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Johannah Bloemendaal

Northwestern College - Orange City

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The Impact of Within-Class Grouping Vs. Within-Grade Grouping

Johannah Bloemendaal

Northwestern College

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For the Degree of Master of Education

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Dr. Sara Waring-Tiedeman

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Abstract

The purpose of this action research project was to compare two types of ability grouping and if one type had more of an impact than the other in a primary classroom. In this study, one type of ability grouping, known as within class ability grouping was implemented in one second grade classroom in 2017-2018. Another type of ability grouping was implemented the next year where all three of second grade classrooms were grouped according to ability, which is considered to be within grade ability grouping. Students were assessed with the AddVantage+MR (AVMR) assessment to determine placement. Then they were placed into groups and worked with other students to work on math skills that they all struggled with. The researcher's hope was to determine if there was a greater impact on one type of ability grouping than the other.

Keywords: ability grouping, primary, math

The Impact of Within-Class Grouping Vs. Within-Grade Grouping

In today's classroom, you may find 30 students with different needs, different personalities, and different talents. In today's classroom you may also find one teacher handbook with curriculum to teach. The curriculum may be able to meet some needs, but there are students who perform above grade level and students who perform below grade level. These students' needs may not be addressed by the curriculum. Grouping is an instructional practice to address this problem. Ability grouping was present in the 1940s and 1950s, and students were put into classes based on their ability (Hallam, Davies, & Ireson, 2013). Much of the research conducted on ability grouping in the 1960s brought concerns of equal opportunity and students confined to rigid tracks, which caused a decline in ability grouping (Hallam et al., 2013). Recently, more schools are grouping students by their ability because it allows for teachers to pace instruction to meet individual learning needs, especially with diverse classrooms (Hattie & Anderman, 2013). The way schools are grouping by ability is more flexible and allows for grouping for particular subjects, rather than being placed in a set classroom for an entire day (Tieso, 2003). There is not much current research on comparing the different types of ability grouping, but rather the emotional and academic effects of ability grouping. More research could be conducted today since much of the research was conducted before 2000. Therefore, this research will compare the impact of different types of ability grouping, as well as provide more current research on the topic.

The research question guiding this study, Is there an impact with within-class ability grouping compared to within-grade ability grouping in an early childhood environment? This research will be comparing two types of this flexible ability grouping for math instruction and determining if one type of ability grouping improves math achievement over another. One type

of ability grouping is grouping students from one section of second grade, called within-class ability grouping. The second type is grouping students from three different sections of second grade, which is called within-grade ability grouping. Research has shown that when the grouping of students is flexible, it can have a positive impact on learning. This research will look specifically into if there is more of an impact between two different ways to group students.

Review of the Literature

Education is constantly changing and teachers are trying to find strategies that will best meet student needs. One strategy that is regaining popularity is grouping students based on their skills, whether it is reading level, math skills, or multiple intelligences. Teachers will put together students into groups and meet with each on certain concepts or skills. Those who use this approach say that grouping allows teachers to cope with the wide variety of ability and achievement (Yee, 2013). Others suggest that it damages self-esteem by making some feel inadequate (Yee, 2013).

History of Ability Grouping

Grouping has a long history beginning in the 1940s. In the 1940s and 1950s, students were put into classes based on ability, which was called streaming (Hallam et al., 2013). In the 1960s, there was an increase emphasis on equal opportunity and a movement towards comprehensive education, so the use of streaming began to decline (Hallam et al., 2013). Many states recommended to end the use of ability grouping due to concerns that teachers' expectations were shaped by the initial grouping, students were confined to rigid tracks, and teachers limiting resources to lower achieving students (Yee, 2013). By 1970, only twenty percent of schools that were large enough to stream chose to do so, and in the 1990s it had declined to less than three percent (Hallam et al., 2013).

Types of Ability Grouping

Streaming is one way to group students, which is considered the most rigid form of ability grouping (Hallam et al., 2013). Some American school systems have maintained this type of grouping, where it is called tracking rather than streaming (Macqueen, 2012). In this type of ability grouping, students are divided into different classes based on their ability level, and stay in that class for most subjects (Hallam et al., 2013). There are few students who perform equally at all subjects. This limits the flexibility to allow students to show their strengths and weaknesses. Rather than highlighting their strengths and supporting them through their weaknesses, it assumes strengths and weaknesses for the entire class. With streaming, a school with three sections of a grade level would place students into an A class, a B class, and a C class (Macqueen, 2012). Class A would be considered to have the highest performing students, class B would be students performing average or not quite as well, and class C would be students who are performing the lowest, or had the least amount of abilities (Macqueen, 2012). Those who implement streaming do so under the assumption that students have a certain level of intelligence and stay consistent across the subject areas (Hallam et al., 2013). Teachers would not need to get to know each individual student, but rather teach out a curriculum based on the performance level of the entire class.

Other types of grouping include banding, mixed-ability classes, setting, within-class grouping, and cross-age (Hallam et al., 2013). Each one is a little more flexible than streaming, which is a reason for the rise in ability grouping again. Teachers stated they believed because the groups were constantly in flux, students are not being discriminated against (Yee, 2013). Flexibility appears to be the answer for the success of ability grouping. When groups are formed by the teacher and are regularly assessed by the teacher this allows for students to be reorganized

as needed (Macqueen, 2012). If students are being reorganized based on data or teacher observations, then they are not stuck in a group where their needs are not being met; therefore, the flexibility directly meets students where they are at academically.

Disadvantages of Ability Grouping

Grouping students based on ability has caused debate on its effectiveness. Research on streaming shows that students who perform lower in school made better progress in unstreamed schools than streamed schools, and has little impact on student attainment ((Hallam et al., 2013). Other specific problems included the inaccurate placement of students, inequitable placement of teachers to groups, lack of movement between groups, and low expectations for those students who were placed in the low streams (Macqueen, 2012). Labeling students low, average, and high academically can affect teacher's mindset. They may not attempt to challenge those students who are low if they have it in their mind that they are too low academically to get it. Rather than having a growth mindset about what certain students can do, the labels interfere with how students are taught. The labels may not even be accurate. When students are placed into groups based on general tests, the testing is not exact and leads to incorrect placement of students (Ireson & Hallam, 1999).

Students who are placed in higher tracks or streams seem to benefit more than those in lower tracks or streams. Even though there is not a significant effect on achievement for those who perform lower in school, those students with higher aptitudes was significantly higher than the average (Ireson & Hallam, 1999). The students placed in high ability groups are allowed more independence and choice, there are more opportunities for discussion, and they are given more responsibility for their own work (Ireson & Hallam, 1999). Whereas those in lower ability groups are given work that is more tightly structured, such as concentration on basic skills by

using worksheets and a focus on repetition (Ireson & Hallam, 1999). There are some students who may lack decoding skills, but when they listen to a story they comprehend the story and think deeply about what they heard. If students are placed in a low ability group and work on the decoding skills through worksheets and repetition, they are not utilizing their strength of thinking deeply about stories, and may not even be given the opportunity to listen to a story and show their strength. Lower streamed students seem to have negative attitudes about themselves and there is a greater possibility of regarding themselves as stigmatized (Hallam et al., 2013).

Hong, Corter, Hong, and Pelletier (2012) studied ability grouping for reading in kindergarten and their results contradict the argument that grouping harms low ability students' self-esteem. The researchers selected data from the Early Childhood Longitudinal Study Kindergarten Class of 1998-99 (ECLS-K), which included an entire sample of 21,260 kindergarten students from 1,280 schools (Hong et al., 2012). Students were tested in reading, math, and general knowledge in the fall of 1998 and the spring of 1999, as well as surveyed parents and teachers of each sampled child and administrators in the spring of 1999 (Hong et al., 2012). There was no indication in their research that grouping created social-emotional difficulties (Hong et al., 2012). Their research showed that student learning is optimized especially for medium level ability students and potentially low ability students when they receive a substantial amount of instruction in the area of reading and adaptive instruction, but there is clear evidence that these students suffer when the instruction time is low (Hong et al., 2012). Even though this study showed that there were no social-emotional difficulties, there is an impact on learning when the amount of time for instruction is altered. This could indicate that ability grouping is not effective due to lack of instruction time, specifically for lower and medium level ability students. "When literacy instruction include intensive grouping along with

limited time, the effects may be different again for high-ability and low-ability students.

Although ability grouping is expected to increase teacher-child interactions in a small group setting, dividing the teachers' time among multiple groups, especially under high-intensity grouping, will reduce the time to expose each individual child to teacher-facilitated learning activities" (Hong et al., 2012, p. 73).

Teachers need to divide their time to each group, which leads to students needing to work independently when their group is not meeting with the teacher. Typically, students with higher abilities tend to have higher regulation skills and are able to continue their learning independently, whereas students with lower abilities tend to have less self-control and lower regulation skills; therefore, they need more guidance and assistance from the teacher and tend to be more disruptive to other students when working independently (Hong et al., 2012). Even when the teacher is meeting with students with lower abilities, they may face disruptions with less time for instruction. The materials may be less stimulating and there may be a slower pace in these groups, so more time may be devoted to behavior management than instruction (Hong et al., 2012). Another disruption during the learning time would be the frequent transitioning between groups (Hong et al., 2012).

Advantages of Ability Grouping

Although these can be common occurrences when students are grouped, teachers see the benefits and believe they outweigh the negatives. Within-class ability grouping allows teachers to adjust learning objectives and the pace of instruction to meet individual learning needs, especially with diverse classrooms (Hattie & Anderman, 2013). Thinking specifically about children entering kindergarten, there are some children who arrive with larger vocabulary and greater ability with phonological awareness, which puts them at a greater advantage when

learning to read (Hong et al., 2012). Students who do not have a large vocabulary or lacking phonological awareness requires these skills to be specifically taught (Hong et al., 2012).

Teachers who group students homogeneously may gear instructional activities and materials towards the “zones of proximal development” in the Vygotskian framework, which is working on skills that are not too difficult for them to understand or skills they already know (Hong et al., 2012).

Within-class grouping specifically groups students within the classroom. This allows the teacher to regroup students for different subjects (Hallam et al., 2013). Students may achieve better in certain subjects over others, therefore the ability to group students within the class for a subject allows for more flexibility for students to showcase their strengths. There have been studies conducted on within-class grouping compared to no grouping, and have found small positive effects on achievement (Hattie & Anderman, 2013). When teachers are able to focus on exactly what each student needs in their groups, students are learning the skills that are necessary for growth. Students were found to have more of a positive attitude towards the subjects they were learning about (Hattie & Anderman, 2013). When students are enjoying what they are learning about, they are more engaged, and when they are engaged, they are able to learn more. One difference researchers have found with ability grouping is that the groups are smaller and more flexible than they were in the past (Hattie & Anderman, 2013). Flexibility limits the opportunity to label students as low, average, and high achievers, because groups are constantly changing. They have found that teachers choose this type of grouping to better meet the students’ needs in a diverse classroom (Hattie & Anderman, 2013).

Some believe that gifted students’ needs are not being met, and have identified underachievement among high-ability students (Adelson & Carpenter, 2011). Grouping is a

possible solution for students who are not being pushed to their abilities. Adelson and Carpenter (2011) studied the relationship between achievement and ability grouping in the kindergarten classroom. They found that classrooms that group according to ability experience greater growth for all students, and that the growth was even greater for high-ability students (Adelson & Carpenter, 2011). When they are provided opportunities to learn in a small setting, they make greater reading gains regardless of where they entered kindergarten (Adelson & Carpenter, 2011). Students who are high achievers often are overlooked because they are considered on grade level or above grade level, and there is a push in education for all students to be on grade level. Therefore, when these students are grouped according to ability, then teachers are pushing them even further with their skills, allowing them to achieve at higher levels.

Although when students are grouped for instruction, then there is diminished time for instruction for students. Some claim that the type of learning that occurs in the small groups compensates for the shortened time, partly because the instruction is focusing on exactly what they need and it is easier to retain attention with a fewer number of students in the group (Tieso, 2003). The type of instruction that happens in these groups will lead to achievement. Flexible grouping must be combined with instruction that is based on the students' learning styles, interests, and abilities (Tieso, 2003). A specific example of this success is the Joplin Plan, which was devised by Cecil Floyd, the assistant superintendent of schools in Joplin, Missouri (Tieso, 2003). The Joplin Plan grouping arrangement was a temporary arrangement, which was a major advantage; students were moved into and out of groups based on their current demonstrated achievement (Tieso, 2003). Another advantage was the curricular adjustment made among groups since teachers had to develop curriculum based on the unique needs of the group, rather than one set curriculum used to instruct all students (Tieso, 2003). Finally, this plan allowed for

reduced heterogeneity, without affecting self-esteem (Tieso, 2003). This had a positive effect on students and teachers because of the flexibility. The student groups were flexible, as well as the flexibility for teachers to make curricular adjustments. Teachers made these decisions, and they know their students more than a scripted whole-class curriculum. Teachers were allowed to group for certain subjects to meet the appropriate needs of each student, while not keeping the same groups for an entire school day (Tieso, 2003).

Within-grade grouping is similar to within-class grouping in which it allows the teacher to regroup students for different subjects (Hallam et al., 2013). For example, if there are four sections of a grade level, the teachers can group students based on reading ability and regroup the students based on their math ability. Each teacher would be assigned a group of students that are working on the same skill. Then teachers can change groups every week or every other week to meet with various students, and to instruct different skills. Other teachers may prefer to keep a skill group that they are more confident instructing. Since they have the tools to teach that certain skill, they may feel more equipped to teach that group of students to help them master the concept.

Co-Teaching Through Within-Grade Ability Grouping

Since groups do not stay the same throughout the entire day, students get the benefit of meeting with various teachers. All teachers are different and have different teaching styles. When students get to learn with different teaching styles, they may be able to understand a concept through the teaching of one teacher than the teacher of another teacher. Teachers working collaboratively to deliver instruction to students in a shared space is considered co-teaching (Conderman, 2011). Since co-teaching involves teachers working collaboratively, it requires a high level of commitment to open communication, mutual respect, and compromise

(Conderman, 2011). While collaborating, they discuss students' needs, solve problems, demonstrate instructional techniques, and share resources (Conderman, 2011).

Walther-Thomas (1997) reported multiple benefits of co-teaching. One benefit in particular is the classroom and school feeling more like an inclusive community (Walther-Thomas, 1997). If teachers are committed to the open communication, mutual respect, and are willing to compromise, then teachers are going to feel like a community of professionals. Students are also able to form relationships with multiple teachers and students from other classrooms. Other benefits include professional satisfaction of student success due to co-teaching, working closely with other teachers allow for an increase in professional growth, along with an increase in personal support to share the good experiences and the bad experiences, and the increase in collaboration allows for teachers to feel more like a team and are more willing to share their expertise with the team (Walther-Thomas, 1997).

Although there are positive impacts of co-teaching, there are certain downfalls, which can cause many teachers to stop co-teaching altogether. In elementary school, planning time is broken down into small segments of time, which makes in-depth planning and preparation difficult (Walther-Thomas, 1997). Another issue that arises is taking the time to figure out the student schedules. A computer cannot randomize student schedules, instead they need to be specifically scheduled by people to ensure correct student placement, and there would be adequate support provided for teachers and students (Walther-Thomas, 1997). Rather than planning effective lessons, many teachers took most of their planning time to ensure students were in the right place.

Collaboration through Within-Grade Ability Grouping

If planning time is set aside specifically for teachers to collaborate, then real achievement can be possible. Egodawatte, Mcdougall, and Stoilescu (2011) suggest that there is a need to increase our knowledge of collaborative inquiry, and how teacher practice can be enhanced through close collaboration. The field of mathematics can move forward through teacher collaboration by energizing teams of teachers to improve teaching practices, and therefore sustaining student learning (Egodawatte et al., 2011). When teachers are alone, it may be difficult to come up with new ideas on how to assist individual students or new teaching practices. Schools are full of people, and each person contains individual knowledge; individual knowledge can turn into an organization of knowledge through collaboration (Tschannen-Moran, Uline, Woolfolk Hoy, & Mackley, 2000). The schools that are able to tap into the knowledge of each individual in decision making ultimately become smarter (Tschannen-Moran et al., 2000). Just as students have different skills and knowledge, teachers also have various skills. Teachers come from different backgrounds and have different experiences, therefore bringing teachers together will allow for their skills and experiences to help make the best decision possible. Collaborating with other teachers means trusting the individual differences to accomplish the agreed upon purposes of collaborating, not giving up those differences (Egodawatte et al., 2011). Individual differences should be celebrated as a team, and teams should seek out how to utilize the differences to enhance teaching and meet student needs.

Collaboration is essential today with how schools have changed. Schools today have higher expectations of equity and resource distribution, diverse student populations, new technologies, and changed expectations of high school graduates (Tschannen-Moran et al., 2000). To cope with these changes, schools need to tap into their best resources, which are the people who can share their expertise (Tschannen-Moran et al., 2000). Teachers are able to

respond to real school issues that they experience with thought and action, which occurs through collaboration (Tschannen-Moran et al., 2000). This thought and action process allows teachers to share a problem they may be experiencing, and other teachers can give thought and then provide a next step for that teacher to take. Ultimately, students benefit from this process, because even if one teacher has used all his/her tools to help that student learn, and the student is still stuck, there are multiple other teachers who may offer their tools to continue to help that student learn.

Instruction and Learning during Groups

Understanding how students learn and how to take each student in their current understanding to the next is a tool that is important for teachers to have. Add+VantageMR (AVMR) provides professional development for teachers to improve teacher effectiveness with numeracy education (US Math Recovery Council, 2018). “Teachers who are actively engaged in diagnosing current student understanding and applying their knowledge of developmental learning progressions continue to enhance the effectiveness of their instruction, thereby positively impacting student growth” (US Math Recovery Council, 2018). Using AVMR knowledge can help teachers initially group students and can help teachers identify exactly what gaps the student has and how the teacher can fill those gaps. Those who participate in AVMR professional development have shown significant improvement when making instructional decisions based on student actions when solving a problem (US Math Recovery Council, 2018).

The professional development provided to teachers is based on how math concepts are solidified by students, and what concepts need to be mastered before other concepts can be mastered. Sarama & Clements (2009) share three research findings on math instruction. First, learning math in the primary grades is essential for math development, and predicts math and reading achievement in later years (Sarama & Clements, 2009). Second, all children have the

ability to do and learn challenging math, and they have the ability to do abstract math, which is math done by reasoning mentally (Sarama & Clements, 2009). Third, student's thinking follows a developmental path when learning math, and when teachers understand the path and provide activities for students to help them progress along the path, then they provide an environment that is developmentally appropriate and effective (Sarama & Clements, 2009). AVMR shows teachers the developmental path for concepts, such as knowing the forward number and backward number sequence, adding and subtracting, the ability to structure numbers, place value, multiplication and division, and fractions. Each of these concepts have a trajectory on which there is a certain level of understanding.

Sarama & Clements (2009) suggest there are three parts to math trajectories. The first part is having a mathematical goal, which include the big ideas of math (Sarama & Clements, 2009). Next, is the developmental path, which describes the particular learning path that students follow in developing understanding of and skill in a math concept (Sarama & Clements, 2009). Finally, the math trajectory consists of instructional tasks or activities that is designed for students at each level of thinking (Sarama & Clements, 2009). When teachers understand the trajectories, they are able to see the perspective of that student, which is important because children's thinking is different from an adult (Sarama & Clements, 2009). Teachers should assess the student's thinking, and interpret what that student is doing, then based on where the student is on the developmental path, the teacher provides tasks to help progress the student along (Sarama & Clements, 2009). AVMR provides assessments for teachers to use, a rubric to determine where the student is on the developmental path according to the student's responses on the assessment, and then they provide activities to continue to learning from one level to the next.

When teachers are able to identify the areas of strengths and find where to instruct the student, they are able to use this information for their instruction. Teachers can specifically use this information when creating groups of students to instruct students who are solving problems similarly. Each student is getting specific instruction on his or her specific needs, which is a new trend in education called personalized learning. Childress and Benson (2014) presents personalized learning as learning where students follow an optimal learning path and go through a mix of instructional methods, such as individual and small group time with a teacher, group projects, and instructional software. Students are learning in a personal way, and they are driving their own learning by knowing their goals and the path to achieve them (Childress & Benson, 2014).

During this personalized type of learning, Boaler (2016) shares how important the group discussions are. Students rarely understand concepts without talking through them, and the discussions not only engage students, but also they teach students to reason and analyze each other's reasoning (Boaler, 2016). This ability to talk mathematically is important enough that Common Core State Standards included this as a standard for a mathematical practice. Students are to be able to justify their answers, communicate their answers or ideas to others, and respond to the argument of others (Common Core State Standards Initiative, 2019). When given the time to explain their thinking, they are able to practice justifying their answers and communicating their ideas. When they are in a group with others, they can listen to other explanations and agree or disagree with others on their thinking.

To foster student discourse, Quebec Fuentes (2018) suggests teachers go through four different stages. In the first stage, teachers should listen and observe the group dynamic of various groups in the classroom (Quebec Fuentes, 2018). The second stage, teachers should

specifically listen to the type of communication that is happening (Quebec Fuentes, 2018). For example, teachers should listen for the types of questions students are asking, the responses, and types of questions or responses are not happening (Quebec Fuentes, 2018). The third stage is to be listening and observing how the teacher responds while working with the group (Quebec Fuentes, 2018). These stages involve the teachers to observe rather than interject their ideas right away. Many times teachers are eager to fix the conversation right away, therefore affecting the discourse between students. Students may be afraid to say the wrong thing if the teacher corrects or takes over the conversation, therefore they may not bring forth their ideas. Teachers should specifically be looking for what type of help they are offering, who are they interacting with, and the amount of talking they are doing (Quebec Fuentes, 2018). The fourth stage teachers should challenge themselves to interact with the group by asking the group questions to help them critically think, giving them a task, asking clarifying questions, comparing strategies, or asking group members to agree or disagree with each other (Quebec Fuentes, 2018). These four stages will help teachers to actively reflect on each group discussion, as well as reflect on how they are responding to each group. Teachers may become more aware to the type of help they are providing to each group, and improve the student discourse.

Discussing ideas helps students solidify their understanding with new concepts. When learning mathematics that is unfamiliar, it takes up a large space in the brain, as it takes deep thinking about how it works and how the idea relates to other ideas (Boaler, 2016). The other ideas that are already solidified take up a small part of the brain, and can be used easily without thinking about it (Boaler, 2016). This process is called compression, and only a few uncompressed ideas can be focused on at one time (Boaler, 2016). When students are working in these small groups, they have a focused goal they are working towards, and they are using the

compressed ideas to help them understand the new concept they are learning. The compressed ideas build on each other and can be used easily when thinking about an uncompressed concept.

Methods

Participants

The action research to determine the effectiveness of within grade grouping compared to within class grouping was conducted at Laura Wilder Elementary School, located in Sioux Falls, South Dakota. Laura Wilder Elementary had 529 students enrolled in the 2017-2018 school year (South Dakota Department of Education, 2018). Of those 529 students, 61.8% are Caucasian 10.8% are Hispanic/Latino, 10.2% are African American, 9.1% are two or more races, 7.2% are American Indian, and 1% is Asian (South Dakota Department of Education, 2018). Fifty-two percent of Laura Wilder students are economically disadvantaged (South Dakota Department of Education, 2018). 18.9% of students are considered to have a disability, and 2.8% are English Language Learners (South Dakota Department of Education, 2018).

Data Collection

To compare the two types of ability grouping, data was collected beginning of the 2017-2018 school year with a second grade classroom. The classroom had 26 students, and four of those students were considered to have a learning disability. All students were grouped according to their skills within the classroom. Students were grouped based on ability for 20 minutes during a time called math intervention, and each group would be met with for about 5-7 minutes. The special education teacher pushed in the classroom for these 20 minutes. In the 2018-2019 school year, students were group according to skills, but within the entire second grade. The 2018-2019 school year, there were three sections of second grade. At the beginning of the year, the first section had 30 students, the second section had 30 students, and the third section had 29 students.

Thirteen of those students are considered to have a disability. To accommodate for the amount of students, the math intervention time was extended to 30 minutes, with each group still met with for about five to seven minutes. The special education teacher pushed into one of the classrooms during this time.

To determine placement of groups, the homeroom teacher tested students with an addition and subtraction assessment tool developed by AddVantage+MR. The assessment is one-on-one, and students give verbal responses to math problems. Students are not able to use paper or pencil, but can use any mental strategies or their fingers. Once the assessment was given to all students, students were grouped together based on their responses and what type of instruction they need based on how they solved the problems and/or if they did not solve a problem correctly. The assessment has a rubric to determine placement, and the rubric is divided into constructs. Construct 0 is where the student has difficulty adding a collection of counters, and it goes up to construct five, which is where the student is able to add and subtract without counting and using all mental strategies. In the 2017-2018 school year, the classroom teacher and the special education teacher grouped the 26 students. In 2018-2019 school year, the three classroom teachers and the special education teacher met altogether to place students into groups.

Once the groups were formed, teachers began to meet with groups. The 2017-2018 school year started September 5, and groups were formed and teachers met with students on September 25. The 2018-2019 school year started August 23, and students were grouped at met with on September 6. The groups were tracked and data was collected from when the groups started to the end of the 1st quarter, and then continued to be tracked through the end of the 2nd quarter. Students are originally formed according to the AddVantage+MR assessment, and when they master the skill, they move onto the next skill based on the progression or trajectory of the

AddVantage+MR assessment. Students are able to move onto the next skill when they show proficiency over a three school day span.

The movement from one skill to the next is tracked on a Google spreadsheet, which is used for calculating measurements. Students' AVMR assessments were first used when calculating measurements. To determine the percent of students in each construct, the number of students in each construct was recorded and divided by the total number of students. This information was then used to determine the average construct. The construct number was multiplied by the percentage of students in that construct to give a construct subtotal. The construct subtotals were then added together to get a total, which was the average construct. These measurements were calculated the same way at the beginning of each school year, the end of quarter one, and at the end of quarter two. The initial average construct from the beginning of the year was subtracted from the average construct at the end of quarter one. This growth was also tracked between quarters, as well as from the beginning of the year to the end of quarter two.

Findings

Data Analysis

Analyzing the growth from the beginning of the year to the end of first quarter, the results showed that both within-class grouping and within-grade grouping had a positive impact on the average construct. The average construct at the beginning of the 2017-2018 school year was 1.96. At the end of quarter one, the average construct was 2.27. The average growth for within-class grouping (2017-2018) was a growth of 0.31. The average construct at the beginning of the 2018-2019 school year was 2.02. At the end of quarter one, the average construct was 3.05. The average growth in one quarter for within-grade grouping (2018-2019) was a growth of 1.03.

Growth was also tracked until the end of quarter two. The average construct growth for within-class grouping from quarter one to quarter two was a growth of 1.15. The average construct growth from quarter one to quarter two for within-grade grouping was a growth of 0.73. Therefore, the average growth from the beginning of the year to the end of quarter two was a growth of 1.46 for within-class grouping, and a growth of 1.76 for within grade grouping. Within-class grouping and within-grade grouping both had an impact on construct growth, with within-grade grouping having a slightly higher average construct growth among two quarters.

Table 1

AVMR Construct Beginning of the Year

Construct	Number of students 2017-2018	Percentage of students 2017-2018	Number of students 2018-2019	Percentage of students 2018-2019
Construct 0	0/26	0%	3/87	3.45%
Construct 1	3/26	11.54%	6/87	6.9%
Construct 2	21/26	80.77%	66/87	75.86%
Construct 3	2/26	7.69%	10/87	11.49%
Construct 4	0/26	0%	2/87	2.3%
Construct 5	0/26	0%	0/87	0%

Table two shows the amount of students in each construct at the end of quarter one, along with the percentage for each construct. In 2017-2018, the percentage for construct three increased from 7.69 percent to 23.08 percent, and a construct four from 0 percent to 3.85 percent in one quarter. For the 2018-2019 school year, the percentage of students at a construct three went from 11.49 percent to 31.03 percent, and a construct four from 2.3 percent to 37.93 percent in one quarter.

Table 2

AVMR Construct End of Quarter One

Construct	Number of students 2017-2018	Percentage of students 2017-2018	Number of students 2018-2019	Percentage of students 2018-2019
Construct 0	0/26	0%	0/87	0%
Construct 1	1/26	3.85%	2/87	2.3%
Construct 2	18/26	69.23%	25/87	28.74%
Construct 3	6/26	23.08%	27/87	31.03%
Construct 4	1/26	3.85%	33/87	37.93%
Construct 5	0/26	0%	0/87	0%

Table three shows the amount of students and the percentage in each construct at the end of quarter two. In 2017-2018, the percentage for construct three increased from 23.08 percent to 34.62 percent, and a construct four from 3.85 percent to 50 percent in from quarter one to quarter two. For the 2018-2019 school year, the percentage of students at a construct four went from 31.03 percent to 79.31 percent, and a construct five from 0 percent to 3.45 percent in one quarter.

Table 3

AVMR Construct End of Quarter Two

Construct	Number of students 2017-2018	Percentage of students 2017-2018	Number of students 2018-2019	Percentage of students 2018-2019
Construct 0	0/26	0%	0/87	0%
Construct 1	1/26	3.85%	1/87	1.15%
Construct 2	2/26	7.69%	5/87	5.75%
Construct 3	9/26	34.62%	9/87	10.34%
Construct 4	13/26	50%	69/87	79.31%
Construct 5	1/26	3.85%	3/87	3.45%

Table four shows the average construct growth in one quarter, the average growth from quarter one to quarter two, and the average growth in two quarters.

Table 4

Average Construct Growth

Year	Average Growth in One Quarter	Average Growth From Quarter One to Quarter Two	Average Growth in Two Quarters
2017-2018	+0.31	+1.15	+1.46
2018-2019	+1.03	+0.73	+1.76

Discussion

Summary of Major Findings

The research shows that both types of ability groups have an impact, with within-grade grouping having a slightly higher impact over two quarters. Based on the beginning of the year

data, most students start out as a construct two. In the 2017-2018 school year, by quarter two majority of students were a construct three or four. For the 2018-2019 school year, majority of students were a construct four by the end of quarter two. This shows that there is an impact on math achievement, as most students grow one or two constructs in two quarters, with within-grade ability grouping showing that most students grow two constructs.

The 2018-2019 school year shows the range of skills of an incoming second grader, as there were students in every single construct except for a construct five. This is evidence for the various student needs that teachers need to address in the classroom in education today. Hong et al. (2012) shared the vast differences among kindergarten students in the area of reading, and how teachers group students to meet the needs of all students. This allows teachers to instruct students towards the “zones of proximal development” by providing instructional activities and materials that are not too easy or too difficult for them (Hong et al., 2012). Kindergarten students can range in abilities in math and reading due to previous exposure to concepts. Some students have prior experiences through preschool or home life, where as some students do not know what a number is or have ever seen a book before.

Students enter kindergarten with a range of skills, and this range can expand when they get to second grade. AVMR construct zero is where a student is not able to count counters, where a construct four is where a student is able to use counting strategies to add and subtract within 20. If a teacher is teaching a whole group lesson, this teacher may find it difficult to teach a math concept with this range of skills. The student who has difficult counting counters may need one on one attention the entire lesson, where the students who can solve problems by counting may get easily bored and may not be challenged with their mathematical thinking. This study shows that by meeting with all students based on their zone of proximal development has

an impact and moves students forward in their mathematical achievement. Within-grade grouping is shown to have a slightly higher impact based on this study.

Limitations of the Study

The data was collected over two quarters, so the results could vary if done over the course of the entire school year. If the data collection was over the entire year, the impact of within-class grouping and within-grade grouping could vary. The first quarter students are still adjusting to the beginning of a new school year, therefore the results may vary if the data was collected over two different quarters. This was only conducted in a primary classroom, there could be various grade levels where the impact could vary. There were three sections of second grade classrooms with classroom sizes around 30. If this study was conducted with more or less sections as well as more or less students the results could vary. The study was conducted at one school, which is a low-income school in an urban area; the impact could differ in a different environment.

Another factor to consider is the amount of time that was given for intervention groups. The 2017-2018 school year, there was 25 minutes allotted for math intervention. In 2018-2019, there was 35 minutes allotted for math intervention. Since additional time was given to compensate for the amount of students, this could have affected the results of the study. The amount of time students met with the teacher stayed consistent, but the extra ten minutes allows for students to have more time to work independently on math programs on their devices, which could have an impact on math achievement.

Further Study

To examine the impact of ability grouping further, one could conduct this study over an entire year to see if the results changed when data is collected more than two quarters. This study

only used quantitative data to determine if there was an impact, so one could also use qualitative data to determine if there is an impact. A researcher could conduct a survey for students to take to gain additional data to extend the study. Other qualitative data that could be used for this research is interviewing the teachers to gain their insight on the impact of both types of ability grouping. Teachers may be able to give perspective that the quantitative data is not able to provide.

Previous research that is included in this study evaluated the impact of ability grouping on self-esteem. Research could be conducted to evaluate the impact on self-esteem with both types of ability grouping. Much of the research that is referenced was conducted in the late 1900s, and the groupings were not as flexible as it is today. Researchers could determine if the change in flexibility of grouping has an effect on self-esteem. This study could be done for upper elementary students to see if there is an impact for a different grade level. It could also be further investigated by conducting this study in a different environment. One could conduct the study with smaller class sizes, different socio-economic status, or in a suburban area.

Conclusion

Is there an impact with within-class ability grouping compared to within-grade ability grouping in a primary grade level environment? Based on the findings, there is more of an impact with within-grade ability grouping compared to within-class ability grouping. When students are flexibly placed into groups and are able to fluidly move from group to group, students have opportunities to enhance their strengths and grow in their understanding of new concepts or strategies. The flexibility requires the teacher to constantly be evaluating the student and his/her understanding, therefore providing the appropriate teaching for each student.

Teachers who know exactly what students are doing and their misinterpretations are able to adjust their teaching to move forward their understanding on different concepts. This study shows that both types of the flexible ability grouping has an impact on mathematical learning, but within-grade grouping has a slightly higher impact on learning.

Other studies have evaluated the impact of ability grouping on learning and on self-esteem, where this study compares the impact on two different types of ability grouping. This study did not evaluate the impact on self-esteem, but evaluated the impact on mathematical learning and whether grouping students as an entire grade had more of an impact over grouping students in one section of second grade. Hattie and Anderman (2013) found that there was a small impact when students were grouped, especially when classrooms have diverse learners with different needs. This study supports the finding as both types of ability grouping had an impact. Adelson and Carpenter (2011) found that kindergarten classrooms that grouped students had higher achievement rates for all students and even higher achievement for those students who perform above grade level. This study shows that the percentage from each construct moves from the lower level constructs to the higher level constructs, which shows that majority of students are moving because of this type of practice, with the high achieving students reaching a construct five by the end of the second quarter, which is where second grade students are expected to be by the end of the school year.

The findings from this study show the importance of meeting all student needs by flexibly grouping students as an entire grade. Teachers are able to evaluate student understanding each day, and change their goal as soon as they have mastered a concept. Students are not bored in the groups as students are in the zone of proximal development and getting the support and

challenge that they need to succeed. When students are divided among the entire grade, the students get to meet with different teachers, and are able to experience different types of teaching. Student's benefit from the collaboration of the team of teachers, and all students have a teacher that is working to meet their needs.

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