

## Ability Grouping is on the Rise, but Should It Be?

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### Abstract

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Ability grouping is on the rise in American schools. Teachers engage in this classroom organizational strategy with the purpose of meeting individual learners' needs, improving student learning, and increasing test scores. However, there is opposition to ability grouping. Teachers who do not practice ability grouping often question its significance, believe it has a negative outcome on student achievement and self-concept, or prefer teaching whole-group instruction. This review of the research literature sought to determine the effectiveness of ability grouping on kindergarten through sixth grade students. Specifically, this review examined what ability grouping encompasses and the varying methods for implementing ability grouping at the elementary level. In addition, we investigated the effect of ability grouping on the academic achievement of advanced, on level, and below level elementary students. Finally, we explored how ability grouping influences the psychological and social welfare of young students.

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**Key Words:** Ability grouping, elementary students, between-class ability grouping, within-class ability grouping

### 1. Introduction

Many educators of elementary school children have practiced at least one form of ability grouping during their tenure in the classroom. In the 2013 Brown Center Report on American Education, Loveless reported that from 1998 to 2009 the percentage of fourth-grade teachers implementing ability-based reading groups increased from 28% to 71%. In that same report, Loveless reported an increase in math ability grouping from 40% to 61% from 1996 to 2011. These findings demonstrate that ability grouping is on the rise in American classrooms. Teachers engage in this classroom organizational strategy with the purpose of meeting individual learners' needs, improving student learning, and increasing test scores. Teachers who do not practice ability grouping often question its significance, believe it has a negative outcome on student achievement and self-concept, or prefer teaching whole-group instruction. Missett, Brunner, Callahan, Moon, and Azano (2014) found that teacher beliefs and expectations about their students' abilities influence the instructional choices made in the classroom. Significant instructional decisions like ability grouping should not be based on conjecture, but by empirical research that provides administrators and educators alike with the knowledge to determine whether ability grouping is an effective instructional practice to implement school wide and/or in individual classrooms for elementary students.

The purpose of this review is to determine the effectiveness of ability grouping on kindergarten through sixth grade students. A comprehensive analysis will be presented through the use of three guiding research questions. First, what is ability grouping and how is ability grouping implemented at the elementary level? Second, what is the effect of ability grouping on the academic achievement of advanced, on level, and below level elementary students? Finally, how does ability grouping influence the psychological and social welfare of students?

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## 2. What Is Ability Grouping and How Is It Implemented at the Elementary Level?

Ability grouping is an educational approach that places students in groups based on academic achievement. The common purpose of ability grouping is to provide instruction that is appropriate for students and their individual needs. The two most common forms of ability grouping are between-class and within-class ability grouping. Between-class ability grouping is the practice of separating students into different classrooms based on academic ability or past performance (Matthews, Ritchotte, & McBee, 2013). Whereas, within-class ability grouping divides students within a class based on academic ability, past performance, or student interests. These groups are typically assigned by the teacher and may be heterogeneous or homogeneous. It is the intent for ability grouping assignments to be flexible, which means that students can easily move in and out of grouping assignments based on performance.

**2.1 Between-class ability grouping:** Between-class ability grouping has many variations that are practiced throughout elementary schools. Researchers have studied different styles of between-class ability grouping such as multilevel classes (Gentry & MacDougall, 2009; Kulik & Kulik, 1992; Tieso, 2003), cross-grade grouping (Kulik & Kulik, 1992; Tieso, 2003), school-wide cluster grouping (Brulles, Peters, & Saunders, 2012; Gentry & MacDougall, 2009; Matthews et al., 2009), total-school cluster grouping (Gentry & Owen, 1999; Gentry & MacDougall, 2009), and tracking (Gentry & MacDougall, 2009; Matthews et al., 2009; Worthy, 2010).

**2.1. a. Multi-level ability grouping:** Multilevel ability grouping is the practice of dividing students of the same grade into groups based on ability or for a specific subject. When multilevel ability grouping was first introduced in Detroit in 1919, standard materials, and methods were used without the differentiation of curriculum or instruction between groups (Kulik & Kulik, 1992). In other words, students received the same content; the only difference was that they were among a classroom full of peers with similar abilities. This style of multilevel class typically had little or no effect on student achievement (Kulik & Kulik, 1992). A more common example now seen in elementary schools is the regrouping of students for a particular subject area based on achievement or ability, which includes a variety of curriculum, materials, and strategies for diverse learners (Gentry & MacDougall, 2009). When this occurs, the instruction is designed to meet the comparable needs of the students. Teachers use relevant curricula, appropriate pace, and suitable approaches to promote successful learning (Gentry & MacDougall, 2009). In the case with mathematics, one teacher teaches algebra to a classroom of high-ability advanced students, another teaches pre-algebra to proficient students, all the while another teacher instructs struggling students on the basics and fundamentals of math. As students advance or decrease in their academic achievement and learning, they have the opportunity to move in and out of classrooms, which are referred to as flexible ability grouping (Matthews et al. 2009).

**2.1. b. Cross-grade grouping:** Cross-grade grouping is similar to multilevel grouping, except it includes students of various grades and typically involves more achievement levels and classes (Kulik & Kulik, 1992). According to Tieso (2003), the most well known cross-grade grouping assignment is the Joplin Plan. The Joplin Plan initially started by cross-grade grouping elementary students in reading. Students in different grades would separate into different classrooms for reading instruction appropriate to their readiness levels and return to the regular education classroom for the remainder of the day (Tieso, 2003). The teachers would instruct using textbooks and materials that were relevant to the students' abilities and not their specific grade levels. This enables teachers to adapt the curriculum and instruction to meet the similar needs of the group, rather than having a classroom full of students of various abilities using a variety of materials (Tieso, 2003). The Joplin Plan later evolved to include rearrangement for math instruction as well.

**2.1. c. School-wide cluster grouping:** School-wide cluster grouping is described as the placement of high achieving or gifted students in a regular education classroom (Gentry & MacDougall, 2009). One purpose of this arrangement is to establish an equalized range of achievement levels in a classroom and limit extreme variations of student abilities (Brulles et al., 2012). The classroom teacher differentiates the curriculum and instruction for all abilities while teaching. This type of between-class grouping has shown effective results in meeting the academic needs of high-achieving students as well as students of other levels (Gentry & MacDougall, 2009).

**2.1. d. Total school cluster grouping:** Total school cluster grouping is a specific type of cluster between-class grouping. In this model, students are categorized based on achievement levels and given a placement for the school year (Matthews et al., 2013). Students are placed in categories such as high achieving, above average, average, low average, low, and special education (Matthews et al., 2013). Similar to school-wide cluster grouping, teachers may change categorical assignments as students' achievement levels increase or decrease (Matthews et al., 2013). Students from each group are distributed evenly between classrooms except for the high-achievers; the high ability group is assigned to one specific classroom with a designated teacher (Matthews et al., 2013). Teachers of high ability classrooms receive specialized professional development training on gifted education curriculum, instruction, and teaching strategies (Gentry & MacDougall, 2009). For example, one classroom may include all twelve high-achieving students in third grade, eight average students, and four below average students; while another third grade classroom may contain seven above average students, eight average students, five low average students, and five low students. According to Gentry and MacDougall (2009), the goal of total school cluster grouping is to limit the number of academic levels within a single classroom and assist teachers with differentiation in order to increase the achievement for all students.

**2.1. e. Tracking:** One of the most recognized variations of between-class ability grouping is tracking. Tracking refers to the permanent assignment of students to classrooms for instruction and is commonly seen at the secondary level (Gentry & MacDougall, 2009). Students placed in high-tracked classes experience a faster paced, more challenging workload, whereas students in low-tracked classrooms focus on basic literacy skills, test preparation, with low-level materials (Worthy, 2010). Tracking differs from flexible ability grouping because the sequence of courses for students at specific ability levels or tracks are considered full-time and are rarely adjusted (Matthews et al., 2013).

**2.2. Within-class ability grouping:** In elementary schools, students are frequently placed in groups of similar abilities within the classroom for small-group instruction (Lleras & Rangel, 2009). Within-class grouping assignments may be heterogeneous or homogeneous, and are typically chosen by the classroom teacher based on students' abilities, achievements, skills, or interests (Gentry & MacDougall, 2009). Heterogeneous groupings include students with mixed abilities, whereas homogeneous groups consist of students with the same or similar abilities (Leonard, 2001). Groups are meant to be flexible, thus, enabling students to move in and out of assignments based on individual achievement and needs (Gentry & MacDougall, 2009). Teachers assess students frequently to determine student growth and reassign students to different groups based on their results (Tieso, 2003). This strategy of flexible ability grouping is aimed to meet the fluctuating needs of all learners within a classroom (Castle et al., 2005).

The purpose of within-class ability groups is to improve achievement and reduce the gap between students of different ability levels, which is done through differentiation of instruction (Lleras & Rangel, 2009). Castle et al. (2005) found that teachers commonly have students with differences in abilities ranging from three to five years within one single classroom. Aside from academic differences, often times classrooms contain students from diverse backgrounds, languages, and cultures. In response to the diverse and developmentally varied classrooms, within-class groupings are often practiced with the goal to meet the needs of all students. In order for within-class ability groupings to be successful, teachers must adapt their instruction (Tieso, 2003). After teachers present a whole group lesson, they may then place students into small groups based on performance, reading levels, or interests. For example, after a whole class lesson on the butterfly life cycle, the teacher can extend students' learning in small group instruction by using reading materials at the students' varying readability levels. The advanced level group may read a more difficult text and engage in enrichment activities, while the below level group reads a simpler text with pictures as the teacher models appropriate reading strategies. Within-class ability groups can also be taught with the same material but with appropriate levels of prompting, modeling, and pacing that meet the needs of the students in each group (Lleras & Rangel, 2009). In this case, if a teacher uses the same reading material for each level group, they may assign the advanced group independent reading and reflection, have the on level group partner read the material and complete the activities together, and then work with the below level group by modeling effective reading strategies and checking for understanding throughout reading and discussion. Either way, it is essential for teachers to adapt the instructional material to the academic needs of each child in order for ability groups to be efficient (Kulik & Kulik, 1996).

**2.2. a. Support for within-class ability grouping:** Supporters of within-class grouping believe it accommodates the diverse student needs, abilities, goals, and interests, and has the potential to raise student achievement levels as a whole (Gentry & Owen, 1999; Kulik & Kulik, 1992; Puzio & Colby, 2010).

Teachers are able to more effectively engage students in small groups rather than completely group classroom instruction because there are fewer students; this grouping allows the teachers to efficiently make adaptations to the instructional materials and methods provided in homogeneous ability groups (Tieso, 2003). The learning conducted in within-class groups balances the instructional time that may have been lost during small group instruction. Other advantages of teaching in ability groups are that it places an emphasis on diversity rather than the standardization of lessons, allows students to act as peer tutors to encourage learning, provides more options and variability to group assignments, gives teachers more time to better assist struggling students, and allows flexibility in the modification and management of lessons (Leonard, 2001). If done efficiently and purposefully, within-class ability groups may be an effective method for teachers to incorporate in order to meet the variety of student needs in an elementary classroom.

**2.2. b. Caution for within-class ability grouping:** On the other hand, opposing researchers claim that within-class ability groups result in academic, social, and emotional consequences for students, especially those categorized as low ability (Nomi, 2010; Tieso, 2003; Worthy, 2009). Nomi (2010) argues that the instructional arrangements widen the achievement gap. Lower ability groups typically move slower than those in higher level groups, which may create gaps in content knowledge, thus negatively effecting achievement, as well as the low achieving student's attitude and self-concept (Worthy, 2009). For example, material covered in one week with a higher-level group may take a lower level group two or more weeks to complete. This may damage students' self-esteem and attitudes when being compared to more advanced and fast-paced ability groups (Tieso, 2003). Nomi (2010) also reported that the learning environment can be more disruptive, which is likely caused by less student supervision in learning activities as teachers spend time with other ability groups. Additionally, some ability groups may require more direction and training, resulting in groups receiving different amounts of instruction and attention. Some researchers also argue that low-achieving students are demotivated when placed in homogeneous groups, but are encouraged when placed with high-achieving students in heterogeneous groups (Kaya, 2015; Leonard, 2001). The evidence presented shows that researchers' opinions on ability grouping are inconsistent, varying from study to study. Because of this discrepancy between researchers' opinions, it may be difficult for teachers or school districts to make a confident decision on whether or not to practice ability grouping in their classrooms and schools. The forthcoming studies present an insight into how and why teachers are choosing or rejecting this practice in their elementary classrooms.

A qualitative study conducted by Chorzempa and Graham (2006) explored first, second, and third grade teachers' use of within-class ability grouping. Of the 201 participating teachers, 63% reported using within-class homogeneous ability groups for reading. Sixty-eight percent of the teachers cited they used within-class ability groups because it meets the instructional needs of their students. Other reasons included that the reading curriculum suggested using ability groups (12%), it was required by their school district or administration (11%), it meets the social needs of students (7%), personal experiences (5%), small group instruction is easier and more effective (4%), and class and school factors (3%). For those teachers not incorporating within-class ability groups, 29% of teachers felt that mixed-ability settings were more beneficial for their students.

Other reasons teachers indicated for not using ability groups included that they were not permitted under the school district or administrations' policies, negative social factors, class and school factors, the current reading curriculum, preference of individualized instruction, personal decisions, not enough time, and research support denying its success. In the same study, Chorzempa and Graham (2006) also investigated how teachers placed students within a particular reading group. Seventy-six percent of teachers explained they used formal or informal reading assessments to group students. Other reasons included observations of class performance, students' strengths, and weaknesses, oral reading performances, students' reading levels, sight word skills, social behaviors, comprehension abilities, vowel recognition and/or phonemic awareness skills, students' writing, use of reading strategies, and mastery of the English language. The results of teacher observations and student assessments are the most common indicators teachers used when categorizing students into homogeneous or heterogeneous within-class ability groups. Policies regarding within-class ability grouping are not required in all school districts, so one may question the reasons why certain schools implement the practice and others do not.

Several researchers found that grouping is most common in schools with large minority students, diverse levels of achievement, and higher levels of poverty (Condron, 2008; Nomi, 2010). A study conducted by Nomi (2010) focused on the significance school contexts have on ability grouping, and how that affects student learning. The study found that schools implementing within-class ability grouping were more likely to be larger public schools, with a lower mean SES, a higher quantity of minority students, students with lower literacy skills, and students with a large range of literacy skills.

Administrators of these schools also reported having more issues with attendance of students and teachers, negative school environments, and school safety concerns. Schools that were less likely to use ability grouping included private and smaller schools that were similar in both cognitive and behavioral characteristics, and often had admission processes such as tests, records, recommendations, and interviews upon entry. Nomi (2010) found that schools that use within-class ability grouping had more disadvantageous characteristics and diversity than schools without within-class ability grouping practices. Because these larger public schools often times have a more diverse population, with students of various abilities, backgrounds, languages, cultures, and socioeconomic statuses, these school districts often implement within-class ability groups with intentions to alleviate achievement gaps by meeting the various needs of all learners.

### **3. What Are the Effects of Ability Grouping on Elementary Students' Academic Achievement?**

Some researchers argue that the effectiveness of ability grouping depends on the style of grouping implemented, as well as the demographics and academic levels of students involved (Nomi, 2010). Others find insignificant effects, neither positively nor negatively affecting student achievement (Brulles et al., 2012; Kulik & Kulik, 1992; Leonard, 2001). Whether researchers fully support ability grouping, believe that ability groups cause negative consequences, or argue that certain styles of ability grouping trump others, it is crucial to determine the practices that are most effective for learners in your school.

**3.1. Between-class ability grouping:** Kulik and Kulik (1992) conducted a meta-analysis to examine the effects of grouping programs on students. Fifty-one studies were examined that measured the effects multilevel classes on academic achievement. Approximately 60% of the studies concluded that students' assessment scores were greater in the multilevel classes, while 40% found greater assessment scores in the mixed-ability classes. However, the differences between students' scores in multilevel classes and mixed-ability classes were determined minor in all fifty-one studies and not great enough to reach significance. These results indicate that multilevel classes do not have an effect on students' academic achievement when compared to students in mixed-ability classrooms. Thirty-six of the studies examined the results separately by students' ability levels and found that students in higher ability classes had clearer academic benefits, but the students in average and lower ability classrooms were not affected, but also not academically harmed by multilevel classroom groupings. In addition to the analysis on multilevel classes, Kulik and Kulik (1992) also investigated the effects of cross-grade grouping programs on student academic achievement and found that cross-grade grouping programs had a positive effect on students' academic achievement with an overall effect size of Cohen's  $d = .30$ .

Similar to Kulik and Kulik (1992), Brulles, Peters, and Saunders (2012) also examined the effects of between-class ability grouping, but instead focused on school-wide cluster grouping. The purpose of the study was to determine how non-gifted students performed in mathematics when placed in gifted cluster classrooms as opposed to non-gifted cluster classrooms in an urban school district that had been implementing school-wide cluster grouping for six years. The study included 3,716 non-gifted students in grades 2-8. Measures collected included assessment data from the school district's pre- and post-benchmark assessments and examined the non-gifted students' pre-assessment mathematics scores to the same students' post-assessment mathematics scores. The results of non-gifted students in the gifted clustered classrooms were then compared to non-gifted students in the non-gifted clustered classrooms. The researchers found that non-gifted students made progress in math regardless of being placed in the gifted or non-gifted classrooms and there were no significant differences in non-gifted students' posttest scores. The school-wide cluster-grouping model was neither beneficial nor detrimental because the results between both groups showed almost equal progress. Matthews, Ritchotte, and McBee (2013) investigated the effects of school-wide cluster grouping on the reading and mathematics performance of elementary school gifted ( $n = 68$ ) and non-gifted ( $n = 186$ ) students in grades 2-6 during a single year of clustering.

Data was collected from the MAP assessment in the areas of reading and math for three years. During the first year with in-class grouping was used and the gifted-identified students were spread across classrooms. During year two, school-wide cluster grouping was implemented and gifted students were placed together in a single classroom. For the final year, students returned to within-class grouping arrangements.

As expected, the results showed an overall increase in reading scores over the three years from both gifted and typical students. Gifted students showed an increase in reading ability at the same rate over time as typical students not identified as gifted. During the year students were cluster grouped, both gifted and typical students grew at a slightly slower rate in reading than in the other two years, but this result was found to be insignificant. Likewise, the math assessment results showed an overall increase in scores over the three years from both gifted and typical students, and gifted students increased in math ability at the same rate over time as typical students. In terms of mathematics achievement, both typical and gifted students grew at a substantially faster rate during the year following cluster grouping. In the end, researchers found no evidence to show that school-wide cluster grouping benefited or harmed academic achievement in the area of reading, but displayed positive results in math the year after implementation, suggesting that it may take more than one year for the benefits of cluster grouping to become apparent. The results of Matthews et al. (2013) align with the findings of Brulles et al. (2012) which concluded that school-wide cluster grouping did not have any lasting benefits or harm to students' academic achievement. Matthews et al. (2013) found these results in reading, whereas Brulles et al. (2012) found them in mathematics, which contradicts Matthews et al.'s (2013) research that school-wide cluster grouping increases students' math achievement.

Differing from the research of Matthews et al. (2013) on school-wide cluster grouping, Gentry and Owen (1999) focused their study on the effects total school flexible cluster grouping had on student achievement in grades 3-5. The researchers compared students in a cluster grouping school to students from a similar school not involved in any style of cluster grouping. While implementing a total school flexible grouping model, the school district also regrouped students by achievement levels for reading and math instruction. Existing achievement data from both schools in the areas of math and reading were compared.

The cluster-grouped school used the Iowa Test of Basic Skills (ITBS) and the comparison school used the California Achievement Test (CAT), which are comparable by content. Even though the cluster-grouped school began with lower reading scores than students in the comparison school, the cluster-grouped school equaled or outperformed the comparison school after the three-year period. The growth in reading achievement was statistically significant; however, math achievement did not have any significant changes. This is likely because the students' math scores in the cluster-grouped school were initially high at the start of the study. Findings indicated that throughout the implementation of the total school flexible grouping model, students had increased reading achievement, higher math achievement, and there was an increased number of students identified as high achieving. This demonstrates that when a total cluster-grouping model is combined with high teacher expectations, appropriate strategies, and a positive classroom environment, positive effects may transpire for all students involved. Although, while the school district was implementing a total school-grouping model, they also regrouped students homogeneously for reading and math instruction. This is a limitation of the study because even though student achievement did increase, it is difficult to attribute these results to total school cluster grouping or homogenous within-class ability grouping, since both instruction styles were practiced simultaneously.

**3.2. Within-class ability grouping:** In the meta-analysis previously explained, Kulik and Kulik (1992) additionally selected eleven studies to determine the effect within-class ability grouping had on academic achievement. Nine studies found an overall higher achievement level in classrooms implementing within-class grouping, and two studies reported mixed-ability classrooms had greater achievement (Kulik & Kulik, 1992). The effect sizes were small but significant, which indicates that within-class ability groups had an overall positive effect on student achievement.

Similar to Kulik and Kulik (1992), Puzio and Colby (2010) also conducted a meta-analysis, but focused specifically on the effects of within-class grouping on reading achievement. Their review included fifteen experimental or quasi-experimental studies that used a pretest, posttest, and comparison group design and encompassed 5,410 students from grades 2-10. The results found that within-class grouping is effective at improving reading achievement with an effect size of Cohen's  $d = 0.22$ .

While this effect size appears small, when taking into account the normal yearly growth for reading on standardized achievement outcomes, it translates into an extra half of a year of growth in reading. Puzio and Colby (2010) suggest that teachers and school districts begin or continue using within-class ability grouping to improve reading instruction.

Nomi (2010) also examined the effects within-class grouping had on reading achievement by conducted an individual study to determine (a) if reading achievement differed between students who were grouped by ability and those who were not, (b) if the effects of reading ability grouping vary by students' initial abilities, and (c) if the effects of ability grouping alter between schools. Participants in this study included 13,512 kindergarten students from ability grouped schools, ungrouped schools, and mixed schools.

Data was collected from fall and spring kindergarten assessments, as well as spring first-grade assessments. The results showed there were no significant differences between the average reading scores of students grouped by ability and those that were not. The research also showed no significant difference among students in low, middle, and high achievement levels at ability grouped and ungrouped schools. In many of these schools, ability grouping had no effect on student learning; however, some schools with varying characteristics practicing ability grouping showed either benefits or harms to academic achievement. For example, private and small schools, typically including advantaged students with similar levels, showed more positive effects from ability grouping, while schools having students from more deprived and diverse backgrounds had no effect or negative effects, especially when concerning the lower skilled students. Various factors may explain the undesirable effects for students attending certain schools. A recommendation for future studies would be to investigate how factors such as students' backgrounds, cultures, socioeconomic statuses, and languages affect academic achievement throughout the use of within-class ability groups.

Within-class grouping was also investigated in a more recent study conducted by Kaya (2015), but with a focus on homogeneous groups compared to heterogeneous groups. The purpose of this study was to examine how the different types of achievement grouping had an effect on students' generation of questions in science (Kaya, 2015). Participants in this study included 46 fifth grade students from two classrooms with the same science teacher. Kaya (2015) chose a school in Turkey with average socioeconomic backgrounds and standardized test scores. Both classrooms had similar average achievement test scores.

Classroom A was homogeneous, having groups of students with similar scores and abilities, and Classroom B was heterogeneous, with students of different scores and abilities grouped together. Both classrooms had five groups, with either four or five students in each group. Students were to generate questions in their groups relative to the topics they learned the previous week. The questions were coded as lower order or higher order, and compared between classrooms. Kaya (2015) found there were no significant differences between the two classrooms in the total number of questions, or the number of lower order and higher order questions. This shows that grouping students homogeneously or heterogeneously had no effect on the amount or type of questions generated. Although, in both classrooms, students with higher achievement test scores created more total questions and higher order questions than other students. These results support the idea that high-achieving students perform well regardless of how they are grouped (Kaya, 2015), and also aligns with views that higher ability students typically show more positive effects from ability grouping than their lower performing peers (Nomi, 2010).

Similar to Kaya's (2015) study, Leonard (2001) had also explored heterogeneous and homogeneous groups to determine whether one style of group composition was more effective. Instead of emphasizing on science and higher-order thinking skills as Kaya (2015) did, Leonard (2001) focused on mathematics achievement. The study included 177 sixth-grade mathematics students enrolled in a suburban elementary school. Leonard (2001) collected achievement data from her own classroom of students using The Maryland Functional Mathematics Test-Level I, administered as a pretest and posttest. The results of these assessments were used to determine whether group composition had an influence on mathematics achievement. During year one, the students were grouped heterogeneously by ability, and during year two the students were grouped homogeneously. Students were assigned to an ability group based on their results from the MFMT-I pretest. The heterogeneous cohort consisted of sixteen low ability, thirty-four middle ability, and forty-three high ability students, whereas the homogeneous cohort contained thirty-seven low ability, twenty-nine middle ability, and twenty-eight high ability students. Results revealed there were significant effects between the posttest scores of students in the heterogeneous and homogeneous groups.

The low-achieving and middle-achieving students scored significantly higher in the heterogeneous groups than students in the homogeneous groups. Low-achieving students grouped homogeneously scored much lower than those in the heterogeneous groups did. Although, Leonard (2001) did not find any significant differences in the high-achievers' scores between the two group settings. These results suggest that group composition had an effect on students' mathematics achievement; particularly that lower and middle achieving students grouped heterogeneously performed better than students grouped homogeneously. These results disagree with Kaya's (2015) findings that noted no significant differences between the performances in heterogeneous and homogeneous classrooms in relation to the generation of higher-order thinking questions. Although, the results of Leonard's (2001) study do support the beliefs of other researchers (Nomi, 2010; Tieso, 2003; Worthy, 2009) that claim homogeneous style within-class ability groups have a negative effect on low ability students' academic achievement. As mentioned previously, some critics of within-class ability grouping believe that it resulted in academic, social, and emotional consequences for students, especially those categorized as minority, low socioeconomic status, and low ability (Nomi, 2010; Tieso, 2003; Worthy, 2009). Castle, Deniz, and Tortura (2005), conducted a study that examined these students predominantly, and how flexible within-class ability grouping affects their learning. The focus of the study was to determine if the percentage of students reaching mastery in reading and writing increased throughout the implementation of within-class ability grouping (Castle et al., 2005). The school population was considered high needs for the following reasons. Forty-five percent of students were African American, 29% Hispanic, 21% White, and 5% Asian, with 61% of students receiving free or reduced lunch.

The elementary school was also one of the lowest performing in the district, and had a transience rate that exceeded 35% per year. Castle et al. (2005) tracked only the non transient, below-goal students in grades two through six. Student achievement data was collected from the QRI, state-standardized tests, and Writing Prompt scores for a five-year period. During the first year, participating teachers received training in how to conduct assessments, how to use assessment data to form groups, and how to plan differentiated instruction; an Instructional Resource Teacher also provided professional development and support throughout the duration of the study. To determine the effect within-class grouping had on achievement, the percentage of students below goal and at or above goal (mastery) were calculated, and each student was identified as being at mastery or below; students' scores were then compared for at least a three-year period. The results from the state standardized tests indicated an increase in the percentage of students at mastery for all three reading comparisons and two out of the three writing comparisons. The data collected from the QRI results showed increases in the percentage of students at mastery on six out of seven comparisons. As for the Writing Prompts assessments, Castle et al. (2005) found increases in the percentage of students at mastery in five of the six comparisons. The percentage of students attaining at mastery increased in sixteen out of the nineteen comparisons, and increases ranged anywhere from 10% to 57% throughout the five-year study. These results revealed that throughout the implementation of within-class ability grouping, the percentage of at mastery students increased in the areas of reading and writing on most assessments. Because this study focused on below goal students, this would suggest that within-class ability grouping had positive effects on below-goal students. These results contradict researchers such as Nomi (2010), Tieso (2003), and Worthy (2009) who found that within-class ability grouping had zero or negative effects on low ability students' learning.

There are no clear solutions when defining whether ability groups benefit or harm students' academic achievement. Researchers such as Castle et al. (2005), Gentry & Owen (1999), Kulik & Kulik (1992), Matthews et al. (2013), and Puzio & Colby (2010) have found that the style of ability grouping they have explored showed positive results on students' achievement. Leonard (2001) found benefits on achievement when implementing mixed ability heterogeneous groups, but negative effects when grouping students homogeneously. Some researchers found insignificant results, determining that the style of ability grouping, paired with the level of student participants and subject area studied, had neither improved nor decreased academic achievement (Brulles et al., 2012; Kaya, 2015; Kulik & Kulik, 1992; Leonard, 2001; Matthews et al., 2013; Nomi, 2010). Furthermore, students of different ability levels may need particular styles of ability grouping instruction in order to be successful. More research needs to be completed to determine which types of ability grouping are most beneficial for the varying needs of students in today's elementary classrooms.



#### 4. How does ability grouping influence the psychological and social welfare of students?

Now that the academic effects of ability grouping have been explored and determined to be inconclusive, it is essential to consider the influence ability grouping has on the psychological and social welfare of students. To do so, researchers have examined students' social self-concept of acceptance, social-self-concept of assertiveness, peer relationships, school-related attitudes, and self-esteem (Kulik & Kulik, 1992; Neihart, 2007; Vogl & Preckel, 2014). Social self-concept of acceptance refers to how students perceive themselves in their sense of acceptance and interaction with peers, whereas social self-concept of assertiveness includes an individual's perception in their ability to assert and apply themselves in the school environment (Vogl & Preckel, 2014). School-related attitudes and beliefs include students' interest in school, student-teacher relationships, social tension in class, and anxiety caused by the school environment (Vogl & Preckel, 2014). Similar to researchers' viewpoints on the academic affects of ability grouping, researchers once again have various opinions on how ability grouping affects students psychologically and socially. Some researchers of ability grouping found benefits such as students having a more favorable attitude toward subject matters, a greater development of career interests, healthy social relationships, and high motivation in groups (Adams-Byers, Whitsell, & Moon, 2004; Kuriloff & Reichart, 2003; Neihart, 2007). Other researchers claim that ability grouping negatively impacts students' self-concept and self-esteem (Kulik & Kulik, 1992; Marsh & Hau, 2003; Neihart, 2007). Then again, some research has shown that ability grouping has different social effects for all students. For example, high ability or gifted students may have positive results from ability grouping, while low ability or minority students are negatively affected. Neihart (2007) conducted a review of empirical research to determine the style of ability grouping most beneficial to students emotionally and socially and then provided recommendations for educators to practice in their schools and classrooms.

Neihart (2007) analyzed research that studied the social and emotional impact of ability grouping on gifted students. The review of research conducted by Neihart (2007) found that various types of ability grouping generate consistent results for gifted students. Ability grouping appears to show positive social and emotional effects for certain gifted students, neutral effects for some, and then damaging effects for others (Neihart, 2007). The research was limited, but evidence collected suggests that homogeneous grouping arrangements are more strongly associated with positive adjustments of highly gifted children. Positive social and emotional outcomes for gifted minority students were also found, but Neihart (2007) explained that more research is needed to establish clearer effects. The results of this review determined that ability grouping has different social effects for all students. Neihart (2007) then provided the following recommendations when using peer ability grouping to benefit students socially and emotionally: First, school districts should expand the types of ability grouping offered to meet the needs of all students. Second, classroom teachers should not use peer ability grouping as a one size fits all approach; some gifted students are challenged socially or emotionally, and peer ability grouping may not secure positive results. Third, educators must make accommodations for students with disabilities. Fourth, teachers should realize that students' preferences on ability grouping may be influenced by the need to maintain academic excellence, rather than having difficulties socially or emotionally. Finally, staff development opportunities are necessary to provide advanced instruction for gifted students in peer ability grouping instruction. Similar to Neihart's (2007) review, Kulik and Kulik (1992) also examined studies focusing on the effects ability grouping had on students' self-concept, but instead focused on all levels of students rather than just gifted students.

Kulik and Kulik (1992) evaluated thirteen studies that described the effects multilevel ability grouping had on students' self-esteem. The results showed a decrease in self-esteem scores, but were determined insignificant due to the very small effect size. Kulik and Kulik (1992) also analyzed eleven of those studies by categorizing students' results separately by ability levels. The average effect sizes for advanced students were  $-0.15$ , average level students were  $-0.09$ , and below level students were  $0.19$  (Kulik & Kulik, 1992). These results show that multilevel ability grouping had a positive effect on the self-esteem of lower ability students, and reduced the self-esteem scores of average and high ability students. This increase in lower ability students' self-esteem may be caused by the decrease of academic levels in a classroom, resulting from less intimidation from the higher ability students. On the other hand, the decrease in self-esteem by average and high ability students may be triggered by similar ability students engaging in a more competitive classroom atmosphere.

In the same meta-analysis, Kulik and Kulik (1992) also investigated five studies that examined the effect that gifted classrooms had on students' self-concept. In four of those studies, the students had a more confident self-concept when taught in a separate classroom or group.

However, the effect size was considered small and too insignificant to make the conclusion that gifted education had a positive influence on gifted students' perceptions of themselves. Like Kulik and Kulik's (1992) study, Vogl and Preckel (2014) also researched gifted students' self-concept when participating in gifted classroom instruction; although, these studies differ in their modes of comparison. Vogl and Preckel (2014) explored students' social self-concept and school-related attitudes and beliefs in full-time gifted classes, and compared them to students in full-time regular education classes. The participating schools were using between class ability grouping practices throughout the period of the study, by separating students in both gifted and regular education classrooms. The longitudinal study consisted of 198 students throughout the beginning of fifth grade and concluding in the middle of sixth grade. Vogl and Preckel (2014) matched students in the gifted classes with students in the regular education classes based on cognitive ability and socioeconomic status. Data was collected through cognitive ability tests and student questionnaires on four separate occasions throughout approximately two years. The results showed a significant increase in gifted students' social self-concept of acceptance during the first month of school, and insignificant changes for students in regular education classes. Although, they did not find any difference in the effects of students' social self-concept of assertiveness between the gifted and regular education students, Vogl and Preckel (2014) determined that gifted students had a continued interest in school, whereas students' interests participating in regular classes declined. Student teacher relationships in regular classes weakened as well, while it remained constant in the gifted classes; social tension in both gifted and regular education classes decreased. There was no evidence that suggested intelligent students benefit from gifted classes in terms of social self-concept of acceptance, school-related interest, or student-teacher relationships. These findings indicate that grouping between-class by ability, specifically gifted classes versus regular education classes; can have both positive and insignificant results on students' self-concept and school-related attitudes. While Vogl and Preckel's (2014) research focused on gifted students compared to regular education students, Castle et al. (2005) instead concentrated on the below level students, whom are often times found to have a negative self-concept from ability grouping (Kulik & Kulik, 1992; Marsh & Hau, 2003; Neihart, 2007).

Contradictory to other researchers' studies (Kulik & Kulik, 1992; Marsh & Hau, 2003; Neihart, 2007), Castle et al. (2005) found that flexible within-class ability grouping yielded positive results on below level students' learning and self-concept. The participating teachers in this study believed that flexible grouping improved students' confidence levels (Castle et al., 2005). These below level students may have been more confident because they were learning more, or because they were learning, more they became more confident. Either way, according to teachers' experiences, students' self-esteem increased throughout within-class ability groups. These results disagree with researchers such as Kulik and Kulik (1992), Marsh and Hau (2003), and Neihart (2007) who suggest ability grouping negatively impacts students' self-concept and self-esteem. The effect of ability grouping on students' psychological and social welfare was found to be very similar to the effect ability grouping had on students' academic achievement. Once again, the research shows inconclusive results; there are no distinct answers that suggest ability grouping is always beneficial or harmful to students' self-esteem or social well-being. Neihart (2007) found inconsistent results that revealed ability grouping showed positive social and emotional outcomes for certain gifted students, neutral effects for some, and damaging results for others. Kulik and Kulik (1992) determined that multilevel ability grouping had a positive effect on the self-esteem of lower ability students, but reduced the self-esteem scores of average and high ability students. Research conducted by Vogl and Preckel (2014) indicated that grouping between-class by ability, specifically gifted classes versus regular education classes, can have both positive and insignificant results on students' self-concept and school-related attitudes. Finally, the teachers participating in the Castle et al. (2005) study believed that flexible grouping improved students' confidence levels. This evidence suggests that the various styles of ability grouping may affect students with diverse abilities differently. A style of ability grouping that increases or maintains the self-concept of high-ability students may negatively affect below level students. Neihart's (2007) recommendation to not use ability grouping as a one size fits all approach aligns with the findings of this study. More research needs to be conducted to determine how the various types of ability grouping affect students with diverse needs differently. Educators must then use that knowledge when making instructional decisions regarding ability grouping for elementary classrooms.

## 5. Discussion

Given the diverse range of students' backgrounds, levels, and needs in today's elementary classrooms, educators are continually searching for programs and strategies that provide appropriate support for all learners. Many teachers and administrators are implementing policies of ability grouping to address these ever-changing demands. The goal of this review was to determine the effectiveness ability grouping had on students in grades kindergarten through six. Ability grouping is an educational practice that places students in groups based on academic achievement. The two most common forms of ability grouping, between-class and within-class, both have the common purpose of providing instruction that is appropriate for students and their needs. One difference is that between-class groups are directed and organized by school district administration, whereas the classroom teacher typically chooses to practice within-class ability groups. Within-class grouping assignments may be heterogeneous or homogeneous, and are intended to be flexible to meet the fluctuating needs of all learners within a classroom (Castle et al., 2005).

A qualitative study conducted by Chorzempa and Graham (2006) found that 63% of teachers reported using within-class homogeneous ability groups for reading, primarily because it meets the instructional needs of their students. The teachers who did not use ability groups primarily felt that mixed-ability settings were more beneficial for their students than homogeneous group settings (Chorzempa & Graham, 2006). It is also safe to question why certain school districts practice ability grouping while others do not. Several researchers found that ability grouping is most common in schools with large minority students, various levels of achievement, and high levels of poverty (Condrón, 2008; Nomi, 2010). To these schools, ability grouping assignments may be the solution that addresses the ever-changing needs of the diverse student population; but before implementing in their school districts and elementary classrooms, educators must establish whether using any style of ability grouping would be an appropriate and effective instructional practice. The results exposed no clear solutions when defining whether ability groups benefit or harm students' academic achievement. Researchers such as Castle et al. (2005), Gentry and Owen (1999), Kulik and Kulik (1992), Matthews et al. (2013), and Puzio and Colby (2010) have found positive results on students' achievement. Leonard (2001) found benefits on achievement when implementing mixed ability heterogeneous groups, but negative effects when grouping students homogeneously. Brulles et al. (2012), Kaya (2015), Kulik and Kulik (1992), Leonard (2001), Matthews et al. (2013), and Nomi (2010) found insignificant results, determining that the style of ability grouping, paired with the level of student participants and subject area studied, had neither improved nor decreased academic achievement. Furthermore, students of different ability levels may need particular styles of ability grouping instruction in order to be successful.

The effect of ability grouping on students' psychological and social welfare was found to be very similar to the effect ability grouping had on students' academic achievement. There are no distinct answers that suggest ability grouping is always beneficial or harmful to students' self-esteem or social well-being. Neihart (2007) found inconsistent results that revealed ability grouping showed positive social and emotional outcomes for certain gifted students, neutral effects for some, and damaging results for others. Kulik and Kulik (1992) that multilevel ability grouping had a positive effect on the self-esteem of lower ability students, but reduced the self-esteem scores of average and high ability students. Research conducted by Vogl and Preckel (2014) indicated that grouping between-class by ability, specifically gifted classes versus regular education classes, can have both positive and insignificant results on students' self-concept and school-related attitudes. Finally, the teachers participating in Castle et al. (2005) study believed that flexible grouping improved students' confidence levels. This evidence suggests that the various styles of ability grouping may affect students with diverse abilities differently. One style of ability grouping that increases or maintains the self-concept of high-ability students may negatively affect below level students. Neihart's (2007) recommendation to not use ability grouping as a one size fits all approach aligns with the findings of the current review of the literature.

## 6. Conclusion

Ability grouping is on the rise in America's classrooms and schools. Many teachers use ability grouping with the intentions to meet individual learners' needs, improve student learning, or increase test scores. The teachers who still do not practice ability grouping question its significance, believe it negatively affects student achievement or self-concept, or prefer teaching whole-group instruction. This study examined the many variations of ability grouping and how ability grouping influences students academically and psychologically. Evidence both supports and discourages the practice of ability grouping in elementary classrooms. Although, a common trend did appear after analyzing the results on how ability grouping affected students academically and psychologically:

Ability grouping should not be used as a one size fits all approach for students. Specific types of ability grouping may be more beneficial or harmful than others both academically and psychologically, depending on students' particular backgrounds and levels. Future research is needed to examine how each type of grouping affects students of different abilities and levels. Once research defines the grouping most effective for all levels of learners, teachers can make confident instructional decisions to successfully benefit and support their students.

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