, 164 respondents completed the questionnaire on which they rated items using a Likert-type five-point scale (1-not at all important, 2-somewhat important, 3-not sure, 4-important, and 5-very important). Perception data was collected related to the types of professional development respondents felt would be most beneficial to them now as pre-service teachers and which types of professional development would be most beneficial to them in the future as in-service teachers. Data provided in Table 1 and 2 show the means of participants' perceptions for pre-service teachers and in-service practitioners based

on 25 professional development topics. The questionnaire items have been arranged by mean ratings which correspond to two of the research questions: 1) Which professional development topics do pre-service teachers perceive are most beneficial to them now during their teacher preparation? and 2) Which professional development topics do pre-service teachers perceive will benefit them in the future as in-service practitioners? Furthermore, the questionnaire asked participants to rate the importance of select items when considering whether to attend professional development (see Table 3) and their preferred delivery method of professional development (see Table 4).

Table 1

*Descriptive statistics of perception of beneficial PD topics for pre-service teachers*

| Survey Item                               | <i>M</i> | <i>SD</i> |
|-------------------------------------------|----------|-----------|
| 1. Classroom management                   | 4.57     | 0.80      |
| 2. Culture and diversity in schools       | 4.51     | 0.83      |
| 3. Individualized education plans         | 4.45     | 0.86      |
| 4. Behavior intervention plans            | 4.39     | 0.91      |
| 5. Attention Deficit Hyperactive Disorder | 4.38     | 0.90      |
| 6. English language learners              | 4.32     | 0.93      |
| 7. Learning disabilities in reading       | 4.32     | 0.94      |
| 8. Speech/language impairment             | 4.29     | 0.97      |
| 9. Multiple disabilities                  | 4.29     | 1.04      |
| 10. Autism                                | 4.27     | 1.05      |
| 11. Response to Intervention              | 4.25     | 0.93      |
| 12. Technology use in education           | 4.24     | 0.98      |
| 13. Differentiated instruction            | 4.23     | 0.92      |

|                                        |      |      |
|----------------------------------------|------|------|
| 14. Emotional disturbance              | 4.23 | 0.99 |
| 15. Transition planning                | 4.18 | 0.98 |
| 16. Learning disabilities in math      | 4.18 | 1.06 |
| 18. Assistive technology               | 4.17 | 1.00 |
| 17. Co-teaching                        | 4.10 | 0.93 |
| 19. Evidence-based practices           | 4.09 | 0.96 |
| 20. Hearing impairments                | 4.01 | 1.12 |
| 21. Traumatic brain injury             | 3.97 | 1.18 |
| 22. Visual impairment                  | 3.95 | 1.16 |
| 23. Classroom layout and design        | 3.93 | 1.15 |
| 24. Themes and units for the classroom | 3.91 | 1.12 |
| 25. Orthopedic impairments             | 3.75 | 1.17 |

**Perceptions regarding professional development topics beneficial for pre-service teachers.** Participants were asked to rate 25 professional development topics using a 5-point Likert type scale. Of the 25 items, means ranged from 3.75 to 4.57 with standard deviations of 1.17 and 0.80 respectively. The intent of this question was to examine which professional development topics participants perceived would benefit them during their teacher preparation program. Respondents rated the following three topics as most beneficial

to their current status of pre-service teachers (a) classroom management ( $M = 4.57$ ;  $SD = 0.80$ ), (b) culture and diversity in schools ( $M = 4.51$ ;  $SD = 0.83$ ), and (c) individualized education plans ( $M = 4.45$ ;  $SD = 0.86$ ). The three lowest mean ratings were topics on assisting students with orthopedic impairments ( $M = 3.75$ ;  $SD = 1.17$ ), themes and units for the classroom ( $M = 3.91$ ;  $SD = 1.12$ ), and classroom layout and design ( $M = 3.93$ ;  $SD = 1.15$ ). See Table 1 for the full list.

Table 2

*Descriptive statistics of perception of beneficial PD topics for in-service practitioners*

| Survey Item                         | <i>M</i> | <i>SD</i> |
|-------------------------------------|----------|-----------|
| 1. Culture and diversity in schools | 4.63     | 0.73      |
| 2. Learning disabilities in reading | 4.62     | 0.63      |
| 3. Individualized education plans   | 4.60     | 0.66      |
| 4. Classroom management             | 4.59     | 0.84      |
| 5. Behavior intervention plans      | 4.58     | 0.70      |



|                                           |      |      |
|-------------------------------------------|------|------|
| 6. Technology use in education            | 4.56 | 0.78 |
| 7. Attention Deficit Hyperactive Disorder | 4.54 | 0.77 |
| 8. Autism                                 | 4.53 | 0.77 |
| 9. English language learners              | 4.52 | 0.77 |
| 10. Speech/language impairment            | 4.52 | 0.75 |
| 11. Learning disabilities in math         | 4.52 | 0.86 |
| 12. Multiple disabilities                 | 4.49 | 0.91 |
| 13. Response to Intervention              | 4.48 | 0.76 |
| 14. Emotional disturbance                 | 4.46 | 0.85 |
| 15. Differentiated instruction            | 4.45 | 0.82 |
| 16. Assistive technology                  | 4.42 | 0.85 |
| 17. Evidence-based practices              | 4.40 | 0.81 |
| 18. Transition planning                   | 4.38 | 0.83 |
| 19. Co-teaching                           | 4.36 | 0.87 |
| 20. Traumatic brain injury                | 4.33 | 0.96 |
| 21. Hearing impairments                   | 4.32 | 0.95 |
| 22. Visual impairment                     | 4.23 | 1.03 |
| 23. Classroom layout and design           | 4.21 | 1.08 |
| 24. Themes and units for the classroom    | 4.18 | 1.04 |
| 25. Orthopedic impairments                | 4.14 | 1.10 |

**Perceptions regarding professional development topics beneficial for in-service practitioners.** The perceptions of pre-service teachers regarding the professional development topics beneficial for in-service practitioners were similar to their perceptions of the topics beneficial for pre-service teachers. However, the means of the 25 items were higher on the question about in-service practitioners. Means ranged from 4.14 to 4.63 with standard deviations of 1.1 and 0.63 respectively. In general, data indicate that respondents

tended to view all professional development topics as valuable for in-service practitioners with culture and diversity in the classroom as most important ( $M = 4.63$ ;  $SD 0.73$ ) followed closely by the topic of learning disabilities in reading ( $M = 4.62$ ;  $SD 0.63$ ). Additionally, participants perceive in-service teachers as benefiting from topics on individualized education plans ( $M = 4.60$ ;  $SD 0.66$ ). For in-service practitioners, the three lowest mean ratings were topics on assisting students with orthopedic impairments ( $M = 4.14$ ;  $SD$

= 1.10), themes and units for the classroom ( $M = 4.18$ ;  $SD = 1.04$ ), and classroom layout

and design ( $M = 4.21$ ;  $SD = 1.08$ ). Refer to Table 2 for the full list of topics.

Table 3

*Descriptive statistics of responses to professional development considerations*

| Survey Item                  | <i>M</i> | <i>SD</i> |
|------------------------------|----------|-----------|
| 1. Time commitment to attend | 4.23     | 0.89      |
| 2. Time/day PD is offered    | 4.19     | 0.85      |
| 3. Location of PD            | 4.02     | 0.97      |
| 4. Cost or fees to attend    | 3.89     | 1.09      |

**Professional development considerations.** As noted in Table 3, respondents were asked to rate the importance of four items when considering professional development: cost or fees to attend, time commitment, time/day offered, and location. The time commitment to attend ( $M = 4.23$ ;  $SD = 0.89$ ) and the time/day the professional

development was offered were rated as most important ( $M = 4.19$ ;  $SD = 0.85$ ). Somewhat surprising was that of the four items, the cost or fees to attend was rated as the least important consideration ( $M = 3.89$ ;  $SD = 1.09$ ). The location of the professional development was rated the third most important consideration ( $M = 4.02$ ;  $SD = 0.97$ ).

Table 4

*Descriptive statistics of responses to preferred delivery method*

| Survey Item               | <i>M</i> | <i>SD</i> |
|---------------------------|----------|-----------|
| 1. Webinar                | 2.56     | 0.70      |
| 2. Attend a conference    | 2.01     | 0.73      |
| 3. On-site at your campus | 1.40     | 0.57      |

**Preferred delivery method.** The questionnaire item concerning preferred delivery method for professional development had respondents rank three delivery methods in order of preference with 1 being the preferred method, 2 being the participants' second choice, and 3 the least preferred delivery method. This item was included on the questionnaire to obtain a better understanding of the perceptions and preferences of the respondents in

terms of desirable delivery methods for professional development (see Table 4). Overall, participants ranked on-site professional development as the preferred delivery method ( $n = 103$ ; 62.80%). Attending a professional conference ranked second ( $n = 44$ ; 26.83%) and webinars ranked last ( $n = 18$ , 10.98%).

**Qualitative Findings**

Participants were requested to respond to open-ended questions within

the survey to dig deeper into their perceived knowledge of known evidence-based practices, required hours for in-service teachers during each school year, views of what professional development is/means, and views of what differentiated instruction is/means. Participant answers to open-ended survey questions were hand-coded utilizing an inductive methodological approach. The inductive methodological was used to increase methodological flexibility by looking at the emerging findings from the most frequently appearing themes within the data regarding professional development perceptions. Thomas (2006) argues that the inductive data analysis procedure assists in developing categories into a framework that can summarize raw data, convey key themes or processes (pg. 242). This tactic also assisted in the interpretation and analysis of participant questions as some of the questions revealed an apparent lack of knowledge on behalf of the participants; thus, it was imperative for the researchers to keep an open mind as to what interpretations might be found. Through

this process, conceptual categories emerged and lent to specific themes found within each open-ended question, as the qualitative analysis delineates below.

When asking participants '*What is professional development?*' an array of answers was given. The most frequently occurring theme revealed that 40% of participants did not have a clear understanding to what PD actually was. Examples of specific statements from participants included: "*PD is how to behave on social media and what not to wear*"; "*Helping you to decide your major*"; and "*All types of students in the same classroom*". In addition, 23% of participants viewed PD as 'Useful information about various classroom aspects' and 20% of participants perceived PD as 'new tools to increase knowledge'. The remainder of answers coded was sparse in findings and included statements such as, 'making yourself [sic] better' and 'becoming and expert'. Figure 3 below depicts a word cloud generated with the most frequently occurring words from answers given.



Figure 3. Word cloud of most frequently used words to describe professional development.



knowledge base associated with several facets of PD (e.g. evidence-based practices, differentiated instruction, and state requirements for PD hours as a full-time teacher).

This study also verifies that increased, early exposure to professional development in teacher preparation

programs is needed. Supporting initial professional development through a variety of experiences, contributes to pre-service teachers' repertoire of overall skills, specific to the varied and similar needs of general and special education teachers.

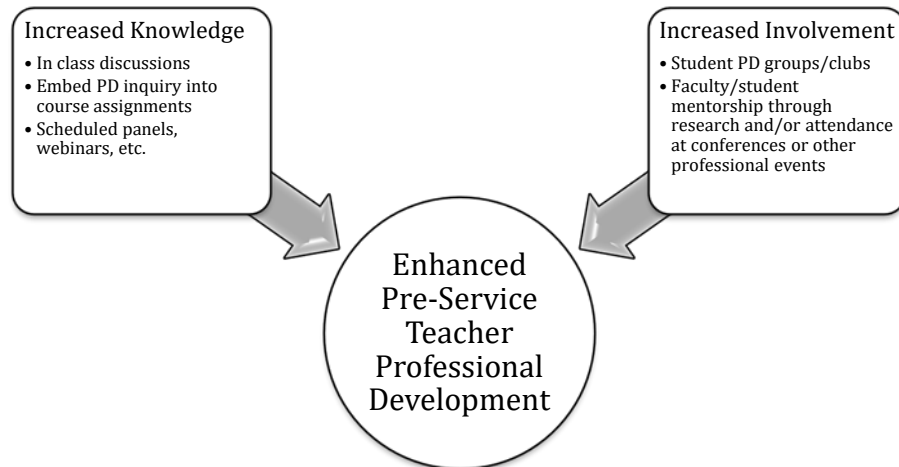


Figure 5. Ways to enhance knowledge of professionalism within teacher preparation programs.

### Discussion

The importance of high quality teacher preparation programs for school and student learning continues to be of critical significance to teacher education faculty. This study provided valuable information to help prepare both pre-service educators for continuing training through professional development opportunities. Overall, the results show that all professional development topics are valuable. These results will now be discussed in terms of the study questions.

#### **Question 1: What are pre-service teachers' perceptions of the foci/purposes of professional development?**

Qualitative results show participants have limited or no clear understanding of professional development. A recent study by Darling-Hammond et. al (2014) found

that 90% of teachers have participated in professional development. Unfortunately, with the exception of content-related training, the bulk of the teachers believe professional development is ineffective and subsequently warranted them a bad reputation. Without a clear understanding of what professional development is or means, pre-service teachers are less likely to seek continued education opportunities.

#### **Question 2: What do pre-service teachers perceive as barriers to professional development?**

Results showed that time commitment and time of day to attend the professional development were rated by participants as most essential. Additionally the location and cost of the professional development were also rated as most important. No doubt, the results raise the

question as to why certain barriers are perceived as non-barriers when compared with the other barriers. Unfortunately, this question is difficult to answer because there are a number of factors specific to institutions of higher education (i.e. funding, faculty availability, type/area of teaching certification, specific instructional support needed, etc.).

**Question 3: Which professional development topics do pre-service teachers perceive are most beneficial to them now during their teacher preparation?**

With a clear advantage, classroom management, culture and diversity in schools, and individualized education plans were found to be most advantageous for pre-service teachers. Successful teachers must utilize effective classroom management skills. Unfortunately, prior to beginning their teaching careers, many teachers do not receive adequate classroom management skills and feel unprepared for the demands of managing student behaviors in their classrooms. The findings of Freeman, Simonsen, Briere and MacSuga-Gage (2013) found pre-service teachers struggled with classroom management; therefore, it is no surprise that this study found pre-service teachers identified classroom management as most beneficial for current training.

Moreover, Milner (2006) found a critical component of pre-service teachers' learning is including cultural and racial awareness. In an attempt to provide teachers what they need to effectively and significantly meet the needs of K-12 students, understanding the influence of courses in teacher education programs and how each provides opportunities for learning is warranted. Pre-service teachers identified culture and diversity in schools as

a valuable professional development topic. This need parallels the disproportionate representation of culturally and linguistically diverse (CLD) students in the field of special education within the United States (Barrio, 2015). Teachers have an influential role in determining if all students, including CLD students, are attaining an appropriate education to enable the best learning for each student.

Pre-service teachers recognize the importance of individual education plans (IEPs). With millions of IEP conferences held each year, and as the most important component of IDEA, having training in individual education planning is no surprise. Perhaps due to limited relevancy, pre-service teachers perceived assisting students with orthopedic impairments, themes and units for the classroom, and classroom layout and design as insufficient topics for professional development.

**Question 4: Which professional development topics do pre-service teachers perceive will benefit them in the future as in-service practitioners?**

Quite similar to the previous results, the study found participants viewed all professional development as important. At their current pre-service teaching status, the study showed culture and diversity in the classroom as critical. Since reading is one of the most fundamental skills that students learn and about 90% of students identified with specific learning disabilities (SLD) are referred for special education services due to reading difficulties (Bender, 2007), it's not surprising that pre-service teachers identified learning disabilities in reading to be most valuable. Pre-service teachers focus on becoming proficient teachers of reading is understandable.

During the early years of in-service teachers' careers, teacher preparation

programs are in a unique position to provide them the needed support and mentoring. These teacher preparation programs can influence beginning teachers in developing and understanding the teaching roles and responsibilities. Learning about pre-service and in-service teachers' knowledge and perceptions of professional development can assist school districts in retaining the "best of the best."

### Limitations

The sample in the current study was obtained exclusively from two universities in Texas, which limits generalizability. Another limitation is that the questionnaire allowed participants to rate every professional development topic, perhaps asking respondents to rank the topics in order of important or interest may provide more useful information to teacher preparation programs. Furthermore, future iterations of this study may benefit from including a focus group or participant interviews, which would provide depth and clarity to the experiences pre-service teachers, have with professional development. Lastly, the qualitative data was coded and analyzed by only two researchers; one from each university in the study. Future studies could attempt a replication of these results with a larger and more geographically diverse sample and research team.

### Implications

The study operates as a vehicle for learning where changes in teacher

preparation programs may be warranted. By reviewing and sharing the outcomes of the study, faculty is able to discuss areas of strengths and needs for program improvement and can ensure alignment of assignments and projects to best meet the needs of pre-service teacher candidates and to better prepare future teachers to work with students with special education needs. Furthermore, faculty can identify opportunities to further teacher candidate knowledge and skills by providing information for access to a variety of professional development opportunities outside of their prescribed course work and degree plans. These efforts can take an interdisciplinary approach to teacher preparation and collaborative practice through partnerships with local education agencies (LEAs) or education service providers (ESCs).

By changing the way in which professional development opportunities are embedded or offered to pre-service teachers throughout the duration of their teacher preparation programs, the potential to positively impact knowledge regarding the multifaceted arena of general and special education crossover is increased. Additionally, generalization of how this will impact future classrooms may also occur to create and increase understanding of students in special education who will be educated in both general and special education settings.

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