THE EFFECTS OF DIFFERENTIATED INSTRUCTION ON MOTIVATION AND ENGAGEMENT IN FIFTH-GRADE GIFTED MATH AND MUSIC STUDENTS

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Abstract

The purpose of this action research project report was to increase student motivation and engagement. There seemed to be an increasing disconnect between student potential and performance, especially among gifted math and beginning music students. Two teacher researchers carried out this research with 25 fifth-grade students at two different sites in a gifted math class and a beginning band class. The research was conducted from September 11th, 2012, through December 17th, 2012.

In order to document the lack of student motivation and engagement, three tools were utilized; a teacher survey, a student survey, and a student behavior checklist. After analyzing the collected data, it was evident that a notable percentage of students felt that their school work was too easy while teachers felt their lessons were appropriately challenging. While students felt they were sometimes given the options to make choices in the classroom, teachers reported that they rarely or never gave students the option to choose an assignment or activity. Students felt grades were the most motivating factor while teachers felt parental involvement motivated students more to do their best in school. During direct instruction, several off-task behaviors (hyperactive, withdrawn, poor attention, disruptive, uncooperative) were noted that reflected a lack of motivation and engagement.

The interventions implemented to increase motivation and engagement included differentiated instruction based on flexible grouping and giving choices. Differentiated guided groups with a student choice menu were the selected interventions because the research states that these instructional strategies positively benefit student motivation and engagement.

The data collected from the Student Survey provided validating insights into student engagement and motivation. After the intervention, more students felt that they were being appropriately challenged. Overall, more student felt that they were given options to choose their assignments in class. Grades, choosing projects, feeling challenged, authenticity, and knowing teachers care were the most motivating factors for students. Based on the post-results of the Student Survey, the teacher researchers concluded that the intervention positively impacted changes in students' perception of their engagement and motivation. Teacher Researchers attributed this result to increased differentiated instruction in their classes and an increase in open-ended choices during non-instruction time. As students were given more choice in the classroom, they perceived their school work to be more appropriately challenging. The Teacher Researchers thought this increase was due to creating a more learner-centered classroom environment.

Chapter 1

Problem Statement and Context

General Statement of the Problem

The two teacher researchers identified motivation and underachievement were a problem among fifth-grade gifted math students and fifth-grade music students. Teachers collected data to document the following behaviors: hyperactivity, withdrawal, poor attention span, disruption, and uncooperation. The teacher researchers used a Teacher Survey, a Student Survey, and a Behavior Checklist to document evidence of the problem.

Immediate Context of the Problem

Two teacher researchers, a gifted resource teacher and a band director, conducted this action research project. One teacher researcher was located at Site A, an elementary school, and taught gifted and enrichment classes for kindergarten through fifth grade. The teacher researcher at Site B, a middle school, taught fifth- through eighth-grade band students. Unless otherwise noted, the data below comes from each site's respective school report card (Illinois School Report Card, 2011).

Site A.

According to the Illinois School Report Card, the total enrollment at Site A was 327 students, 151 girls and 170 boys (building principal, personal communication, December, 6, 2011), while the total enrollment for the district was 4,348 students. Site A's district had a student-to-teacher ratio of 14.4:1 at the district level compared to 18.8:1 at the state level. As shown in Table 1, the average class size at Site A was 18.9 students, compared to 18.3 in the district and 22.2 in the state.

Table 1

Average Class Size

	Kindergarten	1st Grade	2nd Grade	3rd Grade	4th Grade	5th Grade
School	18.0	19.7	16.0	17.7	23.0	19.0
District	17.4	19.3	18.1	18.9	20.2	19.1
State	20.9	21.6	21.8	22.3	22.9	23.3

The parental contact within Site A's school district was 100% as opposed to the state's at 96%. The majority of the students at Site A were Caucasian (92%) with Hispanic students being the second largest ethnic group at 4.3%. The Hispanic student population, however, had a notably greater representation within the district (21.2%) as shown in Table 2.

Table 2

Racial/Ethnic Background of Students by Percentage

	Caucasian	African-American	Hispanic	Asian	Native Hawaiian /Pacific Islander	Native American	Two or More Races
School	92.0	0.6	4.3	1.2	0.0	0.0	1.8
District	72.5	1.9	21.2	1.8	0.1	0.3	2.2
State	51.4	18.3	23.0	4.1	0.1	0.3	2.8

The percentage of Site A's low-income families was 5.5, considerably lower than the district's 23.8 %. However, both Site A and the district had fewer low-income families when compared to the state's 48.1%. Site A had 0.9% Limited-English-Proficient students, which includes those eligible for transitional bilingual programs. This percentage was much lower than the district's 13.5% and the state's 8.8% of Limited-English-Proficient students. The truancy rate

for Site A and the district was 0.0%. The mobility rate, the number of times students enroll in or leave a school during the school year, was 3.4% for Site A. The attendance rate at Site A was 96.7%, which was slightly higher than the state's 94%.

Of the 364 teachers employed in the district, 31 (27 women, 4 men) taught at Site A. As shown in Table 3, the majority of teachers within Site A's district were Caucasian (88.8%); however, the district and the state represented a slightly greater demographic variety.

Table 3

Racial/Ethnic Background of Teachers by Percentage

	Caucasian	African-American	Hispanic	Asian	Native Hawaiian /Pacific Islander	Native American	Two or More Races
District	88.8	0.5	8.6	2.1	0.0	0.0	0.0
State	82.4	6.1	5.0	1.2	0.1	0.7	4.3

The teachers in Site A's district had an average teaching experience of 11.5 years of teaching experience and 13.2 years of teaching experience in the state. In regards to educational attainment, 24.8% of teachers in the district and 39.5% of teachers in the state obtained a bachelor's degree. At Site A, 75.2% of teachers in the district and 60.4% of teachers in the state had a masters degree or above. The teachers at Site A's district received an average salary of $70,566 which was higher than the state average salary of $64,978. Despite contacting the building principal, the specific teacher demographics at Site A were not available for public access.

Every day, Site A followed district guidelines to devote 60 minutes to math instruction, 165 minutes to language arts, 30 minutes to science, and 30 minutes to social science. With the

exception of 20 additional literacy minutes, this time devoted to teaching core subjects was consistent with the state. All students in grades 3-5 at Site A participated in the Illinois Standards Achievement Test (ISAT). Overall, 96.8% of third- through fifth-grade students at Site A met or exceeded standards compared to the district (92.3%) and the state (82%) in both reading and math. On all state tests, Site A had 96.6% of students meeting or exceeding the Illinois learning standards. Ninety-two percent of the students in the district and 76.5% or the students in the state met or exceeded standards on all state tests.

The school staff at Site A consisted of 31 certified staff members and two classified staff members. This included one principal, one part-time intervention specialist, one social worker, and one speech and language teacher. Site A had one kindergarten teacher, three first-grade teachers, three second-grade teachers, three third-grade teachers, three fourth-grade teachers, and two fifth-grade teachers. The school employed one art teacher, a part-time music teacher, one full-time physical education teacher, and one part-time physical education teacher. Site A also employed one part-time band teacher and one part-time orchestra teacher. Two teachers at Site A also served as technology leaders. One nurse, one administrative assistant, and a custodian were also employed at Site A.

Site A's school was known for its active Parent-Teacher Organization (PTO) involvement and the extra-curricular clubs offered met the wide-range of student interests. Site A also housed a branch of the Northern Suburban Special Education District Educational Life Skills (NSSED ELS) program as well. The tremendous parent support and involvement was another positive facet of the school. The consistent above-average test scores and overall student achievement was another proud accomplishment of Site A.

Site A originated as a two-room school house built in 1897, about the size of the current gymnasium and housing only 50 students (Site A Elementary School, 2011). The school had greatly expanded since the two room school house. In 1999, the second addition was added to the original building. Site A now has 20 classrooms and 8 additional instructional areas including a greenhouse in which the school's Green Team club grows lettuce to sell to local restaurants. The grounds consists of a parking lot, two playgrounds, a basketball court, a large blacktop area, and a butterfly garden.

Site B.

According to the Illinois School Report Card (2011), the total enrollment at Site B was 652, 322 girls and 309 boys, students while the total enrollment for the district was 1,338 students. Site B's average class size reflects the same as the district's average class size at 20.4%. In relation to average class size, the district pupil-teacher ratio at Site B was 14.1 compared to the state ratio of 18.8.

Table 1

Average Class Size

	5th Grade	6th Grade	7th Grade	8th Grade
School	20.4	21.3	19.5	19.9
District	20.4	21.3	19.5	19.9
State	23.3	22.0	21.3	21.3

The parental contact within Site B's school district was 100% as opposed to the state's 96%. The majority of students at Site B were Caucasian (91.7%) with Asian students being the second largest ethnic group at 2.5% as shown in Table 2.

Table 2

Racial/Ethnic Background of Students by Percentage

	Caucasian	African-American	Hispanics	Asian	Native Hawaiian/Pacific Islander	Native Indian	Two or More Races
School	91.7	0.6	2.1	2.5	0.0	0.3	2.8
District	92.8	0.4	1.7	2.6	0.0	0.2	2.2
State	51.4	18.3	23.0	4.1	0.1	0.3	2.8

The percentage of Site B's low-income families was 4.6, which was representative of the entire district. However, Site B had significantly fewer low-income families, which was not represented of the state's 48.1%. Site B had 0.6 Limited-English-Proficient students, which represents the district accurately. The truancy rate (2011) for Site B and the district was 0.0%. According to the Illinois School Report Card, the mobility rate, the number of times students enroll in or leave a school during the school year, is 1.5 for Site B. The attendance rate at Site B is 94.9% which was slightly higher than the state's 94%. The majority of the teacher population at Site B's district were Caucasian at 98.2% as shown in Table 3.

Table 3

Racial/Ethnic Backgrounds of Teachers by Percentage

	Caucasian	African-American	Hispanic	Asian	Native Hawaiian/Pacific Islander	Native American	Two or More Races
District	98.2	0.0	1.8	0.0	0.0	0.0	0.0
State	82.4	6.1	5.0	1.2	0.1	0.1	0.7

The teachers at Site B's district have an average teaching experience of 14.0 years of teaching experience in the district compared to 13.2 years of teaching experience in the state. In regard to educational attainment, 23.7% of teachers in the district and 39.5% of teachers in the state have obtained a bachelor's degree. At Site B, 76.3% of teachers in the district had a

master's degree or above as opposed to 60.4% of teachers in the state. The teachers who were employed with Site B's district received an average salary of $73,702, which is higher than the state average salary of $64,978. Site B's district has a student-to-teacher ratio of 14.1:1 at the district level compared to 18.8:1 at the state level. The average class size at Site B is 20.3 students which is identical to the district; however, the state reported an average class size of 22 students.

Everyday, Site B followed district guidelines to devote 42 minutes to math instruction, 42 minutes of science instruction, 84 minutes to language arts, and 42 minutes to social science. With the exception of roughly 20 additional minutes in 6th-grade language arts, this time devoted to teaching core subjects was fairly consistent with the state.

Students at Site B took core classes such as math, English, science, history, modern language, and physical education with 43minute class periods. Music, art, and technology classes were also offered to students at Site B. Fifth grade students were required to take chorus and a band or orchestra instrument of their choice in addition to a rotation through art and technology classes. Once students in sixth through eighth grade met the requirements, they were allowed to choose their art, technology and music classes. Site B scored well on the ISAT performance test with an overall score of 95.1% compared to the state's score of 82.0%. On all state tests, Site B had 94.7% of students meeting or exceeding Illinois Learning Standards. 94.8% of the students in the district and 76.5% of the students in the state met or exceeded standards on all state tests.

The staff at Site B included one principal, one assistant principal, six fifth-grade teachers, nine sixth-grade teachers, and sixteen teachers who teach seventh and eighth grade. Site B also

employed two full-time band directors, one full-time orchestra teacher, one-full time chorus teacher, six physical education teachers, seven special education teachers, and one part-time health teacher. Site B also housed a branch of the NSSED ELS classrooms. There were also 15 teachers' assistants, one school psychologist, two social workers, one occupational therapist, two network technicians, eight custodians, two office secretaries, and one literacy coach. Despite contacting the building principal, the specific teacher demographics at Site B were not available for public access.

Site B's building is three stories high with a beautiful brick façade. The school is handicapped accessible and is also equipped with two gymnasiums, one that includes a two-story climbing wall, and three science labs. Site B also has four large music classrooms, a large art room equipped with kilns and pottery equipment, and two state-of-the art technology/video production labs. Site B also houses one of the largest auditoriums in the area, which also includes a beautiful Steinway piano. On the backside of Site B is another brick and pillar façade for the school's auditorium.

Local Context of the Problem

Sites A and B were located in very similar and neighboring communities. Despite some commonalities, both sites will be described in separate sections due to some key differences in income and ethnic makeup.

Site A.

Site A was a public school located in Lake County along Lake Michigan's Shoreline, approximately 30 miles north of Chicago and served students in grade kindergarten through five. Interstate-94 and Route-41 were major roadways within five miles of Site A. Metra's Union

Pacific North Line was another form of transportation near Site A.

According to the U.S. Census Bureau (2011, *State*), this research school community had a population of 29,763. The median home value of owner occupied housing units between 2005-2009 was $588,900. The median household income between 2005-2009 was $113,404. The percentage of of people in poverty between 2005-2009 was 4.3% compared to the 12.4% of the state. Site A's community was comprised of 5.3% under the age of five, 25.9% under the age of 18, and 19.3% 65 years and over. Males made up 48.4% while females made up 51.6% of the population. The largest percentage of the community ages 25 and above, 95.2%, had graduated from high school while 64.3% of the community attained a bachelor's degree or higher (U.S Census Bureau, Site A, 2011, *State*). The total population of the Site A's community was 29, 763. As shown in Table 3 below, the ethnic make-up of the research community was primarily Caucasian (91%).

Table 3

Racial/Ethnic Background of Community by Percentage

Caucasian	African-American	Hispanic or Latino	Asian	Native American	Two or More Races
91.0	1.8	7.3	2.9	0.2	1.5

The 11,768 households in Site A's community had an average of 2.64 residents. The employment rate within this community was 94.1% (Sperling's Best Places, 2010). Management, professional, sales, and related occupations were among the most common occupations within the community (U.S. Census Bureau, Site A, 2011, *State*). The Community Police Department 2010 Annual Report disclosed 365 property crimes, including burglary, larceny-theft, and motor-

vehicle theft, and 17 violent crimes, including murder, non-negligent manslaughter, forcible rape, robbery, and aggravated assault.

According to the Encyclopedia of Chicago (2005, *Site A*), Site A's bluffs, lake vistas, ravines, and accessibility to Chicago support the vision of early developers who envisioned Site A as a retreat for Chicago's affluent professionals. With the intent of trading, German immigrants founded two ports, St. Johns (1847) and Port Clinton (1850). In 1855, Site A's mayor concluded that Site A would be best developed as a residential, rather than commercial development. In March 1869, Site A reached a total of 600 residents, a school, hotel, and a religious association. Elite professionals settled along the lake bluffs while residents who provided services to the suburbs built more modest homes away from the water.

A public library investment was supported by residents in 1887. Site A's population continued to grow as they welcomed a sizable Jewish population after World War II. In the 1920s and the 1950s the city grew by 98% to 12,203 and 53% to 25,532, respectively. The area's appeal was maintained by careful planning, promoting the unique village character as well as its well-respected public and private amenities.

More recently, Site A was making improvements to ensure a continuous supply of safe drinking water to its residents (The Site of Site A Illinois, P*arks and bike trails*, n.d.). Based on a comprehension assessment of the sidewalks, paths, trails, streets, and open spaces, Site A's City Council developed the Greenways Plan, an effort to provide recreation and fitness activities for the community (The Site of Site A Illinois, *Parks and bike trails*, n.d.). Site A's downtown community provided a "home town" environment providing over 125 retailers (The Site of Site A Illinois, *Parks and facilities*, n.d.). An outdoor music festival was a legacy that was

established in 1904 and had been maintained to host popular concerts, including performances by the Chicago Symphony Orchestra (The Site of Site A Illinois, *Parks and facilities*, n.d.).

Site A's school district was comprised of nine elementary schools and three middle schools. According to Site A's District website, the district's mission states the following:

> To provide a community partnership committed to a world-class education, is to nurture every child to become an inspired learner, a well-rounded individual and contributing member of a global community by striving for excellence within an environment that fosters innovation, respect, engagement, and intellectual inquiry (Site A School District, 2011).

One superintendent and nine principals administered the district. According to the 2011 Illinois School Report Card, the total revenue gathered for 2009-2010 was $75,197,665. Local property taxes made up the 83.7% of funding for the district totaling $62,905,084. Each general education, music, and art classroom in Site A was equipped with a Promethean board. There were three laptop carts (24 laptops each) and one iPad cart (24 total) available for use. The district buildings were also equipped with wireless internet in all areas.

Site B.

Site B was a public school located in Cook County along Lake Michigan's shoreline about 25 miles north of Chicago and served grades five through eight. Interstate-94 and Route-41 are major roadways that are within 5 miles of Site B. Metra's Union Pacific/North Line was another form of transportation near Site B. According to the community website and the 2010 census, the population of Site B was 8,723. The median home value of owner occupied housing units between 2005-2009 was $1,000,001. The median household income between 2005-2009

was $201,050. The percentage of people of all ages in poverty between 2005-2009 was 4.8% compared to the 12.4% of the state. Site B's population is comprised of 4.8% of persons under five years old, 31.6% of persons under 18 years old, and 14.4% of persons over 65 years old. Males make up 49.2% of the population while females made up 50.8% of the population. The percentage of high school graduates ages 25 and above is 100% while 86.1% of the community attained a Bachelor's degree or higher (U.S. Census Bureau, Site B, 2011, *State and County*). The research community is primarily a Caucasian community. The ethnic make-up of Site B's population is shown below.

Table 4

Racial/Ethnic Background of Community by Percentage

Total Population	Caucasian	African-American	Hispanics	Asian	Native Indian	Two or More Races
8,723	94.0	1.2	2.7	2.7	0.1	1.5

The 3,209 households in Site B's community had an average of 2.94 residents. According to the U.S. Census Bureau (2011), the unemployment rate within this community was 8.9%. Management, professional, sales, and related occupations were among the most common occupations. Site B's community was remarkably safe with 0.0% murders, rape, robberies and assaults while there were 14 burglaries, 70 thefts, and 3 arsons reported in 2009 (U.S. Census Bureau, Site B, 2011, *State and County*).

According to the Encyclopedia of Chicago (2005) and the village website (Village of Site B, n.d., *A Short),* Site B was incorporated in 1869 and had roughly150 residents. Logging was a large industry at that time and it relied heavily on the railroad system that goes through the village. Site B's growth through the 1950-60's remained primarily affluent and white and later

became home to a considerable number of Chicago's Jewish population. Site B's village also includes an entire subdivision of homes designed by Frank Lloyd Wright and the Chicago Botanical Gardens. Site B's community also has many educational and recreational opportunities offered by it's park district as it has many parks and lake front beaches.

Site B's school district is comprised of two elementary schools and one middle school. According to Site B School District (n. d.), the district's mission is "to provide each child with an educational foundation for life-long learning as a socially responsible member of a global society by dedicating resources toward the development of the whole child within a secure school environment," (Site B School District, n. d.). One superintendent, one assistant superintendent and four principals administered the district. According to the 2011 Illinois School Report Card of Site B, the total revenue gathered for 2009-2010 is $26,351,371. Local property taxes made up 90% of funding for the district totaling $23,716,310. Each general education classroom at Site B is equipped with a Smartboard. Each classroom has at least three computers for student use. The district buildings were also equipped wireless internet in all areas.

National Context of the Problem

Classrooms sometimes fail to motivate students, are not engaging, or lack interesting and challenging experiences (Reis, 2011). No Child Left Behind (NCLB) has brought higher standards and more accountability into the classroom, but it has also thinned and narrowed the curriculum. Site B had limited the gifted population, offering fewer programs that enable them to excel (Radner, n.d., as cited in Cleaver, n.d.). Often, students who are gifted are not challenged to perform to their full capacity because they seem to be doing just fine. These students may never achieve their full potential because they have not had complex tasks and have never really

learned to work (Winebrenner & Berger, 1994).

Reflection

We felt there were many contributors to a lack of motivation and underachievement of gifted students. As shown in our demographic data, our students come from affluent homes (Site A's median household income (2009) = $113,404; Site B's median household income (2009) = $201, 050) and we have noticed that they have been exposed to more life experiences than the typical fifth-grader. Many students have traveled to other countries, have connections to celebrities and professional athletes, and there appear to be no monetary limitations for needs or wants. Often times, parents come from Ivy league schools and are well-educated, placing high value on their child's education. While this value can be positive, it can place high demands on students and schools, having detrimental results. Often, gifted students receive tutoring outside of the school day to enrich their education. These factors present a problem because the general education curriculum is no longer meeting these highly-experienced student; therefore, leaving in-school experiences lack-luster compared to that of their at-home enrichment activities and devaluing traditional education.

Chapter 2

Problem Documentation

Evidence of the Problem

The purpose of this research was to increase gifted math and beginning band student motivation and engagement through differentiated instruction. In order to document the lack of student motivation and engagement, three tools were utilized; a teacher survey, a student survey, and a student behavior checklist. These tools were utilized by two teacher researchers in two different classrooms, at two different sites. The subjects included 25 fifth-grade students. The documentation was collected over a two week period from September 11, 2012 through September 21, 2012. Due to the similar nature of the questions, the data was presented together.

Student Survey.

The student survey was used to gain insight into the thoughts of the students participating in the research project. The student survey was administered in each music and gifted math classroom and results were compiled for 100% (n=25) of the students surveyed. The survey was administered during the instructional period and students placed the surveys into a folder, which was sealed by the last respondent to ensure anonymity. The survey was administered during the week of September 17, 2012 and consisted of five questions. One question will be discussed in this section while the other four questions will be discussed as fusions of both teacher and student surveys in the Teacher Survey section. A Likert scale was used to collect responses for each of the five questions with ratings including *strongly agree*, *agree*, *disagree* and *strongly disagree*. In addition, the students were invited to provide comments explaining the level of difficulty in their school work. Student comments supported the Likert scale responses. See

Appendix A for Student Survey.

Figure 1 displays 92% (n=23) of students felt they always do their best in school. It is marked that none of the students felt they rarely or never did their best in school.

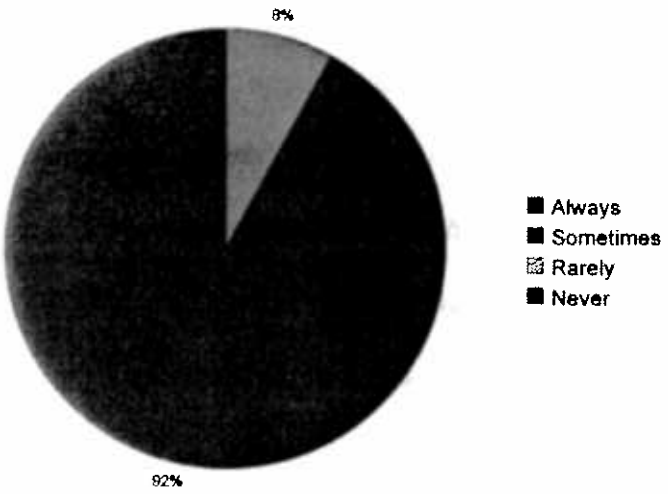


Figure 1: Student effort (n=25)

Teacher Survey.

The purpose of the teacher survey was to gauge teachers' attitudes about student motivation and the difficulty level of their instruction. The teacher survey was distributed on September 11, 2012, and completed surveys were collected by September 21,2012. The teacher survey was distributed to two teachers at each Site A and Site B by placing them in faculty mailboxes and asking them to be anonymously returned to the researcher's mailbox. Four teacher surveys were returned for a rate of 100%. A Likert scale was used to collect responses with ratings including *strongly agree*, *agree*, *disagree* and *strongly disagree*. In addition, the teachers were invited to provide comments explaining the level of difficulty in their instruction. See Appendix B for Teacher Survey.

Figure 2 shows that 75% (n=3) of teachers felt that their students met their full potential 75-100% of the time. The remaining 25% (n=1) of teachers felt their students met their full potential 50-75% of the time.

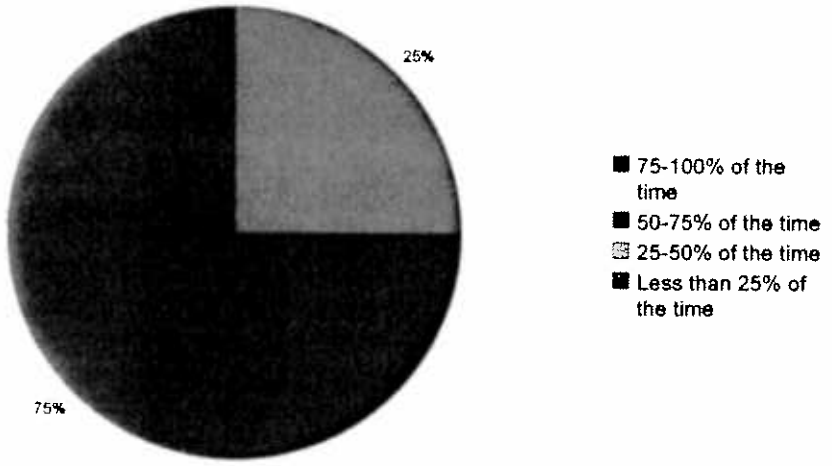


Figure 2: Teacher perception of student effort (n=4)

Figure 3 shows teachers' and students' perceptions of parental interest in what their children were learning in school. It is important to note that 52% (n=12) of students felt that their parents only sometimes show interest in what he/she is learning in school. However, 75% (n=3) of teachers felt that their students' parents always showed interest in what he/she is learning in school. Neither students nor teachers felt parents rarely or never showed interest in what their children are learning in school.

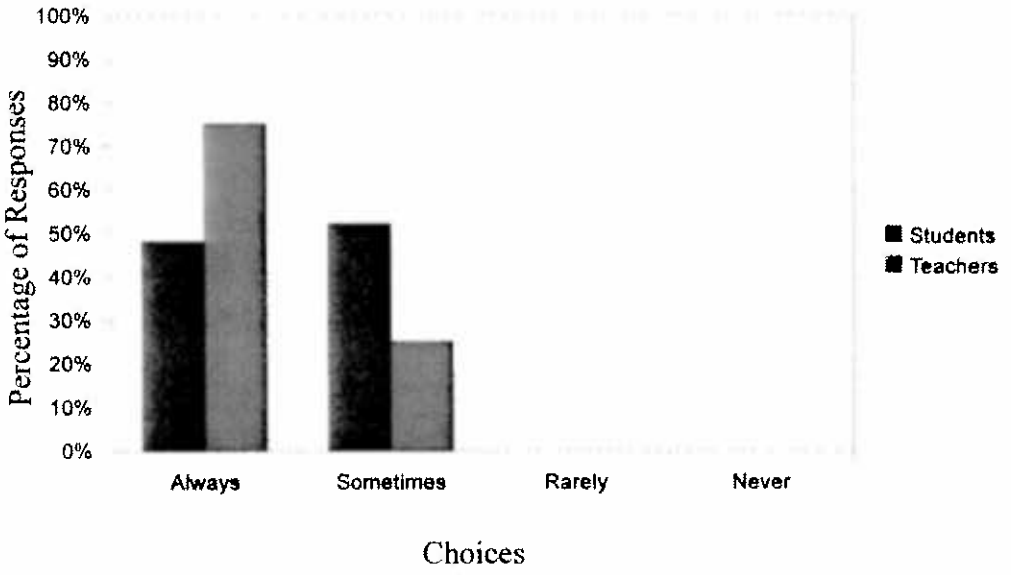


Figure 3: Students' and teachers' perception of parental interest in learning (n=29)

Figure 4 displays that 44% of students (n=11) felt their lessons at school were too easy; however, Figure 5 shows that 100% (n=4) of teacher felt their lessons were appropriately challenging. Neither students nor teachers felt lessons were too hard.

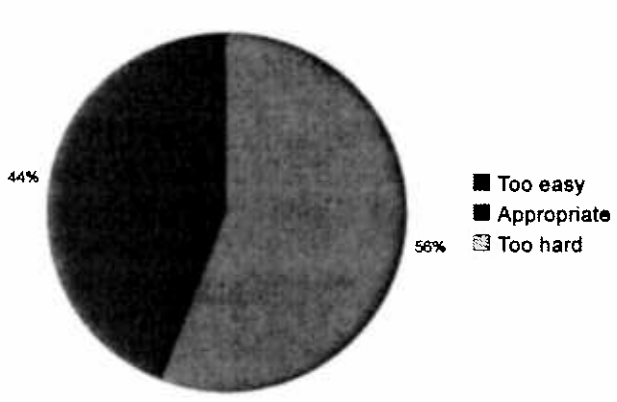


Figure 4: Student lesson difficulty (n=25)

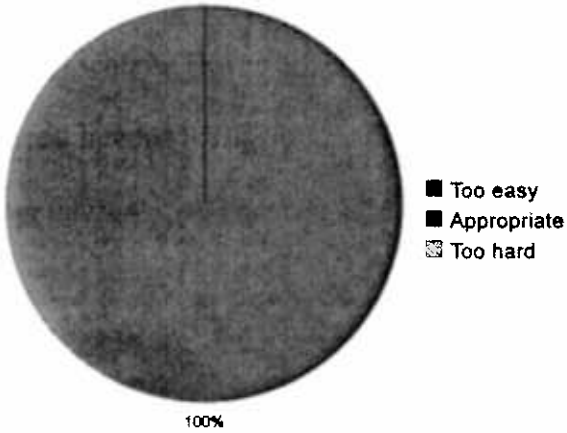
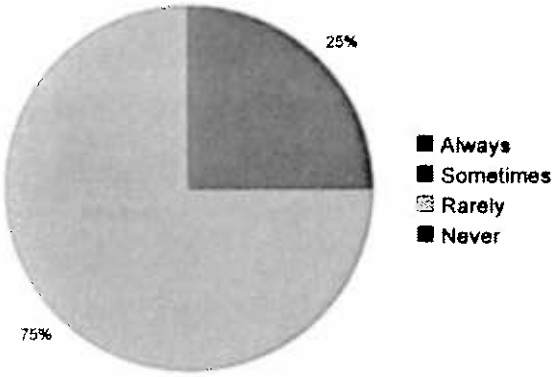


Figure 5: Teacher lesson difficulty (n=4)

Figure 6 shows 75% (n=3) of teachers felt they rarely give their students an option to

choose assignments in class. However, in Figure 7, 56% (n= 14) of students agreed they were rarely given the option to choose an assignment, but 36% (n=9) of students felt they were sometimes given the option to choose assignments.



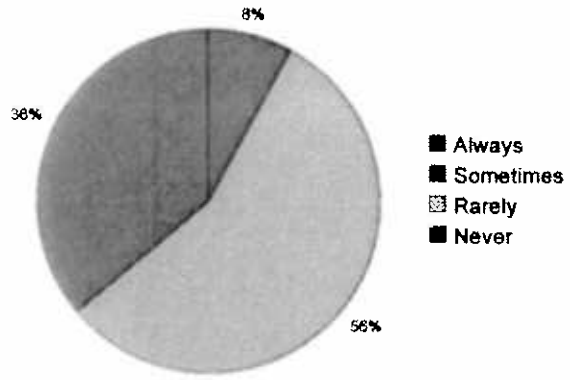


Figure 6: Teachers giving choices (n=4)

Figure 7: Students making choices (n=25)

Figure 8 shows the top factors students and teachers believed to motivate students to do their best in school. Of the 29 people surveyed, 25 students and 4 teachers, 36% (n=9 of 25) of students felt that grades are a motivating factor. However, 25% of teachers (n=3 of 4) felt that parental interest and involvement was the most motivating factor for students. Seventeen percent of students (n=4.25) felt that appropriate challenge and working in groups were motivating. On the other hand, 16% (n=.64) of teachers felt authenticity and caring teachers were motivating factors.

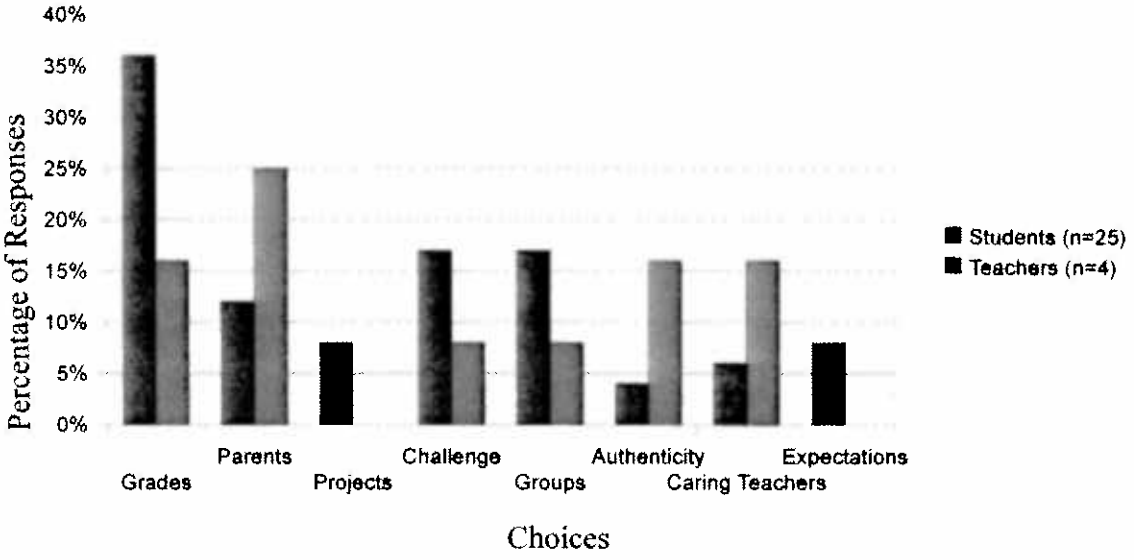


Figure 8: Student motivation factors (n=29)

Behavior Checklist.

Each teacher researcher within the context of a normal classroom period administered the student behavior checklist. The checklist was administered three times to each participating class during the week of Sept 17, 2012, and then again three times on weeks 10, 11, and 12 during the intervention. The purpose of the checklist was to identify student behaviors that exhibited lack of motivation, lack of engagement or discipline issues. See Appendix C for the Student Behavior Checklist.

Figure 9 shows adverse behaviors observed before and during the intervention (n=25). All behaviors decreased during the intervention; however, it is particularly noteworthy that disruptive behaviors before the intervention (n=26) decreased by 92% during the intervention (n=2). Overall, before the intervention, students were frequently withdrawn (n=31, 28%), had poor attention (n=32, 29%), and were disruptive (n=26, 24%). However, during the intervention, these most frequently exhibited negative behaviors decreased (n=7, 22%; n=18, 56%; n=2, 6%;

respectively).

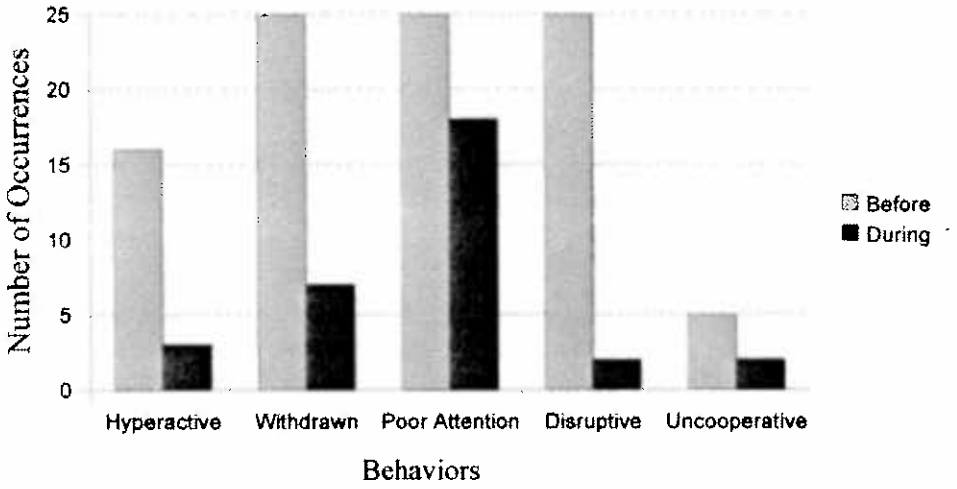


Figure 9: Behavior observation data (Before n=110; During n=32)

Summary

After analyzing the data presented above, it is evident that a notable percentage of students feel that their school work is too easy while teachers feel their lessons are appropriately challenging (Figures 4 & 5). While students feel they are sometimes given the options to make choices in the classroom, teachers reported that they rarely or never gave students the option to choose an assignment or activity (Figures 6 & 7). Students felt grades were the most motivating factor while teachers felt parental involvement more motivated students to do their best in school (Figure 8). During direct instruction, several off-task behaviors were noted that reflected a lack of motivation and engagement (Figure 9.).

Reflection

We believe based on the data presented above, our own experiences, and the review of the literature that the lack of student motivation and engagement was related to a lack of choice and

challenge within the learning environment and a strong emphasis on external motivating factors (grades and parents).

We believe that by presenting students with differentiated instruction with opportunities for choosing assignments and activities will increase levels of motivation and engagement while decreasing adverse behaviors. We instructed with a differentiated curriculum to small groups and implemented a choice menu with task options. Both teachers at Site A and B felt that planning for small group instruction took an increased amount of time, preparation, and effort to develop differentiated lessons for each group. Teacher at Site A felt that teaching in guided small-groups was time-consuming, yet feasible for daily use. On the other hand, Teacher at Site B saw benefits of small-group instruction, but would rather use it in moderation with lessons conducive to grouping by skill and ability level. However, both teachers at Site A and B found that students were more attentive during small group lessons and enjoyed the aspect of choice during non-teacher time. This method allows for teachers to hold high-achieving students accountable in small groups to better meet their potential.

Probable Causes

Several factors can lead to a lack of student motivation. The section below describes each of the following problematic areas: discrepancy between potential and performance; identification and programming; family support levels; school environment constraints; classroom challenges; lack of curricular challenge; lack of interest-based learning; extrinsic motivation, gender differences; middle school issues; behavior problems; and ongoing issues in gifted and music education.

Discrepancy Between Potential and Performance.

An underachiever is a student with a discrepancy between his/her academic potential and performance (Seely, 2004). Rarely do teachers turn their attention to the students who pass all the tests and score in the 90th percentile or even higher, scores that indicate the test was probably inadequate for measuring what these students know and are able to do (Rakow, 2012). Even though they may consistently score at the 99th percentile; many students do not make sufficient yearly progress (Rakow, 2012). Often, for no obvious reason, talented students' performance is not commensurate with his/her potential and this is frustrating for both teachers and parents (Reis, 2011).

Identification and Programming.

Poor motivation in gifted students is paradoxical since intrinsic motivation is considered an identifying characteristic (Newman, 1992, as cited in Ford, et al., 1998). Renzulli's (1986) definition of giftedness includes task commitment as a critical element (Ford, et al., 1998). "We need to look at the entire spectrum of achievement. By not developing today's high achievers, we're losing tomorrow's scientists, engineers, artists, writers, business leaders, and politicians," (Ambrose, n.d., as cited in Cleaver, n.d., p. 2). Gifted students who were not identified and were not given enrichment opportunities underachieve (The Center for Comprehensive School Reform and Improvement, 2008). Unfortunately, gifted identification processes will overlook many gifted underachievers, especially when teachers and parents believe that gifted students are always highly motivated (Ford, et al., 1998). Teachers frequently cite "keen sense of interest" and "highly motivated" as gifted characteristics (Fraiser, et al., 1995, as cited in Newman, 1992, as cited in Ford, et al., 1998). When assessments are used, several gifted checklists include a

motivation subscale (Renzulli, Smith, White, Callahan, & Hartman, 1976, as cited in Newman, 1992, as cited in Ford, et al., 1998, p. 1). However, schools are not identifying and are underserving special gifted populations (young children, culturally different students, and girls) putting these particular students at risk for underachievement (Seely, 2004). Culturally and linguistically diverse or low socioeconomic status (SES) gifted and talented students are especially at risk for underachievement and are underserved in school districts (The Center for Comprehensive School Reform and Improvement, 2008). Low-income and culturally-diverse students require different approaches to gifted identification and "the majority of states do not attend to low socioeconomic status as a factor for special consideration in identification, programming, or definitions (VanTassel-Baska, Patton, & Prillaman, 1989, as cited in Seely, 2004, p. 3). Identifying a child too late, may not detect giftedness due to underachievement and too many lost learning opportunities to develop his/her abilities (Saunders, 2003). Gifted education researchers have not explored the wealth of important information available in student cumulative files. School files may locate patterns among both students who achieve and those who underachieve (Peterson & Colangelo, 1996).

School records are not used in any systematic way for identification of children who may be at risk. This readily available information about behavior, achievement, and attendance can be used to identify students early enough to use prevention rather than remediation (Baker & Shaw, 1987, as cited in Peterson & Colangelo, 1996).

Family Support Levels.

Researchers have connected family disruption to student underachievement. Family attitudes towards school and jobs and either too high or too low expectations have been factors in

underachievement (Peterson & Colangelo, 1996). In addition, constant (parental) supervision is likely to lead to resentment and may be counter productive in the long term (Sloboda & Davidson 1996, as cited in Driscoll, 2009). Forcing children to practice, discouraging them from doing so, being to critical or demanding, or having unrealistic expectations, may negatively impact motivation (Driscoll, 2009). Some gifted students may underachieve because their parents do not stress the importance of academic achievement and how it can translate to future success. These parents do not set high standards or expect their children to reach them. The message the child receives is that academic success is not to be valued (National Research Center on the Gifted and Talented, 1995). In addition, Brandstrom and Wiklund noticed that it was twice as common for children of higher-level employees and university graduates (with higher SES) to study music than children of parents with a working class background (lower SES) (Brandstrom & Wiklund, 1996, as cited in Albert, 2006). The parent with the higher SES determined the child's SES. The researchers found that home musical environment appeared to exert an important influence on a child's participation at the MMS (municipal music school) (Albert, 2006). Monetary investments necessary to participate in an instrumental music program, including obtaining and maintaining an instrument, may be a strain on an already tight budget (Albert, 2006).

School Environment Constraints.

School environment seemed to play a role in underachievement with students whom teachers deemed less-likable (Seely, 2004). In addition, budget cuts have left teachers with few resources, little expert assistance from gifted specialists, and no additional time to plan and create (Rakow, 2012). The underachieving gifted population should be "viewed as a result of

'underachieving schools' and 'undeserving groups.'" This idea takes the blame off of the student and his/her home life (Whitmore, 1989, as cited in Seely, 2004, p. 1).

Classroom Challenges.

Classroom environments can present many challenges to teachers. Developing motivation is a difficult task for teachers, considering every student learns differently and is diverse in his or her own way (Mart, 2011). Demands on teachers are rigorous and individualized instruction or learning types are not always addressed (Lopez and Schroder, 2008, as cited in McQuown, 2011). Aside from teaching, there are other necessary administrative responsibilities: planning for classes, developing curriculum, and devoting time to score study. Therefore, when it comes time to think about next year's beginning band students, many directors with pending end-of-year concerts looming may simply overlook recruiting (Bazon & Bayley, 2009). Dedicated band directors have many administrative duties related to student assessment and evaluation, attendance records, inventory, letters to parents, meetings with booster groups, stave, administration, and clubs. All of these tasks require a great deal of time and may take away from recruiting and retention of students for the following year (Bazon & Bayley, 2009).

Few teacher preparation programs require coursework in differentiation for gifted and advanced learners or strategies for teaching advanced classes and content. Even when teachers want to help, they lack the knowledge and skills to do so (Rakow, 2012). Young musicians develop their skills as a result of specific environmental conditions and developmental experiences, the details of which are remarkably similar among those who achieve the highest levels of performance. Throughout their development, the musicians are motivated by various

internal and external sources. At certain points they draw inspiration from the intrinsically enjoyable aspects of musical involvement. At other times, however, they rely on other people who support them through the rigorous demands of achieving exceptional performance skills (Woody, 2004). Teachers are not creating appropriate learning environments to meet the needs of diverse learners (Seely, 2004). Most teachers say they already differentiate, but what they often mean is that they make accommodations for students with special needs in accordance with individualized education plans (IEPs) and 504 plans for students with disabilities (Rakow, 2012). Some teachers may feel that because of legal issues and Individualized Education Plans (IEPs), they always look at special education students first, (Wagner, n.d., as cited in Cleaver, n.d.). The impact of our classroom decisions as educators can shape students' perceptions and actions related to music throughout their lives (Green & Hale, 2011).

Teachers may not always recognize and appreciate gifted students' unique abilities and talents. These students may receive the message that their participation is not valued and their interests are not a concern (National Research Center on the Gifted and Talented, 1995). Differentiation for advanced learners requires the teacher to be familiar with above-grade-level standards, in-depth content beyond the grade-level text, advanced and extended resources, and alternative instructional strategies. As a result, many ask these learners to do something different, but it is not differentiated (Rakow, 2012). Students in classrooms that use competitive motivators tend to use more surface-level learning skills and recall more basic knowledge than concepts (Hruska, 2011).

Students are rarely given the opportunity to struggle with their learning. Most teachers provide support for students through scaffolding and repeated examples. Students are able to get

the correct answer for the test, but the lack of knowledge construction inhibits long-term learning. When learners are given the opportunity to "flounder" with higher-level problem solving, it requires much more than a simple, correct solution (Paul, 2012). Often, there is a great divide between our values and expectations (as teachers) and our students' values with respect to studying a musical instrument (Pike, 2011). The teacher plays a critical role in shaping a student's expectancy-value toward music study throughout the entire course of instruction, especially as the student evolves musically and artistically (Pike, 2011).

If our students believe school music to be something drastically different from what music teachers intend it to be. Teachers need to take a serious look at our practices as music teachers and as a profession at large (Scheib, 2006). Until teachers clearly identify the specific kinds of learning goals they wish students to achieve, it is impossible for students to take the steps necessary to achieve them (Sullo, 2007 as cited in Hruska 2011).

Lack of Curricular Challenge.

Often, students who are gifted are not challenged to perform to their full capacity because they seem to be doing just fine. These students may never achieve their full potential because they have not had complex tasks and have never really learned to work (Winebrenner & Berger, 1994). Too often, children are complaining of boredom and repeated learning, teachers are complaining about lack of time, and many are left feeling frustrated (Rakow, 2012). Gifted students frequently languish in classrooms, held down by the low ceiling imposed by narrow assessments, misunderstood needs, teachers' lack of skills in adjusting the curriculum (Rakow, 2012).

Students are rarely grouped on ability. "The average first-grade classroom can have as

many as 12 grade equivalencies and an IQ range of up to 80 points. Teachers teach to the bottom third of the graph, so everyone at the top third of the graph is doing a lot of waiting, getting more repetition. That's when boredom and bad behavior set in," (Ruf, n.d., as cited in Cleaver, n.d., p. 2). No Child Left Behind (NCLB) has brought higher standards and more accountability into the classroom, but it has also narrowed the curriculum. We have limited our gifted population, offering fewer programs that enable them to excel (Radner, n.d., as cited in Cleaver, n.d.). Schools may provide pull-out of push-in services with a gifted specialist for a few hours a week, but, like students with learning disabilities, gifted students are gifted all day long (Rakow, 2012). High performing students may (or may not) experience rich and challenging learning opportunities (The Site of Site A Illinois, *Resource*, n.d.). High ability students can master materials at a much faster rate than average students, but are rarely given the opportunity through curricular challenge. The curriculum is often unchallenging and unmotivating. This lack of challenge in a child's early years of schooling can later translate to poor work habits (National Research Center on the Gifted and Talented, 1995). Boring lessons and a sense of lack of progress were the most commonly cited reasons for discontinuation (Driscoll, 2009). Some gifted students will drop out of school if their needs are not met (The Center for Comprehensive School Reform and Improvement, 2008).

Lack of Interest-Based Learning.

Poor motivation cannot fully account for underachievement, but it does plays a major role. Many gifted underachievers express a lack of interest in what they are learning in school - they find it uninteresting, meaningless, or irrelevant (Ford et al., 1998). "Sometimes motivating high achievers is a matter of being more sensitive to what they're interested in." Too often

classrooms are not set up for that kind of sensitivity. Schools are consistently failing to provide opportunities for top students to realize their potential. Teachers are teaching to the bottom half of our classes with perhaps devastating ramifications (Ambrose, n.d., as cited in Cleaver, n.d., p. 2). It is not unusual to hear of students who dislike a particular composer or a certain style of music. Often this aversion to a particular genre is a manifestation of low self-efficacy or of a high perceived cost simply because of a bad past experience, usually resulting from a piece that was too challenging and inappropriately assigned (Pike, 2011). Lack of motivation is not the student's fault, but rather a teacher's inability to connect the content to something of interest (Nicholls, & Miller, 1984, & Ackerman, Sternberg, & Glaser, 1989, as cited in Seely, 2004). "The most pressing and persistent issue for students is not low achievement, but student engagement. Students attend class with little excitement, commitment, and pride in mastering the curriculum. They have no psychological investment in learning," (Newman, 1992, as cited in (Ford et al., 1998, p. 1).

Detriments of Extrinsic Motivation.

Research shows that students learn best when they internalize what they are learning about. Practice time was most strongly correlated with intrinsic motivation. Factor analysis revealed three factors of motivation: Learning/Task Orientation, Performance/Ego Orientation, and Individual Orientation. The factors essentially replicated those found in a general academic achievement setting. Learning/Task Orientation was positively correlated with practice time, ratings of performance and effort, solo festival and private-lesson experience, and grade level. Performance/Ego Orientation was negatively correlated with grade level and solo festival ratings. Individual Orientation scores were positively correlated with ratings of performance and effort

and solo festival ratings (Schmidt, 2005). Students who are motivated by an ability-approach goal are oriented to being better than others, to appear to be smarter or more talented (the best musician in the band), and to be best in competitions (Maehr, Pintrich, & Linnenbrink 2002, p. 360, as cited in Nielsen, S. G., 2008). In contrast, students who adopt ability-avoidance goals seek to avoid looking dumb or stupid relative to others (i.e., avoid playing a wrong note in orchestra so as not to look dumb) (Maehr, Pintrich, & Linnenbrink 2002, p. 360 as cited in Nielsen, 2008). Because culture is competition-oriented and the grade orientation is pervasive in classrooms and beyond, students need strong encouragement to develop a learning orientation. This is especially true for students who do not have a great deal of innate talent (Green & Hale, 2011). Some have suggested that this declines stem from an emphasis on competition and performance techniques that are not relevant to students, especially after they finish high school. In addition, bands and choirs often place competition at the heart of success. The result is motivation that comes from extrinsic rewards, such as moving up in chair assignments or winning competitions, rather than from intrinsic rewards and love of music (Green & Hale, 2011). Failure to perform well often leads to reduced involvement, lowered intrinsic motivation, and negative emotions stemming from a perceived lack of ability (Molden & Dweck, 2000, & Wigfield & Eccles, 2002 as cited in Hruska 2011). If our practices as school music educators focus exclusively on extrinsic aspects of music instruction, we are not creating generations of citizens who believe school music exists solely to teach these extrinsic attributes. Our students eventually leave our schools to become members of our communities - school board members, taxpayers, policy makers, school administrators, colleagues, and even school music teachers. (Scheib, 2006). The value attached to a task by family, friends, school and society is crucial to

engendering motivation, but intrinsic motivation is a key to sustain motivation over time (Hallum 2001, as cited in Driscoll, 2009).

Gender Differences.

Differences in gender will also present issues in terms of student underachievement. Social, emotional, family, educational, and socioeconomic factors and their affects on creative and academic potential were analyzed for a second-grade, gifted boy who was having behavior problems in school (Saunders, 2003). Gifted boys are more at risk for missing the window to develop emotional and social intimacy (Kline, & Short, 1991, as cited in Saunders, 2003). Gifted boys outnumber gifted girls in school underachievement, but recent research has shown increased attention to female underachievers. Girls might underachieve intentionally for social acceptance (Dowdall & Colangelo, 1982, & Rakow, 1989, as cited in Peterson & Colangelo, 1996).

Middle School Issues.

Middle school gifted students are more susceptible to have stress, alienate themselves, underachieve, display antisocial behavior, or indifference (Seely, 2004). If high-achieving kids aren't challenged in elementary school, they turn off when they hit challenges in middle or high school," (McCoach, n.d., as cited in Cleaver, n.d., p. 2). Once in middle school, sometimes called the "black hole of gifted education", the pull-out model is a social disaster. Being pulled out of class too often is embarrassing for gifted students (Rakow, 2012, p. 38). High standards placed on middle school gifted student are at risk because of other contributing developmental factors such as the need for separation and to find his/her own identity (Seely, 2004).

Students may also lose interest in music, consider it simply a short-term hobby (Younker

& Renwick 2002), or develop interests in conflicting areas such as sports that compete for the same timetable spaces (Younker & Renwick, 2002 as cited in Gouzouasis, Henrey, & Belliveau, 2008). They (students) discovered that loss of interest in band and interest in other activities were frequently cited reasons (Gouzouasis, 2008). In addition, the younger generation is accustomed to multi-tasking, achieving success readily with much that they do, begin rewarded for effort (not necessarily for outcome) and having teachers and parents problem solve for them (Pike, 2011). Peer group pressure can be a primary culprit that leads to underachievement. The "nerd" label can come with students performing well in school, when academic excellence is not already valued by many students. To be accepted into a social group, students will sometimes perform below expectations (National Research Center on the Gifted and Talented, 1995). Some students (boys) simply are not the gender that chooses music in school, that is less successful and less hardworking at it, and that identifies it as for 'sissies' (Green 2005, as cited in Gouzouasis et al., 2008).

Behavior Problems.

Gifted students with advanced verbal reasoning are often treated or expected to act more mature than their chronological age causing "teachers and parents to wonder why someone so smart can do such dumb things sometimes." (Seely, 2004, p. 4). According to a study of 2,000 middle school students conducted by Seely (1988), he found a reciprocal relationship between behavior and grades. He found that students were graded based on behavior rather than performance (Seely, 1988, as cited in Seely, 2004). Seely (1988) also found that students that received poor grades had a tendency to act out (Seely, 2004). Learning disabled gifted students may appear slow or lazy, but are capable of much more (Seely, 2004). A decline in attendance

may signal a child at risk. Yet, lists of characteristics of gifted underachievers usually do not include references to attendance and tardiness (Baker & Shaw, 1987, as cited in Peterson & Colangelo, 1996). Creative and divergent thinkers are more at risk for school absences, tardiness, and delinquency because they feel like they do not fit in their school environment (Seely, 2004). Convergent thinkers with strong motivation are able to understand and cope with their school environment, keeping them less at risk for delinquency (Seely, 2004).

Ongoing Issues in Gifted and Music Education.

Underachievement occurs for various reasons: personal, environmental, or lack of engagement in school. Classrooms sometimes fail to motivate students, are not engaging, or lack interesting and challenging experiences. At times, peer pressure plays a factor or strong academic performance is not celebrated (Reis, 2011). As children become older they need to practice more independently (Driscoll, 2009). As in the case of standardized academic testing, the expectation is that when students have the threat of a poor performance (or the potential reward of a good result) in front of them, they will work harder, show greater levels of commitment, and will produce a higher quality performance than they would without that incentive (Mitchell, 2010). However, research into high-stakes academic tests has called into question whether these types of evaluations really bring out the best in students and teachers (Kelleghan, Madus, & Raczek, 1997 & Phelps, 2005 as cited in Mitchell, 2010).

Many students work very hard in preparation for evaluative performances. However, their efforts are not necessarily rewarded, particularly in ranked competitions in which it is predetermined that only one student (or one ensemble) can receive the highest level of recognition (Mitchell, 2010). Some gifted students may lack self-confidence and not actually

believe that they can do well. This inhibits them from even attempting tasks because it's easier not to try at all (National Research Center on the Gifted and Talented, 1995). The ability to interrelate procured information is usually referred to as generalization or "transfer," and anyone responsible for designing, managing, or conducting a music organization knows the frustration experienced when participants in the program do not, cannot, or will not apply what they are supposedly taught. The need for preparing students studying music with diverse skills and the ability to make meaningful transfers seems especially important (Petersen & Madsen, 2010).

Fortunately, music education provides many experiences that are structured in such a way as to be more practical or in which the information gained can be related to another activity. Still, the ability to transfer information from one situation or idea to another seems difficult at best (Petersen & Madsen, 2010). Some students feel different, lonely, or isolated from classmates and teachers. For others, family dynamics play a role, including too high or too low parental expectations. Depression, anxiety, perfectionism, and low self-esteem can also be factors that cause students to underachieve. Some students are simply immature and do not find value in education or setting and accomplishing realistic goals. Students may also place more attention on social factors rather than academics (Reis, 2011).

Rarely do teachers turn their attention to the students who pass all the tests and score in the 90th percentile or even higher, scores that indicate the test was probably inadequate for measuring what these students know and are able to do (Rakow, 2012). Musicians who become exceptional performers enjoy musically stimulating home environments as children. Their parents, although usually not performers themselves, have a keen interest in music and expose their children to musical activities as part of the family's recreational time (Woody, 2004).

Chapter 3

The Solution Strategy

Review of the Literature

There seems to be an increasing disconnect between student potential and performance, especially among gifted math and beginning music students. The following sections discuss possible solutions for this lack of student motivation, including proper programming, adequate support, a positive learning environment and appropriately challenging curriculum.

Appropriate Identification and Programming.

By actively identifying giftedness at a young age, educators can identify potential and develop a specific plan to meet the needs of the child (Seeley, 2004). Appropriate identification and programming raises awareness of underserved gifted populations while raising awareness (Seeley, 2004). Using multi-faceted nondiscriminatory tests can aid in appropriately identifying underserved students (Center for Comprehensive School Reform and Improvement, 2008). Do not use the word "disadvantaged" to describe low income and culturally diverse populations because of its negative connotations (Seeley, 2004). Proper identification and programming will increase the likelihood that underserved, gifted students will stay in school, (The Center for Comprehensive School Reform and Improvement, 2008).

Providing a Support System.

Saunders (2003) suggest a comprehensive approach is the best way to understand gifted, underachieving students. A sense of community needs to be developed within the school environment to give gifted children a sense of belonging when they do not necessarily feel they fit (Seeley, 2004). Gifted children need outlets for their different way of thinking and

functioning without feeling isolated and lonely (Saunders, 2003). It is important to provide preventions and interventions to support the unique needs of underachieving, gifted students (The Center for Comprehensive School Reform and Improvement, 2008). Most importantly, support systems work best when both parents and gifted children need to be involved in all decision-making (Seeley, 2004).

Educators and counselors need to provide support to students (Seeley, 2004). In trying to reverse underachievement, parents and teachers usually start with counseling or instructional interventions (Reis, 2011). Counseling focuses on changing personal and/or family dynamics that affect students' underachievement. Some treatments have been successful, others have not. The ultimate goal is not to force underachievers to become more successful in school, but rather help them decide if they want to be successful in school. If so, efforts are made to guide them to strategies that can help counterproductive habits and behaviors (Reis, 2011).

Teven and McCrosky (1996) reported that levels of learning were positively influenced when students perceive their teachers to be caring (Thayer-Bacon & Bacon, 1996, as cited in Mart, 2011). Teacher-caring encourages student growth and learning, creating a safe environment for risk-taking (Thayer-Bacon & Bacon, 1996, as cited in Mart, 2011). There is also good evidence to support a "community-of-learners" approach, where the students share verbally their creative connections with the class and where the teacher makes clear that application and transfer is a goal for student learning (Petersen & Madsen, 2010).

In many school districts across North America, band is more than merely part of the music program- it is a culture, a place of belonging, a social activity (Adderley, Kennedy, & Berz, 2003, as cited in Gouzouasis, et al., 2008). As young musicians enter adolescence, they

typically have pursued music lessons and other music activities for several years. At this point, peers replace parents and teachers as a motivational source. Many music students around this age will begin to identify with a "musical subculture." Perhaps the most important aspect of adolescent musical development is the increased focus on the social aspects of music (Hargreaves, Marshall, & North, 2003 & McPherson, 2006, as cited in Gooding & Standley, 2011). Research suggests that adolescents are often motivated to become involved in music because of the social aspects; they participate in music activities because they enjoy making music in groups, because they want to meet new people, or even because they want to spend more time with existing friends (Adderley, Kennedy, & Berz, 2003, as cited in Gooding & Standley, 2011). Attending concerts together; participating in duets or chamber ensembles; giving partner evaluations; attending studio classes; and accompanying other musicians all were suggested as ways to provide peer interaction (Mann, 2003).

By creating recruiting experiences that are enjoyable and appealing, students perceive the school band program as a "cool" activity and want to be identified with that activity (Albert, 2006). Most middle and high school music teachers are familiar with "band kids" or choral students who form a close-knit group. Such groups award social recognition to individuals who demonstrate notable musical abilities. The desire for support, a sense of belonging, and recognition motivates many proficient student musicians to do what is necessary (namely practice) to increase their level of performance (Woody, 2004).

Students who are familiar with middle school teachers who have worked with them in the elementary schools may be more likely to participate in the middle school's instrumental music program (Albert, 2006). Visit feeder schools more than once during a semester so that all

directors are known to prospective recruits (Bazon & Bayley, 2009).Exposure techniques included traditional performances in elementary schools and "instrument petting zoos"- exhibits that allowed elementary students to touch, hear, and play band instruments (Albert, 2006). Exposure also included performing for the surrounding community, and creating publicity through local media outlets and advertising techniques such as compact disc recordings and band apparel (Albert, 2006).

Family Investment.

The support of parents and teachers can mean the difference between a young person benefiting from musical training or dropping out. Family support was perceived by respondents to be almost twice as high as that of friends (Driscoll, 2009). Parental support and encouragement to participate are obviously necessary components of musical study. Parents also need to know about providing other study opportunities, such as summer camps and workshops, when those opportunities arise (Mann, 2003). But teachers also need to suggest to parents that they take children to performances of all kinds, such as symphonies, operas, musicals, competitions and recitals (Mann, 2003). In addition to actual musical experiences, students bring with them beliefs and attitudes about music as a result of their interaction with peers, parents, and society in general (Bazon & Bayley, 2009).

Motivating a student to do the necessary practice for skill development depends upon the support of parents and teachers, an extrinsic motivator, and is a powerful factor in a student's musical success (Pike, 2011). The amount of practice is a key variable in the determination of music performance, and parents of high-achieving children generally support practice by supervision or encouragement (Driscoll, 2009).

Teacher's Mindset/Role.

Teachers need to be "analytical practitioners" by constantly reflecting on classroom procedures, policies, and pedagogies for evidence that they are working for each student and modify them when they are not (The Site of Site A Illinois, *Resource*, n.d.). Research has shown that teacher's expectations have a powerful effect on student's performance (Callahan, 2010, as cited in Mart, 2011). Teachers need to develop a growth mindset that each learner has the capacity to succeed (Dweck, 2007, as cited in Tomlinson & Edwin, 2012). "Underachievement is a learned behavior; therefore, it can be unlearned," (Davis and Rimm, 1994, as cited in National Research Center on the Gifted and Talented,1995). Effective teachers are those who develop goals, beliefs, and attitudes in students that will contribute to and sustain long-term learning (Ames, 1990, as cited in Mart, 2011).

Gifted students are more engaged and motivated when the teacher is engaged and motivated in what he or she is teaching (McQuown, 2011). Providing opportunities for these students to display their giftedness and receive appreciation for the effort involved in developing their skills is a necessary aspect of working with them (Mann, 2003). Transfer will not happen automatically for most students, so teachers must structure the learning environment to provide opportunities for all students to learn and practice transfer (Petersen & Madsen, 2010).

Music educators who wish to develop a lifelong interest and appreciation of music play an important role in the source of student motivation (Hruska, 2011). If music educators want students to perceive school music as engaging, artistic, and educational, all within a framework of studying human self expression via the performing arts, perhaps we need to reexamine our procedures and find ways to communicate those intrinsic attributes (Scheib, 2006).

Research suggests that students who perceive that their teachers are emphasizing a learning orientation tend to have more positive attitudes toward school and subject matter (Green & Hale, 2011). Teachers who encourage a learning orientation increases motivation and help these students see musical participation in a whole new light. Emphasizing the individual's progress across time is more likely to encourage a learning orientation and less likely to lead to discouragement than an exclusive diet of constant competition with others (Green & Hale, 2011). Teachers can reward effort toward mastery and enjoyment rather than focusing solely on winning competitions and comparison to others. This shift in focus can increase positive attitudes because students have more control in reaching mastery and finding success. That is because success can now be defined more broadly than holding first chair or winning the state competition (Green & Hale, 2011). As students experience success in learning situations and in performance settings, they will become more confident and empowered to work toward attaining the next musical objective we set for them (Pike, 2011).

When teachers focus more on rewarding effort and on building positive climates of learning, students feel safe to make mistakes (Covington, 1998 & Sullo, 2007, as cited in Hruska, 2011). In encouraging the most easily administered children to continue in band: through rewarding good behavior with good marks and making them feel successful in music regardless of their ability to 'do' music- the teacher is not considering what is in the best interests of the child. Indeed, it may be that some of the least easily managed students could benefit the most from being included in high school music programs (Gouzouasis, et al., 2008). With continual positive feedback and praise for musical accomplishments, young musicians may begin to believe in their giftedness and feel destined to become exceptional performers. Self-esteem is

improved when gifted children are given positive feedback that confirms their potential, helping them better cope and understand why they feel different (Saunders, 2003). This feeling can contribute heavily to their sense of self-efficacy, or the belief in their ability to achieve objectives (Woody, 2004).

Teachers can also build and reinforce self-efficacy in their music students by emphasizing effort and practice, instead of natural ability and talent. Teachers also increase the success of students' practicing--and therefore motivation--by teaching them how to practice efficiently (Woody, 2004). Students should be taught to analyze the causes of success and failure in constructive ways and in which they can value their hard work and effort as a source of personal worth and the will to learn (Covington, 1998 & Sullo, 2007, as cited in Hruska, 2011). Beginnings are best nurtured in a climate of support and encouragement rather than fear and punishment; besides, there is probably no "perfect" performance or music activity. Many musicians who once started by doing small-scale things have later continued to produce very substantive relationships while pursuing their individual curiosity and interests (Petersen & Madsen, 2010). If teachers help students improve their skills and confidence by giving them small objectives they can measure, and provide them with strategies to meet those goals, success will fuel the students' sense of mastery motivation, and the empowering motivational cycle builds upon itself (Pike, 2011).

Lastly, teachers should take advantage of the motivating power of an imminent performance. Keep in mind that practice is not intrinsically motivating, even for the most accomplished performers. Even the most conscientious students will benefit from having something to practice for. This is not to say, however, that teachers should try to increase student

practice by threatening embarrassment in an in-class playing test or leading students to believe that their music education only amounts to how they perform in the next concert. However, teachers should realize that if their students are unmotivated to practice without some sort of extrinsic incentive, they are probably just normal musicians (Woody, 2004). When the music teacher can successfully link pecific, targeted feedback to improvement, the focus can easily shift to "the team," working toward a meaningful, high-quality performance experience (Hruska, 2011).

Setting the Tone for Learning.

Setting the classroom environment at the beginning of the year is pertinent. Make sure students know that everyone is expected to improve, success is based on effort, we are always curious, and there is always more we can learn," (Tredlick, n.d., as cited in Cleaver, n.d., p. 3). Set the tone for your classroom early in the year and clearly communicate your expectations and capitalize on students' initial curiosity (Mart, 2011). Teacher should have a firm hand in classroom management and clearly outline their expectations for student behavior (Albert, 2006). Most importantly, provide students with clear learning targets, guidelines, and feedback (Tomlinson & Edwin, 2012).

Student Involvement.

It is important to support independence and acknowledge the mature gifted mind by allowing gifted adolescents to develop their own goals and explore their options (Seeley, 2004). Students need to be part of the goal-setting process, discussing their interests and areas needing growth (Seeley, 2004). Students need help setting realistic goals that they can eventually reach, but avoid comparing students to others or creating a competitive atmosphere (National Research

Center on the Gifted and Talented, 1995). Teachers may also use learning contracts, or written agreements between teachers and students, outline what students will learn, how they will learn it, a basic timeline of when the learning will take place, and how they will be evaluated. These contracts allow students to engage actively in the decision-making process, directing their course of study (Park, 1989, as cited in Winebrenner & Berger, 1994).

Empower students in the classroom by giving them options that help develop a sense of autonomy and skills for self-directed learning (Mart, 2011). Student motivation is increased if they feel that they have control of their learning outcomes (Callahan, 2010, as cited in Mart, 2011). This provision of choice and control for students in their independent practice gives the students the opportunities to set the pace of learning and how the task will be accomplished (Nielsen, 2008). A study by Sandene (1997) on the variables related to student motivation in instrumental music suggested that students be allowed to have some choices in music selection and a chance to develop their individual interests. The study found that students were more motivated when expectations for success were reasonable, students received individual attention as needed, and the class atmosphere was noncompetitive in nature (Sandene, 1997 as cited in Hruska, 2011). Students will be more likely to take ownership of learning a piece they choose (Pike, 2011). Presenting two or three pieces and letting the student choose usually produces an eagerness and willingness to work hard on the student's part (Mann, 2003). Students practice differently when they are working on pieces of music that they like and have a higher motivation to practice pieces they have chosen themselves (Pike, 2011).

Letting gifted students mentor younger students by practicing with them can offer a different type of recognition (Mann, 2003). Student leadership situations provide some of the

best ways for students to become more intrinsically motivated through the promotion of cooperation, fulfilling responsibilities, and making decisions and discoveries about personal learning styles (Hruska, 2011). Involve model band students from older grades who are perceived as "cool" or "leaders" during the presentation of instruments (Bazon & Bayley, 2009). By actively involving students in the recruiting process, it becomes their program, providing them with the valuable opportunity to demonstrate that they are enthusiastic and committed members of the band (Bazon & Bayley, 2009).

Intrinsically Motivating Students.

"There are three things to remember about education. The first one is motivation. The second one is motivation. The third one is motivation," (Bell, n.d., as cited in Mart, 2011). Motivating learning is about bringing out students' natural motivations and tendencies to learn, not "fixing them" or giving them something they lack (McCombs, n.d., as cited in Mart, 2011). An intrinsically motivated person will pursue an activity because he or she enjoys it. This enjoyment provides the only reinforcement that the person needs in order to continue to engage in the activity. Extrinsic motivation, in contrast is based on receiving external rewards for engaging in a particular behavior. When these incentives are removed, engagement in the activity stops (Mitchell, 2010). Internal motivation is longer lasting and more self-directive than external motivation, which must be repeatedly reinforced by praise or concrete rewards (Mart, 2011). Extrinsic rewards can have a particularly damaging impact if a person was previously intrinsically motivated to pursue an activity, as the reliance on rewards can take place of the intrinsic motivation (Stipeck, 2002, cited in Mitchell, 2010).

Students appeared to be more motivated in a classroom environment that emphasized

performance rather than outcome (Ames & Archer, 1988, as cited in Seeley, 2004). In a study of instrumental band students, the young musicians tended to report that their own success was best defined by mastery and cooperative orientations, while they placed less emphasis on competitive and ego orientations. Participants tended to agree with statements in which success was perceived as reaching personal goals, and sensing improvement or accomplishment. Similarly, subjects on average tended to agree that they learned the most or did their best when working with other students. The results suggest that students may respond best to the intrinsic or cooperative aspects of instrumental music, rather than its extrinsic or competitive aspects (Schmidt, 2005).

The rewards for students involved in these music ensembles are often intrinsic in nature, stemming from personal connections with others and aesthetic responses to the performance of the music. Well-trained student ensemble leaders have the ability to motivate other students in the group to raise their performance standards, making for an even more enjoyable learning experience (Hruska 2011). Efforts to increase student motivation should focus on fostering enjoyment, encouraging hard work, and effective practicing, developing mastery and providing opportunities for students to experience successful, meaningful music-making (Mitchell, 2010). In the music classroom, musicians who are part of mastery learning goal environments are motivated by the goals and challenges presented to them (Hruska 2011).

Providing Meaningful Learning Experiences.

The most effective learning occurs when students are able to make meaningful and relevant connections to what they are learning (Ford, et al., 1998). Teachers need to make lessons relevant to students' lives. By connecting the material to real-world experiences or

educational goals, understandings are deepened and students can see the value of what they are learning (Callahan, 2010, as cited in Mart, 2011). Teachers also need to vary teaching methods to get students to actively participate in the class (problem-based learning, collaborative learning, experiments, technology, etc.) and provide immediate feedback (Mart, 2011). Real-world problems do not come neatly packaged, so teachers need to discern how to "design for productive failure" by choosing a problem that challenges without frustration, providing learners with an opportunity to explain and elaborate, and give learners a chance to compare and contrast good and bad solutions (Paul, 2012). The "learning paradox" is the more you struggle and fail when you are trying to master new information, the better you are likely to recall and apply the information later (Paul, 2012).

When students learn to transfer information and knowledge to new situations, they are more likely to retain that knowledge; this retention seems to be enhanced when the information is presented within an activity where creativity is encouraged (Petersen & Madsen, 2010). Giving students an independent study or project work is another way to keep them engaged (Renzulli, n.d., as cited in Cleaver, n.d.). Also, giving students open-ended questions and assignments, more thinking time, and assignments without models to follow challenges high achievers (Radner, n.d., as cited in Cleaver, n.d.). Providing open ended assignments allows high-achieving student to take their work to a deeper level and is incredibly beneficial for all students. Projects that allow for a broad range of higher-level thinking can provide opportunities for real-life learning experiences lead to more engaged students (Renzulli, n.d., as cited in Cleaver, n.d.). Rather than pushing high-achievers to move through the curriculum faster than their peers, engage them in real-life problems. Let them, "do what the big guys do, even if it's at

a junior level." (Renzulli, n.d., as cited in Cleaver, n.d., p. 3).

Through the process of music making, students created a sense of pride and enthusiasm (Albert, 2006). Additionally, a young musician who has enjoyed even a moderate level of performance success will have experienced the pleasure and excitement of participating in a public concert or recital. For some, the thrill of performing before a large audience and hearing the rousing applause is stimulating. Others gain strong aesthetic rewards from being part of a high-quality music performance (Woody, 2004).

Interest-Based Learning.

Teachers need to provide opportunities for students to pursue topics of interest and encourage students to pursue out-of-school interests as well. Underachievers may begin to recognize connections between their interest areas and academic content (National Research Center on the Gifted and Talented, 1995). This connection makes for highly engaging and student-centered learning increases the likelihood of students being active participants in the learning process (Ford, et al., 1998). Underachievers are more likely to be engaged in school and achieve at higher levels when stimulated in class and allowed to pursue topics of interest. Teachers should encourage different learning styles by getting a feel for what a student wants to do and then let him or her work in ways that reflect that (Garcia, n.d. as cited in Cleaver, n.d.). Teachers should also give students opportunities to develop independence and responsibility for their learning rather than keeping all authority in the hands of the teacher promotes a learning orientation (Green & Hale, 2011). If students are given meaningful tasks that incorporate variety and interests, they are more likely to promote a learning orientation and higher motivation (Green & Hale, 2011). This suggests students' strengths and interests matter in the learning

process. Spend time each day focusing on students' strengths and interest and remember that the classroom is a place for developing all sorts of talents in students (Renzulli, n.d., as cited in Cleaver, n.d., p. 1).

Ford, et al., (1998) described "behavior traps" as a way to assist students development of academic and social skills. "A behavior trap uses a student's interests to 'trap' him or her into using and developing important skills," (Ford, et al., 1998, p. 2). Plan a demonstration lesson that sparks student interest (Bazon & Bayley, 2009). Perform music that is interesting and captivates students (Bazon & Bayley, 2009). Many students wanted to perform in an ensemble that reflected cultural relevance (Albert, 2006). Teachers can set a "motivation trap" through a five-step process: identify which students need help, discover student interests, find resources, and set the trap. Setting the trap only works if students get "caught" or their interests are peaked. Making it easy for students to enter the trap is key, requiring only small, easy responses. Once the trap is set, the student is required to use and extend target skills in order to maintain and increase contact with his or her topic or activity of interest. Finally, evaluating the trap is key for future improvement (Ford, et al., 1998, p. 2).

Differentiation.

Differentiated education and gifted education share a major philosophical commonality: the teacher needs to engage the child in a search for meaning through a content-rich curriculum. The focus is on thinking, not acquiring knowledge (Good, 2006). Differentiation doesn't come naturally. Teachers often think they are differentiating, but they are not. Differentiation is more than giving choices and grouping, and it's not individualizing instruction for 30 kids. "Differentiated instruction is good for kids and hard for teachers," (McCoach, n.d., as cited in

Cleaver, n.d., p. 3). "In classrooms that are highly differentiated, high-achieving kids may be comfortable, happy, eager learners. Where there isn't sufficient differentiation, there can be bad habits, frustration, and depression," (Peterson, n.d., as cited in Cleaver, n.d., p. 3)."Challenging them from the start and teaching them good habits gets them through eight grade and beyond. If they have a well-established habit of achievement, even if the bottom falls out, many times those habits will support them," (Peterson, n.d., as cited in Cleaver, n.d., p. 1). Teachers should not let students think school is too easy. If they are not challenged early on, they get the impression that school is something that is not worth the effort. This attitude toward learning will only hurt them later. (McCoach, n.d., as cited in Cleaver, n.d.). Teachers need to be in tune to what the students' individual learning styles are while bringing the classroom together as a whole team of learners (McQuown, 2011). In addition, all students should be treating fairly by giving all students work that is, "equally engaging, equally appealing, and equally important," so that they are all being challenged on their level and the way they learn best, (Tomlinson, 2008, as cited in McQuown, 2011).

A more challenging learning environment and an opportunity to resolve some underlying personal issues might allow for higher academic achievement (Saunders, 2003). Teachers should provide opportunities for academic challenge in the classroom that enables gifted students to use higher-level thinking skills (National Research Center on the Gifted and Talented, 1995). All students deserve equitable access to an engaging and rigorous curriculum (Tomlinson & Edwin, 2012). "Teaching up" is a key approach teachers can use to make meaningful learning experiences available to all children (Tomlinson & Edwin, 2012). Gifted students benefit from alternative activities that extend basic concepts and allow connections between personal interests

and course curriculum (Winebrenner & Berger, 1994). Students who demonstrate mastery of the curriculum, benefit from compacting, spending less time on the curriculum and more on extension and enrichment opportunities (Winebrenner & Berger, 1994). Gifted students are best served by participating in higher-level, challenging activities, not by merely doing more of the same work as the rest of the class (California Association for the Gifted, 1994, as cited in Good, 2006). Create assignments that are appropriately challenging. Every student feels that he or she, with reasonable effort, has the capability to succeed while still being challenged to stretch his/her limits (Callahan, 2010, as cited in Mart, 2011).

Talented students also need differentiation, including pre-assessments, and interest-based opportunities to reverse the trend of academic underachievement (Reis, 2011). "Teachers make the soundest decisions only after thorough pre-assessments have taken place and in collaboration with others," (Rakow, 2012, p. 37). Pre-assessments should be administered at least one to two weeks before instruction is to begin. These assessments should be individual, completed in school, and in writing (graphic organizers, journals, charts, concept maps, or more formal tests). Teachers need to use unit-based pre-assessments to avoid the issue of requiring a gifted label, rather any student that demonstrates mastery on the pre-assessment becomes eligible for advanced work (Rakow, 2012). One might need to pretest to identify needs and see who is beyond the lesson. It is crucial to plan early and often to get to know the curriculum so that it can be extended across multiple disciplines (Tredlick, n.d., as cited in Cleaver, n.d.).

After pre-assessment has taken place, teachers can create tiered assignments with shared content and themes give students a change to share knowledge and ideas while working at a level that is both academically challenging and comfortable. Teachers can more flexibly teach to

engage students' interests and meet all needs. Renzulli (n.d.) reminds us that one size does not fit all. Teachers can also group kids based on ability and interests. The groups can change depending on the topic and kids' strengths in different areas (McCoach, n.d., as cited in Cleaver, n.d.). Cluster-grouping high-achieving and gifted students for more in-depth group assignments enables teachers to more easily provide different assignments and content (Renzulli, n.d., as cited in Cleaver, n.d.). If warranted, research on acceleration (grade-skipping or content acceleration) suggests that it benefits gifted and talented students in many ways (Renzulli, n.d., as cited in Cleaver, n.d.). Giving advanced learners beyond-grade-level content allows them to encounter words and ideas that are new to them (Renzulli, n.d., as cited in Cleaver, n.d.).

Project Objective and Processing Statements

As a result of differentiation, during the period of Monday, September 11, 2012 through Friday, January 18, 2013, teacher researchers attempted to decrease student under-achievement (hyperactive, withdrawn, poor attention, disruptive, and uncooperative).

The teacher researchers performed the following tasks prior to implementing the intervention:

- Identified learning goals for intervention unit
- Designed pre-assessments to form small, flexible groups
- Reformatted lessons to incorporate use of differentiation to provide added challenge and/or support
- Created interest-based activity menu

Project Action Plan

The following project action plan delineated the specific steps that were taken throughout the research period. This plan outlined the actions that were taken during pre-documentation, intervention implementation, and post-documentation in order to increase motivation and

underachievement.

Pre-Documentation:
September 11, 2012 – September 21, 2012

- Parent consent
- Teacher survey
- Student survey
- Behavior checklist

Intervention Implementation:
September 24, 2012 – December 17, 2012

- Behavior checklist (ongoing)
- Pre-assessment
- Form flexible small groups
- Teach small group lessons
- Design interest-based choice menu
- Student weekly journaling
- Teacher weekly journaling
- Post-assessment

Post-Documentation:
January 7, 2013 – January 18, 2013

- Student survey
- Analyze data

Methods of Assessment

The Student Survey was used to gain knowledge regarding student attitudes towards achievement and was given before (9/11/12-9/21/12) and after (1/7/13-1/18/13) the intervention. The 25 student participants completed the survey given by two teacher-researchers in class. Pre- and post-data was analyzed to note any changes.

Chapter 4

Project Results

The purpose of this action research project was to increase student motivation and engagement. Lack of student motivation and engagement was documented based on information obtained from student surveys, teacher surveys and student behavior checklists. The interventions implemented to increase motivation and engagement included differentiated instruction based on flexible grouping and giving choices. The interventions were implemented for 25, fifth-grade students. Two teacher researchers at two different sites carried out the research in a gifted math class and a beginning band class. The research was carried out from September 11th, 2012, through January 18th, 2013. The results of our interventions were documented using a student survey.

Historical Description of the Intervention

Description.

During the pre-documentation phase of the action research project from September 11th through September 21st, 2012, we made copies of the student survey, the teacher survey, and the student behavior checklists. In addition, we sent home the consent forms to the parents and/or guardians of the students involved in the research. We distributed copies of the teacher survey to selected teachers at both sites. We collected these surveys and were pleased with the quality of responses. We also administered the student survey, which was collected immediately upon completion. Both teacher-researchers used the student behavior checklists to document behaviors exhibiting lack of motivation and engagement. The student behavior checklist was administered in each class where interventions were going to be implemented. We started

analyzing the data from the student and teacher surveys. In addition, we discussed grouping strategies based on core curriculum pre-assessment data.

During the first week of the intervention, from September 24th through September 28th, 2012, we began to model and practice student choices based on a menu of appropriate options since the activities were student led. Both Teacher Researchers discussed guidelines and expectations with students before pulling small groups for instruction. Teacher Researcher A began to pull small groups based on pre-assessment data. Student's not working in a small group used the menu to make a positive use of their learning time. Teacher Researcher A felt that her instruction was differentiated and very little math time was lost. However, she found herself spending more time with struggling students, leaving high-achieving students with less teacher time. Teacher Researcher A made it a goal to give each group an equal amount of teacher time, re-teaching, practicing, or enriching the current content. Teacher Researcher B taught the class as a whole group for the first 20 minutes and then took an additional 10 minutes to separate into smaller groups based on ability level and moved students' equipment.

Teacher Researcher B spent the last 13 minutes implementing small group instruction with a student-led choice menu. Teacher Researcher B thought it was great to be able to work with the students in smaller, level based groups because it helped him differentiate his instruction. There was a necessity though to have two separate rehearsal venues to occupy both groups due to the noise level created by two groups of musicians playing.

During the second week of the intervention, from October 1st through October 5th, 2012, we continued to get more comfortable using our intervention to manage engagement and management in the classroom. Teacher Researcher A completed the first unit with the

intervention and gave a post test. With the graded post-tests, Teacher Researcher A also handed back pretests and a test reflection form (See Appendix E). This gave students an opportunity to calculate their growth by recording pre- and post-test scores. Although Teacher Researcher A felt that this was a motivating classroom tool, she also felt that she spent a lot of time reviewing, giving the post-test, and reflecting that week rather than moving onto new information. Teacher Researcher A also found it noteworthy that all students made significant growth in the first unit except for her three students, her most gifted math students. Teacher Researcher A felt that this was due to more prior knowledge on the content and lack of structure during non-instruction time.

Teacher Researcher B created smaller ability based groups based on pre-assessments and observations. Teacher Researcher B continued working with smaller ability based groups and began illustrating how to verbally count rhythms to students. Teacher Researcher B gave the students choices from exercises in their books to practice but still had frustrations due to having two separate locations for students, leaving one group unsupervised and often times off task.

During the third week of the intervention, from October 8th through October 12th, 2012, Teacher Researcher A began using a Math Menu Reflection as an "exit slip" to hold students accountable for their tasks each day. She found this particularly helpful to check in with all students every day, even if they did not receive direct instruction time. Teacher Researcher A began to feel that the small group instruction time felt too short to fully explore the depth of each concept. However, she was hopeful that this quality instruction time would allow for less re-teaching later.

Teacher Researcher B found frustration when students came to class unprepared for class

(no book, no sticks, or no percussion kit). Teacher Researcher B did not possess extra materials for students to use if they were unprepared for class. There was also a significant loss of educational time due to moving students and their equipment to the second rehearsal venue. Teacher Researcher B saw progress in both small groups, but questioned whether or not teaching smaller differentiated groups at every lesson was worth the lost time with the preparations.

During the fourth week of the intervention, from October 15th through October 19th, 2012, Teacher Researcher A reported that students were seemingly more engaged for the entire math block and transitions between small groups were becoming faster. She had to pause the regular curriculum to fill in necessary content knowledge holes. Once students had exposure to this new information, they were able to quickly move onto the new content. Students were receiving differentiated homework based on pacing and understanding of the current concept (See Appendix F). Because homework was given after small-group instruction, students received different homework on different nights. Students did not express concern about this aspect of guided math. Teacher Researcher A felt that this guided math format, although messy at first, was worth the positive results.

Teacher Researcher B's students continue to enjoy participating in the percussion class and they seemed to enjoy making music as well. Most of the students in Teacher Researcher B's beginning percussion class came into 5th grade with some music knowledge. Students continued working by themselves while Teacher Researcher B worked with the opposite group. Most students were very excitable and had difficulties refraining from randomly hitting/playing drums, making loud noises etc. Teacher Researcher B anticipated that more difficulties would ensue as the students' progressed and moved onto the larger school instruments (bass drums, snare drums,

cymbals, tom-toms, tympani, and large mallet instruments). These larger instruments are drastically louder than the percussion kits that the students start on which posed another problem of containing the louder sounds.

During the fifth week of the intervention, from October 22nd through October 26th, 2012, Teacher Researcher A used small math groups to check in and review difficult concepts with struggling students. She felt it was beneficial to re-teach in a small group format and gave all students an open invitation to join a particular group if they wanted a review. On the other hand, students that mastered the content were working on Math Menu extension options. Students did not seem to mind or notice that teacher time was not equal this week. However, Teacher Researcher A recognized that students who had mastered the content were still engaged in an open-ended math activity and using class time wisely. Teacher Researcher B introduced the Concert Bb and F scales and basic snare drum rudiments to all students. This week the students also got to play along to recorded music (Stevie Wonder etc.), which they seemed to really enjoy. Students began verbally counting rhythms out on the board to continue building their abilities to count in their mind. The students showed that they could understand newer concepts and continue doing a great job. Students continued to socialize when given the opportunity to work together. Students also continue to come to class unprepared.

During the sixth week of the intervention, from October 29th through November 2nd, 2012, Teacher Researcher A focused on small group, differentiated problem-solving. Unfortunately, due to an assembly, Teacher Researcher A could only see her students for four days that week. She did feel, however, that Math Menu choices continued to keep students engaged and teacher time remained focused. Teacher Researcher A found herself spending less time correcting

behavior and more time guiding learning. Teacher Researcher B began introducing the students to the larger equipment to the percussion students. The students were very exuberant and for the most part were prepared for the transition. While the students were prepared, they were always over excitable and could not resist the urge to hit and play the drums. The students were also transitioning to playing separate parts as opposed to playing in unison all of the time. Some students still came unprepared to class making it difficult for them to participate.

During the seventh week of the intervention, from November 5th through November 9th, 2012, Teacher Researcher A had students work in pairs and triads on a review guide. Although this was more of a traditional math class, Teacher Researcher A felt that she was able to review a lot of content so students felt confident for the upcoming test. Two days of math were missed this week due to Measures of Academic Progress (MAP) testing. Due to a short math week and a more traditional class, students seemed to be less engaged and more off-task. In Teacher Researcher B's classroom, students continue to excel in their playing. It was becoming more difficult to separate students into groups because they were playing different parts as opposed to all unison parts. Teacher Researcher B contemplated separating the groups by instrument instead of ability level (students are still basically in ability level groups, ex: lower level kids play bass drum parts, higher level kids play snare drum etc). Teacher Researcher B spent a good amount of time assessing the students and their level and giving them parts that were appropriate to their level. Teacher Researcher B strove to offer students a well-rounded music education by giving them a variety of parts (bass, snare, tom-toms, cymbals, tympani etc) and not just keeping them on one part all year.

During the eighth week of the intervention, from November 12th through November 16th,

2012, Teacher Researcher A gave a test and had students complete a test reflection. The test reflections seemed to be motivating for students; they were excited to see their growth and if they met their goal from last unit. Teacher Researcher A has also received positive feedback from parents on the math test reflection. They have informally reported that they appreciated the consistent communication and the clear evidence of growth. The math test took longer than expected. Teacher Researcher A planned to created shorter pre- and post-tests to assess more often in upcoming units. Teacher Researcher B began grouping the students by instrument in the smaller groups. Teacher Researcher B found it to be too complicated to have a group of students playing separate parts without the director helping them. If the students were older, they might have been able to play their parts together but it was too difficult for fifth-graders. Teacher Researcher B began class in separate groups and then brought the students back together for the second half of class to put their parts together. The difficulty that presented itself was the issue of moving equipment for the students. Five to seven minutes were squandered every time the students need to separate or come back together. It was also hard to find time to set up a separate space for the students before they got to class since Teacher Researcher B had classes right up to their class.

During the ninth week of the intervention, from November 19th through November 23rd, 2012, Teacher Researcher A showed an online video clip to the whole class before she continued her guided math groups with the choice menu. Teacher Researcher A was able to use the video as a re-teaching strategy during math menu time for struggling students to independently view. This week, Teacher Researcher A felt that students' demonstrated incredibly discrepant knowledge adding and subtracting fractions. She was very grateful to be able to work with small

groups to meet all needs. Teacher Researcher A, however, found that even within small groups of five to seven students she still had to differentiate. Teacher Researcher B found that it helped to have the groups in two separate areas to focus on one part at a time rather than work with one group while the other group sat and waited. It gave Teacher Researcher B more time to focus on one group and really clean up their parts while the other group was actively playing on their own. Teacher Researcher B still needed to almost be in two places at once since the students that were not being supervised easily got off task. At times, Teacher Researcher B found the process both helpful and difficult. Teacher Researcher B did not have enough instruments to set up for both main instrument groups (bass drums/snare drums) in two places. The time switching groups to other rehearsal spaces was frantic and sometimes got the students more off task. Teacher Researcher B saw how having even smaller groups work separately while working with the opposite group would be more helpful rather than just splitting the groups down the middle. The sound crossover continued to be an issue as the students were playing larger drums and not their drum pads. It was also still an issue to supervise two groups at once, but the smaller 3-person groups seemed to stay more on task than a group of 8 or 9 students.

During the tenth week of the intervention, from November 26th through November 30th, 2012, Teacher Researcher A found that most students learned multiplying and dividing fractions quickly. She was able to move onto new content with all students while again checking in with struggling students who had not yet mastered last week's skills. Even though not all students were ready to move on, she was able to be flexible with her small group instruction. Teacher Researcher A noticed that students got in a math menu habit of choosing the same activities. Teacher Researcher A had a conversation with the class about selecting a variety of activities

during choice time that are challenging. Teacher Researcher B experimented this week and separated 3 students instead of having the two larger groups of 9 and 8. Teacher Researcher B set up two tom-toms and one snare drum in the back room. Teacher Researcher B sent two bass drum/tom-tom players (lower level players), and one snare player (higher level player) into the room to play. The snare drum player was the designated player to count off the students. Teacher Researcher B worked with the rest of the group on both sets of instruments while the group of 3 worked together. Moving only 3 drums took a lot less time for the students or Teacher Researcher B to move at one time. Teacher Researcher B felt that the students stayed more on task in a small group of 3 with a designated student "leader". Teacher Researcher B decided to continue with this method to see if it is any better than groups split down the middle.

During the eleventh week of the intervention, from December 3rd through December 7th, 2012, Teacher Researcher A continued to differentiate fraction content and skills. She tried to give all learning levels authentic applications of fractions in their small groups through real-world problem-solving. Teacher Researcher A noticed students made an effort to choose more of a variety of activities at a more challenging level. Teacher Researcher B rotated students in smaller groups to work together. The students worked better in a group of 3 as opposed to a group of 8 or 9. The designated teacher leaders also helped the students on their own parts instead of just playing through their music. The amount of time lost was a lot less as opposed to when 8 or 9 drums had to be moved before or during class. Having 3 kids move drums and music stands was a lot less chaotic than having 8 kids moving equipment at once.

During the twelfth week of the intervention, from December 10th through December 14th, 2012, Teacher Researcher A taught customary units. Students had been exposed to the content

before and the pre-test showed that most students just needed a little refresher with some units. Teacher Researcher A put students in small groups to write a customary unit song, poem, or rap to perform for the class. Students seemed to really enjoy expressing their creativity in math class. Teacher Researcher A also taught all students hand motions to remember to multiply or divide when converting customary units. Although, Teacher Researcher A did not pull small guided math groups as much this week, active learning strategies were used to differentiate by process rather than content. Students were able to choose their homework difficulty and Teacher Researcher A noticed that most students were a very fair judge of the appropriate homework level. She felt that this type of choice encouraged self-reflection, metacognition, self-advocacy, and self-awareness. Teacher Researcher B continued to see the benefits of having smaller groups work together rather than what had been done earlier throughout the intervention. Teacher Researcher B was much more happy with the results and wished it had been thought of earlier on. The students seemed to enjoy working in the small, 3 person groups and it seems to help them become more independent players. The progress was much more noticeable to Teacher Researcher B while using the smaller, rotating groups.

During the thirteenth week of the intervention, from December 17th through December 21st, 2012, Teacher Researcher A's math time was cut short due to fifth graders taking the Cognitive Abilities Test (Cogat) for middle school placement. She did a review game and gave a quiz on customary units. Teacher Researcher A decided to give a partner quiz in which students were homogeneously paired based on data collected from classwork and homework the previous week. Teacher Researcher A and her students were both excited about the idea of a partner quiz. Students were visibly less nervous and Teacher Researcher A still felt it gave her an accurate

assessment of their learning. For the most part, the partner quiz worked well. However, an absent student made a need for a group of 3, then he had to take the quiz independently when he returned. Teacher Researcher B found more success when using the smaller rotating groups of about 3 students. There was a designated student leader within these smaller groups that helped the other students with their parts and helped lead the smaller "sectional" rehearsal (in music, sectionals are when all of the groups of instruments break away to rehearse by themselves to practice during a rehearsal time). Student leaders continued to help the other students in the small group with their individual parts and run the rehearsal (counting students off etc). This allowed Teacher Researcher B to continue working on the larger group techniques. The benefits of this method were that it took drastically less time to move equipment and music stands into a second location and it allowed a higher-level student work with 2 lower-level students. The down side to this was that as the students switched to drums instead of their drum pads, the noise from their instruments was much louder and the sound still bled through to where the opposite groups were practicing.

During the post-documentation phase of the action research project from January 1st through January 18th, 2012, the Teacher Researchers gave students the Student Survey. After gathering this information, the Teacher Researchers analyzed the data received.

Interventions.

Underachievement, or stifled motivation, occurs for various reasons: personal, environmental, or lack of engagement in school. Classrooms sometimes fail to motivate students, are not engaging, or lack interesting and challenging experiences (Reis, 2011). One of the ways in which educators can motivate students is to differentiate the content, which does not come

naturally. Teachers often think they are differentiating, but they are not. Differentiation is more than giving choices and grouping, and it is not individualizing instruction for thirty kids. "Differentiated instruction is good for kids and hard for teachers," (McCoach, n.d., as cited in Cleaver, n.d., p. 3). "In classrooms that are highly differentiated, high-achieving kids may be comfortable, happy, eager learners. Where there isn't sufficient differentiation, there can be bad habits, frustration, and depression," (Peterson, n.d., as cited in Cleaver, n.d., p. 3). Unit-based pre-assessment allows for any student that demonstrates mastery on the pre-assessment to become eligible for advanced work (Rakow, 2012). "Teachers make the soundest decisions only after thorough pre-assessments have taken place and in collaboration with others," (Rakow, 2012, p. 37). Students who demonstrate mastery of the curriculum, benefit from compacting, spending less time on the curriculum and more on extension and enrichment opportunities (Winebrenner & Berger, 1994). By creating assignments that are appropriately challenging, every student feels that he or she, with reasonable effort, has the capability to succeed while still being challenged to stretch his/her limits (Callahan, 2010, as cited in Mart, 2011). Tiered assignments with shared content and themes give students a chance to share knowledge and ideas while working at a level that is both academically challenging and comfortable. Teachers can more flexibly teach to engage students' interests and meet all needs (Renzulli, n.d., as cited in Cleaver, n.d.). All students deserve equitable access to an engaging and rigorous curriculum (Tomlinson & Edwin, 2012). As Cleaver (n.d.) quoted Renzulli (n.d.), one size does not fit all. We chose differentiated guided groups with a student choice menu because the research states that these instructional strategies positively benefit student motivation and engagement.

Reflection.

Teacher Researcher A.

As a result of implementing these interventions in my classroom, I, Teacher Researcher A, have learned the importance of keeping the classroom student-centered. I feel I have become more in tune with students' individual needs, both instructional and interpersonal. Teaching math in a whole class setting gave me little time or availability to address individual needs, questions, or behavior issues appropriately. Teaching students in small groups has given me more time for meaningful conversations with each student. This intervention positively changed my classroom environment and students knew math time was precious and therefore used it wisely. As a Teacher Researcher, I learned the value of consistently evaluating data. Each unit, I pre-assessed students and charted who needed support, practice, or enrichment for a particular skill. My groups were directly based on this information. I have a much better understanding of how to use assessments to guide my instruction. Because of my success, I have shared this guided math model with a few of my colleagues. They have implemented a Math Menu in their classrooms and are also finding success. I feel proud to have had such a positive experience to share with my professional colleagues to better reach students' needs.

Teacher Researcher B.

I, Teacher Researcher B, came into this project apprehensive about what to expect. This project has affected me both positively and negatively. I found it to be difficult to have two separate groups of young musicians, one group of which was essentially unsupervised, working in two different locations. It was a necessity to have two separate locations due to the fact that two groups of musicians playing different exercises/etudes is impossible to do in one room due

to the cross over of sound. It was difficult to prepare the venues for the students due to having to move different equipment for the students to use. Many minutes were squandered trying to assist students to the second location for individual group work. There were also many instances where students would come to class unprepared for the tasks at hand. They would come without their books, their own mallets/sticks, or their entire percussion kit. As their teacher I wanted them to all participate and I have supplied them with extra sticks, music/books etc, but I did not have extra instruments for them to play as they begin in band. If they came to class without their entire kit, it was very hard for them to participate. While the students were separated, it was difficult for me to keep the second group on task since I was out of their room. I would have to stop what I was doing to go check in with them and to redirect them back on task. After speaking with my music colleagues, I decided to switch the group sizes toward the end of the interventions. I decided to send two to three students on a rotating basis to work separately instead of splitting the group up down the middle. I felt as though two to three person groups would actively work better than 9 or 10. This would allow me to continue working with one group, while a few students at a time were working ahead or catching up. As a researcher, I have definitely taken away a process that can work in my classroom with certain modifications and I definitely feel that I can use the procedures presented here, on a smaller scale. Something that I took away from the research experience would be that if I had found that the intervention was not working like I thought it would, to make a change in the procedure earlier in the process. I continued working through the intervention for a quite a while before deciding to make a change in the intervention procedure.

Presentation and Analysis of Results

The purpose of this project was to increase student engagement and motivation by incorporating student choice and differentiated instruction to small, flexible groups. The research participants consistent of 25 fifth-grade students in a gifted math and a beginning band class. Teacher Researchers used one tool during the post-documentation period. A student survey was administered to gather students' perceptions of their own engagement and motivation levels in school. The student survey was administered during the post-documentation week of January 7th through January 18th, 2012. The graphs shown below present the data for both pre- and post-intervention.

Student Survey.

The student perception survey was used to gain insight into the thoughts of the students after participation in the research project. This was administered during the pre-documentation phase from September 11th through September 21st, 2012, and again during the post-documentation phases from January 1st through January 18th, 2012. The survey was administered during regular classroom time to 25 students and the results were compiled for 100% (n=25) of the students surveyed. Three of the questions responses were based on a Likert scale with responses including *Always*, *Sometimes*, *Rarely*, and *Never.* One question asked for student responses regarding the difficulty level of school work. The Likert scale responses on this question included *Too Easy*, *Appropriate*, or *Too Hard.* Students were also given space to make comments about their school work difficulty. One question listed eight motivation factors and requested students circle their top three choices. See Appendix A for the Student Survey.

Figure 10 displays data of students' effort in school. Of the 25 students, 92% (n=23) felt

that they always do their best in school.

Figure 10: Student effort (n=25)

Figure 10 shows that the students perception of their effort did not vary from the pre- to post- documentation period.

Figure 11 presents students' perception regarding their parents showing interest in their learning. Of the 25 students, 56% (n=14) reported during post documentation that their parents/guardians always show interest in what they are learning in school. It is noteworthy that no students reported their parents/guardians rarely or never show interest in their learning.

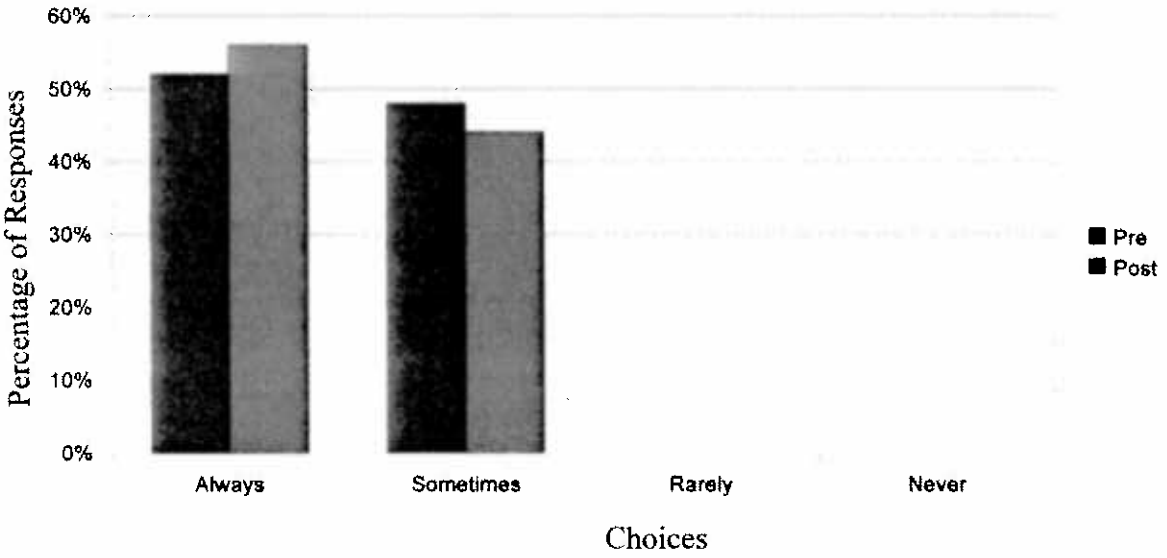


Figure 11: Parental interest in learning (n=25)

Figure 11 does not show a noteworthy change in parental interest in student learning from the pre- to post-documentation period.

Figure 12 shows students' feelings on the difficulty level of their school work. It is notable that only 8% (n=2) of students felt their school work was too easy. It was also shown that 92% (n=23) of students felt their school work was appropriate challenging in post documentation.

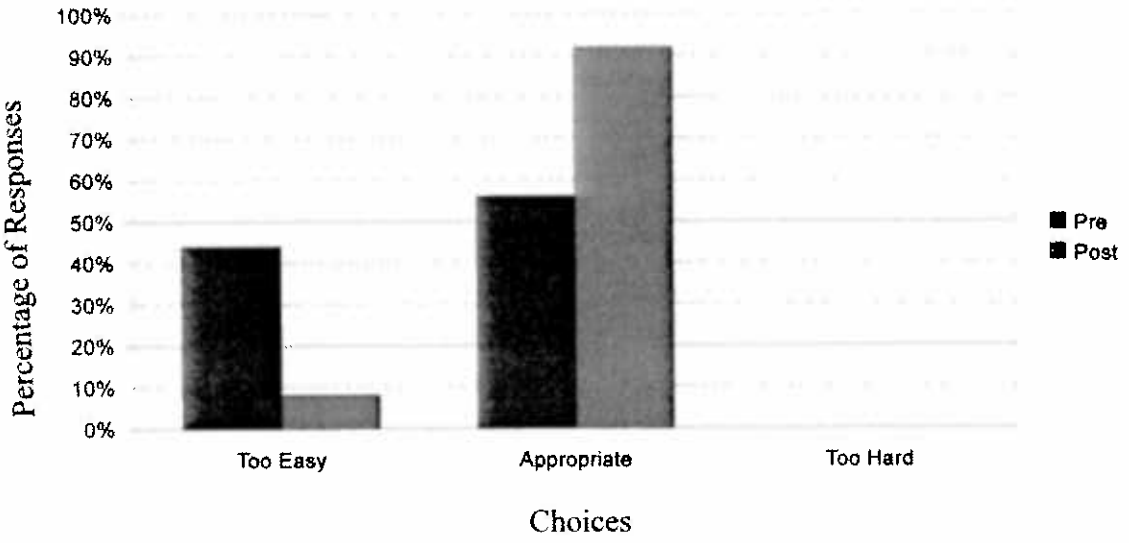


Figure 12: School work difficulty (n=25)

Figure 12 shows a 36% (n=9) decrease in students who believed their school work was too easy. In addition, the figure above shows an increase of 36% (n=9) of students who felt their school work was appropriately challenging.

Figure 13 displays students' perceptions of the option of choice in their class assignments. Of the students surveyed, 64% (n=16) responded, post documentation, that they are sometimes offered assignment choices. Twenty-four percent (n=6) felt that they were rarely offered choices in class. On the other hand, 12% (n=3) replied that they are always given assignment choices.

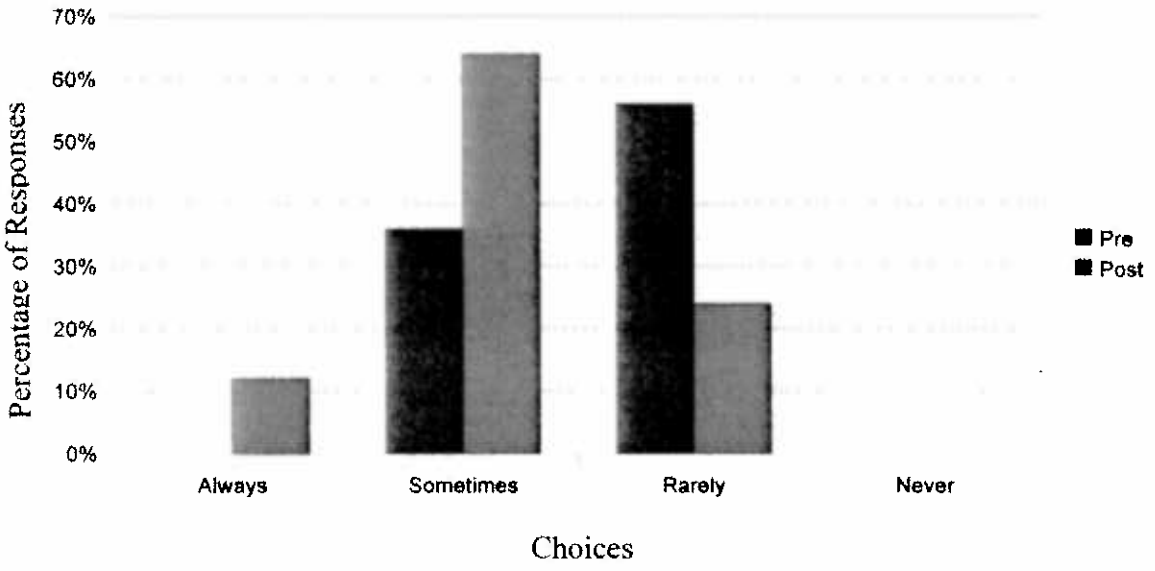


Figure 13: Students making choices (n=25)

Figure 13 shows that more students (28%, n=5) perceived that they were sometimes given more assignment choices. In addition, there was a 32% (n=8) decrease in students who felt they were rarely offered assignment choices in the classroom.

Figure 14 asked for students to identify the three most motivating factors that make them want to do their best in school. Getting good grades was the most selected motivation factor in post documentation for 88% (n=22 of 25). Forty-four percent (n=11 of 25) of students felt that choosing projects was a motivational factor. Of the students surveyed, 36% (n=9 of 25) of students felt that feeling challenged, assignment authenticity, and knowing teachers care motivated students to do their best in school.

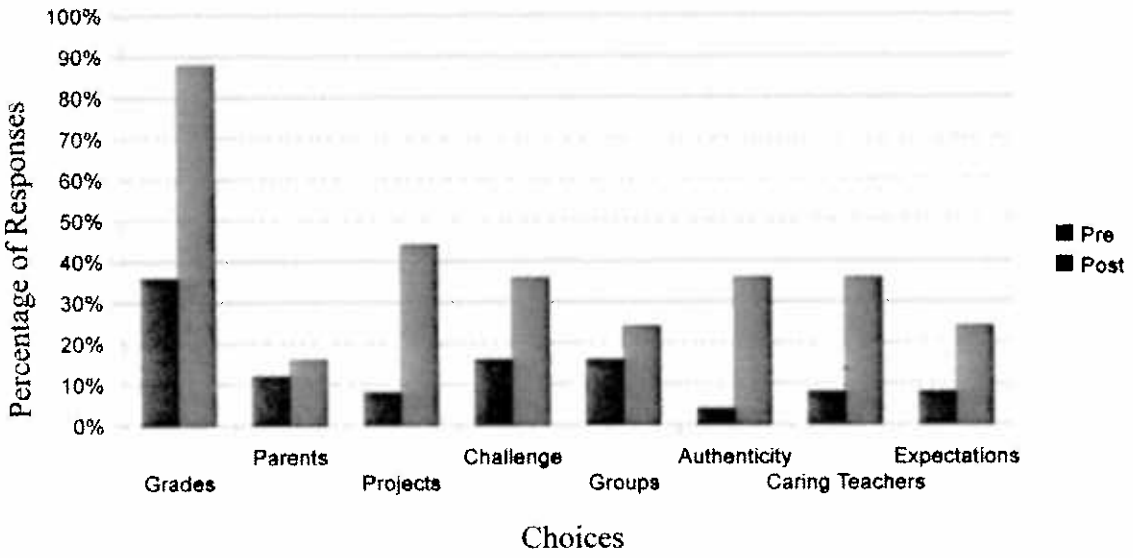


Figure 14: Student motivation factors (Pre n=75; Post n=75)

Figure 14 displays a 52% (n=13) increase in students who felt that grades were motivating. In addition, 36% (n=9) more students felt that choosing projects made them want to do their best in school. It is also important to note that more students (32%, n=8) felt connecting their learning to the real world (authenticity) was a motivating factor after the intervention.

Summary.

The data collected from the Student Survey gave validating insights into student engagement and motivation. After the intervention, more students felt that they were being appropriately challenged (Figure 12). Overall, more student felt that they were given options to choose their assignments in class (Figure 13). Grades, choosing projects, feeling challenged, authenticity, and knowing teachers care were the most motivating factors for students (Figure 14).

Conclusions and Recommendations

Conclusions.

Based on the results of the Student Survey, we concluded that our intervention positively impacted changes in students' perception of their engagement and motivation. (We will refer to the figures found in this chapter as we discuss the results of the Student Survey. Figures 10 and 11 show little or no change from pre- to post-intervention Student Surveys. Figure 13 shows an increase in *Sometimes* (28%, n=7) and *Always* (12%, n=3) students responses to being given the option of choice in class. As shown in Figure 12, there was a 36% (n=9) decrease in students who felt their work was too easy. We attribute this to more differentiated instruction and an increase in open-ended choices during non-instruction time. As students were given more choice in the classroom, they perceived their school work to be more appropriately challenging. Figure 14 shows that getting good grades, an externally motivating factor, was the highest selected option for students during both the pre-intervention (36%, n=9) and post-intervention (88%, n=22) surveys. Figure 11 shows that 100% (n=25) of parents/guardians always or sometimes show interest in student learning. We attribute the emphasis on getting good grades to the high levels of parent/guardian involvement in student learning. On the contrary, choosing projects (36%, n=9) and authentic learning (32%, n=8), both internally motivating factors, increased following the intervention. We feel this increase is due to creating a more learner-centered classroom environment through the intervention).

Recommendations.

Based on conclusions from the results of the interventions, both Teacher Researcher A and Teacher Researcher B will continue using the strategies and intervention in some format.

Teacher Researcher A will continue the intervention in its entirety due to the extremely positive results in her classroom. Teacher Researcher B plans to make modifications to the strategy to continue its use. Instead of splitting the group in half, Teacher Researcher B plans to rotate two to three person groups to a second rehearsal venue to work together. Teacher Researcher B believes that a group of two to three students will stay more on task and actively work together better than a larger group. Both teachers believe that the strategies listed here can be used in a variety of classrooms. Both Teacher Researchers believe that using pre-assessments to differentiate instruction, teaching in small flexible groups, and giving students choices, creates a learner-centered classroom environment that best meets individual students' needs.

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APPENDICES

Appendix A

Student Survey

Directions: Please do not put your name on this survey. Read each statement and circle the selection that best describes your beliefs. Please answer honestly.

---

1. I do my best in school.

Always Sometimes Rarely Never

---

2. My parents/guardians show interest in what I am learning in school.

Always Sometimes Rarely Never

---

3. I feel...

My school work is too easy. My school work is appropriately challenging. My school work is too hard.

Please explain your answer:

---

4. I am given the option to choose my assignments in class.

Always Sometimes Rarely Never

---

5. Circle the top 3 things that make you want to do your best in school.

Getting good grades	Choosing projects	Working in small groups	Knowing my teachers care
Parents/guardians showing interest in my work	Feeling challenged	Connecting my learning to the the real world	My teachers expecting me to do well

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Appendix B

Teacher Survey

I am a masters degree student at St. Xavier University gathering information regarding student achievement and motivation in gifted math students. The data collected will be used in a 12-week research study to inform teacher-researchers of teacher perceptions of your students' achievement and motivation. Completing this survey is voluntary. All information collected will be confidential and anonymous. This survey is easy to complete and should only take you a few minutes.

Directions: Please do not put your name on this survey. Read each statement and circle the selection that best describes your beliefs. Please answer honestly.

---

1. My students meet their full potential in the classroom.

75-100% of the time | 50-75% of the time | 25-50% of the time | Less than 25% of the time

---

2. My students' parents/guardians show interest in what they are learning in school.

Always | Sometimes | Rarely | Never

---

3. I feel...

My lessons are too easy for my students. | My lessons appropriately challenge my students. | My lessons are too hard for my students.

Please explain your answer:

---

4. I give students the option to choose their assignments in class.

Always | Sometimes | Rarely | Never

---

5. Circle the top 3 things that you believe make your students want to do their best in school.

Getting good grades	Choosing projects	Working in small groups	Knowing their teachers care
Parents/guardians showing interest in their work	Feeling challenged	Connecting their learning to the real world	Their teachers expecting them to do well

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Appendix C

Behavior Checklist Chart

Directions: Before and during intervention takes place, tally behaviors observed during lessons.

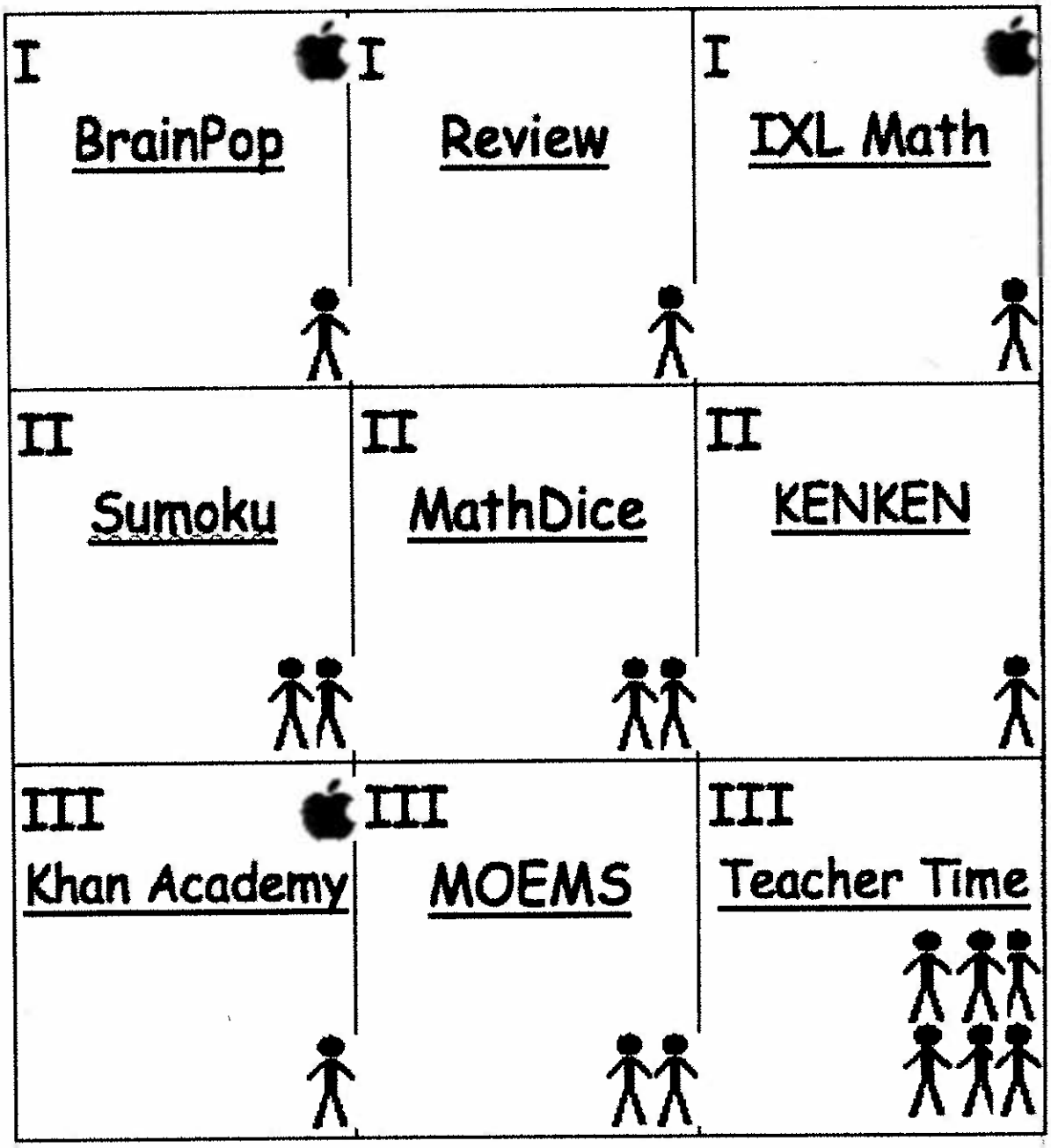
*Date	Hyperactive	Withdrawn	Poor Attention	Disruptive	Uncooperative

Hyperactive	*Out of seat, constant movement, distracts self/others*
Withdrawn	*Stares blankly into space, does not ask for help, no affect*
Poor Attention	*Does not follow oral and/or visual directions, rarely completes assignments, easily distractible*
Disruptive	*Demands attention, does not follow rules, talks out of turn*
Uncooperative	*Blames others, defiant of teacher requests, works only when threatened with consequences*

*Dates will be added once schedule is confirmed in the fall. Students will be seen twice a week for an hour each session.

Appendix D

Math Menu



Weekly Accomplishments

Name _____

MON	Tasks:
	Reflection:
TUES	Tasks:
	Reflection:
WED	Tasks:
	Reflection:
THUR	Tasks:
	Reflection:
FRI	Tasks:
	Reflection:

Appendix E

Name _____

Date _____

Math Test Reflection

Pretest Score	Posttest Score	Growth

What are you most proud of this unit?

_____

_____

_____

_____

_____

What are your goals for next unit?

_____

_____

_____

_____

_____

After you do all your test corrections on a separate sheet of paper, please have a parent sign the bottom of this page and return this page only to school.

Parent Signature: _____

Appendix F

LESSON 4.2

Name _____

Practice A

For use with pages 170–174

Write all the factors of the number.

1. 15 **2.** 28 **3.** 100

Use a factor tree to write the prime factorization of the number.

4. 54 **5.** 45 **6.** 63

Complete the statement.

7. When finding the greatest common factor of two numbers by using prime factorization, the greatest common factor is the __?__ of the common prime factors.

8. Two or more numbers are __?__ if their greatest common factor is 1.

Find the greatest common factor of the numbers by listing factors.

9. 48, 51 **10.** 20, 36 **11.** 15, 35, 40

Find the greatest common factor of the numbers using prime factorization. Then tell whether the numbers are relatively prime.

12. 24, 60 **13.** 28, 75 **14.** 39, 42, 72

15. Describe and correct the error in finding the greatest common factor of 28 and 52.

The greatest common factor of 28 and 52 is 2.

16. You made 48 rye dinner rolls and 60 wheat dinner rolls for a family picnic. You want to make up plates of rolls to set on the picnic tables. If each plate is to contain the same number of rye rolls and the same number of wheat rolls, and there are no leftover rolls, what is the greatest number of plates that can be made? How many rye dinner rolls and wheat dinner rolls are on each plate?

17. A college class with 18 juniors and 27 seniors is divided into project groups where each group has the same number of juniors and seniors. What is the greatest number of groups that can be formed? How many juniors and seniors are in each project group?

LESSON 4.2

Name _____

Challenge Practice

For use with pages 170–174

Find the greatest common factor of the numbers using prime factorization.

1. 90, 132, 168
2. 210, 300, 585

A *perfect number* is a number that equals the sum of its factors not including itself.

3. Show that 496 is a perfect number.
4. Show that 400 is not a perfect number.

Find the number(s) being described in each case.

5. List 3 numbers that are relatively prime to 210.
6. The greatest common factor of a number and 144 is 36. The number is divisible by 10. What is the smallest number satisfying these conditions?