Inclusion: Problems and Potential Solutions in Mathematics Instruction

by

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STATEMENT BY THE AUTHOR

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INCLUSION: PROBLEMS AND POTENTIAL SOLUTIONS IN MATHEMATICS INSTRUCTION

Lynnea Marie Salscheider

The purpose of this study was (1) to identify and describe the attitudes and beliefs of general and special education teachers about inclusion and (2) to identify significant recommendations based on teacher attitudes for improving the teaching of mathematics to special needs students using inclusion.

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Chapter 1: Introduction

The author of this paper teaches eighth grade mathematics in a top-rated middle school in the Upstate of South Carolina, located in one of the state's best rated school districts (SC Annual School Report Card Summary, 2011). The author is originally from Bemidji, Minnesota, and attended the *Minnesota Education Job Fair* in Minneapolis, Minnesota, in the spring of 2007, which lead to the opportunity of employment in South Carolina. Since one of the classes she teaches is classified as "inclusion mathematics," the author became interested in the attitudes of other regular education teachers about inclusion, methods and strategies for implementing inclusion, and national trends for improving the teaching of mathematics using inclusion.

Inclusion in mathematics classes has become more common as special education students are transitioned from classes taught by special education teachers to inclusion in regular education classrooms (Cook, Cameron, & Tankersley, 2007). This transition came about because of the 2004 revision of the *Individuals with Disabilities Education Act* (IDEA), which clearly states that "[t]o the maximum extent appropriate, children with disabilities,… are educated with students who are not disabled…" (IDEA, 2004). Such inclusion in the regular classroom provides the "least restrictive environment" for many students with learning disabilities (IDEA, 2004). According to the 2001 requirements set forth in *No Child Left Behind* (NCLB) and the recommendations of the National Council of Teachers of Mathematics (NCTM) in *Principles and Standards for School Mathematics* (2000), special education students are expected to successfully complete the same general mathematics curricula as regular education students and to pass state mathematics achievement tests. Regular education

mathematics teachers, a majority with little or no preparation or training in special education (Stauble, 2009), are often required to teach special education students through inclusion in regular classroom settings.

DeSimone and Parmar (2006) suggest that some mathematics teachers possess negative attitudes about inclusion. This has generated several significant recommendations (Bigham, 2010). These recommendations have important implications for addressing pre-service and in-service programs, as well as training for improving teachers' attitudes and readiness for teaching special education students.

Inclusion is not universally defined and has generally been left to the interpretation of school administrators and teachers (Bondurant, 2004). One definition according to Truelove, Holaway-Johnson, Leslie, and Smith, (2007) is that "All students belong with their nondisabled, chronological-age peers. Inclusion is really a philosophy, not a placement for students" (p. 346). Recently, a definition with seven key components has been compiled and includes the following: 1) placing special education students in general education classes, 2) instructing these students together, 3) supporting and modifying special education students within the general education classroom, 4) belonging for all students, 5) collaborating among special and regular education teachers, 6) incorporating school/community trust, and, 7) interlocking of special and regular education (Ryndak, Jackson, & Billingsley, 2000).

Statement of the Problem

Many educators have been required to teach special education students with little or no training. In research conducted by DeSimone and Parmar (2006), all seven teachers who participated in the study "believed that their undergraduate and graduate schools did not

effectively prepare them to teach mathematics inclusion" (p. 344). This lack of preparation, combined with teacher resistance to participate in inclusion, has a detrimental effect on the learning of special needs students.

The purpose of this study was (1) to identify and describe the attitudes and beliefs of general and special education teachers about inclusion and (2) to identify significant recommendations based on teacher attitudes for improving the teaching of mathematics to special needs students using inclusion.

Research Questions

This study will investigate the following questions:

1. What are regular and special education teachers' attitudes about inclusion?
2. What recommendations cited in research will help improve mathematics teacher's attitudes about inclusion?

Significance of the Research Problem and Study

Research studies suggest that some middle school mathematics teachers possess negative attitudes about inclusion for a number of reasons. Few studies exist examining longitudinal data from standardized or state mandated tests as a measure to determine the effectiveness of inclusion. Both of these issues are interrelated and have implications for addressing pre-service and in-service programs, as well as training for improving teacher attitudes and readiness for teaching special education students.

Limitations and Assumptions

Given the limited scope of this paper, it will not: 1) replicate questionnaires or surveys about teachers' attitudes and beliefs about inclusion, as many studies over the last two decades clearly give evidence that regular education teachers hold generally negative

attitudes and beliefs about inclusion (Bingham, 2010; DeSimone & Parmar, 2006 Ellins & Porter, 2005); 2) present detailed analysis or evaluation of the recommendations and suggestions for using inclusion as a teaching strategy in regular education mathematics classes; and, 3) provide specific recommendations other than what already exists in professional literature.

Definition of Terms

IDEA: *The Individuals with Disabilities Education Act* (IDEA) is a law originally passed in 1975, ensuring services to children with disabilities throughout the nation. The law been revised my times, most recently in 2004 (IDEA, 2004).

Inclusion: Inclusion is the incorporation of all students, including those with severe disabilities, into regular education classrooms.

Learning Disability: A disorder in one or more of the basic psychological processes involved in understanding or in using language, spoken or written, which disorder may manifest itself in the imperfect ability to listen, think, speak, read, write, spell, or do mathematical calculations (IDEA, 2004).

NCLB: NCLB is the acronym for *No Child Left Behind*, which is the federal legislation passed in 2001 in an effort to ensure that all students receive a quality education.

Pull-out: In special education, students with learning disabilities were formerly removed from regular education core classes and taught by special education teachers in a small classroom setting, generally referred to as a pull-out program.

Chapter 2: Review of Literature

Brief History of Special Education

Historically, the public education system has not provided equal or appropriate opportunities for children with disabilities (Rogers, D., Rogers, E., & Yell, 1998). Yet, as far back as the 1880s this was a concern, as "compulsory school attendance for the handicapped or disadvantaged children were the leading subjects of theoretical discussion" (Winzer, 1993, pp. 366-367). Many children with disabilities were not permitted to attend regular public schools and were institutionalized, while others were permitted to attend special classes if available. According to Winzer (1993), even though some children with disabilities were provided an education, "by the 1930's many placements in the special classes thus became as restrictive and custodial as placements in the earlier institutions had been" (p. 370). Winzer also stated that, "[d]isabled students, while not encountering the isolation of institutional settings, found that segregated classes led to another kind of isolation – public school classes in basements, down dark hallways, and in former closets" (p. 370). Unfortunately, a significant negative stigma was associated with these special classes, which lead to students with disabilities being rejected, avoided, misunderstood, and mocked. This negative stigma was further described by Will (1986):

> When students with learning problems are segregated from their non-handicapped schoolmates and labels attached to them, stigmatization can result. The effects of stigmatization may serve to further isolate these students from their peers and increases negative attitudes about school and learning. The consequences of stigmatization and poor self-esteem have been fully described in

> the literature: low expectations of success, failure to persist on tasks, the belief the failures are caused by personal inadequacies, and a continued failure to learn effectively. In addition, negative staff attitudes, as a result of the stigma of special class placement, can create an atmosphere which further hampers the student's learning (p. 8).

States in the 1950s and 1960s were still passing laws that did not require them to educate students who were "feeble minded" or "mentally deficient," such as in the case of *The Department of Public Welfare v. Haas* (1958) heard by the Illinois Supreme Court. Tremendous progress has been made in the last fifty years to provide equal opportunities, due to the "efforts of parents and advocacy groups in the courts and legislatures" (Yell, Rogers & Rogers, 1998, p. 219).

Most states, however, passed laws by the 1970s that required educating children with disabilities. Yet, according to the U.S. Office of Special Education Programs (2000), "in 1970, U.S. schools educated only one in five children with disabilities" (p. 9). Two important difficulties were: first, education laws differed from state to state and, second, funding shortages were abundant (Yell, Rogers & Rogers, 1998). These unequal education opportunities, which varied from state to state, led to the development of federal legislation passed by Congress in 1975 and signed into law by President Ford, called the *Education for All Handicapped Children Act* (EAHCA). This act ensured that all children in every state with mental or physical disabilities had equal access to a fair education, an individualized lesson plan, one free meal at school, and also allowed for parents to actively participate in their child's education plans (*Special Education News*, 2013). In 1990, EAHCA was revised and changed to IDEA. The main changes in IDEA

involved "the scope of early intervention, services for children with disabilities, and special education" (*Special Education News*, 2013, p. 1). The most recent revisions in IDEA were in 2004, in which regulatory language was brought into compliance with new amendments and detailed "the intentions of the amendments to be that each child with a disability will be given a Free Appropriate Public Education that will give them the foundation they need to become employed and live an independent life" (*Special Education News*, 2013, p. 1).

What is Inclusion?

With the recent revisions to IDEA, there has been an increased emphasis on serving "students with disabilities in the general education setting whenever possible" (p. 258) (Murawski & Swanson, 2001, p. 258). One way to structure these services for students is "through the use of co-teaching between general and special education teachers" (p. 258), which is one way to describe inclusion (Murawski & Swanson, 2001). As cited in Chapter 1, inclusion is a difficult term to define and has generally been left open to the interpretation of individual schools and teachers (Bondurant, 2004; "What is Inclusion?", 2002). Inclusion may appear different from classroom to classroom, but the basic premise is the same: inclusion is the incorporation of all students, including those with severe disabilities, into regular education classrooms (Ryndak, Jackson, & Billingsley, 2000). Depending on the classroom situation, there may be a small number of students with disabilities "included" in the regular classroom, or students with disabilities may make up a majority of the regular education classroom and be "included" with other students who have not been identified as learning disabled but may struggle to some extent in the regular classroom.

What are teachers' attitudes about inclusion?

The literature reviewed for this paper shows that regular education teachers have varying attitudes about teaching inclusion and about its effectiveness (Bigham, 2010; DeSimone & Parmar, 2006; Olson, 2003; Stauble, 2009; Bondurant, 2004; Elhoweris & Alsheikh, 2006; Cook, Cameron, & Tankersley, 2007). Bigham's research (2010) explored general and special education teachers' attitudes about inclusion and about special needs students. Her study found that teachers hold a wide range of views regarding inclusion, which is consistent with other studies. Regular education teachers generally held a more negative view about inclusion than special education teachers. One interesting aspect of Bigham's research is that when teachers responded to the questionnaire, the teachers who held negative attitudes about inclusion generally did not use "person-first" language. For example, instead of referring to included students as "students with disabilities" some teachers referred to them as "disabled students." This small difference in wording can be viewed by some as dehumanizing and as putting the disability ahead of the student. Such wording typically followed a teacher's negative attitude about teaching inclusion. One teacher responded, "I taught 6 CD students…five of the six were behavior problems, which I did not need to have in my room" (p. 13)…"On the other hand, regular education teachers tended to blame [students with disabilities] for a lot of the disruptive behaviors in their classroom" (p. 15), and these behavior issues contributed to negative feelings toward inclusion (Bigham, 2010).

Elhoweris and Alsheikh (2006) surveyed ten in-service teachers enrolled in graduate education classes. The authors found generally that teachers held positive attitudes toward inclusion; however, special education teachers were more supportive than general

education teachers about inclusion. The authors' analyses of data resulted in teachers' attitudes being characterized by three factors governing inclusion: legalism, environmentalism, and conservatism. The authors describe "legalism" as being concerned with fairness and also with the legal aspect of inclusion. Inclusion was beneficial for all and could be viewed as a civil rights matter. The authors describe "environmentalism" as the belief that a regular education classroom can meet the needs of all students, and special education students can truly belong as part of the regular education classroom without being alienated. The authors describe "conservatism" as the belief that inclusion may have a negative impact on students without disabilities and that inclusion is not an appropriate way to meet the needs of special education students. In this study, one conclusion drawn by the authors is that "all special education teachers identified with the *Legalism* and *Environmentalism* viewpoint, which implies that they are highly supportive of inclusion" (p. 117). In contrast, "more general education teachers identified with the *Conservatism* point of view" which would suggest that "general education teachers are not highly supportive of inclusion, and have strong reservations toward including students with severe disabilities" (Elhoweris & Alsheikh, 2006, pp. 116-117).

In a study by Bondurant (2004), thirty-eight middle school teachers, who taught both regular and special education students, completed a survey regarding their attitudes about including students with special needs in the regular education classroom. When teachers were queried about their support for inclusion, seventy-one percent either agreed or strongly agreed with having inclusion at their school. Further, seventy-six percent of participants believed inclusion was beneficial to students with special needs. Even though

seventy-one percent, or a majority of teachers, supported inclusion, this study also found most teachers "felt that they would have a difficult time implementing an inclusion/mainstreaming program" (p. 34).

Stauble's dissertation (2009) examined general education teachers' attitudes about the inclusion of special education students in regular classrooms. An analysis of data found that there was a negative correlation between teachers' attitudes and the grade levels they taught (p. 66). Mathematics and science teachers' attitudes were significantly lower toward inclusion than teachers who taught language arts and social studies. "As has been suggested in the literature, the lower attitudes held by science and mathematics teachers may be due to more challenging content and be affected by prior learning which may be missing for many students with special needs" (Stauble, 2009, p. 67). This study also found that about half of the teachers surveyed "strongly agreed or moderately agreed with the statement that inclusion is a desirable practice" (p. 69); therefore, the other half of the teachers surveyed felt either neutral or negative about inclusion.

In their study, Ellins and Porter (2005) administered a Likert-scale survey about inclusion to British secondary teachers. Positive and negative comments were recorded for each discipline, from English to physical education to art. They found that in their particular school "there is a difference in attitudes towards special educational needs between teachers from different subject departments" (p. 194). Overall, teachers in core subjects, such as English, mathematics and science, had less positive attitudes than teachers in other subjects. These researchers also found that special education students made the least progress in science, the discipline in which the teachers' attitudes were the least positive (Ellins & Porter, 2005, p. 193).

Santoli, Sachs, Romey and McClurg (2008) found that despite the fact that almost all fifty-six teachers interviewed (98.2%) were willing to make necessary accommodations for students with disabilities, nearly seventy-seven percent of teachers felt that students with disabilities could not be educated in the regular classroom. Eighty percent of teachers reported that they believed that special education students lacked the necessary skills to successfully complete regular education curricula. Teachers were willing to make necessary accommodations for students with special needs; however, teachers did not believe that special education students had the capability to be successful in their classrooms:

> This is an area of great concern, as the willingness is there, but the belief that special education students can be successfully accommodated in a regular classroom setting is not. It would seem that, in the absence of positive beliefs about student achievement, teachers are going through empty motions in making modifications for special education students (p. 6).

In response to their article "Parent Perception of the Impacts of Inclusion on the Nondisabled Child", Peck, Staub, Gallucci, and Schwartz, (2004) received 389 replies from parents on a survey that explored what parents thought about inclusion. Parents of nondisabled students were supportive overall or neutral about their child being part of a regular education class which included students with disabilities as regards the "classroom climate, responsiveness of the curriculum to individual needs, and the availability of specialists supports for all children in the class" (p. 138). Parents of nondisabled children also reported that after their child experienced being a member of an inclusion class, nearly two-thirds of students showed an increase in the "appreciation

of the needs of other children" (p. 138) and also an increase in "their child's acceptance of 'differences among people in terms of behavior and appearance'" (p. 138). There were some parents, however, who "indicated they believed inclusion had a negative impact on these dimensions of the classroom" (p. 138). Sharpe, York, and Knight, (1994) conducted a study with an inclusion group and a comparison group to see if inclusion had a negative impact on nondisabled students. The authors found that "the results failed to show statistically significant evidence of performance differences among the two groups in the basic skills areas of reading, language arts, and mathematics" (p. 285).

In 2011, Berry, Berst, Jund, Overton, Rondina, and Tate received responses from forty-five K-12 teachers about their attitudes toward inclusion. The survey found "that the majority of the teachers had positive attitudes toward inclusion" (p. 17). The authors assert that even though teachers have a "general positive attitude toward inclusionary programs, teachers feel that the behaviors of some students with disabilities take away from instructional time and they do not have the time to implement inclusion effectively" (p. 17).

Olson (2003) claims in her review of research that she found "both positive and negative teacher attitudes toward inclusion of students with disabilities are typically found" (p. 2). Olson surveyed special and general education middle school teachers. Of the sixty-five teachers provided with a survey, twenty-two teachers responded. The findings were that "[o]verall, the special education and general education teachers in this study generally have positive attitudes towards inclusion" (p. 58), while the general education teachers had slightly more positive attitudes.

In their article "Inclusive Teachers' Attitudinal Ratings of Their Students with Disabilities", Cook, Cameron, and Tankersley (2007) researched attitudes developing a new attitudinal rating scale which incorporated the following four prompts:

- I would like to keep this student for another year for the sheer joy of it.
- I would like to devote all my attention to this student because he/she concerns me.
- I would not be prepared to talk about this student if his/her parents dropped by for a conference.
- If my class was to be reduced, I would be relieved to have this student removed.

Teachers were to respond "on a 4-point Likert-type scale (1 = *not at all true*, 4 = *extremely true*)" for all their students (p. 233). This new rating scale was based on Silberman's (1969) examination of teachers' descriptions of their students, and "identified four attitudes held by educators toward their students: attachment, concern, indifference, and rejection" (p. 230). The results of the Cook et al. study found that "included students with disabilities were rated significantly higher than were their nondisabled classmates in concern, indifference, and rejection, suggesting both positive and negative implications" (p. 237). For instance, students with disabilities seem to be given more teacher support and concern than their regular education classmates. Yet, the authors claim that whether the increase in teacher concern leads to students with disabilities making academic gains is not known. "Alternatively, findings regarding teachers' rejection ratings portend negative teacher-student interactions for a disproportionate number of included students" (p. 237).

What are teachers' attitudes about inclusion in the mathematics classroom?

DeSimone and Parmar conducted research in 2006 examining mathematics teachers' beliefs and classroom instruction using inclusion. Three of the seven teachers interviewed reported that the inclusion classes were effective and had positive attitudes toward teaching inclusion. One teacher said inclusion was "working very well" (p. 341), and another stated her school was "doing wonders as far as inclusion…children come away with learning skills that they thought they never had in math" (p. 341). In contrast, three teachers doubted the academic effectiveness of inclusion and had negative attitudes, while one teacher was undecided. One teacher who held a negative attitude about inclusion said the following:

> …the math that we're doing is over the heads of many of them…many of them cannot do it without the help of a teacher next to them…is it fair to put a kid, like some of these who can't even, like focus on a problem, much less read a word problem and do it on his own…I can tell you, right now [in September], who's going to fail…it's the kids who are learning disabled (DeSimone & Parmar, 2006, p. 341).

Another teacher, who held a negative attitude about inclusion, was observed actively ignoring students with learning disabilities struggling with a concept and having questions; yet she told the class they simply had to "move on" (DeSimone & Parmar, 2006, p. 342).

In the article, "Collaborative Efforts by Mathematics and Special Education Teachers for the Inclusive Mathematics Class", Lee and Herner-Patnode (2009) investigated twenty-four mathematics and special education teachers, who were interviewed and

responded to a Likert-scale questionnaire. Both mathematics and special education teachers viewed inclusion as successful if certain strategies were used; however, the teachers differed on their views of the benefits and challenges of inclusion. Half of the special education teachers felt inclusion was unsuccessful, and the other half were unsure of inclusion effectiveness. Mathematics teachers were also divided about the effectiveness of inclusion, with teachers responding as "not sure", "need to include", and "no success". A special education teacher stated that inclusion was not successful at her school because it hardly ever happens. She stated:

> Now that special ed kids, IEP kids are to pass the OAT, the Ohio Achievement Test, oh my goodness, the regular teachers are getting really interested in seeing that the special ed kids are successful. So there's more openness and more nervousness from them. The only thing is I'm starting to feel like there is a lot of finger pointing blaming the special ed teacher, me, for the students' lack of abilities and skills and when I receive a student he/she may be behind or deficit 2-3 years already (p. 1425).

In contrast, a regular education mathematics teacher had a very different attitude toward inclusion. She said in her interview:

> I do [think inclusion works]. When I first started teaching mathematics I had a pull out class and they didn't have any examples as to what, they didn't have any higher level thinkers in there. So every time you would come up with a question they wouldn't understand. You had no peer interaction, no discussion, nothing to go from. So having them in a regular classroom helps them tremendously because they have that discussion to go off of and basically I don't want to say

> peer tutoring, but peer examples as to how things are being solved other than just the teachers (p. 1426).

In the article, "Attitudes of Mathematics Teachers Towards the Inclusion of Students with Learning Disabilities and Special Needs in Mainstream Classrooms" (Patkin & Timor, 2010), thirty-six elementary teachers responded to a twelve question survey. This study showed teachers held:

> …positive attitudes towards the three examined aspects: keeping these students in mainstream classes, the need to adapt the mathematics curriculum to these students and the teachers' perception of themselves as responsible for the academic inclusion of special needs students in their classes (p. 16-17).

What causes negative attitudes about inclusion, and how can this be reversed?

As stated earlier in this chapter, various attitudes exist about inclusion. The research consistently shows that the main contributing factor to the negative attitude about inclusion is primarily a lack of training. According to Bigham (2010), "teachers who do not have any specialized training in including students with special needs tend to have more negative attitudes towards those students and including them in the general education inclusive classroom" (p. 16). Bigham recommends professional development to help improve these negative attitudes.

Elhoweris and Alsheikh (2006) state that the "attitudes that teachers hold toward inclusion of students with disabilities in the general education classroom are critical for the success of inclusion" (p. 117). The authors assert "pre-service years are a critical period for the modification of teachers' attitudes" (p. 117), and they further call for colleges and universities to provide training in this area.

While Bondurant (2004) found that a majority of teachers surveyed held positive attitudes about the idea of inclusion, most of these teachers felt implementing inclusion would be difficult due to lack of time. Bondurant did not make any specific recommendations for improving teacher attitudes, but stated that "careful thinking and planning" are necessary for inclusion to work (p. 36).

Stauble (2009) claims that "teacher attitudes toward inclusion shape their expectations for students, influence the instructional strategies used and ultimately student achievement" (p. 6); therefore, teacher attitudes are extremely important to consider. She states that the negative relationship between grade levels taught and teacher attitude can be attributed to pre-service training. Middle and high school teachers have a greater focus on content knowledge and not necessarily on different instructional methods for diverse learners, as is generally emphasized for elementary teachers. Stauble recommends "collaboration between the general education university faculty and faculty in special education. This model would allow pre-service teachers to learn and practice alternate instructional strategies in the context of each content area" (2009, p. 73). She suggests that instructional strategies used by special education teachers need to be integrated in the inclusion classroom.

One reason given by Ellins and Porter (2005) for negative attitudes of teachers, especially teachers of core subjects, is that "[s]tudents have to take them [English, mathematics and science] and they are tested at the end…the results of these tests are published and form part of the league tables by which schools are judged" (p. 193). This brings increased pressure on core subject teachers, and these teachers worry that "students with special educational needs may have a detrimental effect upon examination

results due to their difficulties" (p. 193). On the other hand, subjects that aren't required to have mandated testing had the most positive responses, perhaps because these teachers did not face the same pressure as the core subject teachers. The authors state that in the school they researched, "work needs to be done to improve attitudes, particularly in the science department and among teachers in the other core subjects" (p. 194). More support from administration is called for and additional training "targeting both whole-school and subject specific requirements" (p. 195). Further research is necessary to see if other schools also have subject area differences in attitudes. The authors conclude that "While attitudes to special educational needs remain only weakly positive, progress towards inclusion will be limited" (p. 195).

Santoli et al. (2008) mentions that even though teachers "were willing to make adaptations for students with disabilities…[they] did not believe that most students with disabilities had the skills to master regular classroom course content" (p. 6). This is a huge problem because there may be a "positive relationship between positive teacher expectations and student success" (p. 6). The authors establish several important factors for inclusion to be successful: administrative support, collaboration from general and special education teachers, and more time to implement inclusion practices.

Peck et al. (2004) assert that teachers should be provided training in "classroom disruptions and challenging behavior" (p. 141), especially for students with disabilities. Parents of nondisabled students had listed behavior problems as one of their concerns about inclusion. In addition, numerous comments by parents suggested that teachers need to be prepared to:

> Understand the ways in which social and academic aspects of life in classrooms are continually intertwined may help teachers capitalize on those connections and may show parents how outcomes such as increased 'acceptance of differences in behavior and appearance' or 'increased emotional warmth of the classroom' may actually be contributing to their child's sense of belonging, safety, and well being in the classroom (pp. 141-142).

Berry et al. (2011) claim that one reason negative attitudes exist is because "teachers feel that the behaviors of some students with disabilities take away from instruction time and they do not have the time to implement inclusion effectively" (p. 17). This research study was the only one in which the author found the claim that most of the respondents felt they had the appropriate training to teach inclusion. Unfortunately, the researchers did not provide a list of the questions asked on the survey or the responses to these questions, so further investigation is not possible. The authors do, however, go on to suggest "all teachers feel that they would need proper pre-service and in-service training in order to run a successful inclusive classroom" (p. 18).

Olson (2003) presents the negative attitudes which could come from teachers' beliefs that they lack the time to implement inclusion. Olson states:

> Teachers may already feel they don't have enough prep time to prepare for their daily lessons, so when the idea of having students with disabilities in their classrooms arises, they may feel overwhelmed that they simply will not be able to accommodate the individual needs of students (p. 3).

Further training and in-service opportunities are recommended for the success of an inclusion program.

Cook et al. (2007) assert that teachers' negative attitudes could be influenced because "given finite instructional resources (e.g. time, expertise, support) and significant variance in student learning characteristics, it is not possible for teachers to concurrently provide optimal instruction to all students" (p. 231). The term the authors use to refer to these attitudes is "instructional tolerance." The authors state:

> As a matter of course, some students will consistently fall outside the range of a teacher's instructional tolerance. Considering the nature and educational impact of disabilities, it is logical to assume that included students with disabilities are often those who fall at the cusps or beyond the boundaries of a teacher's instructional tolerance – which likely influences teachers' attitudes toward them (p. 231).

Improved teacher preparation, training, and support are recommended, especially in the area of managing poor behavior.

DeSimone and Parmar (2006) state that pre-service and in-service practices need to effectively prepare teachers to teach inclusion: all teachers claimed that they were entirely unprepared to teach mathematics to special education students. Some of the teachers had enrolled in a special education class in college, but the course did not specifically address strategies for teaching mathematics. The authors formulated three conclusions from the data: 1) College and university undergraduate programs need to provide opportunities for students to observe inclusion classrooms, as well as to require classes that specifically address strategies for teaching special education students mathematics; 2) Schools need to provide training opportunities for current inclusion teachers and allow for additional planning time for teachers to develop adaptations for the

special education students; and, 3) Inclusion teachers need more training on how to teach collaboratively with special education teachers, as well as training for teacher aides that work in the inclusion classroom (p. 346).

Lee and Herner-Patnode (2009) found in their study that "the factors that influence teacher attitudes toward inclusion are many and sometimes depend on which position they have, mathematics teacher or special education teacher" (p. 1427). The study also found that special education teachers may feel that the mathematics teacher only cares about the performance of the students with learning disabilities because of mandated testing. Special education teachers may also feel that the success of included students on state testing is exclusively their responsibility. Mathematics teachers may feel that if included students are not making satisfactory gains then inclusion is not successful. The authors recommend a need for training, but also for improved communication, more common planning times, and collaboration between special education and mathematics teachers.

Chapter 3: Interpretation

From the literature review, a number of conclusions can be drawn.

- Tremendous progress has been made to appropriately education students with learning disabilities (EACHA, 1975; NCLB, 2001; IDEA, 2004).
- Important laws were passed to ensure progress for all children with disabilities (EACHA, 1975; NCLB, 2001; IDEA, 2004).
- Inclusion has increasingly become one major strategy used to provide the least restrictive environment for students with disabilities and to give equal access to the general education curriculum (Murawski & Swanson, 2001).
- Inclusion is incorporated in different ways and at different levels, and it often looks different even from school to school (Bondurant, 2004; "What is Inclusion?", 2002).

The author's school has been impacted by the laws, regulations, and requirements which necessitate compliance with NCLB (2001), and the most recent revision of IDEA (2004). Since inclusion looks different from school to school and undergraduate training for teaching inclusion, nonexistent in her teacher preparation courses, the author has had to come up with her own strategies to teach special education students. This was an especially difficult task, but has gotten easier with the training she had at Bemidji State University.

- Teachers have a wide variety of attitudes toward including students with learning disabilities in the general education setting (Bigham, 2010; Ellins & Porter, 2005).

- Some teachers believe inclusion is working and is an important part of servicing special education students, while other teachers do not believe inclusion is working and they would rather not have it at their particular school (DeSimone & Parmar, 2006).
- Special education teachers sometimes feel the responsibility for the success of special education students is exclusively theirs, even when using inclusion and co-teaching as a teaching strategy (Lee & Herner-Patnode, 2009).

The teachers at the author's school hold a variety of positive and negative attitudes about inclusion and its effectiveness as a teaching strategy. Yet overall, teachers desire to help students learn regardless of their disabilities. The author intends to ensure that her cooperating special education teacher does not feel sole responsibility for the success of included students. Co-teaching is a partnership and takes collaboration from both the regular and special education perspectives.

- Teachers in the core subject areas tend to have more negative attitudes toward inclusion than teachers in other areas (Ellins & Porter, 2005).
- Core subject teachers tend to have more negative attitudes because of the pressure of mandated testing (Ellins & Porter, 2005).
- High school teachers tend to have more negative attitudes than lower grade level teachers (Ellins & Porter, 2005).

The author's school has inclusion in sixth, seventh, and eighth grade mathematics and English classes. Since these classes are core subject areas and core teachers tend to have more negative attitudes toward inclusion, these teachers may need more training and support for inclusion to be successful. The author feels the pressure of mandated testing

and assumes that other core teachers feel it as well. Because the author teaches at a middle school, she does not share the negative attitudes associated with high school teachers.

- Behavior problems from students with learning disabilities is a concern for many inclusion teachers, and this leads to negative attitudes about inclusion and special education students in general (Peck et al., 2004).
- Time to implement inclusion is a concern, as many teachers already feel overwhelmed with day-to-day teaching responsibilities (Bondurant, 2004).
- Lack of training in the area of how to teach special education students is a concern to general education teachers, as they often feel unprepared and lack confidence in this area (Bigham, 2010).

The teachers at the author's middle school share concerns about dealing with special education students with excessive behavior issues. Many students with learning disabilities have a short attention span, which makes focusing for a seventy-five minute class period difficult, and may lead to misbehavior. If students are not engaged in class activities and do not understand the topic, they are more likely to be disruptive and to fail to master the content. This makes reaching these students vitally important for the success of the inclusion class. Time is also a concern at the author's school. Although teachers have a daily planning period, required meetings and other demands prevent teachers from planning for inclusion classes. While the author is unfamiliar with the in-service training of other regular education teachers, she assumes they receive similar minimal training regarding teaching special education students because of their lack of confidence and frustration.

- Research about inclusion and mathematics instruction is inadequate at best and severely wanting at worst (DeSimone & Parmar, 2006; Ellins & Porter, 2005).

The lack of research affects the author's school because there is no longitudinal data to verify if inclusion is an effective teaching strategy for students with learning disabilities. While resources exist about different ways to implement inclusion, the success of inclusion cannot be verified if there is no data to show growth on mandated state and national testing or an improved graduation rate of students with learning disabilities.

The author has learned during the process of this research paper that there is a scarcity of research literature available about inclusion on middle school mathematics. Originally, this paper was to focus solely on middle school mathematics, but because of the lack of studies and articles available, the author had to broaden the research focus to include K-12 and other subjects. DeSimone and Parmar (2006) also found this to be true, stating:

> A review of literature on inclusion of SLD [students with learning disabilities] in general education programs revealed that there was very little data on the way in which inclusion programs were being implemented at typical sites. There was also a general paucity of information on inclusion in mathematics (p. 338).

Ellins and Porter (2005) also support this claim about the scarcity of research about inclusion specifically in mathematics stating:

> An area little covered by research to date concerns the relationship between attitudes to special educational needs and subject departments in schools. The nature of the subject taught and the culture of the different

disciplines may affect the attitudes of teachers towards those with special needs and therefore their ability to meet those needs (p. 189).

Chapter 4: Conclusion

Details about the Author's Classroom

The author teaches in the Upstate of South Carolina at a middle school with an enrollment of approximately one thousand students. She currently teaches four eighth grade mathematics classes, one of which is an inclusion class. She has previously taught sixth, seventh, and eighth grade math foundations and Algebra I. The author has been a mathematics teacher for six years.

The author's classes usually have twenty-five to thirty students per class. The author's school uses a block schedule with seventy-five minute class periods. A majority of the student body is Caucasian, with approximately 10% African American and 5% Hispanic. Roughly sixty percent of the student body qualifies for free or reduced school meals.

The Author's Experience Teaching Inclusion for the First Time

The author has taught an inclusion class for four years. As reflected in the literature review, the author was expected to take on this responsibility but had no training in her undergraduate program to prepare her for the task of teaching mathematics to students with learning disabilities. As a matter of fact, the author had never heard of inclusion until she was asked to teach the class. The author can recall one brief meeting with other mathematics and special education teachers, during which a presentation was given of several articles about inclusion. The mathematics teachers were also expected to plan with the cooperating special education teacher once a week. Other than that, the inclusion and special education teachers were expected to determine how to make inclusion work. The author felt overwhelmed and underprepared to teach inclusion, much like other

teachers in the literature review. The special education teacher who was co-teaching with the author did not feel ready to teach some of the skills necessary for success at the eighth grade level. There were times during the first year of inclusion in which the special education teacher sat in class and took notes along with the students to refresh her memory on regular eighth grade mathematics content. Even though the author felt like she didn't know what she was doing, she learned by trial and error, and did the best she could. It is the author's observation that special education teachers are not comfortable with the content of the mathematics curriculum, and mathematics teachers are not comfortable with making all of the appropriate accommodations and using the most suitable teaching strategies for teaching students with learning disabilities. Working collaboratively is, therefore, essential to benefit both the teachers and the students.

Summer Graduate School Classes

After the author's first year of teaching inclusion, she took summer graduate classes at Bemidji State University. All of the literature reviewed for this paper, apart from one source, called for teacher training in regards to teaching inclusion. The author received exceptional training from the professors teaching the summer mathematics classes. The author was provided many different strategies for teaching mathematics to diverse learners; for example, moving from concrete ideas, i.e., using hands-on manipulatives, pictures, and diagrams, to abstract ideas, i.e., using algorithms and formulas. Another focus was to provide mathematical games that would be fun for students yet allow practice on necessary mathematical skills. The author has much more confidence in her ability to teach mathematics than before she took the courses, especially regarding students with learning disabilities.

One concern of teachers in the research literature is how to deal with students with disabilities who have behavior problems. The author found that providing hands-on, concrete activities and games, behavior problems were more easily kept in check because students were interested in what was going on in class. As part of the summer graduate classes, participants were required to put together lesson plans of these activities, which made incorporating these activities very easy. The author used her inclusion class to complete three of the five required portfolios that were also part of the Bemidji State University summer school program, and these portfolios document that students with learning disabilities were able to learn the same skills as students in regular mathematics classes.

Impact of this Paper on the Author

This research paper has impacted the author in several ways. First, the author had limited knowledge about inclusion other than her own experiences using it as a teaching strategy when she was first assigned an inclusion class in the 2008-2009 school year. After reading the research, the author feels that she shares the experiences of other teachers. This shared experience is reassuring, as teaching can be an isolating experience and the author was unaware of the norms held by other teachers on their feelings about teaching inclusion. Second, the author feels more knowledgeable about inclusion and special education in general. The author had a limited understanding about the history of special education and now can see the vital importance of providing appropriate access to the curriculum for all students. Third, this research has impacted the author and will continue to impact her in the future as she will take a more active leadership role in her mathematics department, especially with the other inclusion mathematics teachers.

Fourth, the author will look for opportunities to work with grants to improve teaching inclusion mathematics, to gather data, and to work collaboratively with other schools and local colleges and universities. Fifth, the author has leaned that there is a scarcity of research available on teaching middle school mathematics inclusion, and the lack of research needs to be seriously addressed by colleges and universities at the state and national level.

Sharing the Findings of this Paper

The author has presented some of these lessons developed in summer school graduate classes to her fellow eighth grade mathematics teachers for use in their regular education mathematics classes. In the 2013-2014 school year, the author's school will have two eighth grade mathematics inclusion classes because of large numbers of students with learning disabilities. The author plans on sharing lesson plans, ideas, and activities with the other mathematics teacher who will be teaching inclusion and will serve as a resource for this teacher, as it will be her first time teaching an inclusion class. The author will also share this paper with her colleagues to be used as a resource.

In addition to sharing with her immediate colleagues, the author will share this paper with her school administration and the special education department. The author would like to share this research paper at the district level, as there are two other middle schools in the district. She will recommend to the head of district teacher development that in-service training in the area of inclusion be required for core subject teacher in-service work days. She will also compose a letter to the district superintendent addressing the critical need for research in the area of mathematics inclusion, and include a copy of her research paper for examination. This letter will include an inquiry about the possibility

of grants available for working with local colleges and universities in a collaborative effort to collect data and to offer pre-service training in the area of inclusion in the mathematics classroom.

Call for More Research

The author would like to examine more research about inclusion in middle school mathematics classes. She would also like to see more studies conducted specifically about attitudes of middle school mathematics teachers, and how these attitudes relate to student success. The author would also like to see data from state or national testing which would indicate the effectiveness of inclusion as a teaching strategy. In addition, she would like to see in-service opportunities available in her school district to train current inclusion teachers, and also teachers who have been asked to teach inclusion for the first time. Furthermore, colleges and universities offering teacher training programs should require a specific class to train teachers to teach included special education students, as well as to incorporate in their content area courses instruction on how to teach an inclusion class.

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