# Differences in Perceived Issues in Teacher Preparation Between First-Year Teachers and Their Principals

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The perspectives of both teachers and principals are valuable in understanding to what extent recent graduates from formal educator preparation programs are ready to take on teaching roles and tasks as a teacher. The understanding gained may contribute to bettering initiatives targeted on teacher retention, particularly in those critical beginning years of practice. This study examined the perceived effectiveness of first-year teachers' preparation from the perspectives of the teachers and the principals, utilizing three-year survey data of 644 first-year teachers who graduated from a higher education institution and 497 hosting principals in a Midwest state. The findings note that the first-year teachers and principals, in general, had similar views regarding the preparation of the teachers. Significant differences were found related to certain competency domains as identified in the state's teaching standards. Also discussed in the article are longitudinal trends and recommendations for addressing noted challenges faced by first-year teachers.

#### Introduction

In the United States, somewhere between 40 and 50 percent of teachers leave teaching within the first five years (Mee & Haverback, 2014). This alarming attrition rate costs schools instructional time, faculty morale, and money. One may argue that evidence of such negative effects can be seen in reports that U.S. students persistently fall behind on international tests compared to their international counterparts (Darling-Hammond, 2010; Heim, 2016) and are hardly job- or college-ready when they graduate from high school (Aud et al., 2011; Eisen, Jasinowski, & Kleinert, 2005). A 2011 report from the Organization for Economic Cooperation and Development (OECD) revealed that, globally, teachers receive limited recognition from principals and school systems for their effectiveness and innovativeness under increasingly demanding conditions and accountabilities (Schleicher, 2011). The report underscored the importance of initial recruitment and preparation, career development, evaluation, and compensation, as well as continuous support in sustaining and growing a capable teaching force. The goal of developing and maintaining competent teachers, as both professional organizations and governmental agencies

recognize, is not be achievable without high-quality teacher preparation programs (Schleicher, 2011; The World Bank, 2012; USDOE, 2016).

Developmentally, the first year on the job is critical as new teachers transition into their professional roles. First-year teachers are immersed into the local school culture and expectations, tested cognitively and emotionally on putting knowledge and skills learned into practice, and groomed experientially on what means to be a teacher. As such, first-year teachers are well positioned to provide relevant and timely information on teacher preparation program quality and needed improvements. This could be said also of the principals of first-year teachers, for not only are they responsible for evaluating the novices, but also charged with supporting and developing their teaching ability individually and collectively. The perspectives from both teachers and principals are valuable in understanding to what extent recent graduates from formal teacher preparation programs are ready to take on the roles and tasks of a teacher. An understanding of their experiences may help better initiatives targeting teacher retention, particularly in those critical beginning years of practice.

This study utilized a survey and explored the perceived effectiveness of first-year-teacher preparation from the perspectives of the teachers and the principals. The two guiding research questions for the study were:

- (1) What are the differences and similarities between the ratings by first-year teachers and their principals related to the teachers' preparation?
- (2) What are the prominent issues described by first-year teachers and their principals related to the teachers' preparation?

#### Framework and Background Literature

After a careful review of the existing literature on new teachers, Goodwin (2012) identified the three most common and prominent challenges new teachers face: classroom management, curricular freedom, and unsupportive work environments. In this section, we discuss the relevant literature that has informed our study by using Goodwin's tripod structure.

#### **Classroom Management**

According to Goodwin (2012), "struggling with classroom management" is "the biggest challenge" for new teachers (p. 84). He quoted a 2004 study by Public Agenda, noting that 85% of teachers in that study believed that beginner teachers are unprepared for dealing with behavior issues in the classrooms. He also referenced Melnick and Meister's (2008) study where the two researchers found that teachers who have been working for three years or fewer were twice as likely to report student behavior as an issue than those with more experience.

The literature on inadequate classroom management reveals that there is a negative impact on teaching and learning (Marzano, Marzano, & Pickering, 2003; Van de Grift, Van der Wal, & Torenbeek, 2011; Veenman, 1984). The earlier studies, such as Veenman's (1984), noted that new teachers tended to teach in a more traditional manner because it was easier to keep students

working in an orderly and quiet manner—while classroom management was relatively easier to be accomplished under such an approach—prioritized by control, the opportunities for new teachers to design and experiment with innovative teaching strategies were notably limited. Entering into the 21<sup>st</sup> century, classroom management remains an issue for new graduates into the teaching profession. A 2014 report from the National Council on Teacher Education (NCTE) revealed a disconnection between the theory and practice of classroom management in teacher preparation programs (Greenberg, Putman, & Walsh, 2014). Across the 122 programs examined, classroom management theories and practice were addressed sparsely throughout the degree curriculum and rarely constituted meaningful and cohesive experiences. Furthermore, one third of these programs required the actual practice of classroom management skills, and only about half of these programs claimed that their teacher candidates developed their own personal philosophy of classroom management. Greenberg and colleagues found this particularly troublesome because classroom management is not a matter of personal preference, rather, a key element for quality teaching and learning.

Nonetheless, some scholars argue that no preservice preparation could fully prepare one for the responsibilities and tasks involved in teaching because of its complex and developmental nature, including classroom management (Dias-Lacey & Guirguis, 2017). In their qualitative study of new teachers, Dias-Lacey and Guirguis (2017) found that classroom management involves both behavioral and academic issues, and the time the teacher candidates spent in a teacher preparation program or the student teaching internship they completed, does not guarantee a better result on developing classroom management skills. Nevertheless, strategies like establishing the rules and procedures of a classroom, being consistent and orderly, and utilizing discipline techniques can help improve classroom management, which in turn positively affect students' academic outcomes (Korpershoek, Harms, de Boer, van Kuijk, & Doolaard, 2016).

#### **Curricular Freedom**

The second major challenge for new teachers, as Goodwin (2012) noted, is the issue of curricular freedom. That is, the new teachers suffer from a lack of resources and directions regarding unit and lesson planning. In contrast to veteran teachers, new teachers tend to find the freedom to choose curricular materials and shouldering all the decisions daunting on their own (Fry, 2007). This has a lot to do with the fact that new teachers have not acquired a sufficient amount of experience to develop a repertoire of ideas and knowledge of the things or practices that tend to work well in their classrooms. To further this point, novice teachers may lack the tactics of implementing and tailoring such schemas to fit specific student behaviors with specific and/or emergent student needs (Fry, 2007).

According to Uhrmacher, Conrad, and Moroye (2013), while lesson planning is one of the most common activities teachers perform, limited research has been completed regarding this activity since the 1980s. The limited research available focuses on lesson planning for a particular teaching method or a subject area. In such studies related to novice teachers, it was found that they tend to spend considerably more time planning their lessons than their experienced counterparts, and they consider lesson planning to be challenging (Richards, 1998; Senior, 2006). On a similar note, Gordon (1991) found that new teachers lacked an accumulation of instructional materials from years of teaching, and as such, they were noticeably under-resourced

from a pedagogical manner, which could make the lesson planning even more challenging. Gordon further pointed out that when new teachers had to rely on unfamiliar textbooks and materials for lesson planning and instruction, the process became considerably time-consuming and even more stressful. Other extraneous circumstances such as large class size and challenging students can further exacerbate new teachers' sense of self-efficacy in handling such "curriculum freedom" without feeling overwhelmed and lost.

#### **Unsupportive Environments**

The third issue raised by Goodwin (2012) is related to unsupportive environments, that is, "[t]he sink-or-swim nature of many first-year teacher experiences" (p. 84). The "sink or swim" approach is manifested primarily in challenging relationships with administration and mentors and the absence of collegiality with fellow teachers. An unsupportive working environment can discourage first-year teachers from continuing in the profession (Goodwin, 2012; Gu & Day, 2013).

Echoing Goodwin (2012), Podolsky Kini, Bishop and Darling-Hammond (2016) advocated for a strong support system for novice teachers. They described the impact of such support as follows, "Depending on the amount and quality of support they encounter in their first teaching job, new teachers can grow into highly competent ones—or they may develop counterproductive approaches or leave the profession entirely" (p.34). As Sargent (2003) argued, a supportive work environment has a high chance of supplying new teachers with a supportive community critical for them to feel safe enough to take risks as they continue to learn and experiment with newly gained knowledge, skills, and professional growth. This all contributes to a sense of belonging and the instrumental retention of teachers. Furthermore, a supportive environment is a key condition for developing and sustaining a schoolwide learning culture to which new teachers are sensitive to as they seek building relationships with other teachers, colleagues, staff and mentorship (formally and/or informally) (Gu & Day, 2013; Podolsky, Kini, Bishop, & Darling-Hammond, 2016).

Linda Darling-Hammond (2010) argued that schools might become more attractive when they are clear in their commitment to find, keep, and support effective teachers. Other education scholars have argued that it is critical to provide mentorships during a new teacher's first year on the job, along with proactive support from administrators to prevent frustration and to increase teacher satisfaction and subsequently retention (Callahan, 2016; McCann & Johannessen, 2004; Quinn & Andrews, 2004; Roehrig, Pressley, & Talotta, 2002; Shaw & Newton, 2014). For example, the first-year teachers surveyed in Quinn and Andrews' (2004) study indicated that teachers had a high level of reliance on the assistance from their principal for many of their needs, mainly related to instruction and curriculum, personal and emotional support, access to material, information about school and district procedures, classroom management, and dealing with parents.

It is undeniable that the principal plays a critical role in a novice teacher's successful transition from student to teacher. According to Roberson and Roberson (2009), two specific strategies for principals to meet the needs of first-year teachers are to provide (1) opportunities to share experiences and knowledge in regular professional development meetings with the first-year

teacher and (2) meaningful, instructive feedback to first-year teachers that is professional and personal. In their study, Mccarley, Peters, and Decman (2014) found that principal leadership led to a healthy school climate, which reduced the frustration levels of teachers. They found that more support from the principal resulted in more engaged teachers who felt supported despite the challenges encountered in the classroom. Likewise, Shaw and Newton (2014) found that the principal's servant leadership had a positive effect on teachers' intention to remain in the profession. In addition to principal leadership and support, peer support has been found to reduce teacher isolation and subsequently contributed to teacher retention (Buchanan, Prescott, Schuk, Aubusson, & Burke, 2013; Ingersoll, Merrill, & May, 2014). Nonetheless, in their study utilizing data from a statewide and a national sample, Stockard and Lehman (2004) found that support and school management were most influential on teacher satisfaction, but had limited direct influence on teachers' retention decisions

#### **Connection to the State Professional Standards for Teachers**

The current study is based on the teaching standards that a Midwestern state uses for pre-service and in-service teachers. There are nine standards, and each standard describes the expectation of performance for the teachers. The standards rest on the idea that to be an effective teacher, the following characteristics are crucial and include, being caring, reflective practitioners, and lifelong learners who constantly pursue improving their teaching practice for the benefit of all students.

- Standard 1, Content knowledge aligned with appropriate instruction relies on the concept that an effective teacher understanding of the subject matter is reflected in the central concepts, structures, and tools of inquiry; and that experiences created by the teacher make these aspects of subject matter meaningful and engaging for all students.
- Standard 2, *student learning, growth, and development*, conveys that the teacher understands how students learn, develop, and differ in their approaches to learning. It is under this standard that the teacher performs differentiation. The teacher shows this by providing learning opportunities that are adapted to diverse learners and support the intellectual, social, and personal development of all students.
- Standard 3, *curriculum implementation*, recognizes how important long-range planning and curriculum development are for teachers. This planning and the curriculum development are based upon student, district, and state standards.
- Standard 4, *critical thinking*, articulates how teachers use several instructional strategies and resources to encourage students' critical thinking, problem-solving, and performance skills
- Standard 5, *positive classroom environment*, focuses on the teacher's understanding of individual/group motivation and behavior to create a learning environment with active engagement in learning, positive social interaction, and self-motivation.
- Standard 6, *effective communication*, emphasizes the importance of effective teacher's verbal, nonverbal, and media communication techniques with students, other teachers, school staff, and families to foster collaboration and supportive interaction in the classroom.
- Standard 7, *student assessment and data analysis*, highlights the understanding and use of formative and summative assessment strategies to plan ongoing instruction and monitors student.

- Standard 8, *professionalism*, states that the teacher is a reflective practitioner who continually and actively seeks out opportunities to grow professionally to improve learning for all students. The teacher also considers how their actions and choices affect others.
- Standard 9, *professional collaboration*, stresses that the teacher participates in effective working relationships with students, parents, school colleagues, and community members.

Following the challenges described by Goodwin's (2012), Standard 2, *student learning, growth and development*, relates to the first challenge, classroom management. The standard deals mainly with differentiation by engaging all students in the classroom and supporting the intellectual, social, and personal development of these students, which can result in a more manageable classroom environment. State Standards 1 to 4 fall under Goodwin's (2012) second challenge, curricular freedom. When a novice teacher starts teaching, they do not have accumulated the resources and materials that a more experienced teacher would. In turn, the novice teacher spends more time preparing their lessons than their peers with more years on the job. Finally, Standards 6, 8, and 9 are related to the third challenge described in Goodwin's (2012) review, unsupportive environment. Novice teachers often have difficulty interacting and collaborating with students' families, colleagues, and administrators. The strain of these relationships might affect their performance.

The first year of a teacher is a valuable time to apply the skills learned in college, and the principal has a role to play in teacher success. It is valuable to understand the perspectives of the teacher and principal regarding the role of a successful teacher because both the teacher and principal impact student success. Successful teachers tend to have higher retention and a valuable impact on student growth. The purpose of this study was to examine the perceived effectiveness of first-year teachers' preparation from the perspectives of the teachers and the principals. The views, via survey, of first-year teachers and building principals are analyzed to determine teachers' preparation related to state teaching standards.

#### Methods

The current study used a survey design that collected both quantitative and qualitative data. Quantitative data from the close-ended survey questions allowed the researchers to compare and contrast perceptions between first-year teachers and their principals on teacher preparedness. Qualitative data from the open-ended questions provided more detailed comments from the respondents on teacher preparation. The same sample was used, and the quantitative and qualitative survey items were not established sequentially, which may limit the interaction between the two. For future studies, methodological improvement could be made, using fully mixed, two-phase sequential mixed design where a quantitative survey is complemented by qualitative in-depth interviews with teachers and principals focusing on more contextualized experiences (Teddlie & Tashakkori, 2009).

#### **Participants**

The targeted population for this study were first-year public school (PK-12) teachers and their principals in a single Midwestern state. The sample came from teachers who graduated from one higher education institution within the state and the principals of their schools. The present study

was a secondary data analysis using the data collected in the spring of 2015, 2016, and 2017 by the state's Department of Education (DoE). First-year teachers and their principals completed a survey about the teachers' preparation and the DoE shared with the participating institutions the data on their graduates. The sample for this study included responses from 644 teachers and 497 principals. The numbers of participants by year are presented in Table 1.

Table 1
Number of Participants by Year

Year	First-year teachers	Principals
2015	230	165
2016	187	158
2017	227	174
Total	644	497

#### **Instrumentation and Procedure**

The state's DoE annually collects data on teacher preparation from first-year teachers and their principals in the state's public schools. The teacher and principal surveys both included the same 38 close-ended questions about the teachers' preparation. These items are aligned with the state's nine teaching standards with two to seven items for each standard. Appendix A shows the standards and their corresponding items. The survey also included two open-ended questions asking the teachers and principals to describe the challenges teachers faced during their first year and to provide suggestions for teacher preparation institutions (see Appendix A). All close-ended items were measured on a five-point Likert-scale with one being *strongly disagree* and five being *strongly agree*. The surveys were validated for content validity, internal consistency, and structural validity by the DoE¹ via an external and independent agency. Factor analyses on the scales for both questionnaires showed Cronbach's alphas ranging from 0.71 to 0.91.

The DoE solicited participation through an independent agency, using the teacher records reported by public PK-12 schools. The agency emailed the survey to all first-year teachers in the state's public schools and their principals. Once the data were collected and processed, the DoE distributed aggregated summaries of survey results to individual teacher preparation institutions. In the summaries, all individual or school-level identifiers were removed; as such, demographic information was not available. For the one institution involved in the present study, the response rates for the three years (2015-2017) that the DoE reported were all above 60%, allowing the researchers of the study to have enough confidence in sample representation cross-sectionally and longitudinally; however, the DoE did not report exact response rates for each year.

#### **Data Analyses**

The quantitative data were analyzed using the Statistical Package for Social Sciences (SPSS) software, version 23. It is important to highlight that the use of SPSS version 23 was instrumental in the analysis of the data. The function SPSSINC SUMMARY TTEST (first

<sup>&</sup>lt;sup>1</sup> For confidentiality considerations, the exact citation is not provided to prevent potential identification of the research site(s) and participants.

available in version 23) calculates a *t*-test from just summary information of the two groups within the sample (means, standard deviations, and counts). Since the state only provides summary data, the researchers had no access to the raw data by case. One downside is that effect sizes are not reported.

Descriptive statistics were performed, and independent samples t-tests were used to compare first-year teachers' and principals' ratings. Content analysis (Krippendorff, 2004) was conducted on the qualitative data gathered from the two open-ended questions in the surveys, using NVivo software, version 12. The researchers of the study conducted coding independently first and then reviewed for coding consistency. An examination of the themes found in the narratives provided by the survey respondents was also conducted to connect with the quantitative results. Disagreements were resolved through re-assessment of the codes and consensus-building among the researchers. Categorization of codes and generation of themes are informed by state standards and followed the similar review-and-agreement process (Denzin & Lincoln, 2010). Such methodological and investigator triangulations were instrumental to the establishment of confirmability of the study (Guba, 1981). The researchers on the project team, while all current university faculty in educational preparation programs, had past roles of classroom teacher, school administrator, university administrator, and educational grant officer. Together with the between-groups (principal versus teacher) perspective comparison and contrast, the researchers' diverse and yet immediately relevant perspectives and experiences to the focus of the study allowed regular critical conversations throughout the research process. This guarded against potential biases and strengthening the democratic and dialogic validities (Anderson, Herr, & Nihlen, 1994).

#### Results

#### **Quantitative Results**

Descriptive statistics were examined to note the areas in which the teachers felt most positive and negative about their performance; examined also alongside were the principals' perceptions. Appendix B shows the frequency distribution of all responses by first-year teachers and principals.

Overall, first-year teachers tended to rate themselves higher than the principals on most of the categories. One item rated lowest by both first-year teachers and principals was regarding the teacher's ability to modify instruction for English Language Learners (ELLs), gifted learners, and creating lesson plans to engage all learners. Principals tended to agree more that teachers were prepared to implement instruction based on a student's individualized education program (IEP) than did first-year teachers. Regarding communication, first-year teachers felt less positive about their abilities to communicate effectively with parents than principals did. Also, first-year teachers generally felt more prepared to analyze data to self-reflect on areas for professional growth and to reflect on their practices for professional growth.

As for inferential statistics, ten independent-samples *t*-tests (nine standards and a technology component) were conducted to compare first-year teachers' and principals' perspectives on the teachers' preparation. Such comparisons by year allowed the researchers to observe what the

yearly patterns were and how they changed or persisted over the years. The 2015 data included 230 first-year teachers and 165 principals (see Table 2).

Table 2
Summary of the Between-Group Statistics, by Standard, 2015

	Teac	her	Pri		
	(n =	230)	(n =		
Standards	M	SD	M	SD	<i>t</i> -value
1. Content Knowledge Aligned with Appropriate Instruction	4.16	0.57	4.18	0.69	-0.31
2. Student Learning Growth and Development	3.62	0.77	3.81	0.70	-2.51*
3. Curriculum Implementation	4.08	0.64	4.06	0.71	0.29
4. Critical Thinking	4.10	0.62	3.96	0.86	1.88
5. Positive Classroom Environment	4.01	0.65	4.01	0.79	0.01
6. Effective Communication	4.05	0.64	4.11	0.64	-0.92
7. Student Assessment and Data Analysis	3.93	0.74	3.88	0.74	.066
8. Professionalism	4.07	0.79	3.95	0.77	1.51
9. Professional Collaboration	4.01	0.76	4.04	0.71	-0.40
Technology	4.04	0.90	4.10	0.91	-0.65

<sup>\*</sup> *p* < .05

Comparing the average ratings by standard revealed a significant difference in Standard 2 (Student, Learning Growth and Development) between teachers and principals, where the latter's ratings were significantly higher. After closer examination of the items included in Standard 2, it appeared that Item 7 (The teacher was prepared to modify instruction for English language learners) was the trigger. Teachers rated themselves significantly lower on the item (M = 3.16, SD = 1.10) than principals did (M = 3.51, SD = 0.86); t(393) = -3.41, p < .01. It is worth noting that both first-year teachers and principals rated Standard 2 the lowest. Further, on the item level for Standard 2, the three lowest-rated items were (the full 2015 item data are not reported here, due to space limitations):

- I was prepared to implement instruction based on a student's IEP (Item 7).
- I was prepared to modify instruction for English language learners (Item 8).
- I was prepared to modify instruction for gifted learners (Item 9).

The 2016 data included 187 first-year teachers and 158 principals in 2016 (see Table 3). Significant differences were found on the ratings of Standard 4 (Critical Thinking) and Standard 8 (Professionalism). In the case of Standard 4, teachers' ratings were significantly higher than principals' ratings. Item 13 in Standard 4 (The teacher was prepared to engage students in critical thinking) appeared to be driving the difference, as the ratings of teachers (M = 4.34, SD = 0.67) were significantly higher than those of principals (M = 4.00, SD = 0.90); t(343) = 4.02, p < .01. In the case of Standard 8, teachers' ratings were significantly higher than principals' ratings. Further investigation into the items under Standard 8 revealed that Item 35 (The teacher was prepared to reflect on his or her practices for professional growth) appeared to be the cause; teachers rated the item (M = 4.28, SD = 0.69) significantly higher than principals did (M = 4.09,

SD = 0.78); t(343) = 2.55, p < .05. Overall, similar to the 2015 results, both first-year teachers and principals rated the preparation on Standard 2 as the lowest.

Table 3
Summary of the Between-Group Statistics, by Standard, 2016

	Teacher		Principal		
	(n = 187)		(n = 158)		_
Standards	M	SD	M	SD	<i>t</i> -value
1. Content Knowledge Aligned with Appropriate Instruction	4.16	0.63	4.10	0.74	0.81
2. Student Learning Growth and Development	3.78	0.79	3.78	0.81	0.00***
3. Curriculum Implementation	4.18	0.66	4.05	0.75	1.71
4. Critical Thinking	4.17	0.69	3.95	0.85	2.65**
5. Positive Classroom Environment	3.99	0.73	3.98	0.83	0.12
6. Effective Communication	1.12	0.63	4.09	0.65	0.43
7. Student Assessment and Data Analysis	3.99	0.77	3.88	0.80	1.30
8. Professionalism	4.15	0.72	3.97	0.77	2.24*
9. Professional Collaboration	4.02	0.80	4.09	0.66	-0.87
Technology	4.11	0.92	4.12	0.80	-0.11

*Notes:* \* p < .05; \*\* p < .01; \*\*\* .001 rounded up.

Table 4
Summary of the Between-Group Statistics, by Standard, 2017

	Tea	cher	Principal		
	(n =	227)	(n =	174)	_
Standards	M	SD	M	SD	<i>t</i> -value
1. Content Knowledge Aligned with Appropriate	4.20	0.65	4.22	0.73	-0.29
Instruction	4.20	0.03	4.22	0.73	-0.29
2. Student Learning Growth and Development	3.79	0.80	3.92	0.78	-1.63
3. Curriculum Implementation	4.20	0.70	4.17	0.74	0.44
4. Critical Thinking	4.15	0.71	4.00	0.84	1.94
5. Positive Classroom Environment	4.07	0.71	4.10	0.78	-0.40
6. Effective Communication	4.11	0.70	4.15	0.69	-0.57
7. Student Assessment and Data Analysis	4.06	0.76	3.99	0.80	0.89
8. Professionalism	4.11	0.82	4.05	0.81	0.73
9. Professional Collaboration	3.99	0.78	4.14	0.73	-1.96*
Technology	4.09	0.92	4.13	0.84	-0.44

<sup>\*</sup> *p* < .05

The 2017 data included 227 first-year teachers and 174 principals (see Table 4). One statistically significant difference was found at the standard level. On Standard 9 (Professional Collaboration), teachers' ratings were significantly lower than the principals' ratings. Item 37 in Standard 9 (The teacher was prepared to collaborate with parents to support student learning) appeared to be the main contributor to the difference, where teachers' ratings (M = 3.88, SD = 0.99) were significantly lower than principals' (M = 4.09, SD = 0.80); t(399) = -2.28, p < .05. Considering the three-year data, Standard 2 had persistently been rated the lowest by first-year

teachers and principals; further, items 7, 8 and 9 had been rated the lowest in the 2015 and 2017 data by both groups.

In conclusion, the analysis of the three-year quantitative data revealed that first-year teachers' and principals' ratings have remained steady over the years. In the meantime, while the data suggested perceptional differences between the two groups regarding the teachers' preparation, those differences are inconsistent. For instance, both groups had consistently rated Standard 2 the lowest. Standard 7 was rated the second-lowest by both groups in the years 2015 and 2016, but only by principals in 2017. Furthermore, first-year teachers had consistently rated Standard 1 (Content Knowledge Aligned with Appropriate Instruction) and Standard 3 (Curriculum Implementation) as highest over the three years.

#### **Qualitative Results**

The two open-ended questions in the surveys were "what has been the most difficult classroom challenge you (or your first-year teacher) faced when striving to meet the needs of students?" and "what is the single most important area that teacher preparation programs should strengthen?" The iterative coding process had generated 15 code categories. Table 5 and Table 6 show the prevalence distributions of such categories in the responses of both groups surveyed, grouped by standard in an order from the highest to the lowest, with an additional entry for "More classroom experience" in the suggestions table. The values presented in the table are percentages of the total references to a specific code in the analyses (not a percentage of the number of responses).

Table 5
Challenges: Prevalence of Codes, Teachers and Principals, by Standard

Code Category by Standard	Teachers (%)	Principals (%)
Student learning, growth, and development (S2)	37.77	31.97
Differentiation	16.78	13.01
Diverse learners	11.94	9.64
Gifted and special needs	9.05	9.32
Positive classroom environment (S5)	27.85	28.57
Classroom management	23.10	24.65
Time management	4.75	3.92
Content knowledge with appropriate instruction (S1)	17.50	11.00
Student Engagement	10.4	10.47
Content	7.10	0.53
Effective communication (S6)	4.55	8.41
Communication	4.55	8.41
Curriculum implementation (S3)	3.76	1.57
Resources	3.32	0.61
Technology	0.44	0.96
Professional collaboration (S9)	3.29	5.84
Collaboration	3.29	5.84
Student assessment and data analysis (S7)	3.33	6.91
Assessment and data analysis	3.33	6.91

The highest-to-lowest order in the tables are based on teacher responses. As such, in the principals column, the order is not necessarily from highest to lowest. Relative to the teacher responses, the principal responses reveal that the rankings of S3 and S7 are reversed for challenges. Overall, first-year teachers and their principals had similar responses to the two questions. From Table 5, Standard 2, *student learning, growth, and development* and Standard 5, *positive classroom environment*, were noted as the most challenging by the respondents. Under these two standards, the top two codes applied to the participants' responses were "classroom management" and "differentiation," by far. The one standard appeared in both groups in their top-two for suggestions, *student learning, growth, and development*; with the most frequent code being "students with special needs and gifted." Regarding differences, the most notable difference among the groups is the suggestion to the programs of providing more classroom experience to pre-service teachers. The frequency of this suggestion from teachers was 19%, but only 2% from principals. Nevertheless, for both groups the single most frequent coding regarding suggestions was classroom management.

Table 6
Suggestions: Prevalence of Codes, Teachers and Principals, by Standard.

Code Category by Standard	Teachers (%)	Principals (%)
Content knowledge with appropriate instruction (S1)	21.74	6.32
Student Engagement	7.10	4.91
Content	14.64	1.41
Student learning, growth, and development (S2)	19.99	28.55
Differentiation	1.77	10.41
Diverse learners	6.82	5.73
Gifted and special needs	11.4	12.41
Positive classroom environment (S5)	18.56	23.51
Classroom management	17.45	23.05
Time management	1.11	0.46
Student assessment and data analysis (S7)	5.94	11.73
Assessment and data analysis	5.94	11.73
Curriculum implementation (S3)	4.21	2.44
Resources	0.42	0
Technology	3.79	2.44
Effective communication (S6)	2.12	8.75
Communication	2.12	8.75
Professional collaboration (S9)	1.81	5.29
Collaboration	1.81	5.29
More classroom experience	19.11	2.04

In what follows, a thematic elaboration on the qualitative findings summarized in Table 5 and 6 is provided. It is important to note that only seven (out of nine) state standards were prevalent enough to be included in the tables above and corresponding discussion below. The two standards not included are *critical thinking* and *professionalism*.

Student learning, growth, and development (Standard 2). This standard was at the top of the list for both first-year teachers and principals as being the most challenging (about a third of all

coded responses). It was the second most common suggestion by teachers for what pre-service programs could improve on; it was by far the top suggestion by principals. Within this standard, both groups indicated that differentiating instruction to meet the needs of all students was one of the weakest areas of first-year teachers. Most of the comments made by principal respondents about differentiation were not specific. For instance, one principal stated that first-year teachers should work on "providing intervention to students who are behind or unmotivated." Multiple principals commented on differentiation as modifications based on student abilities and backgrounds. On the other hand, many first-year teachers expressed having difficulty in meeting the needs of students with a wide range of abilities simultaneously when trying to differentiate instructional strategies, assignments, and assessments. Here is one very telling comment from one first-year teacher respondent:

... manage the gifted children who would finish so fast, along with the misbehaving children, and with the ones that could not even read. I felt like I was working 24 hours a day trying to change my lessons to try to grab and hold the attention of all of my learners.

Further, principals felt that teacher candidates could improve in meeting the needs of students, specifically those of "under-resourced," "at-risk," and "[having] a mental diagnosis," and when with "multiple abilities in one classroom." First-year teachers agreed, as exemplified by one teacher's response:

I would encourage all education programs to require at least 30 hours working with kids with special needs, even if their emphasis is not Special Education. There is not enough emphasis put on working alongside kids with learning disabilities, ADD/ADHD, Autism, etc., when it is very prevalent even with regular education students in this day and age.

First-year teachers expressed a lack of confidence concerning individualized education programs (IEPs) and working with gifted students. For instance, one teacher noted, "I felt very unprepared to deal with that [IEPs].... While we [teacher preparation programs] claim to teach pre-service teachers on how to meet diverse learners, all too often we overlook teaching them on how to challenge the strong students."

Positive classroom environment (Standard 5). This standard was the second most commonly noted challenge that appeared in comment by both teachers and principals, and ranked second in suggestions for program improvements by principals, but third by teachers. More specifically, classroom management was by far the most prevalent issue overall noted by principals noted regarding their first-year teachers. Many principals wrote "classroom management" without further explanation; some more specific comments were about time management, such as first-year teachers had yet to use time more wisely in "setting up and running classroom procedures and protocols," as one principal noted; and others mostly referred to discipline, particularly in the circumstances involving students who were "behaviorally challenged" or "with social-emotional issues." Principals felt that first-year teachers relied too heavily on the school's main office instead of handling the problem themselves in the classroom. For instance, a principal commented, "Office discipline will never fix a disrespect problem. It [the ultimate solution] comes from the teacher. A first-year teacher needs to understand that."

First-year teachers' responses echoed these challenges. Several teachers identified behavioral management skills as the most important area that teacher preparation programs should strengthen, for "effectively handling classroom behaviors while still educating other students in the room is difficult," as commented by one teacher. Take another teacher's response for example, "There is no practice for classroom management until you do student teaching and teaching in your class. I don't feel we are given any more than a vague idea [about] what those strategies should look like."

Another element falling within this standard that was raised in the survey responses was the managing time inside and outside the classroom in an efficient way. The lack of structure in a lesson might prevent teachers from using valuable time for instruction or plan activities. One first-year teacher stressed that "My most difficult challenge has been time management in the classroom, I plan too many activities for the allotted time period."

Content knowledge aligned with appropriate instruction (Standard 1). This standard was the third most common challenge noted by both teachers and principals, though overall it only appeared in less than a fifth of the coded responses. For teachers, this was the most common suggestion they had for program improvement; however, principals barely mentioned this as a suggestion, making it the seventh most common on their list. Few principals mentioned that their first-year teachers had trouble delivering content to their students because they lacked the knowledge themselves. One principal noted that a teacher was placed in an area without strong content knowledge in the past, and had to "build from the ground up." Some comments about content were related to standards. As a case in point, one principal noted that a new teacher resigned before the end of the first semester after being "unable to develop and implement lessons based on curriculum standards, even after working with the curriculum coordinator to develop lessons." First-year teachers' responses showed similar views about content knowledge. One first-year teacher noted, "I had two additional content courses that had some methodology, but not intensive enough. I had courses that covered instructional practices, lesson plan design, etc., but they were not content-based."

Another challenge noted by principals related to making instruction engaging for students. Some responses included "apathetic students," "the teacher is not working directly with the students," and "students are not engaged during mini-lessons and independent work times." First-year teachers did not disagree, and on a couple of occasions, they offered solutions to this challenge. For instance, one teacher stated:

Much of teaching is about motivating students, caring for them on an individual level, and helping them to set and reach their goals in the classroom more time should be spent [during teacher preparation program time] on teaching these to help a teacher be exceptional.

Similarly, another teacher commented: "As teachers, we need to see instructors model effective ways to promote student engagement in a math class."

Communication, curriculum, collaboration, assessment (Standards 6, 3, 9, 7). The final four standards listed in the tables were raised as challenges in the comments less frequency. The four

standards together accounted for about 15% of the coded responses by teachers and about 22% of the coded responses by principals; however, the comments offered are still telling. The responses from the principals suggested teacher preparation programs should have communication classes to help mitigate the challenges teacher face with *effective communication* (Standard 6). The issue resonated with teachers as well. Communication with parents was noted as the most common challenge. One teacher mentioned, "At first the most difficult aspect of teaching was communicating effectively with parents.... Communication with parents didn't get better until the spring semester." For teachers, not only was the how-to-communicate with parents challenging but also the knowing-how-often. Similarly, principals indicated that preservice teachers needed to understand how to communicate effectively with parents and the value of it. For example, one principal stated: "Practices in college are completely different from what is realistic in a classroom. Parent communication isn't always cut and dry." One suggestion noted by the principal respondents was to have more training on "parent communication and the issues that arise when meeting with difficult parents."

How to balance among multiple curricular demands and *curriculum implementation* (Standard 3) was also noted as a challenge for first-year teachers. For instance, one teacher commented:

They [teacher preparation programs] should not only teach you how to create lessons from scratch because that is not what you do as a teacher. I think they should [teach] how to balance the district's curriculum and doing your own ideas.

The same first-year teacher respondent also noted that the teacher preparation programs also need to prepare future teachers on "how fast the curriculum moves and how quickly [teachers] are supposed to teach things." Another type of challenge noted was clearly linking the curricula to the state standards. For example, one teacher commented: "I found it difficult to know if I should use the curriculum's lessons or if I should go by the state standards and create my own." In the responses from the principal participants, one suggestion related to this was: "They [university teacher preparation programs] should take out the busy work of writing lesson plans and have the future teachers look at teaching manuals/curriculum and then build interactive lessons from the curriculum the schools are using."

Professional collaboration (Standard 9) was noted as a challenge could arise when new teachers tried to lead "older" staff at the school who "were set in their ways." It could also occur, according to some principals, because first-year teachers themselves lacked collaboration skills in "working with other teachers" and "managing and collaborating with para-educators in [one's] classroom." First-year teacher respondents also described collaboration as a challenge. Some teachers found it challenging because it was difficult for them to communicate effectively with other faculty members, as one first-year teacher put it, "[prepare us on] not seeing one another as threats but genuinely helping one another." Other teachers found it challenging because their teaching strategies were different from what was used to be or the norm. Interaction with students did not appear to be an issue; however, other interactions did. For example, one first-year teacher reported: "teacher education programs do an amazing job at preparing teachers to foster relationships with students. I wish my teacher education program would have taught me more about how to foster relationships with administration."

In multiple occasions, principals noted that the teachers needed more experience with *student assessment and data analysis* skills (Standard 7). Mainly, principals indicated teachers should use assessments and data to "drive instructional focus" and "develop learning targets." Some principals provided specific examples where their teacher displayed "effective grading practices." First-year teachers mentioned that data analysis, goal setting, and assessment making were some of the challenges they faced; however, this type of comments was rare.

**More classroom experience.** As for suggests for overcoming challenges, teachers were a strong proponent of having more classroom experience. Interestingly, this was not a frequent suggestion by principals. One first-year teacher commented, "I was shocked at how different the experience of running my own classroom was, compared to theories I had learned and even to my student teaching experience." Likewise, first-year teachers in more than one occasion expressed that one semester of student teaching was not enough. Suggestions like the following were not uncommon.

...more time working in classrooms directly with students! A semester of student teaching is great, but I feel like more interaction with students is needed. Time to practice the different approaches and theories instead of just talking about them. As one of my education professors said, "The person doing the work is doing the learning!" Teacher preparation programs need more time devoted to actually practicing teaching instead of just talking about teaching.

One most noted criticism of the current student teaching arrangement was that teacher candidates miss important experiential learning about operational and instructional aspects during the school year given student teaching only lasts for one academic semester. As one first-year teacher stated, "There needs to be plenty of hands-on experiences. Student teachers need to experience the classroom at the beginning of the year and at the end of the year, not just one or the other."

In summary, the qualitative data revealed that first-year teachers and their principals to a great extent had similar rather than different views regarding challenges encountered by first-year teachers as well as the extent to which they were adequately prepared by teacher preparation programs. Both respondent groups appeared to agree that assessment, differentiation, and classroom management were the most salient, challenging aspects for first-year teachers, and teacher preparation programs could better address these "under-prepared" areas by increasing content portion in the curriculum related to these domains and providing more clinical/hands-on experiences in real classrooms.

#### **Discussion and Conclusions**

The purpose of this study was to explore the prominent issues reported by first-year teachers and their principals related to the teachers' preparation and to examine the perceptional differences and similarities between the two groups, as indicated by their survey item ratings. The 2015-2017 data from a statewide survey at a large Midwestern higher education institution were used. In general, first-year teachers and their principals in the current study viewed the teachers' education preparation positively, believing that they had been well prepared to attain the content

of the state's teaching standards. More specifically, the first-year teachers and principals identified positive classroom environment, content, and curriculum as the strongest areas of the first-year teachers.

The areas that were identified as needing more preparation were classroom management, differentiation, and student engagement. These areas overlap with the three major challenges identified by Goodwin (2012). It is conceivable that issues related to curricular freedom, differentiation, and student engagement play a role in lesson planning. As noted by the first-year teachers in the study, differentiating instruction based on students' needs is a multifaceted process that is often situated in competing and sometimes conflicting demands. Consequently, the fact that first-year teachers in the study found differentiation challenging is not unexpected. Regarding classroom management, it was also expected that new teachers find it challenging and feel less confident in the classroom compared to their student teaching experiences. The results also coincide with Greenberg and colleagues' (2014) finding that limited emphasis is placed on the actual application of theories and strategies of classroom management during teacher preparation programs. Finally, the issue concerning the lack of student engagement are raised and noted as connected to unsuccessful classroom management strategies along with ineffective teaching techniques and content delivery, such as differentiation.

The first-year teachers and principals in the study felt that students' behavioral issues and classroom management complicated their ability to address differentiation. Furthermore, issues in the area of classroom management interacted with those related to student engagement. Student engagement and motivation were linked to lesson content where first-year teachers struggled with the over-demanding workload and with what they perceived as competing for instructional needs under the limited time during the school day. The first-year teachers felt torn between covering all the materials as required under accountability and modifying curriculum and pedagogy for students with special needs and those who are gifted. It was clearly shown in the data of this study that first-year teachers found it challenging to work with students from diverse backgrounds and learning styles while keeping them engaged and productive – a challenge often could be further complicated when the students have behavioral issues, to begin with, and/or become the one that generates more student misbehaviors or disruptions. These three challenges are interrelated. Figure 2 illustrates the interconnectedness of the challenges identified by the study participants and the process in which the challenges could be addressed by components in the preparation phase.

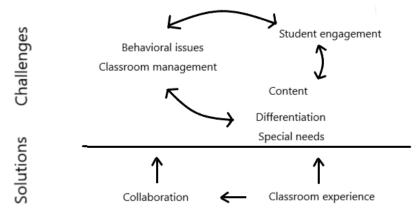


Figure 2. Challenges and solutions association

To break this interrelated challenge circle, two elements in the teacher preparation programs surfaced as potential keys to the solution. First, more hands-on experience and practice in actual classrooms such as year-long student teaching and clinical opportunities throughout the curriculum would help shift the preparation curriculum further away from a heavy emphasis of declarative knowledge of content but to a healthy balance of declarative and procedure knowledge (Bereiter & Scardamalia, 1993) integrated into relevant and meaningful praxis. The intimate and prolonged engagement with real-life curricular and pedagogical situations, school environment, and students' behavioral issues can help teacher candidates to have a better perspective of what teacher practice entails and enhance the theory-to-practice translation. As theorized by Schön's (1983) in his book *The Reflective Practitioner*, professionals have automatic skills developed as a repertoire of techniques. Schön describes the process of developing competence through experience as knowing-in-actions. Novice teachers have not had the opportunity to develop the techniques and repertoire of more experienced teachers. The second component, strengthening the competency in collaboration, can also be improved through such hands-on experience and practice. Given that to collaborate and communicate effectively is central to the roles of a teacher; student teaching experiences can provide premium opportunities to develop these skills in real settings. In return, first-year teachers would learn and hone instructional and managerial tools to develop a supportive environment in their own classrooms among themselves and with others in the school; all contribute to the success and retention of beginner teachers (Goodwin, 2012).

The challenging areas noted by Goodwin (2012) that framed this study were confirmed by both the teachers and principals in our study. Many of the challenges of novice teachers come from a real or perceived lack of knowledge and competence. Teacher-efficacy is one's belief in their competence to teach. This stems from Bandura's (1993) theory of self-efficacy, which is a person's belief in their ability to effectively deal with a situation. It has been noted that educators' beliefs in their own efficacy to motivate students and support student learning affects the types of teaching and learning environments created and the academic progress made by their students (Bandura, 1993; Ormrod, Anderman & Anderman, 2019; Pajares, 1992). Studies over decades have shown that high educator efficacy increases student academic achievement (Ashton & Webb, 1986; Gavora, 2010; Midgley, Feldlaufer, & Eccles, 1989; Moore & Esselman, 1994; Ross, 1992; Ross, Hogaboam-Gray and Hannay, 2001). Educators with high teaching efficacy are more cognizant of the needs of students with low ability, habitually work harder, and use strategies that increase student's ability to work independently in addition to raising student self-efficacy (Gibson & Dembo, 1984; Ross, 1998). High teacher self-efficacy has also been noted as a factor in teachers' willingness to try new instructional techniques. persistence in solving learning problems, and confidence in motivating students (Darling-Hammond, Chung & Frelow, 2002; Canrinus, Helms-Lorenz, Beijaard, Buitink, & Hofman, 2012).

For novice teachers, the association between success and teacher-efficacy seems to be mediated by whether or not they had more of a positive or negative experience with classroom management issues, collegial interactions, and pedagogical exchanges during their entry years into the profession (Martins et al., 2015), the very issues raised by Goodwin (2012) and again in the current study. Principals play a large role in supporting new teachers. Research has shown that principals' instructional leadership affect both teacher and student self-efficacy in a positive

manner (Calik, Sezgin, Kavgaci & Cagatay Kilinc, 2012). Given the importance of principals' leadership in addressing beginning teachers' needs, it is appropriate to suggest that not only do teacher preparation programs have areas that could be improved to better prepare teachers, but also that principal and superintendent licensure programs could emphasize better strategies for supporting novices to the field.

**Limitations.** Several limitations emerged from the use of secondary data provided by the state DoE. First, data was provided in the aggregate and we had to use summary data for the analyses. Second, the state did not report the number of surveys distributed and for that reason we could not determine a response rate. Third, the state surveyed only first-year educators in public schools. Educators in private and parochial schools, or those who chose to work out-of-state were not considered in the analyses.

While the analysis and findings based on the data revealed important observations, lack of access to the demographic data of the survey participants is another limitation of the study. Not having access to individual data prevented the researchers from comparing groups based on gender, race and ethnicity, and program type (i.e., special education, early childhood, elementary, and secondary). Also, having participant level data would have allowed for the exact match between the first-year teacher data and the principals data, which could provide a more finite comparison between the two groups. Also, future research that uses qualitative methodologies such as qualitative case study and in-depth interview study could help generate a much deeper and nuanced understanding of the perceptional commonalities and differences as well as the meaning-making processes behind such overlapping and disparities. While the open-ended survey questions in the current study generated over 250 responses and revealed important patterns, it was left up to the participants to decide whether or they would respond and to what extent they would elaborate if they did choose to answer. There was no opportunity for the researchers to probe and engage further with follow-up questions when the initial response needed clarification and/or was an interesting one worthy further exploration with the respondent, as it would have been possible in qualitative studies. The researchers believe that by examining, comparing, and contrasting these diverse perspectives, greater support can be provided to first-year and novice teachers.

#### **Summary**

The findings of the present study shed light on the main issues perceived by first-year public school teachers and their principals regarding the teachers' preparation and the differences and similarities between the two groups. The findings to a great extent are consistent with previous research, and likewise, reveal certain areas that teacher preparation programs are yet to strengthen that would minimize the challenges that first-year teachers face. Both first-year teachers and principals in the study believed that more experiences in actual classrooms before completing one's program would alleviate the lack of understanding and accelerate the acquisition of the skills a teacher candidate needs, such as classroom management, assessment, and differentiation. A call for stronger competencies in building relationships, collaborating with other adults in the building, and communicating effectively was evident.

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# Appendix A

Survey items aligned with the State teaching standards					
	Survey item	s aligned wi	th the State	teaching standards	

Teaching Standard	Item	Item Statement
S1. Content	1	The teacher was prepared to incorporate interdisciplinary instruction.
Knowledge	2	The teacher was prepared in his or her content area.
Aligned with	3	The teacher was prepared to engage students in his or her content area.
Appropriate Instruction	4	The teacher was prepared to make content meaningful to students
S2. Student,	5	The teacher was prepared to design lessons that include differentiated instruction.
Learning	6	The teacher was prepared to implement instruction based on a student's IEP.
Growth and Development	7	The teacher was prepared to modify instruction for English language learners.
	8	The teacher was prepared to modify instruction for gifted learners.
	9	The teacher was prepared to create lesson plans to engage all learners.
S3. Curriculum	10	The teacher was prepared to deliver lessons based on curriculum standards.
Implementation	11	The teacher was prepared to deliver lessons for diverse learners.
S4. Critical	12	The teacher was prepared to implement a variety of instructional strategies.
Thinking	13	The teacher was prepared to engage students in critical thinking.
	14	The teacher was prepared to model critical thinking and problem solving.
S5. Positive Classroom	16	The teacher was prepared to create a classroom environment that encourages student engagement.
Environment	17	The teacher was prepared to use a variety of classroom management strategies.
	18	The teacher was prepared to manage a variety of discipline issues.
	19	The teacher was prepared to motivate his or her students to learn.
	20	The teacher was prepared to keep his or her students on task.
	21	The teacher was prepared to foster positive student relationships.
	22	The teacher was prepared to facilitate smooth transitions for his or her students.
S6. Effective Communication	23	The teacher was prepared to use effective communication strategies for foster learning.
	24	The teacher was prepared to effectively communicate with parents.
	25	The teacher was prepared to effectively communicate with all staff.
	26	The teacher was prepared to promote respect for diverse cultures, genders, and intellectual/physical abilities.
	27	The teacher was prepared to use technology as a communication tool.
	28	The teacher was prepared to enhance students' skills in using technology as a communication tool.
S7. Student	29	The teacher was prepared to use assessments to evaluate learning.
Assessment and	30	The teacher was prepared to develop assessments to evaluate learning.
Data Analysis	31	The teacher was prepared to analyze assessment data to improve instruction.
	32	The teacher was prepared to help students set learning goals based on assessment results.
	33	The teacher was prepared to work with colleagues to set learning goals using assessment results.

S8.	34	The teacher was prepared to analyze data to reflect on areas for professional growth.
Professionalism	35	The teacher was prepared to reflect on his or her practices for professional growth.
S9. Professional Collaboration	36 37 38	The teacher was prepared to collaborate with colleagues to support student learning. The teacher was prepared to collaborate with parents to support student learning. The teacher was prepared to participate professional organizations.
Technology	15	The teacher was prepared to use technology to enhance student learning.

Appendix B

Frequency distribution (%) of the survey responses of teachers (n=644) and principals (n=497) over the three-year span

Item	First-year teachers				Principals					
	SD	D	N	A	SA	SD	D	N	A	SA
S1. Con	tent Knov	wledge Ali	igned with	Appropri	ate Instruc	tion				
1	0.4	5.8	13.1	58.6	21.8	1.0	6.0	10.9	55.7	27.4
2	0.6	2.0	6.0	49.0	42.4	1.0	2.3	4.3	52.6	40.2
3	0.4	2.9	5.4	52.0	38.3	1.0	4.0	5.6	53.0	35.7
4	0.6	3.6	8.1	53.1	35.3	1.3	4.0	6.6	51.1	37.0
S2. Stud	ent, Lear	rning Grow	vth, and Do	evelopme	nt					
5	0.6	5.9	9.0	46.9	37.5	1.7	7.7	12.3	49.0	29.4
6	3.1	18.8	18.0	39.1	21.4	1.0	6.0	21.0	49.3	22.8
7	6.0	20.3	28.9	29.3	15.2	1.3	6.0	40.9	34.1	17.1
8	3.0	15.7	23.4	40.6	17.3	1.0	6.6	31.9	40.7	19.0
9	0.4	5.0	9.7	52.5	32.1	1.7	5.6	8.8	53.0	31.2
	iculum I	mplementa	ation							
10	0.6	4.8	5.1	45.0	44.3	1.0	2.3	4.3	55.6	36.5
11	0.0	4.9	12.7	55.6	26.5	1.0	6.9	11.3	55.6	24.8
	cal Thinl	king								
12	0.3	2.4	4.4	53.4	39.1	1.3	7.0	8.2	52.3	31.1
13	0.3	5.0	11.1	54.9	28.4	2.0	7.4	12.7	52.3	25.7
14	0.3	4.9	10.9	53.8	29.4	2.0	6.7	12.4	52.9	25.7
	1	sroom Env				Ì				
16	0.4	2.6	7.0	51.5	38.9	1.7	6.0	8.5	48.4	35.4
17	2.9	9.5	10.6	44.1	32.3	3.0	11.6	9.6	48.2	27.7
18	5.8	17.0	20.1	37.5	19.3	3.0	11.9	11.9	49.5	23.7
19	0.3	5.0	12.4	53.0	29.6	1.3	5.6	8.6	53.3	31.7
20	0.6	5.6	16.3	52.1	25.0	1.3	7.7	9.9	49.7	31.4
21	0.6	2.0	4.3	42.7	50.4	1.3	2.0	4.3	49.9	42.4
22	0.6	4.0	11.2	50.8	33.3	1.0	4.0	8.9	56.1	30.4
	ctive Co	mmunicati	on			1				
23	0.4	1.0	9.1	54.6	34.5	1.3	3.3	8.6	57.6	29.5
24	3.4	12.2	14.4	46.3	24.1	1.0	5.0	10.9	55.0	28.1
25	1.9	5.1	10.7	49.4	32.2	1.0	2.4	9.3	53.9	32.8

26	0.7	0.6	5.4	46.6	46.4	1.0	1.7	9.3	58.3	29.3	
27	1.4	3.6	10.4	46.4	38.8	1.3	1.7	6.3	56.7	34.0	
28	2.6	6.3	15.8	44.9	31.0	1.7	2.3	12.9	53.7	29.1	
S7. Stud	S7. Student Assessment and Data Analysis										
29	0.3	3.6	6.4	51.7	37.6	1.3	4.4	10.3	57.0	26.8	
30	1.3	6.0	12.4	49.6	30.3	1.3	6.7	14.6	56.0	21.4	
31	1.4	6.9	10.8	51.4	29.1	1.0	8.3	17.2	53.1	21.0	
32	1.6	9.7	18.0	47.0	23.6	1.3	7.3	18.2	51.4	21.4	
33	1.3	8.3	15.4	47.0	28.1	1.3	4.7	15.2	55.3	23.8	
S8. Prof	essionalis	m									
34	1.4	8.4	13.7	46.6	30.2	1.0	7.7	14.9	54.7	22.4	
35	1.0	1.7	7.4	49.9	40.1	1.0	4.7	7.9	56.3	29.7	
S9. Prof	S9. Professional Collaboration										
36	1.0	2.7	8.2	50.8	37.9	1.3	2.7	6.3	58.9	31.1	
37	0.9	12.1	14.7	47.1	24.8	1.0	5.4	11.5	57.1	24.4	
38	2.3	6.5	12.4	48.6	29.9	1.3	1.7	12.0	55.5	29.8	
Technol	ogy	·		·	·		·	·			
15	2.0	5.7	10.7	46.8	35.2	1.3	4.7	9.3	49.7	34.4	

Note: SD= Strongly disagree, D= Disagree, N=Neutral, A= Agree, SA= Strongly Agree