

Instructional Strategies in Differentiated Instruction for Systemic Change

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Abstract

The major purpose of this study is to examine the relationship between training in differentiated instruction and the comfort level of teachers in helping to plan for systemic change for differentiated instruction to become a standard teaching practice. We also examine the relationship between knowledge of the various strategies of implementation of differentiated instruction and comfort level of teachers. A survey was used to collect data from 116 teachers of kindergarten through sixth grade from seven public schools on Long Island, New York.

Spearman's correlational statistics has shown that there is a positive relationship between whether teachers received any training in differentiated instruction and the teacher's comfort level. A survey of nine strategies were all shown to be significant, however, five were found to have an effect size 20% larger. Correlation data showed a significance in the following five strategies: providing steps to help address the many learning styles in the classroom, develop individualized plans for educating students, planning daily lessons that incorporate differentiated instruction techniques, differentiate instruction according to the student's previous mastery, and finally, developing a long-range curriculum plan for each student in the classroom. In conclusion, these strategies should be included when planning professional development for teachers in differentiation.

Purpose

Since the implementation of programs such as Race to the Top (United States Department of Education, 2009) and the Common Core State Standards (2009), there is a push for all students to reach college and career standards and yet the classroom remains academically and socially diverse. With these changes, a differentiated classroom is needed. The implementation of differentiation is not going to be enough at the individual level. There needs to be a systemic change within the school system in order to continue to close the achievement gap and allow all students to be successful. Cirasuolo (2019) described the need for systemic change by stating that a systemic change is needed to allow educators to personalize learning.

The purpose of this study was to analyze the importance of professional development in differentiated instruction, as well as identify critical strategies that are statistically shown to help plan for systemic change for differentiated instruction to become a standard teaching practice.

Theoretical Framework

A main goal in using differentiation in the classroom by teachers is to maximize the growth and individual success of all students. Differentiation can be defined as a teacher's reacting responsively to a learner's needs. With the implementation of No Child Left Behind, the use of differentiation by teachers has been effective in helping close the achievement gap by making sure all students are achieving academic proficiency (Beecher & Sweeny, 2008). Effective use of differentiation can help to increase student motivation and academic achievement (Konstantinou-Katzi, Tsolaki, Meletiyou-Mavrotheris, & Koutselini, 2013). Although, differentiation is helping to close the achievement gap, not enough teachers are using this important teaching practice. In a study done by Westberg and Daoust (2004), it was concluded that teachers are not effectively using differentiation. Furthermore, they suggested areas of differentiation that are most effective for a professional development for teachers.

There are various factors that have negatively influenced a teacher's use of differentiation in the classroom. Two of them include lack of training in the area and the comfort level of teachers in using differentiation. Most new teachers are not prepared to use differentiation in the classroom. Studies show that teachers who are new to differentiation often misunderstand the technique or they do not have the skills to use it effectively (Hertberg-Davis, 2009; West & West, 2016). This highlights the importance of teacher training in differentiation. In a study done by Beam (2009), it was concluded that a program or training in differentiation should be offered to novice special educators since teachers felt that this was lacking.

A teacher's comfort in using differentiation may also be influencing the use of this practice. Tomlinson and

Allan (2000) suggested that a teacher who is comfortable and skilled with the use of multiple instructional strategies is more likely to reach out effectively to varied students than a teacher who uses a single approach to teaching and learning. As teachers become more comfortable in using differentiation in the classroom, they are more likely to implement different forms of differentiation in their classes (Beam, 2009).

Implementation of differentiation is more effective when carried out throughout the entire building with the involvement of school leaders. Tomlinson (1999) mentioned that educational leaders will need to look for ways and methods to help cultivate a differentiated atmosphere. For systemic change to occur, leaders need to proactively support differentiating practices (VanTassel-Baska & Stambaugh, 2005). Cirusuolo (2019) described the need for systemic change by stating that educators are not using differentiation because the system constricts such use and that a change in the entire system will free educators to personalize learning.

Successful teacher professional development programs involve teachers engaged in active learning strategies (Etchberger & Shaw 1992). For this reason, this study was initiated to determine what strategies are statistically significant in increasing the comfort level of teachers, and therefore, encouraging these teachers to help plan for systemic change for differentiated instruction to become a standard teaching practice.

Methods

The survey and data, which was taken by Nicolino (2008), investigated the relationship between training in differentiated instruction and the comfort level of teachers in kindergarten through sixth grade on Long Island, New York. Seven public schools participated. Teachers were invited to complete the items on the survey and 116 teachers responded. The survey contained 10 items developed by Nicolino (2008) on differentiated instruction based on Hall (2002); Kieman Tomlinson (1997); Tomlinson. (1999); Tomlinson (2004); Tomlinson and McTighe (2006); VanSciver, (2005). These items investigated the knowledge and comfort levels of teachers with differentiated instruction using a Likert scale.

The survey investigated the following questions:

1. Is there a relationship between whether teachers have received any training in the use of differentiated instruction and the comfort level of these teachers in helping to plan for systemic change for differentiated instruction to become a standard teaching practice?
2. What is the relationship between knowledge level of the various strategies of implementation of differentiated instruction and comfort level of teachers?

For the statistical analysis, we conducted a Spearman's correlation to investigate the relationship between training in differentiated instruction and teacher comfort level in helping to plan for systemic change for differentiated instruction to become a standard teaching practice. In addition, an investigation of the relationship between knowledge level of the various strategies of implementation of differentiated instruction and comfort level of teachers was also conducted.

Results

Research Question 1

Is there a relationship between whether teachers received any training in the use of differentiated instruction and the comfort level of teachers in helping to plan for systemic change for differentiated instruction to become a standard teaching practice? Findings related to this research question are found in **Table 1**.

A Spearman's correlation analysis was also performed to determine the relationship between teacher training in differentiated instruction and the comfort level of teachers in helping to plan for systemic change for differentiated instruction to become a standard teaching practice. The Spearman's correlation analysis showed a moderately strong significant (Cohen, 1996) relationship, $r(110) = 0.262$, $p < 0.05$, between teacher training in differentiated instruction and the comfort level of teachers in helping to plan for systemic change (**Table 1**). It showed that training in differentiated instruction positively accounts for 6.86% of teacher's comfort level in helping to plan for systemic change if needed for differentiated instruction to become a standard teaching practice.

Table 1.			
Correlation Data: Relationship between training in differentiated instruction and the comfort level of teachers in helping to plan for systemic change for differentiated instruction to become a standard teaching practice. N = 110 ($p < .001$)			
		Comfort level – Help plan for systemic change if needed for differentiated instruction to become a standard teaching practice	r^2 (%)
Whether teachers received any training in the use of differentiated instruction	r	.262	6.86

Research Question 2

What is the relationship between knowledge level of the various strategies of implementation of differentiated instruction and the comfort level of teachers in helping plan for systemic change?

A Spearman's correlation between knowledge of the various strategies of implementation and the comfort level of teachers in helping plan for systemic change is presented in **Table 2**.

A Spearman's correlation analysis was performed to determine the relationship between teacher's knowledge of differentiated instruction and teacher's comfort level in helping to plan for systemic change if needed for differentiated instruction to become a standard teaching practice (**Table 2**). Nine survey questions were used to detail specific areas of teachers' knowledge of differentiated instruction. The results of the correlational analysis found that all nine strategies had a moderately strong positive statistically significance ($p < .001$). In general, the results suggest that if teachers are knowledgeable in

differentiation instructional strategies, they are more likely to feel comfortable planning for systemic change if needed for differentiated instruction to become a standard teaching practice.

Knowledge of the following five strategies were found to have the effect size larger than 20%, (moderate to strong) among the various strategies analyzed (See **Table 2**):

Item 1 ($r = .568$). Develop a long-range curriculum plan for each student in my classroom. This item accounts for 32.26% of an increase in teacher's comfort level in helping to plan for systemic change differentiated instruction to become a standard teaching practice.

Item 2 ($r = .499$). Plan my daily lessons to incorporate differentiated instruction techniques to meet the academic goals of my students. This item accounts for 24.9% of an increase in teacher's comfort level in helping to plan for systemic change differentiated instruction to become a standard teaching practice.

Table 2.			
Correlation Data: Relationship between knowledge of the strategies of differentiated instruction and teacher comfort level to help plan for systemic change if needed for differentiated instruction to become a standard teaching practice. N = 116 ($p < .001$)			
Knowledge level of the various strategies of implementation of differentiated instruction		Comfort level – Help plan for systemic change if needed for differentiated instruction to become a standard teaching practice.	r^2 (%)
1 - Knowledge level – Develop a long-range curriculum plan for each student in my classroom.	<i>r</i>	.568	32.26
2 - Knowledge level – Plan my daily lessons to incorporate differentiated instruction techniques to meet the academic goals of my students.	<i>r</i>	.499	24.90
3 - Knowledge level – Provide sequential, incremental steps to help address the many learning styles in my classroom.	<i>r</i>	.489	23.91
4 - Knowledge level – Differentiate my instruction according to my student's previous mastery.	<i>r</i>	.475	22.56
5 - Knowledge level – Develop individualized plans for educating my students based upon the learning styles in my classroom.	<i>r</i>	.463	21.44
6 - Knowledge level – Provide a learning environment so my students can work at their own pace.	<i>r</i>	.368	13.54
7 - Knowledge level – Provide different kinds of learning materials when the ones I have so not work or are not enough	<i>r</i>	.329	10.82
8 - Knowledge level – Use various learning strategies for my students to learn the prescribed curriculum	<i>r</i>	.321	10.30
9 - Knowledge level – Construct a positive learning atmosphere that addresses the individual learning styles of my students.	<i>r</i>	.292	8.53

Item 3 ($r = .489$). Provide sequential, incremental steps to help address the many learning styles in my classroom. This item accounts for 23.91% of an increase in teacher's comfort level in helping to plan for systemic change differentiated instruction to become a standard teaching practice.

Item 4 ($r = .475$). Differentiate my instruction according to my student's previous mastery. This item accounts for 22.56% of an increase in teacher's comfort level in helping to plan for systemic change differentiated instruction to become a standard teaching practice.

Item 5 ($r = .463$). Develop individualized plans for educating my students based upon the learning styles in my classroom. This item accounts for 21.44% of an increase in teacher's comfort level in helping to plan for systemic change differentiated instruction to become a standard teaching practice.

Conclusions

Our findings show that there is a significant relationship between teacher training in differentiated instruction and an increase in the comfort level of teachers in helping to plan for systemic change for differentiated instruction. To become a standard teaching practice within our schools teachers that have had training in the implementation of differentiated instruction which employs multiple learning strategies are likely to feel more at ease in employing these approaches within their own classrooms.

This study is in agreement with Beam who articulated that as teachers become more comfortable in using differentiation in the classroom, they are more likely to implement different forms of differentiation in their classes (Beam, 2009). This increase in comfort level will inherently have a positive impact on the likelihood that teachers will employ differentiated instructional practices in their classrooms with the intent to have a greater impact on a larger array of students.

This study highlights the necessity for training in differentiated instruction to be provided during preservice training and employed on a regular basis by school districts. These results concur with VanTassel-Baska and Stambaugh (2005) who agree that administrators should look carefully into the incorporation of training in differentiated instruction for all teachers. Administrators who wish to actively support widespread changes through the development and implementation of curriculum that includes differentiated instruction may increase in their teachers' ability to reach more students and increase student motivation and academic achievement (Konstantinou-Katzi, Tsolaki, Meletiou-Mavrotheris, & Koutselini, 2013).

This study identified critical strategies in differentiated instruction that have been statistically proven to

be associated with an increase in teachers' comfort level to a degree that fosters the facilitation of comprehensive change in the curriculum and the incorporation of differentiated instruction as a standard teaching practice.

It is essential that any training program implementation that wishes to facilitate systematic changes in the curriculum should include these strategies which have been found to be effective in helping to make differentiated instruction standard practice. Tomlinson and Allan (2000) suggested that teachers who are comfortable and skilled with the use of multiple instructional strategies are more likely to reach out effectively to varied students than teachers who use a single approach to teaching and learning (Tomlinson & Allan, 2000). All nine strategies in the study were found to be associated with the comfort level of teachers and therefore would encourage teachers to participate in the implementation of systematic changes within the curriculum. However, knowledge of the five following strategies were found to have the largest effect on increasing the comfort level of teachers. Knowledge of the development of a long-range curriculum plan for each student in the classroom accounted for 32% of the improvement of comfort level among teachers, implicating that it is an essential component that should be incorporated into any training program on differentiated instruction provided to teachers. Other critical strategies included knowledge of how to plan daily lessons to incorporate differentiated instruction techniques to meet the academic goals of students (25%), providing sequential, incremental steps to help address the many learning styles in the classroom (24%), differentiating instruction according to student's previous mastery (23%), and developing individualized plans for educating each student based upon the learning styles in the classroom (21%). These strategies were all found to account for large percentages of an increase in the comfort level of teachers to implement systemic change.

Although the following had less of an impact, they were still found to be significant and should, therefore, also be incorporated into any training programs in differentiated instruction. Knowledge in how to provide a learning environment so that students can work at their own pace, providing different kinds of learning materials, the use of various learning strategies for my students to learn the prescribed curriculum and the construction of a positive learning atmosphere that addresses the individual learning styles of each student were also found to improve comfort levels.

In conclusion, this study showed the importance of professional development in differentiated instruction. It also identified nine critical strategies that are statistically significant in helping to plan for systemic change for differentiated instruction to become a standard teaching practice.

It is essential that when developing training for teachers in differentiated instruction that these strategies

be incorporated in order to encourage the facilitation of the use of differentiated instruction as a standard teaching practice throughout the curriculum. The implementation of districtwide training in differentiated instruction that includes these effective strategies will increase the comfort level of teachers and thus help to increase their use of differentiated instruction. This will encourage teachers to cultivate the kind of systemic change suggested by Cirusuolo (2019) that expands rather than constricts the use of differentiated instruction districtwide and supports educators in providing personalized learning to all students.

References

Beam, A. P. (2009). Standards-based differentiation: Identifying the concept of multiple intelligence for use with students with disabilities. *TEACHING Exceptional Children Plus*, 5(4), 1-13.

Beecher, M., & Sweeny, S. M. (2008). Closing the achievement gap with curriculum enrichment and differentiation: One school's story. *Journal of Advanced Academics*, 19, 502-530.

Cirusuolo, J. J. (2019). A call for systemic change for personalized learning. *Phi Delta Kappan*, 100(8), 80.

Etchberger, M. L., & Shaw, K. L. (1992). Teacher change as a progression of transitional images: A chronology of a developing constructivist teacher. *School Science and Mathematics*, 92(8), 411-417. doi: 10.1111/j.1949-8594.1992.tb15620

Hall, T. (2002). *Differentiated instruction*. Wakefield, MA: National Center on Accessing the General Curriculum.

Hertberg-Davis, H. (2009). Myth 7: Differentiation in the regular classroom is equivalent to gifted programs and is sufficient: Classroom teachers gave the time, the skill, and the will to differentiate adequately. *Gifted Child Quarterly*, 53(4), 251-253. doi: 10.1177/0016986209346927

Kieman, L. J., & Tomlinson, C. A. (1997). *Why differentiate instruction?* Alexandria, VA: Association for Supervision and Curriculum Development.

Konstantinou-Katzi, P., Tsolaki, E., Meletiou-Mavrotheris, M., & Koutselini, M. (2013). Differentiation of teaching and learning mathematics: An action research study in tertiary education. *International Journal of Mathematical Education in Science and Technology*, 44(3), 332-349. doi: 10.1080/0020739X.2012.714491

Nicolino, P. A. (2007). Teacher perceptions of learning styles assessment, differentiated instruction, instructional technology and their willingness to adopt individualized instructional technology (Doctoral dissertation). Retrieved from Learning tech lib. (AAT 3272895)

Tomlinson, C. A., & McTighe, J. (2006). *Integrating differentiating instruction and understanding by design: Connecting content and kids*. Alexandria, VA: Association for Supervision and Curriculum Development.

Tomlinson, C. A. (1999). Leadership for differentiated classrooms. *School Administrator*, 56(9), 6-11.

Tomlinson, C. A. (2004). Sharing responsibility for differentiating instruction. *Roepers Review*, 26(4), 188-189. doi: 10.1080/02783190409554268

Tomlinson, C. A., & Allan, S. D. (2000). *Leadership for differentiating schools and classrooms*. Alexandria, VA: Association for Supervision and Curriculum Development.

VanSciver, J. H. (2005). Motherhood, apple pie, and differentiated instruction. *Phi Delta Kappan*, 86(7), 534.

VanTassel-Baska, J., & Stambaugh, T. (2005). Challenges and possibilities for serving gifted learners in the regular classroom. *Theory into Practice*, 44(3), 211-217.

West, J. A., and West, C. K., (2016) Integrating Differentiation in English Education Methods Courses: Learning from the Perceptions and Experiences of Teacher Candidates. *The Teacher Educator*, 51(2), 115-135.

Westberg, K., & Daoust, M. E. (2004). The results of the replication of the classroom practices survey replication in two states. Storrs: National Research Center on the Gifted and Talented, University of Connecticut.



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