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ABSTRACT

Historically, it has always been important for educators to meet the needs of their children. In practice however, children with special needs were often neglected in the educational processes of schools. With the advent of NCLB and high stakes testing, the pressure on schools to demonstrate improved student achievement for all students has accelerated. As these children have been increasingly included within the regular classroom, educators have been challenged to develop methods to effectively meet their needs.

This concurrent nested mixed method study explored the effect of interdisciplinary thematic instruction using constructivist principles on the motivation and performance of included 5th-grade elementary students with special needs. The study found that that experimental group students who received interdisciplinary thematic instruction as an intervention in math classes demonstrated higher motivation levels and academic performance than participants receiving traditional instruction. These results pose significant implications for schools attempting to meet the needs of included special needs children.

For over 40 years, federal legislation and educational initiatives have provided a framework for the services and delivery options available to students with special needs. Progressively, with the implementation of these initiatives, the rights of students with disabilities have become increasingly protected and opportunities for inclusion with individuals without disabilities have become more attainable. The No Child Left Behind Act (NCLB; 2002) and the reauthorization of the Individuals with Disabilities Education Act (IDEA; 2004) encourage inclusion to the maximum extent appropriate for students with disabilities, supporting inclusive settings as the least restrictive environment with access to the general education curriculum. Thus, the nation has witnessed an increase in inclusive settings that today service students with disabilities.

In the United States, the National Education Association (NEA; 2008) estimated that 6 million students with special needs are serviced by the public education system. The U.S. Department of Education (2007) further adds that approximately 55% of this population spends more than 80% of the school day in general education environments. While inclusion settings have increased over the last decade, the Nation's Report Card (2007) demonstrated that students with special needs continue to lag behind their peers who do not have disabilities. A consistent academic gap remains between special and general education students despite an overall increase in reading and mathematics performance.

As educators are increasingly aware of the achievement gap between students with and without disabilities, instructional methodology drives debate over optimal practices that equitably support the needs of students of inclusive populations. This research emerged from concerns of inclusive educators and administrators of a suburban

town in northern New Jersey, based on significant academic performance discrepancies on the 2008 New Jersey Assessment of Skills and Knowledge (NJASK) elementary school report in literacy and mathematics between included students with and without disabilities. The educators described the instructional environments of the inclusive classrooms within this setting to emphasize the use of a traditional teacher-centered model that relied on textbook-driven instructional practices with single-subject presentation of academic content. Despite individual education plan accommodations, students with special needs reportedly demonstrated a lack of participation, minimal motivation for engagement, and content assessments that were significantly lower in academic performance than their peers without disabilities.

The purpose of this study was to explore the pedagogical effectiveness of interdisciplinary thematic instruction on the motivation levels of students with special needs in the inclusive elementary education setting of a public school in northern New Jersey. An interdisciplinary thematic methodology reflects a student-centered model of instruction which employs variations in student groupings and utilizes theme-based content connections through curriculum over-lapping and project-driven experiences to accommodate multiple skill levels and interests (Gardner, Wissick, Schweder, & Canter, 2003). A multiple case study design was utilized to direct exploration of included students' perceptions about the inclusive environment and motivation levels for participation in multi-subject thematic lessons as factors that influence the outcome of an interdisciplinary thematic instructional methodology. The inquiry format included baseline, intervention, and post study assessment of six 5th-grade included students with special needs' perceptions and performance utilizing observations, interviews, and an

academic content assessment. The findings advocate for an approach to curriculum delivery that supports motivation for participation in learning and improves academic performance for included students with special needs. The outcomes highlight the need for reformation of inclusive instructional practices.

Theoretical Framework

The theoretical framework that guided this study was viewed as two merging categories of learning and instructional perspectives. From a learning perspective, constructivism and brain-based learning theories assert that learning is the outcome of cognitive processing that constructs meaning from knowledge and experience (Caine & Caine, 2006; Vygotsky, 1978). From a constructivist viewpoint, a child internally establishes connections between related concepts, creating associations between new and previously acquired knowledge and uses these webs of networked information to respond to external elements in the environment (Piaget, 1972). As described by brain-based learning theorists, the brain utilizes organized networks to store learned concepts and support the establishment of new connections (Caine & Caine, 2006). Content acquisition, associations, and recall are supported by environmental interactions and social exchanges of knowledge (Bruner 1960: Vygotsky, 1978).

From an instructional perspective, the learning environment and curriculum delivery approach warrants attention to variations in learning styles and multiple intelligences, supported by differentiation, cooperative learning, and motivation philosophies. The diversity of cognition that is facilitated by each individuals mind, results in various demonstrations of intelligence profiles (Gardner, 2006).

Attention to the variation in knowledge acquisition styles elicits optimal learning opportunities (Pym, 2007). Instructional delivery practices that are differentiated and interdisciplinary support the range of intelligence profiles that exist among individuals providing equitable opportunities for learning (Tomlinson, 2004). Social integration within the instructional environment encourages a shared distribution of content-driven exchanges that scaffold different intelligence styles and profiles (Lave & Wenger, 2001). Social integration and differentiation are therefore supported by instructional experiences that encourage a diverse range of participation. Motivation results from increased confidence when the instructional environment elicits opportunities for engagement, supporting each participant as a valued contributor of a learning community (Carter & Kennedy, 2006). Thus, a number of learning and instructional perspectives support the implementation of an interdisciplinary thematic instructional approach to curriculum delivery, and contribute to the success of an inclusive educational setting and inquiry proposed by this study.

Previous research has contributed quantitative findings of general education students and the impact of integrated instruction and motivation on learning. A study by Guthrie, Wigfield, and Vonseeker (2000) found that students in four general education classrooms, grades 3 through 5, demonstrated higher levels of motivation for integrated hands-on learning and collaboration. Similarly, a study by Ben-Ari and Eliassy (2003) of 267 sixth graders concluded that the type of instructional methodology employed encourages students' perceptions of learning and goal attainment. Additional research that utilized qualitative case study designs has explored the impact of integrated instruction and motivation on student learning. One such study by Petrosino (2004)

explored curriculum integration, instruction, and assessment and found that curriculum integration promoted increased levels of student performance and motivation for further inquiry. Additionally, a study by Jenkins (2005) supported the use of interdisciplinary instruction in an inclusive setting, however the boundaries imposed by the study limited generalizations across learning styles and subject disciplines.

The void that previously existed in prior research on the instructional environments of inclusive settings was filled by this study. The research is significant because the outcomes identified factors of instructional practice and environment that warranted reformation. The findings promote greater comprehension of knowledge acquisition instructional factors and encourage the exploration of alternative instructional delivery models among school systems.

Methodology

The investigation relied on three central questions that guided the inquiry.

1. What is the impact of multi-leveled lessons supported by activities that are thematically driven on the motivation levels of students with special needs?
2. How do students with special needs perceive their ability to participate in interdisciplinary thematic lessons in collaboration with their general education peers?
3. How is the academic performance of included students with special needs impacted by their motivation to participate in the learning environment?

Research Design

A concurrent nested mixed method approach that utilized a multiple case study design guided the study. With a concurrent nested mixed methods design, qualitative and

quantitative data were collected simultaneously with quantitative methods embedded within the predominant qualitative method, the case study format (Creswell, 2003). Multiple case studies were used to explore the impact of an intervention, interdisciplinary thematic instruction, across multiple cases when the treatment was employed (Kazdin, 1982).

Participants and Setting

The study took place in a small public school district of northern New Jersey. The elementary grades of the selected setting each consist of four classrooms with approximately two on each grade level designated inclusive. Included students with special needs are routinely placed within each of these two class settings. All data collection, participant, and parental contact occurred within each of two 5th-grade inclusive classrooms and in the researcher's office within the same elementary school.

With a relatively small population of included students within the research setting, the study was limited to a sample selection without random assignment. The total population included 11 students, with 6 students selected based on the following criteria: (1) each participant obtained a score of 150-199 (partially proficient) on the 2008 New Jersey Assessment of Skills and Knowledge (NJASK); (2) each participant had a specific learning disability classification (designated as a perceptual disability or dyslexia) and a developed individualized education plan effective for a minimum of 6 months; and (3) each demonstrated a willingness for participation with assent and parental consent. All participants selected had NJASK scores that fell within a 10-point range to ensure equivalent baseline levels of academic performance. The educators that supported the study acted as facilitators of the data collection, were not study participants, and were

selected by convenience sampling based on each educator's district assignment to each of the inclusive classrooms. Based on the voluntary participation of the educators, general and special, of each of the two inclusive classrooms, one classroom was designated as the treatment setting, selected to employ interdisciplinary thematic instruction, while the other was designated as the control setting, selected to employ a traditional instructional approach. Each setting contained three participants, one male and two females, and each participant was identified via an alpha-numeric code.

Further, to maintain participants' rights and uphold ethical considerations, the researcher met with all participants, parents and legal guardians, and educators to review study procedures, expectations and roles, and obtain written assent and consent. Additionally, participants were assured confidentiality and voluntary participation was maintained. The researcher obtained signed letters of cooperation and a data use agreement from the Principal of the elementary school and the Director of Special Services of the school district of the research setting.

Assumptions and Boundaries

While many strategies for participant, setting, and design selection were employed, the study did present assumptions and applied boundaries. While studies have demonstrated a relationship between motivation and achievement (Marzano, 2003), it was assumed in the context of this study that increases in motivation produce greater levels of academic achievement. The generalizations of outcomes to all students with special needs and larger populations were limited by the nature of the multiple case study design and the criteria utilized for selection. Further, participants' behaviors, by nature, were subject to differences that may have influenced the instructional delivery and

behaviors of the educators and responses of the participants. Finally, the research confined itself to observations and interviews of participants within a selected elementary inclusion setting with time boundaries for data collection established by the administrators of the research setting.

Data Collection

Data collection relied on three sources including observations, interviews, and an academic content assessment. Four observations were conducted in each inclusive classroom and utilized a field note format (Janesick, 2004) to observe participant experiences first hand and record participants' visual and verbal responses to the instructional environment. Pre- and poststudy interviews were conducted with each individual participant following an open-ended interview guide with protocol that aligned questions to the study's guiding inquiry (Hatch, 2002). Each interview was recorded, transcribed by the researcher, and participant and peer-reviewed to ensure content accuracy of recorded statements. Finally, a 25-question multiple choice content assessment was administered pre- and poststudy to measure concept attainment during the study. The content assessment was developed four years ago by the researcher and has since been utilized by 5th-grade educators of the researcher's educational community, demonstrating test-retest reliability with multiple administrations. Twenty-five multiple choice questions, derived from standardized assessments provided in the district adopted curriculums, Silver Burdett Ginn: The Path to Math Success (Fennell, Fendi-Mundy, Ginsburg, Greenes, Murphy, & Tate, 1999) and Macmillan McGraw Hill Treasures Reading and Language Arts Program (Bear, Dole, Echevarria, Paris, Shanahan, & Tinajero, 2004), were simplified for language and numerical computation. The original

program authors demonstrated concurrent validity aligning measures with over five national standardized evaluations and are supported by the National Assessment Committee. The revised format included modifications in quantity, example content, and simplified language.

Prior to the study initiation, all participants experienced a traditional instructional delivery approach in their respective settings and each of the educators had attended workshops on interdisciplinary thematic instructional delivery. Further, the researcher met with the educators of each inclusive setting and developed lesson plans matched for content skills, objectives, and core curriculum standards. The lessons were aligned and equivocally paced for the treatment and control settings.

The data collection period of the study followed in three phases comprising a 6-week duration. The first was a preintervention baseline phase lasting one week during which individual participants were interviewed in the researcher's office. The second was an intervention phase lasting four weeks, during which time all participants in the treatment and control settings were group-administered the academic content assessment in their respective classrooms. The treatment setting initiated an interdisciplinary thematic instructional format, while the control setting maintained a traditional instructional approach to curriculum delivery. Each classroom was observed once per week for four consecutive weeks in 40-minute intervals. Finally, an intervention conclusion poststudy phase lasted one week, during which all participants were again group-administered the academic content assessment in their respective classrooms. The researcher re-interviewed individual participants within her office, concluding the data collection period of the study.

Data Analysis

The concurrent nested strategy assumes triangulation of qualitative and quantitative data collection and analysis which relies on multiple sources to support the assertions made (Creswell, 2003). A case study method of detailed narratives revealed the findings of each individual case, supported by the employment of cross-case analysis that was strengthened by the triangulated data from the described sources.

*Research Question 1.*The first research question explored the impact of multi-leveled lessons supported by activities that are thematically-driven on motivation levels of students with special needs. Typological analysis was utilized to employ a coding process of raw observation data based on predetermined typologies derived from the study's research questions for the data organization (Hatch, 2002). The typologies included: (a) completion of an independent learning activity; (b) completion of one objective in a group learning activity; (c) verbal or kinesthetic contribution to a class lesson; and (d) verbal expressions of learning experiences. The analysis of observation data were reported via narrative summary and demonstrated positive classroom experiences for participants of the treatment setting receiving who participated in thematically-driven class lessons with increases in motivation for participation. In the initial observation of both settings, participants demonstrated similar behaviors of nonparticipation as reported prestudy by the classroom teachers which supported the purpose for this investigation. The initial observed behaviors included a lack of engagement in whole class discussions, incomplete independent learning activities, limited participation in small group activities, a lack of independent fulfillment of activity

objectives, and a lack of oral or body language indicating positive expressions of learning experiences.

Subsequent observations revealed differences among participants in the treatment and control settings. Behavioral comparisons were organized according to each of the typologies that were used to code the data during analysis. First, during independent learning activities, while participants of the control setting continued to exhibit behaviors observed during the initial observation, participants in the treatment setting demonstrated focus and attention to tasks, almost immediate initiation of assigned activities, willingness to seek peer and teacher support, and independent completion of most assigned objectives. Next, analysis of participants' objective completion during group learning activities demonstrated that while participants in the control setting maintained behaviors and responses noted prestudy, participants in the treatment setting demonstrated increased levels of participation with multiple objectives that were often voluntarily selected and completed with accuracy, and frequently sought peer and teacher approval of their efforts. Additionally, analysis of verbal and kinesthetic contributions to whole class lessons demonstrated similar reportings among control participants of prestudy behaviors, in contrast to the changes of participant contributions found within the treatment setting. Participants receiving interdisciplinary thematic instruction displayed no evidence of physical discomfort, frequently volunteered verbal responses to class discussions and teacher-prompted questions, volunteered kinesthetic participation in a whole class activity, and verbalized curricular connections between related concepts of multiple subject disciplines. Finally, verbal expressions of learning experiences were explored and compared between participants in the treatment and control settings,

revealing clear differences among participants. Participant expressions in the control setting were minimal, negative, and often unrelated to the task or subject content. Limited eye contact and a lack of enthusiasm were clearly evident among the participants receiving the traditional instructional format. On the contrast, participants in the treatment setting verbalized curricular content associations, demonstrated positive and enthusiastic expressions of the content, activities and learning environment, and exhibited body language that demonstrated comprehension, interest, and an eagerness to engage.

*Research Question 2.*The second research question explored the perceptions of students with special needs pertaining to their ability to participate in interdisciplinary thematic lessons in collaboration with their peers without disabilities. Within one day following each interview, interview audio recordings were transcribed and drafted. Each participant and a peer-reviewer, a 5th-grade educator with over ten years of general and special education experience, reviewed transcriptions for accuracy. Following, the same process of typological analysis that was utilized to code observation data based on predetermined typologies was employed in the analysis of the interview transcripts (Hatch, 2002). The analysis of interview data was reported via narrative summary and demonstrated that while all 6 participants revealed similar descriptions of their learning experiences preintervention, participants in the treatment setting demonstrated higher levels of motivation and participation in the interdisciplinary thematic instructional environment, indicating that the intervention impacted participants' perceptions.

During the preintervention interview, participants of the treatment and control settings displayed commonalities in their responses to the interview questions. The participants in both settings described themselves as inactive participants during class

lessons. Most cited concerns of peer ridicule and social disdain resulting from their difficulties with literacy and language development. Many conveyed uncertainty for the purpose of lesson objectives and saw no connections between presented subject disciplines, nor could they express recognition of personal meaning associated with the lesson content. Most participants shared frustration with the traditional classroom instructional format, which concentrated on independent writing tasks and whole class discussion, limiting opportunities for students to apply various visual, tactual, and kinesthetic strengths to classroom learning. Further, all participants expressed a desire for collaborative opportunities to work with peers in learning groups, in contrast to the independent tasks students were accustomed to.

The postintervention interview demonstrated an increase in participant motivation to actively engage in class lessons presented in the treatment setting which employed an interdisciplinary thematic instructional format of curriculum delivery. While control participants' responses remained fairly consistent between pre- and postintervention interviews, the treatment group participants described their active participation in class lessons, with positive experiences reported. Participants expressed recognition for curricular connections established between subject disciplines, in addition to associations between personal interests and lesson objectives. Students conveyed positive experiences of social support and peer collaboration during group activities, expressing greater levels of confidence for participation and opportunities for self-advocacy among peer networks. Participants described the change from routine isolated independent tasks to varied collaborative activities that integrated experiences encouraging the utilization of personal strengths and interests with enthusiasm and conviction. Clear changes in the perceptions

of the participants in the treatment setting, postintervention, were attributed to the change in the instructional environment of the inclusive setting, and thus attributed to a positive impact of interdisciplinary thematic instruction.

*Research Question 3.*The third research question examined the academic performance that resulted from the motivation of included students with special needs to participate in a shared learning environment. Each participant was administered an academic content assessment pre- and postintervention to compare content and skill acquisition levels before and after the intervention. Baseline levels established were similar among all participants in the treatment and control settings with participants' response accuracy ranging between 8 and 10 questions answered correctly out of 25 total questions, or 32% to 40% accuracy. However, the findings on the postintervention assessment demonstrated a greater level of academic achievement attained by the participants in the treatment setting, while achievement levels of participants in the control setting remained fairly consistent. Of significance, the score range for treatment setting participants on the postintervention assessment was 80% to 84% accuracy, while the range for the control setting participants was 40% to 48%. While all participants displayed an overall increase between pre- to postintervention measures, the mean score of the treatment participants increased from 37% to 81% compared with the mean score of the control participants which increased from 36% to 43%. The collective results of the participants in the treatment setting, with a significant overall improvement in academic performance of 118%, demonstrated that the intervention received by the participants produced higher levels of academic performance. This outcome supported

the assumption that an instructional environment that utilizes an interdisciplinary thematic instructional format encourages greater levels of achievement.

Summary. Data collected from observations, interviews, and academic content assessments support the literature that describes the benefits of an instructional approach which encourages student collaboration, variation among activities to support a range of skills and interests, and opportunities for associations between subject disciplines to support knowledge acquisition and skill development for all learners of a shared learning environment (Carter & Kennedy, 2006; Gardner, 2006; Slavin, 1987; Tomlinson, 2004). Additionally, the data supported theories on the impact of motivation to participate in learning (Marzano, 2003). Triangulation of the data collected revealed the emergence of three themes found across findings from each of the data sources. Social integration, self-relevance and cross-curricular conceptualization were common factors to all participant data that affected their perceptions and motivation to participate in the learning process within an inclusive setting.

Study Outcomes

The outcomes of this study filled a void in the literature on optimal inclusive instructional strategies that support students with special needs' perceptions, motivation to participate, and academic performance. The findings contribute to the literature a demonstration of the collective benefits of an integration of three factors that emerged throughout the study which optimally support included students with special needs and are collaboratively integrated utilizing an interdisciplinary thematic instructional format for curriculum delivery. These factors included social integration, self-relevance, and cross-curricular conceptualization.

Emergent Themes

Social Integration. In the context of this study, peer exchanges, support, and collaboration emerged as incentives for participation in the learning setting. Participants' perceptions of individual ability to participate equivocally with their peers without disabilities were influenced by the instructional environment. When participants perceived their ability to contribute as feeble due to their academic weaknesses, motivation to engage was minimal with concerns of peer ridicule and social disdain. Participants largely associated their discomfort with whole class lessons and independent learning tasks. However, participants who engaged in an interdisciplinary thematic instructional format demonstrated greater levels of motivation for active engagement in social exchanges that supported group responsibilities and a shared distribution of task objectives. Social integration during interdisciplinary thematic lessons provided opportunities for content discussion within peer groups to assist in comprehension and offered contributory experiences on different levels, validating each individual's acceptance in the learning community as a participating group member. Thus, social integration emerged as a factor that influenced positive perceptions of the learning environment and greater levels of self-confidence for participation in learning.

Self-Relevance. Self-relevance emerged as a common factor among participants identifying the association that each participant established between lesson content and personal skills and interests. Interdisciplinary thematic instructional lessons provided for the selection of themes based on student interests and varying opportunities that encouraged multiple modalities for content presentation and activity participation. When the content was recognized as meaningful and participants perceived activity

participation comparable with their abilities, learning style, or interests, they exhibited greater levels of motivation to participate in lessons. Thus, lesson and activity relevance in students' lives influenced their level of engagement in the learning environment.

Cross-Curricular Conceptualization. Participants' conception of cross-curricular associations influenced perceptions of ability to learn the presented concepts. The connections established through theme-driven lessons across multiple subject disciplines assisted students' development of comprehension for content skills with repetitive reinforcement across multiple contexts. Multiple opportunities to revisit the central themes supported students' interpretation and application of knowledge acquired throughout a unit of study. Cross-curricular connections resulted in heightened motivation for engagement in learning activities with meaningful recognition of related concepts, increasing the likelihood of conceptual development and expansion.

Recommendations

Implications of the study outcomes suggested professional application and social changes necessary to support the increasing demands of growing inclusive educational communities. The findings demonstrated the benefits of an integration of factors, supported by an interdisciplinary thematic instructional approach that promotes increased participation and academic performance improvements. Local school systems with inclusive environments must consider steps necessary for a transition to an interdisciplinary thematic instructional approach to curriculum delivery within these settings. Consideration must be given to the assignment of personnel in each inclusive classroom to pair professional expertise, interpersonal, and leadership skills. To facilitate positive learning experiences, general and special education teaching pairs must clearly

understand their roles and contribution to the instructional process. Clear expectations must be established to identify teacher participation. Administrators must support educational staff with training to expand their understanding of strategies that facilitate collaboration among students with special needs and their peers who do not have disabilities. Additionally, school administrators will benefit from professional development that facilitates support of their teachers and promotes collaboration among all supporting staff members. Effective planning must include common planning time and the availability of resources to support professional dialogue and comprehension of strategies and expectations, in addition to providing for resources that support the educational needs of the physical environment. Budgetary considerations beyond textbooks must be considered to encourage authentic exploration and interactive experiences including media equipment and tactual materials. Further, as the study demonstrated the positive impact of connections between student interests and content skills and objectives, opportunities for parental involvement are recommended to reinforce connections within and outside of the instructional environment supporting genuine experiences for content skill attainment. The home and school connection must be nurtured with participation supported by invitations to training sessions that encourage parental understanding of effective strategies.

In addition to changes within school settings, the outcomes of this study encourage the need for further exploration into other factors that could enhance the benefits of an interdisciplinary thematic instructional approach. Further research is recommended to explore variations in assessment of knowledge acquisition. As our educational culture continues to be driven by standards-based federal mandates, further

study is needed to explore performance-based measures that compliment an interdisciplinary thematic instructional approach.

Conclusion

Inclusive settings acknowledge the diversity that exists among the individuals within them, and thus the practices employed within inclusive settings must also reflect variation and provide a range of opportunities to accommodate all learners. The outcomes of this study implicate that an integration of factors warrant instructional reformation to support learning opportunities provided to students with special needs. Social integration, self-relevance, and cross-curricular conceptualization factors support authentic learning experiences shared by students of all ability levels and styles, and influence a minimization of the achievement gap that exists between students with disabilities and their peers who do not have disabilities. Influencing social change, the findings of this study encourage school systems, administrators, educators, and parents to re-examine instructional practices and learning opportunities that are not conducive to the learning needs of all members of a heterogeneous population, and advocate for collaboration and participation in practice reformation that supports the learning process for all children. As today's inclusive classrooms continue to grow with commitments for equitable opportunities for all learners, so must their instructional environments continue to evolve to optimally fulfill these promises.

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