

Differentiated Instruction, Professional Development, and Teacher Efficacy

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Abstract

Teachers often struggle to provide all students access to specific learning activities that work best for them—and what works best for some students will not work for others. Differentiating instruction makes sense because it offers different paths to understanding content, process, and products, considering what is appropriate given a child’s profile of strengths, interests, and styles. This study focused on teacher efficacy as a way to explain teacher willingness to differentiate instruction. We found that a greater number of professional development hours in differentiation of instruction was positively associated with both teacher efficacy and the teacher’s sense of efficacy beliefs. This study demonstrated that teacher efficacy is an important dimension in implementing the process of differentiation regardless of what level or what content area the teacher taught (elementary, middle, or high school). Implications and future directions for research are also discussed.

Keywords

teacher efficacy, differentiation, professional development

Education has traditionally been subject to change and renewal. Factors that contribute to the ever-changing classroom landscape include Common Core State Standards, standards-based classrooms, high expectations and accountability for all students, multicultural diversity, recognition of different learning styles and multiple

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intelligences, and rapid societal and technological changes (Gregory & Chapman, 2002). Because any classroom with more than one student presents a range of diverse learning needs, teachers often struggle to provide all their students with focused learning activities specifically designed to what works best for them. What works for some students will not work for others (Berliner & Biddle, 1995). Indeed, taxed with so many issues to carry out simultaneously, it is challenging for educators to cope with this variety of teaching tasks and yet stay committed to their chosen profession.

Teaching a mixed-ability class is a difficult and complex issue for today's educators. Although the Individuals With Disabilities Act (IDEA, 2004) articulates the school's responsibility to ensure that students with disabilities have access to the core curriculum of general education in the least restrictive environment, other students in the same class may have been identified as gifted and talented and expect to be educated in a rigorous and challenging setting. According to the National Association for Gifted Children's website (NAGC, 2012),

there are children who demonstrate high performance, or who have the potential to do so, and . . . we have a responsibility to provide optimal educational experiences for talents to flourish in as many children as possible, for the benefit of the individual and the community. (para. 2)

It is not easy to teach such disparate groups—the gifted as well as the struggling learners—while at the same time serving yet a third group, the grade-level students. Our study addresses these issues, focusing on differentiation of instruction to meet the needs of a variety of students in the same class as well as teacher efficacy, that is, teachers' confidence in their ability to promote student learning (Tschannen-Moran & Woolfolk Hoy, 2001). We also examine teachers' self-efficacy beliefs, which are related to the effort teachers invest in teaching, the goals they set, their persistence when things do not go smoothly, and their resilience in the face of setbacks (Tschannen-Moran, Woolfolk Hoy, & Hoy, 1998). We begin with a review of the current literature on differentiating instruction, especially how it relates to teacher education programs, move to professional development and its relationship to differentiation, and then review the literature on teacher efficacy and sense of efficacy beliefs.

Differentiating Instruction in Mixed-Ability Classes

Diversity in learning abilities, the idea that students learn differently from one another, is not a new concept. One size does not fit all when instructing students because students differ in a number of ways. To meet student needs, teachers must adjust both curriculum and instruction for various groups of students. Tomlinson and Jarvis (2009) noted,

Differentiation is an approach to curriculum and instruction that systematically takes student differences into account in designing opportunities for each student to engage with information and ideas and to develop essential skills. Differentiation provides a

framework for responding to differences in students' current and developing levels of readiness, their learning profiles, and their interests, to optimize the match between students and learning opportunities. These three dimensions of student difference can be addressed through adjustments to the content, process, products, and environments of student-learning, and each is justified by a research-based rationale. (p. 599)

Teachers who differentiate their instruction respond to learner needs in the way content is presented (the content dimension of differentiation), the way content is learned (the process dimension), and the ways students respond to the content (the product dimension). All these adaptations are designed to meet the individual characteristics of learners and to maximize their time in school. Teachers are the ones who take charge of these modifications, and their skill in understanding the characteristics of student learning and then using this knowledge in adapting lessons is paramount to success in this complex process. Teachers who do not recognize ways to differentiate or who do not feel capable of instructing different groups at the same time struggle with differentiating instruction.

Indeed, modifications are never easy. In fact, addressing different levels of student readiness, process skills, and product determination can be challenging for teachers. The very nature of differentiation requires teachers to be flexible in their approach to teaching and to adjust the curriculum and presentation of information to learners rather than expecting learners to modify themselves for the curriculum (Hall, Strangman, & Meyer, 2009). To differentiate instruction is to recognize students' varying background knowledge, readiness, language, and preferences in learning and interests, and then to act on that knowledge responsively in planning content dimensions, process dimensions, and product dimensions.

In addition, teachers who employ differentiated instruction adjust their teaching for students of differing abilities in the same class with the intent of maximizing each student's growth and individual success by meeting each student where he or she is and assisting in the learning process. Excellence should be promoted in all learning endeavors, but at different levels, based on personal mastery of material. "To offer the same curriculum and instruction to all students is to deny that individual differences exist or matter in the enterprise of learning" (VanTassel-Baska, 1997, p. 11). Dai (2010) argued that when curricular content and process fall outside of a student's zone of proximal development (i.e., it is too easy or too hard), differentiation is called for.

Hence, differentiation is a philosophy or a way of thinking about teaching and learning rather than a single instructional strategy (Tomlinson, 2000, 2008). It is student-centered at its best in that it focuses on serving levels of understanding within each concept taught. For example, in teaching for readiness, teachers may teach a concept for those students who understand at the knowledge/comprehension level; they must adjust the same concept for those who understand at the application/analysis level; and then they must adjust yet again for those who understand information at the evaluation/create level. These adjustments may occur in the content to be studied, in the activities used to learn the content, or in the product completed to indicate mastery of the content.

Learning how to differentiate instruction for mixed-ability classes is important for teachers during their teacher preparation programs. Because the primary goal of differentiation is ensuring that teachers focus on processes and procedures that provide effective learning for varied individuals (Tomlinson & McTighe, 2006), teacher education programs need to be actively engaged in preparing future teachers toward this goal. However, for new teachers, just understanding the diversity of learning that occurs in the classroom is a difficult process. It follows then that teaching a lesson to students of diverse abilities requires practice and guidance to ensure success. It also makes sense that guidance in teacher preparation programs would help teacher candidates to understand this conceptual approach to teaching and learning that involves analysis of learning goals, continual assessment of student needs, and instructional modifications in response to data about readiness levels, interests, and learning profiles (Brimjoin, 2005).

Professional Development in Differentiation

Although teacher preparation programs seem to be a natural fit for learning how to differentiate instruction for mixed abilities, often they provide only an introduction to the theory, which is presented in a survey course along with other theories of curriculum and instruction. These cursory glimpses at differentiation may not provide enough depth for actually putting it into practice. In an effort to address this need for more information on differentiation in response to learner diversity, school districts may offer professional development opportunities for their teachers. These professional development sessions are typically led by consultants who have been trained in the topic of interest and who serve as role models and coaches in the strategy (Dettmer, Landrum, & Miller, 2006). Their goal is to facilitate in the development of foundational understanding and instructional competencies for the topic at hand—in this case, differentiation. As presenters, these experts are facilitators who must be able to see professional development as a process—in essence, a journey—that is manageable. Professional development that tries to accomplish too much in one half-day session may provide some foundational understanding of differentiation but may not impart the instructional competencies that allow the teacher to try to differentiate lessons when he or she returns to the classroom. Teacher buy-in to the strategy is essential for it to be used regularly.

Indeed, the process of implementing the strategy is complex. In studying why teachers did not differentiate, Moon, Tomlinson, and Callahan (1995) conducted a survey of middle school teachers and found that 50% responded that they did not differentiate instruction by readiness, interest, or learning profile because they saw no reason to do so. Schumm and Vaughn (1992) reported that general education teachers in their study cited problems stemming from calling attention to differences as reasons to not adapt instruction for any specific group of students. So, professional development opportunities must not only introduce the topic of differentiation, but they must also allow teachers to practice the strategy in a workshop setting in which the “coach” helps them write and review their own lessons, assuring them of greater success in the

classroom. If school districts value differentiation enough to devote time to ensuring faculty members are educated in it, then it follows that they should be vigilant in requiring the implementation of differentiation when teachers return to their classroom. Allowing teachers to observe each other differentiate lessons, providing feedback to each other after the observation, and giving time for them to collaborate on shared lessons also provide reinforcement for actually practicing what they have learned. Indeed, emphasizing that the process of differentiation is a journey toward the destination of providing worthwhile instruction for each student makes the time spent learning how to do it well a wise investment for a school district. When a school district provides the support needed for differentiation, administrators must also understand that the teacher's sense of efficacy may play a part in his or her success or (lack of thereof) with differentiation.

Teacher Efficacy

Bandura (1977) introduced the concept of self-efficacy beliefs as an assessment of one's capabilities to attain a desired level of performance in a given endeavor. Applied to the educational realm, teacher efficacy is defined as "a judgment of his or her capabilities to bring about desired outcomes of student engagement and learning, even among those students who may be difficult or unmotivated" (Tschannen-Moran & Woolfolk Hoy, 2001, p. 783). More focused on the individual teacher's self-assessment, teacher self-efficacy is defined as beliefs that are related to the effort teachers invest in teaching, the goals they set, their persistence when things do not go smoothly, and their resilience in the face of setbacks (Tschannen-Moran et al., 1998).

Even though teachers cognitively understand the strategies introduced during professional development sessions on differentiation and can identify diverse students in their classrooms, they may subsequently not translate the material covered in the professional development into practice in the classroom. Perhaps some teachers are not comfortable with their own knowledge of teaching in their content area and therefore cannot be flexible in adjusting their lessons to the needs of their learners. Their lack of teacher efficacy in promoting student learning makes adjusting a lesson for different groups of learners a task they do not think they can do. In terms of self-efficacy beliefs, they just may not feel they have the time to do the adjustments, or they may think of all of the ways their lesson may fail. The effort required may be just too overwhelming for them.

Shulman (1987) provided the following interesting and illustrative example of two teachers who deal with issues of efficacy. Nancy is an expert teacher who readily understands her craft on any given day and can adjust her teaching methods efficaciously. Shulman wrote,

Nancy's pattern of instruction, her style of teaching, is not uniform or predictable in some simple sense. She flexibly responds to the difficulty and character of the subject matter, the capabilities of the students (which can change even over the span of a single course), and her educational purposes. She cannot only conduct her orchestra from the podium, she can sit back and watch it play with virtuosity by itself. (p. 3)

Nancy knows she can readily respond to the discrepancies she sees in any class. Her efficacy ensures her that she can handle whatever may happen in her class. Shulman (1987) contrasted Nancy's self-efficacy beliefs to Colleen's insecurity. In a unit on grammar in her English class, Colleen conducted a highly didactic, teacher-directed lesson that was marked with little student interaction and no chance for questions from the students. In fact, Colleen did not even look at selected students for fear that they would ask a question that she could not answer. She needed to maintain tight control of all aspects of the class or she could not make it through the lesson whenever grammar was covered. Although her teacher efficacy was evident in her literature lessons, she felt a dramatic shift when it came to conducting a class focusing on grammar. She could not cope with the thought that she would not know the answer if a student asked a question. Nancy felt high teacher efficacy in her abilities and was willing to try new strategies, whereas Colleen did not feel efficacious at all in teaching grammar. Colleen was limited by her ability to adjust what she did to meet student needs, and this inadequacy even forced her to avoid eye contact with students who, she felt, knew more than she did.

Coping with teaching issues and being able to overcome insecurities are important qualities to all educators. "Harnessing teacher efficacy, helping teachers get in touch with the will as well as the skill to be excellent teachers, should be the focus of teacher support in the classroom" (Weiner, 2003, p. 12). Indeed, understanding how to teach to diverse abilities is a challenge that teachers can meet successfully, especially if they have strong efficacy in their personal abilities as well as in their teaching abilities. This lack of teacher efficacy may be a reason that some teachers attend professional development focused on differentiation of instruction and then return to business as usual without implementing what they have learned to address student variability in the classroom. They may continue to teach to the middle of the class, missing the learners at either extreme of the normal curve—believing that the top will get the information anyway and the struggling learners may take too long to learn it. However, if they try to differentiate and are successful, then perhaps their efficacy beliefs will be raised, allowing them to continue the process, believing that they can do it.

Our study focused on these three issues: differentiation of instruction, professional development, and both teacher efficacy and self-efficacy beliefs. There is a paucity of empirical research studies on the effectiveness of differentiated instruction, and we wanted to study it more. We think that differentiation makes sense, but we need to test it more in the classroom, examining what makes it work. We need to know more about the type of teacher who is likely to embrace the strategy. The purpose of our study was to investigate the relationship between differentiated instruction and teacher efficacy and sense of self-efficacy beliefs. In other words, do teachers who experience higher teacher efficacy and higher beliefs concerning self-efficacy differentiate instruction more in their classrooms than teachers who feel less efficacy? We also wanted to examine the role professional development played in the differentiation process.

We asked the following research questions in this study:

Research Question 1: Do teachers who express higher teacher efficacy differentiate instruction more in their classrooms than teachers who feel less efficacious?

We hypothesized that greater teacher efficacy and sense of self-efficacy beliefs would be associated with greater levels of differentiating instruction in their classrooms.

Research Question 2: Does professional development in differentiation relate to teacher efficacy?

We hypothesized that greater professional development in differentiation would be associated with greater levels of teacher efficacy and sense of self-efficacy beliefs.

Method

Two school districts were chosen for participation in this study. District 1 is characterized by its large, suburban, white-collared demographic makeup. With a population of more than 4,000 students in the high school (Grades 9-12), this district prides itself in keeping current on educational practices. This district is located in a high socioeconomic status (SES) area tangential to a large city. District 2 is located in a mid-sized industrial city. It is predominantly blue-collared in demographics and has a diverse student body. Both free and reduced lunch and different kinds of educational programming are prevalent in the district. We gained permission from each district's superintendent to conduct our research in four schools in each district. On our first visit to each school, we asked each teacher to fill out two different efficacy questionnaires and complete a demographic questionnaire. We asked the teachers to complete the questionnaires the same day they received them; we picked them up from the teachers before we left the school. On the second visit to each school, teachers were asked to respond to a 10-item questionnaire that focused on differentiation of instruction. These are described next. We were in compliance with the guidelines of the University Institutional Review Board in collecting our data.

Participants

We initially asked the superintendent of the two school districts to recommend 5 different teachers in each of the four schools (two elementary schools, one middle school, and one high school in each district) to participate in this study. Superintendents, along with principals, recommended 45 teachers (one middle school had team-teaching in its classes, so we used both teachers in each team for our research). The teachers were aware that they had been recommended and agreed to participate in a research project. The demographic information of the teachers included gender, ethnicity, and where and what the teachers taught (i.e., elementary, middle school, or high school; and specific disciplines). Four teachers did not return their information and were dropped from the analyses. Of the 41 participants who completed materials, 34 were female and 7 were male, all 41 reported Caucasian as their ethnicity, 18 were elementary teachers, 13 were middle school teachers, and 10 were high school teachers. Of the 23 secondary teachers, 6 taught math, 9 taught science, 5 taught language arts, 1 taught social studies, and 2 reported "other" for their discipline.

Instruments

The first of the efficacy scales distributed was the Teacher Self-Efficacy Scale (TSES; Tschannen-Moran & Woolfolk Hoy, 2001). This scale consists of 24 items with a Likert-type response format of nine choices. Response options range from *none at all* to *a great deal* for each item. Reliabilities for the three subscales for the scale were reported at .91 for Instructional Strategies, .90 for Management, and .87 for Engagement. We chose this measure because the subscales are relevant to the issues of differentiation. For example, the Instructional Strategies subscale includes the following items:

- Item 1: To what extent can you use a variety of assessment strategies?
- Item 2: To what extent can you provide an alternate explanation or example when students are confused?
- Item 4: How well can you implement alternative strategies in your classroom?
- Item 6: How much can you do to adjust your lessons to the proper level for individual students?
- Item 7: To what extent can you gauge student comprehension of what you have taught?
- Item 8: How well can you provide appropriate challenges for very capable students?

These questions address the issues of differentiation. The Engagement subscale also has items relevant to differentiated instruction, including the following:

- Item 17: How much can you do to get students to believe they can do well in schoolwork?
- Item 21: How much can you do to improve the understanding of a student who is failing?
- Item 22: How much can you do to help your students think critically?

Construct validity was reported for this measure in its strong correlation with other measures of self-efficacy (Gibson & Dembo, 1984). Tschannen-Moran and Woolfolk Hoy (2001) stated, "The strongest correlations between the TSES [also called Ohio State Teacher Efficacy Scale (OSTES)] and other measures are with scales that assess personal teaching efficacy" (p. 801). In addition, the results of these analyses indicate that the TSES can be considered reasonably valid and reliable. Positive correlations with other measures of personal teaching efficacy provide evidence for construct validity. But the TSES moves beyond previous measures (e.g., Gibson & Dembo, 1984) to capture a wider range of teaching tasks.

A second scale, the Teacher Efficacy Scale (TES; Woolfolk & Hoy, 1990) was also administered. The TES consists of 22 items with a 6-point Likert-type response scale (*strongly agree* to *strongly disagree*). This measure has two subscales: Personal Efficacy and Teaching Efficacy. According to Woolfolk and Hoy (1990), most of the

Teacher Efficacy items in this scale state negative attitudes about teaching (e.g., Item 20: When it comes right down to it, a teacher cannot do much because most of a student's motivation and performance depends on his or her home environment; Item 17: Even a teacher with good teaching abilities may not reach many students). Disagreeing with the 8 items in the Teaching Efficacy subscale is the more efficacious response. On the contrary, all of the Personal Efficacy items state positive attitudes about teaching. For example, Item 18 directly targets the teacher's sense of efficacy in assessment: If one of my students could not do a class assignment, I would be able to accurately assess whether the assignment was at the correct level of difficulty. Another item relevant to the strategies of differentiation is Item 6, which states, "When a student is having difficulty with an assignment, I am usually able to adjust it to his or her level." The adjustment of learning activities to meet the needs of students is precisely what differentiation targets. In these items, agreeing with them is the more efficacious response. The authors report adequate reliability for each of the subscales (.74 for Teaching Efficacy and .82 for Personal Efficacy).

On the second visit, teachers responded to a 10-question questionnaire that focused on differentiation in instruction. Quantitative items on the questionnaire included the following information:

- What types of students are in your class(es)? Teachers were to check all that applied from the following list: high ability, average or grade level, below average, and/or identified for special services.
- When did you attend professional development on differentiating instruction? Choices included the following: this year, the last 5 years, in a teacher preparation program, or none.
- How many hours of professional development have you attended on Differentiating Instruction? Choices included the following: 1-2 hrs, 3-5 hrs, 5-10 hrs, and more than 10 hrs.
- How often do you differentiate in your classroom? Choices were as follows: daily for each subject taught, daily for more than one subject but not all, daily for one subject, occasionally—less than once a week, and never.

We analyzed the questions and report the results.

Data Analysis

To test whether there were differences in the school districts we used in this study, differences in the grade levels taught for the teachers (i.e., elementary, middle school, or high school), differences in number of years of teaching experience teachers had, or number of professional development hours attended, we conducted separate one-way ANOVAs using both the TES and the TSES.

To answer our research questions, we first conducted a predictive discriminant analysis with the TSES and TES predicting number of professional development hours as reported by teachers in their questionnaires. Next, we performed a predictive

discriminant analysis with the Instructional Strategy, Classroom Management, and Student Engagement subscales predicting professional development hours as reported on the questionnaire. We also performed a predictive discriminant analysis with the Personal Efficacy and Teaching Efficacy subscales predicting professional development hours as reported on the questionnaire. To find out whether greater teacher sense of efficacy beliefs and teacher efficacy would be associated with greater levels of differentiating instruction in the teachers' classrooms, we performed a simple linear regression with TSES predicting differentiation. In addition, we performed a simple linear regression with TES predicting differentiation.

To find out whether Instructional Strategy, Classroom Management, and Student Engagement subscales from the TSES would be associated with greater levels of teachers who differentiated instruction in their classrooms, we performed a stepwise multiple regression with Instructional Strategy, Classroom Management, and Student Engagement predicting differentiation. Finally, to find out whether greater Personal Efficacy and Teaching Efficacy subscales from the TES would be associated with greater levels of differentiating instruction in teachers' classrooms, we performed a stepwise multiple regression with Personal Teaching Efficacy predicting differentiation.

Results

Separate one-way ANOVAs revealed no significant differences for teachers' grade level on the TSES, $F(2) = 2.61, p = .09$, and the TES, $F(2) = 1.45, p = .25$.

Whereas a one-way ANOVA revealed no significant difference for school district on the TES, $F(2) = 0.67, p = .42$, there was a significant difference for the TSES, $F(2) = 5.21, p = .03$. District 1 had a mean on the TSES of 176.99 ($SD = 18.88$), and District 2 had a mean on the TSES of 162.99 ($SD = 20.31$). However, school districts did not significantly differ on hours in professional development, $F(2) = 0.52, p = .48$, professional development experience, $F(2) = 1.90, p = .18$, and years of teaching experience, $F(2) = 3.39, p = .07$. We discuss implications of school district differences on the TSES in the "Discussion" section.

Initially, we examined variance inflation factors. They indicated no significant collinearity between TSES and TES, showing little redundancy between the factors. In addition, variance inflation factors indicated no significant collinearity among Instructional Strategy, Classroom Management, and Student Engagement, showing little redundancy among the factors. Finally, an examination of variance inflation factors indicated no significant collinearity between Personal Efficacy and Teaching Efficacy, showing little redundancy between factors.

We hypothesized that greater professional development in differentiation would be associated with greater levels of teacher sense of efficacy beliefs and teacher efficacy. We performed a predictive discriminant analysis with the TSES and TES predicting professional development hours. The discriminant function was significant, $\lambda = .764, F(6) = .508, p = .006$, and accounted for 86.8% explained variance. The discriminant function revealed that both TSES (.689) and TES (.952) predicted professional

Table 1. Summary Table of Discriminant Analyses for Professional Development Hours.

	λ	<i>F</i>	<i>P</i>	Classify (%)	Cross-valid (%)	TSES	TES	Per efficacy	Teacher efficacy
TSES/TES	2.804	0.508	.006	51.6	45.2	.689	.952	—	—
TSES subscales	0.538	0.551	.071	—	—	—	—	—	—
TES subscales	0.725	0.474	.003	54.8	51.6	—	—	.519	.800

Note. Instructional Strategy, Classroom Management, and Student Engagement are not depicted because they did not significantly predict hours. % Var = Variance Explained; TSES = Teacher Self Efficacy Scale; TES = Teacher Efficacy Scale.

development group (i.e., the number of professional development hours, 1-2, 3-5, 6-10, and 10+ hrs, that teachers reported they had taken in in-service education focused on differentiated instruction). Whereas the first discriminant function correctly classified 51.6% of persons who had received 1-2, 3-5, 6-10, and 10+ hrs of professional development, cross-validation with the leave-one-out method correctly classified 45.2%. The results indicated that greater professional development in differentiation was positively associated with both teacher sense of efficacy beliefs and teacher efficacy.

Next, we performed a predictive discriminant analysis with Instructional Strategy, Classroom Management, and Student Engagement predicting professional development hours. The discriminant function was nonsignificant, $\lambda = .538$, $F(9) = .551$, $p = .071$.

We performed a predictive discriminant analysis with Personal Efficacy and Teaching Efficacy predicting professional development hours. The discriminant function was significant, $\lambda = .725$, $F(6) = .474$, $p = .003$, and accounted for 76.4% explained variance. The discriminant function revealed that both Personal (.519) and Teaching (.800) Efficacy predicted professional development group (i.e., number of professional development hours). Whereas the first discriminant function correctly classified 54.8% of persons who received 1-2, 3-5, 6-10, and 10+ hrs of professional development, cross-validation with the leave-one-out method correctly classified 51.6%. The results indicated that greater professional development in differentiation was positively associated with both Personal and Teaching Efficacy. These results are reported in Table 1.

We hypothesized that greater sense of efficacy beliefs and teacher efficacy would be associated with greater levels of differentiating instruction in the teachers' classrooms. We performed a simple linear regression with TSES predicting differentiation. The results indicated that TSES significantly predicted differentiation ($\beta = .365$, $R^2 = .133$, $p = .043$). We also performed a simple linear regression with TES predicting differentiation. The results indicated that TES significantly predicted differentiation ($\beta = .583$, $R^2 = .340$, $p = .001$). The results indicated that both teacher sense of efficacy beliefs and teacher efficacy were positively associated with differentiation. Whereas teacher sense of efficacy accounted for 13.3% of the variance in differentiation, teacher efficacy accounted for 34% of the variance.

Table 2. Summary Table of Regression Analyses.

	β	R^2	p
TSES	.365	.133	.043
Instructional strategy	.467	.218	.008
Class management	-.246	—	.251
Student engagement	-.099	—	.728
TES	.583	.340	.001
Personal efficacy	.547	.299	.001
Teaching efficacy	-.258	—	.098

Note. TSES = Teacher Self-Efficacy Scale; TES = Teacher Efficacy Scale.

We hypothesized that greater Instructional Strategy, Classroom Management, and Student Engagement would be associated with greater levels of teachers' differentiating instruction in their classrooms. We performed a stepwise multiple regression with Instructional Strategy, Classroom Management, and Student Engagement predicting differentiation. The results indicated that only Instructional Strategy significantly predicted differentiation ($\beta = .467$, $R^2 = .218$, $p = .008$). Both Classroom Management ($\beta = -.246$, $p = .251$) and Student Engagement ($\beta = -.099$, $p = .728$) were unrelated to differentiation when taking into account the variance explained by Instructional Strategy.

Finally, we hypothesized that greater Personal Efficacy and Teaching Efficacy would be associated with greater levels of differentiating instruction in teachers' classrooms. We performed a stepwise multiple regression with Personal and Teaching Efficacy predicting differentiation. The results indicated that only Personal Efficacy significantly predicted differentiation ($\beta = .547$, $R^2 = .299$, $p = .001$). Teaching Efficacy ($\beta = -.258$, $p = .098$) was unrelated to differentiation when taking into account the variance explained by Personal Efficacy. These results are reported in Table 2.

Discussion

Teacher efficacy in the classroom is both interesting and important to the understanding of classroom practices. One classroom practice that is frequently discussed in educational literature is differentiating instruction (Brimijoin, 2005; Tomlinson, 1999; Tomlinson & McTighe, 2006; Winebrenner, 2000). In inclusive classrooms, it is important that teachers understand how to differentiate instruction to ensure maximum learning experiences for all students. It is our view that teacher education programs should provide education about the philosophy behind and process of differentiation of instruction so that beginning teachers may enter the classroom ready for learning diversity. Equally important to the learning and practice of this strategy is professional development focused on how to differentiate and why differentiation is necessary in today's schools.

Shulman (1987) indicated that the key to understanding the knowledge base of teaching is the intersection of content and pedagogy, especially in the capacity of the teacher to transform content knowledge into forms that are pedagogically powerful and yet adaptive to the variations in ability and background presented by the students. If teachers are comfortable in modifying instruction for their students because they know how to make modifications, then students should learn more effectively. Professional development that focuses on increasing teacher skills and gives teachers the chance to practice the strategy should make a difference.

We found that teachers who had more professional development in differentiation, regardless of school, felt more efficacious in differentiating instruction in their classes. Both the TES and the TSES indicated that teachers who had more professional development hours in differentiating instruction felt more efficacious in differentiating instruction in their classrooms. Both the TES and the TSES indicated that more professional development hours predicted more efficacy. This finding suggests that schools that believe that varying instruction for different groups within an inclusionary setting would benefit from offering their teachers (indeed, perhaps requiring it) more professional development in the strategies of differentiation. The single 2-hr presentation that usually occurs in an afternoon at the school is just a snapshot of theory and seems to provide a sample of the strategy but not enough to provide the necessary knowledge to put it to use knowledgeably. On the other hand, when a teacher has 10+ hr of experience with the strategy, he or she has usually worked with it in a workshop setting and can better implement it in the classroom. It makes sense that this familiarity would increase a sense of efficacy within the teacher. We did find a significant difference on the TSES in the two districts that participated in the study. District 1, which is described as a white-collared community with a high SES, in general, has high-achieving students and prides itself in using current educational practices. District 2 is characterized as a blue-collared community with a more diverse student population. These demographic differences may account for the fact that the teachers saw themselves as more efficacious in District 1. Because the TSES examines Instructional Strategies, Classroom Management, and Student Engagement, these teachers may have viewed themselves as more able to deal with all of these issues in the context of their schools.

We chose two different measures (TSES and TES) because they included different subscales that related to areas of differentiation. To differentiate within the classroom, the teacher has to engage in multitasking. Each group of students is doing something slightly different within the context of the same overall concept that is part of the content for each discipline. The teacher must level the work to facilitate maximum understanding for the students. Teachers who have a one-size-fits-all attitude, or who cannot see the big picture of why this is needed, often do not think they can accomplish this process. Our data revealed that grade level and discipline taught did not matter in how efficacious a teacher felt in implementing differentiation, but professional development did. So, those who had more professional development in differentiation had more efficacy beliefs that they could actually implement this process in the classroom. Our data revealed that both sense of efficacy beliefs and teacher efficacy were associated with differentiation.

In examining the subscales of the measures we used, we found that the Instructional Strategy subscale of the TSES was the best predictor of differentiation. The other subscales (i.e., Classroom Management and Student Engagement) were unrelated to differentiation when taking into account the variance explained by Instructional Strategy. This makes good sense when examining the questions asked in this subscale, such as the following:

- Item 1: To what extent can you use a variety of assessment strategies?
- Item 2: To what extent can you provide an alternate explanation or example when students are confused?
- Item 4: How well can you implement alternative strategies in your classroom?
- Item 6: How much can you do to adjust your lessons to the proper level for individual students?
- Item 7: To what extent can you gauge student comprehension of what you have taught?
- Item 8: How well can you provide appropriate challenges for very capable students?

These questions clearly target the issues of differentiation, focusing on an array of strategies, and if a teacher strongly agrees that he or she can do these strategies, then a high sense of efficacy beliefs would emerge. We found that to be true in our sample.

The Personal Efficacy subscale of the TES significantly predicted efficacy in the classroom for the teachers. The results indicated that only Personal Efficacy significantly predicted differentiation; Teaching Efficacy was unrelated to differentiation when taking into account the variance explained by Personal Efficacy. Similar to the Instructional Strategies subscale mentioned previously, the items on this scale seemed to be consistent with the issues of differentiation. For example, Item 18 reads, If one of my students could not do a class assignment, I would be able to accurately assess whether the assignment was at the correct level of difficulty. Another item relevant to the strategies of differentiation is Item 6, which states, When a student is having difficulty with an assignment, I am usually able to adjust it to his or her level. The adjustment of learning activities to meet the needs of students is precisely what differentiation targets. In these items, agreeing with them is the more efficacious response, and individual teachers who see themselves as capable of adjusting to student needs would score more highly in personal efficacy.

In sum, we asked the following research questions in this study:

Research Question 1: Do teachers who express higher teacher efficacy differentiate instruction more in their classrooms than teachers who feel less efficacious?

We hypothesized that greater teacher efficacy and sense of self-efficacy beliefs would be associated with greater levels of differentiating instruction in their classrooms.

Research Question 2: Does professional development in differentiation relate to teacher efficacy?

We hypothesized that greater professional development in differentiation would be associated with greater levels of teacher efficacy and sense of self-efficacy beliefs. Our study confirmed our beliefs that differentiation is associated with greater efficacy beliefs. In addition, we confirmed our belief that more professional development in differentiation is associated with greater levels of teacher efficacy and sense of efficacy beliefs.

Limitations

There are several limitations to our study. First, we only used two school districts. Although we had four schools for each district that represented the elementary, middle, and high school levels, we still only had two school districts and all of our respondents were Caucasian teachers. In addition, the data were self-report data, and we trust they were reported truthfully and adequately. Furthermore, what professional development training is most helpful was not examined. There are no data that actually indicate the precise formula for what works best in increasing teacher behaviors according to professional development. Finally, it would help to have a precise definition for differentiation on the measures used. Future studies are needed to extend what we know about differentiation of instruction.

Conclusion

Our results contribute to knowledge on differentiation in the classroom. When teachers are efficacious in their beliefs about their ability to teach students effectively, they are more likely to differentiate. We suggest that if schools believe in differentiation, they should offer practice in differentiation through workshops that allow teachers to write leveled or tiered lessons together. A necessary follow-up to the writing lessons stage is the time to observe each other actually implementing a differentiated task in the classroom. Feedback about the lesson observed is helpful in a teacher's development of efficacy to continue the practice. We believe that differentiation is a logical and practical way to meet students' learning needs in an inclusionary classroom, and these steps are helpful in enabling teachers to reach that goal.

Although differentiation is a complex process, in that students are doing different tasks based on a central concept, it relies on strong and skillful teachers to plan and implement different levels of the same concept at the same time. Our study indicated that teacher efficacy and professional development were important to teachers in the process of differentiating instruction.

Declaration of Conflicting Interests

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