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ABSTRACT

This action research project implemented and evaluated a program to address the academic needs of all students in a heterogeneous classroom. The targeted population consisted of middle school students in a rural western Illinois community. Evidence of academic underachievement was documented by teacher observation, surveys, test scores, and student assignments. The 4-month intervention was multifaceted and included student goal setting, development of unit organizers, classroom grouping strategies, improved teacher-student contact time, the use of social skills, and the use of higher order thinking skills in problem-solving activities. Ten seventh and eighth graders identified as underachievers were studied over an 11-week period. Evaluation findings indicated that, following the intervention, the underachieving students were actively engaged in the learning process and took better responsibility for their learning. Nine of the ten students improved academic achievement during the intervention by about half a letter grade. (Contains 34 references.) Appendices include the teacher survey, unit goals of achievement, self-evaluation of unit progress: homework and class participation, and student questionnaire. (KB)

IMPROVING ACADEMIC ACHIEVEMENT OF UNDERACHIEVING STUDENTS IN A HETEROGENEOUS CLASSROOM

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Abstract

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Title: Improving Academic Achievement of Underachieving Students
In a Heterogeneous Classroom.

This report describes a program to address the needs of all students in a heterogeneous classroom. The targeted population consisted of middle school students located in a rural western Illinois community. Evidence of academic underachievement was documented by teachers observations, surveys, test scores and student assignments.

Analysis of probable cause data revealed that teachers tend to teach to the average students, and do not sufficiently address the special needs of the upper and lower skilled ranges. Classroom populations have seen an increase in the number of students that exhibit characteristics of underachievement. As a result students may not be actively engaged in the learning process and may fail to take responsibility for their learning.

The examination of solution strategies suggested in literature reviews resulted in the selection of several classroom interventions. Strategies for direct student implementation include student goal setting, development of unit organizers, and the use of social skills. Teacher classroom management implementations include classroom grouping strategies, improved teacher-student contact time, and the use of higher order thinking skills in problem solving activities.

As a result of the interventions, the underachieving students were actively engaged in the learning process and took better responsibility for their learning. This would seem to indicate that the implementation and monitoring of student goals, the use of cooperative grouping techniques, and improved student/teacher contact time increased academic achievement.

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CHAPTER 1

PROBLEM STATEMENT AND CONTEXT

General Statement of the Problem

Across the curriculum the seventh and eighth grade students at this Western Illinois rural community school had not performed to their academic ability. The targeted class of middle school students exhibited many characteristics of academic underachievement. Evidence of the existence of the problem included a large percentage of students with low quarterly grades, teacher observation, and assessments. The purpose of this study was to investigate whether student grouping strategies, active learning techniques, and student goal setting would increase the classroom engagement and academic achievement of students.

This western Illinois school was in its first year of use as a sixth, seventh, and eighth grades middle school. The school population of 725 students was 99% White, .04% African American, and .06% Asian American. The average class size was 22.7 students. The school had a 95.6% attendance rate, a truancy rate of .4%, a student mobility rate of 6.0%, and a chronic truancy rate of .4%. Economically, 11.8% of the students came from low-income families.

The curriculum followed a middle school philosophy of using teaching teams for core subjects of math, science, english, and social studies. The seventh and eighth grade levels had two teams of approximately 125 students per team. Teaching teams consisted of core instructors plus at least four encore teachers of exploratory or special programs. Technology education, art,

consumer and family science, foreign language, health, and music were offered as exploratory subjects. Class periods were 49 minutes in length during a scheduled seven hour day.

In addition to the academic programs, the school offered many non-academic programs that benefited students. A Great Adventures Club provided the students a variety of safe, day trip activities to places like the Davenport Ballet and the Phi Gamma Circus at Illinois State University. The counselors started Polar Bears for conflict resolution and Rainbows for students of divorced parents and dysfunctional families. The school also had an Attention Deficit Disorder support group. The counselors had initiated the Third Quarter Challenge, an academic improvement competition between each of the schools homerooms. Academically proficient high school students came to the middle school and tutored deficient students. The school had a student council that was very active in promoting theme weeks and dances. Opportunities in the performing arts included choir, band, and speech teams. The performing arts competed on a local and statewide basis. The school published a yearbook annually. A strong athletic program included teams of volleyball, cross-country, football, basketball, wrestling, and track.

The school's administrative staff consisted of a principal, assistant principal, athletic director, two counselors, a social worker, a psychologist, and a school nurse. The teaching staff was all White, with an average teaching experience of 15.8 years and an average salary of $32,000. The faculty was 36% male and 64% female. Bachelor degrees were held by 41% of the staff, while 15% held master degrees and the remaining 43% had education beyond a master's degree.

The Surrounding Community

This was a rural community in northwestern Illinois along Interstate 80 approximately 225 miles from Chicago. This rural community had a population of 6,000 residents. The community

had no major industry. There was a thriving downtown and community support for the many small businesses. The town was located within driving range of four large metropolitan cities with an area population of 369,000 residents. The major employers of the area included Deere and Company, Alcoa, Oscar Mayer, and many other manufacturing industries.

Recreational facilities included an 18 lane bowling alley, an indoor movie theater, a community center and pool, and numerous city parks with ball parks. There were three golf courses. The Hennepin Canal and Rock River were located north of town. The Mississippi River was a 20 minute drive and offered areas for boating, camping, and fishing.

The town had 16 churches offering 14 different religious denominations. The city government consisted of a mayor and city council. There were 10 full time police officers and 29 volunteer fire fighters.

The school district encompassed an area of approximately 90 square miles. There were 4 preschools with 41 teachers and 358 students. The public schools in the district consisted of four elementary schools with 80 teachers and 1,400 students. One parochial elementary school contained 130 students and 11 teachers. The middle school had 39 teachers and 725 students. The single high school in the district had 58 teachers and 970 students. Forty five per cent of high school graduates attended a four-year college and 20% attended a two-year college. The district also offered an alternative learning center for high school and junior high students and a vocational training program at another high school in the area. In 1996 the school district passed a referendum for a new middle school and additional classrooms at the high school.

The district's overall student ethnic/racial make up was 97.9% White, .4% Black, 1.5% Hispanic and .03% other. Low-income students made up 13.7% of the student body in the district.

Overall attendance was 96.5% with a dropout rate of 2.3% and a chronic truancy rate of .02%.

Of the 164 teachers, all were White with 29% male and 71% female. The average teacher salary was $38,000 while the average administrative salary was $62,000. The district spent approximately $4,243 per pupil. Among all school districts in the tri-county area, this was the second lowest amount spent per pupil. The national average was $4,690, with $5,579 being the state average. The district had a local endowment fund, which provided the district with up to $25,000 annually.

The school district administrative structure consisted of a superintendent, assistant superintendent and director of curriculum, business manager, computer/technology specialist, special education coordinator and administrative assistants. Administrative offices were centrally located in the city.

Within a twenty five-mile radius there were five trade/technical schools, three junior colleges and five four-year colleges and universities.

The socioeconomic status of the general population had 31% of the residents having incomes less than $20,000; 25% earned between $20,000 and $35,000; 19% earned between $35,000 and $50,000 and 25% earned over $50,000. The median household income was $28,700 with an average family income of $33,900.

National Context

Why is the education of students at risk so important? Every year, hundreds of thousands of the nation's youth were classified as underachievers. In 1990-91 alone, $5.2 billion dollars was spent funding special programs for these students (Jones and Pierce, 1992). Many of the

special programs involved pulling students out of the regular classrooms. The researchers felt these policies and programs created many of the problems they were intended to alleviate.

The importance of educating underachieving students was categorized into four major issues that affected many in the country. The four issues included demographics, the growth of citizens living at poverty level, conflict in higher education, and economic competition with other countries.

Since 1983, there have been more citizens of 65 years or older than there have been teenagers (Hodgkinson, 1985). This was an indicator that the demographics of the United States has changed. The nation has moved from a workplace of 17 workers paying for Social Security for each retiree to 3.4 workers per retiree. An ever-increasing population of today's workforce has been pulled from women, minorities, and immigrants. If the new workforce does not have the skills to compete in today's global economy, then business and industry will suffer as much as the Social Security System.

As schools continue to struggle with underfunding and lack of competent teacher training, the casualties become the students. The vandals, drug users, truants, and failures inside the school become the unskilled, illiterate dropouts and criminals outside the schools. According to a study by Sullivan (1991), more than one-fourth of teenagers drop out of school. These high school dropouts cost the nation more than $240 billion a year in lost earnings and uncollected taxes. Levin (1987) warned us that at the same time these disadvantaged will suffer high unemployment rates, and fill low menial occupations, their political power will increase because they are multiplying so much faster than other groups. This inequality could lead to political, social, and economic conflict and instability.

This conflict may also touch institutions of higher education. University enrollment restrictions would widen the gap between educated and uneducated. Universities may decrease enrollment requirements by developing a greater focus on remedial work. This may lead to an overall weakening of requirements and standards for graduation (Levin, 1987).

Levin (1987) also stated that many students graduated from school without being able to solve problems, think critically, or process information. Businesses have to invest many more resources into job training. Coupled with the millions of dollars spent in education on special programs, billions of dollars seemed to be wasted on inappropriate and ineffective education. The end result would be graduates that lack the thinking and process skills needed for today's global job market.

There are many variables that affect the learning of underachieving students. Many of these variables are controlled in the school environment. Many are not controllable. Prior to World War II, schools did not have specific discipline programs. Order was maintained in the schools by throwing out the unruly and failing the unmotivated. Now we keep those students in school and try to find ways to keep them quiet (Glasser 1987). Today's teachers' face increasing numbers of special education students, bilingual students, "crack babies," economically disadvantaged youth, and children from broken homes (Burke 1992).

Between 1980 and 1990, the Hispanic population in the United States increased by 44 %. Asian and other populations increased by 65% (Hodgkinson, 1985). Many students sat in class and could not understand the spoken words of the teacher. Also according to Hodgkinson (1991), 4,300,000 children were living with a mother who had never married (up 678 % since 1970). Because of the increase in the number of unmarried women having children and the high divorce rate, single mothers are raising 15,000,000 children. Single mothers will have about one-third as

much to spend on their children as those living with two parents. Children from single parent families were less likely to be high achievers. They were consistently more likely to be late, truant, or subject to disciplinary action; and they were more than twice as likely to drop out of school (Eitzen, 1992).

Many school programs currently use or have used pull-out programs that separate underachieving students from others. Instruction in such programs had been based on very widespread beliefs by educators about intelligence and instruction. Beliefs by teachers included the idea that students must master basic skills before they could master higher order skills. Many educators believed that accomplishments by students in pull-out programs had limits because IQ is basically stable. Instruction of problem students in pull-out programs would not "hold back" the rest of the class. And that separate programs were the best way to meet the criteria for funding compensation and classroom management problems arising from heterogeneous classrooms (Jones and Pierce 1992).

Pull-out programs may be filled with inappropriate classroom instruction. Basic skill instruction had been isolated from main concepts and failed to teach students to use and apply what they learn in appropriate academic and real-world contexts (Anderson, Hiebert, Scott and Wilkinson, 1985). Low achieving students in pull-out programs were assigned to instruction that was qualitatively inferior to regular classroom instruction. These students focused on isolated skills and endlessly boring repetition, rather then reasoning and meaning (Allington, 1991). The pull-out programs led to perceptions that students became labeled, and that these students remained in the program the rest of their life at school.

Today, many schools include underachieving students in the regular classroom. This helped underachieving students to become a part of the regular school classroom. Student's self

esteem was boosted and the feelings of being different or inferior were diminished. Yet many of the same problems existed for low achieving students in the regular classroom. Teachers were far more inclined to assign drill and practice assignments to underachieving students. In contrast, teachers tended to assign higher order thinking skills to more proficient students (Jones and Pierce, 1992).

The education of underachieving students is of utmost importance. Yet many programs designed to help underachieving students would actually cause problems that they were intended to alleviate. Pull-out programs alienated and labeled students in the school system. Even when included in the regular classroom, underachieving students deserved the same quality of education as any student.

CHAPTER 2

PROBLEM DOCUMENTATION

Problem Evidence

Academic underachievement occurs in most schools throughout the nation. Yet underachievement could mean different things to different people. For this research, academic underachievement was defined as observing a discrepancy between the actual performance of a student and the student's expected or predicted performance. A predicted performance would be determined by intelligence tests, scoring on standardized tests, and the student's actual performance in an academic class. Academic underachievement was not categorized as a student with learning problems. Academic underachievers had the capabilities to be successful, but were not. Such students were considered to be work-inhibited (Bruns, 1992). Work-inhibited students were pupils who, in academic classes over an extended period of time, routinely did not complete assigned work that they were able to understand and were intellectually able to complete.

Two evaluation tools were used in order to document the extent of student academic underachievement. The evaluation tools consisted of a teacher survey to evaluate student work habits and assess teaching strategies for meeting the needs of all students in the classroom. Quarterly grade records provided evidence of student academic work.

Twenty-one teachers responded to a survey regarding impediments to student achievement. See Appendix A for a copy of the survey. The majority of teachers indicated that poor student work habits led to underachievement. Eighty percent of the teachers believed students were not self-directed learners. Sixty–seven percent of the teachers thought students would not show perseverance when challenged. The survey reported that 81% of the teachers believed the students required constant stimulation to learn, (Table 1) and that the students struggled with personal self-direction. However, 76% of the teachers surveyed did not include goal setting and monitoring as part of their classroom curriculum. The survey showed that students lack many of the work habits needed for successful academic achievement.

Table 1

Teacher Survey Results Regarding Impediments to Student Achievement

	Strongly Agree/Agree	Disagree/Strongly Disagree
Adequate Classroom Time	38%	62%
Identifies Students Abilities	86%	14%
Students Persistence	33%	67%
Self Directed Learners	20%	80%
Require Constant Stimulation	81%	19%
Students Set & Monitor Goals	24%	76%

Quarterly grade records provided evidence of student academic work (Table 2). The reports showed the number of students who were failing at least one subject. The statistics were further defined by student grade level and semester quarter. The table showed that a large number of students were having difficulty with their academic achievement.

Many of these students were capable of higher academic achievement, could be successful, but were not. Students would be successful if only they would complete their work.

Table 2

Percentage of Students Receiving at Least One "F" in the 1997-1998 School Year

Semester	7th grade	8th grade
Quarter 1	15%	21%
Quarter 2	21%	27%
Quarter 3	14%	26%
Quarter 4	17%	39%

The researchers conducted a second survey to determine whether teaching strategies were used to meet the needs of all students in the classroom. In response to the first question, 90% of the teachers directed instruction to the average ability student, while only 10% directed the instruction to students with learning difficulties. No teachers directed the instruction to high ability students. A large percentage of teachers, 43%, felt they did not have sufficient strategies to address the extreme ends of the ability ranges in their classroom (Table 3). Twenty- nine percent of the teachers did not plan extra activities or use additional strategies to address students' individual needs.

Table 3

Teacher Survey Results Regarding Teaching Strategies

Teacher Questions	Yes	No
Sufficient strategies for extreme ends of student's ability range	57%	43%
Plan activities/strategies to address individual students needs	71%	29%

In summary, poor student work habits as evidenced by the teacher survey, the lack of proper teaching strategies, and a significant percentage of student academic underachievement provided evidence for the existence of the problem.

Probable Cause

There has been a long-standing controversy concerning the grouping of students by ability for instruction. Arguments favoring student groupings of this nature had stressed benefits for both teachers and students. Teachers with homogeneously grouped classes were thought to benefit having instruction being tailored only to students of similar ability. Students, regardless of their ability, were thought to learn more when the pace and content of instruction were matched to their level. Reis (1994) advocated that gifted children should be tracked into homogeneous classes. Reis explained that schools with mixed ability classrooms had led to a dumbing down of the curriculum, alienating many of the country's best and brightest students.

Arguments opposing homogeneous grouping had stressed the inequitable effects of ability grouping on students. Effects were thought to be beneficial for high achievers but detrimental for low achievers. Oakes (1992) claimed that students in low ability groups were exposed to less curriculum and that presentations were watered down and consisted of lower level skills. Children in lower level groups were given less information and less opportunity to apply what they learned to the outside world. Instead of written assignments and open-ended tasks, they would get worksheets and rote tasks (Shell, 1994). Ability grouping was also thought to increase social stratification and led to self-fulfilling prophecies regarding teacher expectations of lower ability students (Rosenbaum, 1980).

During the previous two decades, this west central Illinois junior high school practiced ability grouping. Students were placed into high, middle, and low academic class groups.

Working toward the goal of academic excellence and social equality for all students, class organization moved toward heterogeneous grouping in the 1990's. Teachers found themselves with classrooms filled with students of varied abilities. Yet teachers were not trained to direct their teaching strategies to the students' varied abilities. According to Gamoran (1987), grouping did not produce achievement, instruction did. Instructional methods might be the reason why the needs of students at the high and low ability levels were not being met. Since gifted students might have previously mastered many of the concepts they were expected to learn in a heterogeneous class, a huge part of their school time would be wasted (Winebrenner, 1992). Most teachers, however, realized that there were problems with challenging all ability levels. Although they could easily identify the different ability levels of their students, teachers stated that time constraints within the allotted class periods were a major factor in addressing this issue. Teachers strongly agreed that the most difficult aspect of teaching heterogeneous classes was meeting the learning needs of students with varying abilities.

Many new teaching strategies have arisen in recent years to help teachers reach all students. Some of these strategies were cooperative group activities as proposed by Johnson and Johnson (1991), learning through multiple intelligences as proposed by Gardner (1995), and active learning strategies as posed by Harmin (1994). According to Durden and Tangherlini (1993), individual differences often were not addressed because secondary teachers were not willing to recognize these differences exist. In order for teachers to recognize these differences, they needed to acknowledge that students develop their abilities at different rates and what challenges one child may be boring to another. The average students were getting most of the teacher's attention. The exceptionally bright students were painfully bored and the low ability students cannot be successful (Hargis, 1989).

Lack of persistence and commitment prevented students from being self-directed and staying actively engaged in their learning (Butler-Por, 1987). Durden and Tangherlini (1993) stated that students needed stimulation to learn and that the majority were not self directed in the learning process. Stimulation was important to help students become actively engaged and to take responsibility for their own learning. Researchers suggested that giving students no choice in pursuing areas of interest or in working through their preferred learning styles would result in a lack of student interest (Baum, Renzulli, and Hebert, 1994; Butler-Por, 1987). Part of self-directed learning required students to evaluate their progress in a classroom setting. These skills were important if students were to become self-directed and achieve their potential (Baum, Renzulli, and Hebert, 1994). When students used learning strategies, instructional emphasis shifted from a "content" to a "process" orientation. Students should be actively involved in the goal setting and assignment selection process (Schumaker and Deschler, 1995).

Many students' underachievement transpired from the completion of work. Students faced obstacles that kept them from the successful completion of school requirements. Underachieving students were not self-directed. Close supervision from teachers was needed in order to complete work. Underachieving students were poorly organized and gave up easily when frustrated. They lacked persistence and were unable to finish work independently. Even outstanding teachers had difficulty getting underachieving students engaged in the work of school (Bruns, 1992).

Chapter 3

THE SOLUTION STRATEGY

Review of Literature

For many years, the tracking of students by ability into homogeneous classrooms was the norm. Current research had dispelled the notion that students should work only with students of similar abilities. Tracking, especially at secondary schools, generally failed to increase learning and had the unfortunate consequence of widening the achievement gap between students judged to be more able or less able (Slavin, 1990).

A major education reform report released in 1989 by the Carnegie Council on Adolescents Development advocated the elimination of tracking and a commitment to high expectations and higher order thinking skills for all students. A study by Goodlad (1983) found that teachers tend to hold students in high ability classes to a different level of expectations from the expectations they hold for students in low-ability classes. Goodlad indicated that instead of promoting higher achievement, tracking contributed to mediocre schooling for many students.

Many schools in the past decade eliminated tracking from the school system. The educational trend had been to include students of all ability levels into a heterogeneous classroom. Educators previously working in homogeneous classrooms were presented with new challenges and difficulties in a heterogeneous classroom. In a heterogeneous classroom, there

were a number of strategies developed to address the problem of reaching students of multiple abilities. The one strategy common to most research was for the student to be actively engaged in the learning process. Lessons designed with plenty of involvement and movement would help students stay on task. Teachers should stay alert to times needed to quicken the pace of classroom instruction. Teaching in layers, not lumps, would hold the attention span of students (Harmin, 1994).

A strategy that reached students of all abilities in a heterogeneous classroom was cooperative learning, where small groups of students worked collaboratively on classroom projects. Johnson and Johnson (1991) suggested that there were strong positive effects on achievement as well as the ability to think critically, to perform higher order thinking, to display more effective reasoning, and to think more creatively when students worked in a group. According to Winebrenner (1992), all the students in a group learned the same course content and shared responsibility for the success or failure of their group work. In addition, students learned from each other and supported each other's efforts. For the most part, teachers acted as guides and facilitators, not as dispensers of knowledge; students could even take on leadership roles. Cooperative learning also emphasized the development of a student's social skills, as well as self-evaluation by both the individual students and groups. Cohen (1994) stated that cooperative learning helped the low achieving student stay on task. This method of learning kept the rest of the class engaged when the teacher gave individual attention. Cooperative learning encouraged the high ability students to use their resources to help other group members. This type of learning allowed teachers to challenge all students intellectually rather then teach to the lowest common denominator.

Despite the widespread acceptance of cooperative learning in education over the past decade a number of observers questioned the appropriateness of cooperative learning for gifted students. The concern stemmed in large part from the almost universal use of heterogeneous ability grouping in cooperative learning arrangements, a practice which critics claimed helped the non-gifted but harms the gifted (Kulik, 1992). Robinson (1991) uncovered only three references reporting original research on the effect of cooperative learning on the gifted and each of these cases involved fewer than 50 gifted students. Kulik and Robinson contended that some students profited from some homogeneous ability grouping. They believed that curriculum directed to the ability of the individual resulted in substantial academic gain for high, average, and low ability students. In heterogeneous groups which offered a common curriculum to all group members, gifted children were likely to master the material more quickly than their less able peers, and without additional challenges, were likely to become frustrated and bored.

Winebrenner (1992) emphasized that gifted students sometimes needed their own appropriate cooperative experiences. When the learning task required lots of drill and practice, gifted students in heterogeneous groups would spend most of their time tutoring the other students. The gifted students were actually doing more teaching than learning. The message gifted students received was that once they mastered the grade level content, there wa, nothing left for them to learn. Gifted students, like all students, needed to be in classrooms in which their skills and talents were appreciated and their struggles and challenges were supported (Sapn-Shevin, 1994).

Many researchers agreed that grouping by ability without adjusting the curriculum to meet student needs has little effect on the achievement of average and low ability students (Kulik, 1992; Slavin, 1990). Kulik described the effects of a grouping strategy known as with-in class

grouping. A teacher formed ability groups within a single heterogeneous classroom and provided each group with instruction appropriate to their level of aptitude. Kulik (1992) stated that with-in class grouping was effective in part because group assignments were adapted to the curriculum level of the student. Further, with-in class grouping did not socially or academically isolate students to the same extent as tracking (Bode, 1996).

An examination of verbal paticipation outcomes in skill grouping versus whole class grouping (Mosteller, Light, & Sachs, 1996), indicated that skill grouped students, regardless of whether they were high or low skilled students, spoke more often and longer than students in whole class groups. The examination demonstrated that in whole class groups, high skill students dominated the discussion, and those low skill students tended not to participate actively. In skill grouped classes, four times as many of the low skill students contributed per class and they spoke twice as long as similar low skill students in whole class groups. Winebrenner (1992) stated that when gifted students work in heterogeneous cooperative learning groups, similar results could occur. When gifted students explained something to the other students, their listeners may nod their heads in agreement, but they may also feel intimidated, and they do not ask questions for fear of looking inadequate. Gifted students may feel frustrated by the time it takes the others to understand an idea. Since the gifted students have probably not had instruction in how to teach, they may resort to just giving the answers. Few benefit from this experience.

Tailoring the curriculum to within-class groups may help this situation. When the task was of the drill and practice type, the gifted students should be placed together in their own group. For tasks that focused on higher order thinking skills or project based learning, placing gifted students in heterogeneous cooperative groups would be appropriate.

Even with teachers using active learning strategies, cooperative learning, and with-in class grouping, many students will still face academic underachievement. Underachievers sit in every classroom. These students have wasted educational resources, tried the patience of even the best teachers, and destroyed their own confidence. In her book, Rimm (1995), stated that underachieving students tended to be disorganized. They forgot homework, lost assignments, daydreamed, and had poor study skills. Underachievers completed their assignments quickly but were much more concerned about finishing first than about doing quality work. Underachievers failed to really believe that they might achieve their goals even if they worked harder. They set their goals either too high or too low and, as a result, guaranteed failure. Although underachievers admitted they might need more effort to achieve their goals, the effort produced only a small difference, and small differences were not worth the investment or risk.

Many underachievers failed to see the relationship between the learning process and its outcomes. When underachievers put forth little effort and received successful outcomes, or made a serious effort with no successful outcome, the relationship between their work and their grades seemed random. They began to credit their grades to luck (Rimm, 1995).

The role of the teacher was crucial in reversing underachievement. Effective teachers took time and got to know the student before initiating an investigation. Time was an extremely valued commodity during the school day. Effective teachers used their time with students to facilitate the learning process. Effective teachers recognized the nature of underachievement having observed the student, reflected on their behaviors as they worked on their project, and identified strategies that helped students overcome problems. Effective teachers consistently demonstrated patience and believed in the student (Baum, Renzulli, & Hebert, 1994).

By implementing student goals, graphic organizers for each unit of the book, and evaluation tools, teachers helped students become more effective learners. Goal setting was an important component of active learning and enabled students to take responsibility for their own progress. Successful people decided what they want, figured out how to get there, and continually monitored progress toward that goal, but most students were not allowed to do this on their own in schools. Teaching strategies that helped underachievers organize their learning also helped them see the relationship between the learning process and its outcomes. By designing and implementing strategies and reflecting on their progress, students will develop skills that are transferable to any area of life.

Project Objectives and Processes

Objective One:

As a result of using motivational strategies during the period of October 1998 through January 1999, the middle school students in the target school will increase academic engagement and individual accountability toward schoolwork as measured by teacher observations and checklists. Students will reflect on their academic progress and work habits through the use of self-evaluations.

Processes to implement this objective include the following:

1. Develop student goals of achievement for each unit of study.
2. Construct unit organizers and evaluation tools for each unit of study.
3. Employ active learning strategies to enhance student on task time.

Objective 2:

As a result of using classroom management strategies during the period of October, 1998 through January, 1999, the middle school students in the target school will increase academic achievement as measured by teacher-made tests and the quality of completed students' assignments.

Processes to implement this objective include the following:

1. Develop classroom grouping strategies.
2. Utilize improved teacher-student contact time.
3. Create activities based on higher order thinking skills.

Objective 3:

As a result of using cooperative learning during the period of October, 1998 through January, 1999, the middle school students in the target school will increase their verbal participation in the classroom setting as measured by teacher observation and checklist.

Processes to implement this objective include the following:

1. Perform cooperative learning activities.
2. Practice student social skills.
3. Employ higher order thinking skills in cooperative lessons.

Action Plan for Eighth Grade

I. Unit 1: Student Team Building

Week 1:

A. Class discussion of team building, goal setting, and academic achievement.

B. Class discussion of student teams and successful teaming skills.

C. Base group completes a lesson on goal setting.

D. Base group brainstorms and models effective team behaviors.

II. Unit 2: Energy Resources.

Week 2:

A. Base group completes a unit organizer and sets achievement goals for Unit 2.

B. Task group completes a sequential graphic organizer on fossil fuel development.

C. Class discussion of solar heating using think – pair – share. Students reflect with Mrs. Potter's Questions.

D. Base group compares and contrasts active and passive solar heating with graphic organizers.

E. Task group reviews unit vocabulary or receives enrichment activities.

Week 3:

F. Discussion of wind and water energy using think–pair–share. Students reflect using Mrs. Potter's questions.

G. Task group completes review on wind and water energy.

H. Base group describes the operations of hydroelectric power and a turbine generator.

I. Base group completes the lab project, "Alternative Energies" (3 days).

Week 4:

J. Base group prepares for 1:1-1:3 Quiz.

K. Class discussion of nuclear energy using think–pair–share. Students reflect using Mrs. Potter's questions.

L. Task group reviews nuclear fission with outcome statements.

M. Base group describes the operations of a nuclear reactor.

Week 5:

N. Class discussion of alternative energies using think-pair-share.

O. Task group reviews vocabulary or receives enrichment activities.

P. Base group prepares for 1:4-1:5 Quiz.

Q. Base group reflects on achievement goals obtained.

III. Unit 3: Earth's Nonliving Resources

Week 6:

A. Base completes a unit organizer and sets achievement goals for Unit 3.

B. Base group completes lab project, "Disturbed Lands" (5 days).

Week 7:

C. Class discussion of land and soil resources using think-pair-share.

D. Base group completes the lab project, "Topsoil Tour" (3 days).

E. Task group completes graphic organizer on the water cycle.

Week 8:

F. Task group completes a review on water resources.

G. Class discussion of mineral resources using think-pair-share.

H. Base group prepares for Unit 3 Test.

I. Base group reflects on achievement goals for Unit 3.

Week 9:

J. Base completes lab project, "My Island Factory" (5 days).

IV. Unit 4: Pollution

Week 10:

A. Base group completes a unit organizer and sets achievement goals for Unit 4.

B. Task group completes a graphic organizer for three forms of land pollution.

C. Class discussion on water pollution using think-pair-share and Mr. Potter's questions.

Week 11:

D. Base group completes a lab project, "Fruitvale Groundwater Investigation".

Week 12:

E. Task group reviews land and water pollution or receives enrichment activities.

F. Base group prepares for Unit 4 Test.

G. Base group reflects on achievement goals obtained.

Action Plan for Seventh Grade

I. Unit 1: Student Team Building

Week 1:

A. Class discussion of team building, goal setting, and academic achievement.

B. Class discussion of student teams and successful teaming skills.

C. Base group completes a lesson on goal setting.

D. Base group brainstorms and models effective team behaviors.

II. Unit 2: The Human Body

Week 2:

A. Set base groups and achievement goals for Unit 2.

B. Base completes lab on human cheek cells. Use PMI reflection.

C. Task group completes a graphic organizer for chapter 1.

D. Task group completes section review.

Week 3:

E. Base group completes lab project on animal and plant cells. Use Mrs. Potter's questions for reflections.

F. Base group prepares for organ system quiz.

G. Task group completes section review or enrichment activity.

H. Task group uses musical/rhythmic activity on the parts of the body.

III. Unit 3: Skeletal and Muscular Systems

Week 4:

A. Base group sets achievement goals for Unit 3.

B. Base groups complete lab project on chicken wing dissection.

C. Class discussion of function and parts of the skeleton using think-pair-share. Students reflect with Mrs. Potter's questions.

D. Task groups construct graphic organizer to outline chapter 2.

Week 5:

E. Base groups complete lab project on bone structure.

F. Class discussion of muscle types and skeletal movement using think-pair-share. Students reflect with a P.M.I.

G. Task groups complete a review on muscles and skeletal systems.

H. Base groups prepare for Skeletal Quiz.

IV. Unit 4: Digestive System

Week 6:

A. Task groups complete a graphic organizer and set achievement goals for Unit 4.

B. Base groups develop a 3-day menu schedule.

C. Class discussion on the importance of food using think-pair-share. Students reflect with KWL.

Week 7:

D: Base groups compare and contrast nutritional information in a lab project.

E. Base groups prepare for digestive system quiz.

F. Task groups review for chapter vocabulary and section review.

Week 8:

G. Class discussion of absorption of food. Students reflect with KWL.

H. Base groups complete a lab project on fat and starch absorption.

I. Base groups prepare for digestion test.

J. Whole class test preparation using science jeopardy.

V. Unit 5: Circulatory System

Week 9:

A. Base group completes a unit organizer and sets achievement goals for Unit 5.

B. Class discussion on body transport system using think-pair-share. Reflection using Mrs. Potter's questions.

C. Base group completes lab project plotting blood path through the heart.

Week 10:

D. Base groups complete lab projects on sheep heart dissection.

E. Task groups review unit vocabulary words.

F. Task groups complete unit reviews.

G. Base groups complete lab project on blood pulse.

VI. Unit 6: Respiratory and Excretory System

Week 11:

A. Base groups complete a unit organizer and set achievement goals for Unit 6.

B. Base groups describe the path of air through the respiratory organs.

C. Task groups complete graphic organizer on respiration.

D. Base groups prepare for quiz on excretory system.

Week 12:

E. Base groups complete a lab project on sheep kidneys.

F. Task groups complete a section review or enrichment activities.

G. Base groups prepare for test using science jeopardy.

Methods of Assessment

In order to assess the effects of the intervention, various evaluations were used. Teacher observation checklists measured academic engagement and individual accountability towards schoolwork. Students reflected on their academic progress and work habits through the use of self-evaluations. Teacher-made tests and the quality of student assignments measured academic achievement. Teacher observation checklists measured student verbal participation in the classroom.

CHAPTER 4

PROJECT RESULTS

Historical Description of the Intervention

The object of this project was to increase the academic achievement of underachieving students in a heterogeneous classroom. Student goal setting, construction of unit organizers, classroom grouping strategies, and cooperative learning activities were utilized to help students understand the relationship between the learning process and the outcomes. As a result of these processes, the researchers hoped to increase student academic engagement, individual accountability towards schoolwork, verbal participation, and academic achievement.

Individual goal setting and monitoring were used to help students increase academic accountability and achievement (Appendix B). Unit organizers provided direction that helped students better understand the emphasis of each chapter (Appendix C).

The classes were strategically grouped to help students reach their academic potential. Base groups were used for study, lab projects, setting goals, and using higher order thinking skills through problem solving activities. Task groups were used for review and reinforcement activities as well as construction of unit organizers. The grouping strategies were designed to improve student/teacher contact time. Base groups were arranged heterogeneously to benefit the multiple academic levels of students. Lab projects incorporated higher order thinking skills for

all students. Unit goals were used as guidelines for academic progress. Task groups were organized homogeneously to match the pace and content of instruction to the students academic abilities. Cooperative learning activities were implemented during base and task group work. The activities employed higher order thinking skills and practiced student social skills.

Prior to the intervention of the action plan, students worked independently throughout much of the first quarter of the school year. Lab projects were completed in groups without formal cooperative learning strategies or implementation of goal setting. Student academic achievement and work habits were evaluated from the first quarter. Specific students were identified in each class that exhibited characteristics of academic underachievement. Students in special education or resource classes were excluded from consideration. One class period was chosen for collecting raw data, although the interventions were used in all classes except the honors class.

Goal setting was implemented during the first week of the intervention. Goals were related to student academic work and organization. Students set personal short, medium, and long term goals. Weekly self-evaluations were used to monitor the achievement of the goals. Due to time constraints, these weekly self-evaluations were changed to unit self-evaluations. The relationship between goal setting and academic success was emphasized.

Cooperative learning skills and strategies were implemented. Most students had already experienced cooperative learning in previous classes. Teachers monitored the students in setting cooperative learning guidelines. Students completed a unit organizer on the main concepts of the chapter. Base and task groups were organized for the students.

Four weeks into the intervention, a motivational tool was implemented for cooperative groups. This tool was added to the action plan after the intervention began. Science bucks were

earned by cooperative groups for reaching academic goals and achieving social skills (Appendix D). Science bucks gave students a tangible short-term reward for academic achievement. Due to time constraints, certain assignments at the end of the action plan were eliminated.

Presentation and Analysis of Results

A study was completed of 10 students in this rural midwest school. The 10 students were previously identified as having exhibited characteristics of academic underachievement. Researchers monitored the academic engagement, verbal participation, individual accountability toward schoolwork, and academic achievement over an 11-week period. Trained observers collected data during 12 class sessions.

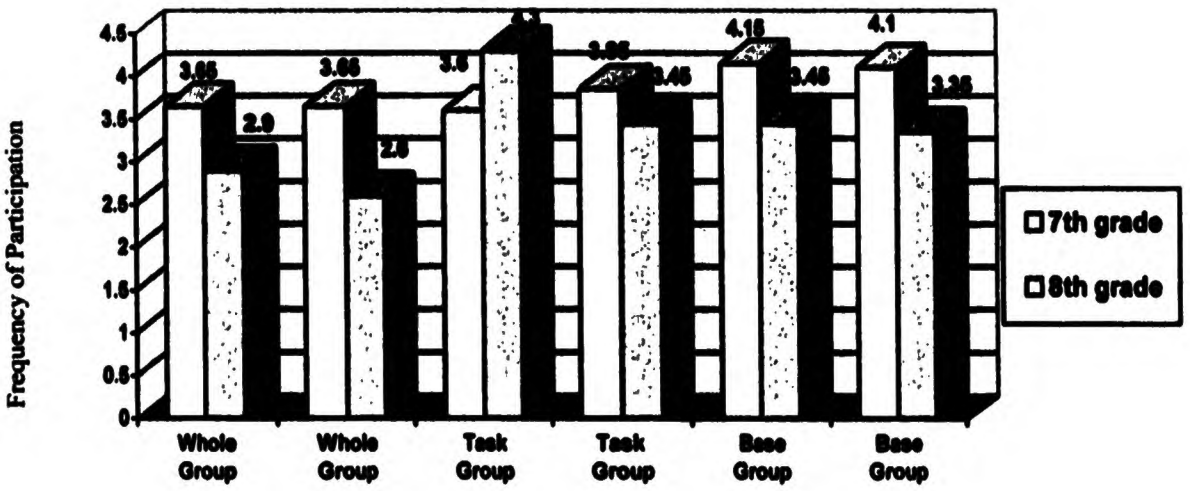

Figure 1. Measure of students' academic engagement during classroom group work.

Academic engagement of the students was measured using four criteria during the classroom observations. Trained observers monitored students' ability to follow directions, actively participate, stay on task, and clean up or prepare to leave the class. A simple rubric was used for scoring the students' behaviors. The rubric was based on a five-point scale.

The results as shown in Figure 1 indicated that using base and task groups increased student academic engagement overall. Whole class work did not have as high a level of student engagement in the classroom as did small group work. Little variance of student engagement was indicated between task group and base groups.

Seventh grade students had a higher level of engagement overall than eighth grade students. Seventh grade students especially showed a higher frequency of engagement during whole class groups than did eighth grade students. Seventh grade students also had a higher level of engagement during base group work than eighth grade students.

Trained observers monitored verbal participation of the selected underachieving students. The students were monitored during whole class, task group, and base group activities. Monitoring was completed using a simple check mark for each occurrence of verbal participation.

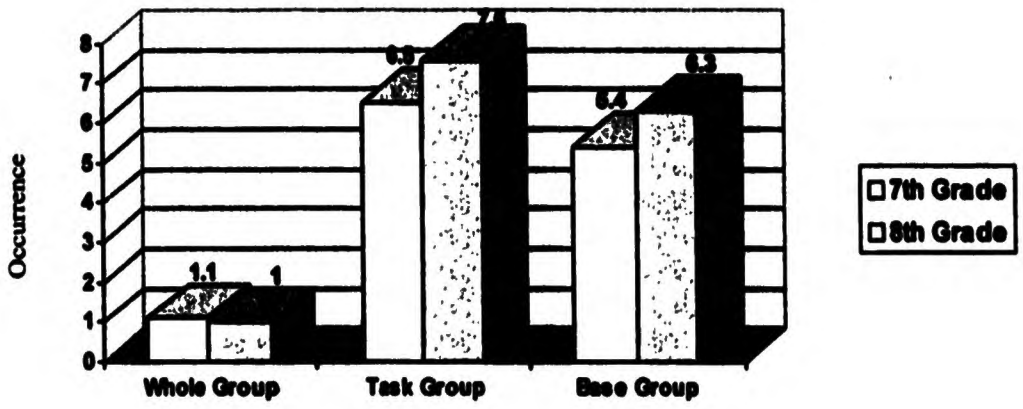

Figure 2. Verbal participation of underachieving students during group work.

Results of verbal participation are indicated in Figure 2. A marked contrast occurred between verbal participation in task and base group work versus whole class work. The students were less willing to verbally participate during whole class discussions than small group work.

Students participated verbally in small group work almost six more times per class hour than in whole class discussions. Students were slightly more willing to participate in homogeneous task groups than heterogeneous base groups, although the difference in the level of occurrence was negligible.

Individual accountability for schoolwork was also measured during the intervention. A comparison was made between the first quarter grading period and the second quarter grading period. The number of missing, late, or incomplete assignments produced by the selected students measured the individual accountability. Figure 3 indicated the results of the intervention.

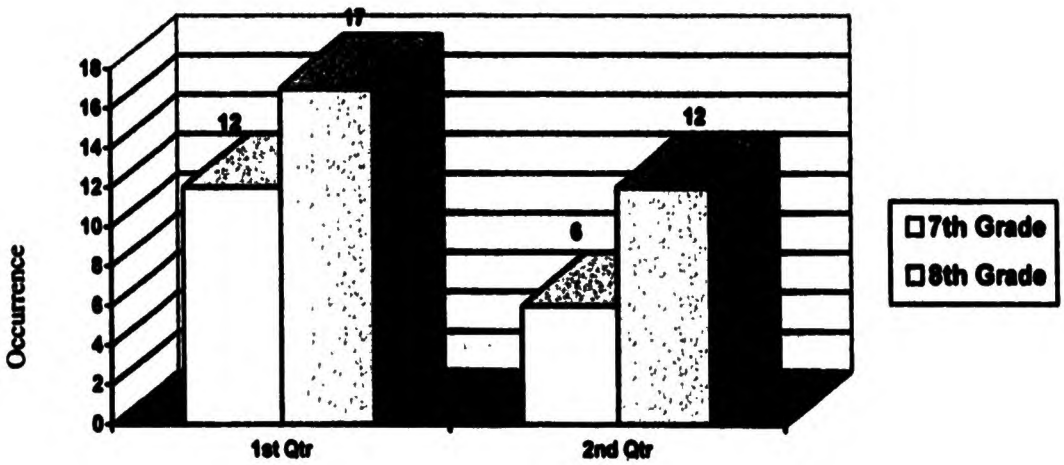

Figure 3. The number of missing, late, or incomplete assignments during the first semester.

The intervention appears to have a positive effect and increased the students' accountability toward schoolwork. The number of missing, late, or incomplete assignments produced by the students decreased by 38% during the intervention.

Academic achievement was monitored after the first and second quarters. A comparison was made to check the percentage of grade change among the selected students. Table 4 represents the results of the academic achievement.

The results indicated a moderate increase in academic achievement from the first quarter to the second quarter. Of the ten selected students, all but one student improved academic achievement during the intervention. Although the percentage grade increase was moderate, it represented a one-half letter grade increase. The researchers felt that this represented a positive improvement.

Table 4

Percentage Change of Academic Achievement During the First and Second Quarter.

Student	%Grade Change	Student	% Grade Change
7-1	+6%	8-1	+8%
7-2	+5%	8-2	+12%
7-3	+6%	8-3	+7%
7-4	+5%	8-4	+5%
7-5	-3%	8-5	+5%

Conclusions and Recommendations

Based on the presentation and analysis of the intervention data, the selected students produced a moderate increase in academic achievement. Individual goal setting and monitoring were used to help students increase their academic accountability. Setting unit goals of achievement and unit organizers seemed to provide the needed structure for the students. Goals were set during class time and originally monitored on a weekly basis. The goals had to be monitored consistently or students would tend to forget them. Due to time constraints, monitoring eventually changed to the end of a completed unit. This helped students to reflect on the processes used to achieve the goals. The key was to be to provide class time to be sure this

occurs. By setting goals and constructing unit organizers, the number of missing, late or incomplete assignments decreased. This seemed to have the greatest direct impact on the students' increase in academic achievement.

The benefit of homogeneous and heterogeneous grouping was less defined. No appreciable differences in student engagement or verbal participation were observed when students were selectively grouped. There were also no clear connections between selective grouping and academic achievement. To relate a connection between homogeneous or heterogeneous grouping and academic achievement, a selective group would have had to been maintained during the duration of the intervention. Instead, the intervention matched the grouping strategy to an appropriate task.

The researchers felt that selective grouping helped the teachers to adapt assignments to meet the needs of all students in the class. By using selective grouping, teachers had a greater potential for adapting assignments to the skill level of the students. The grouping strategies also improved the teacher/student contact time. Teachers focused more time on underachieving students when selectively using homogeneous groups. Although not directly measured, this might have helped increase student academic achievement.

Small group work that used cooperative learning increased verbal participation and students' engagement in learning. In both task and base group work, student engagement increased compared to whole class work. Students were more actively engaged in the learning process in cooperative learning tasks. Cooperative learning promoted active learning as compared to passive learning of whole class learning. Verbal participation increased significantly during task and base group assignments.

According to a student questionnaire, the majority of students liked working together toward academic goals using cooperative learning (Appendix E). Science bucks were used as a reward and increased motivation for students to achieve academic and group success.

As a result of using goal setting, unit organizers, student grouping strategies, and cooperative learning activities, there was a definite increase in student engagement and verbal participation and a moderate increase in academic achievement. The benefits of homogeneous and heterogeneous groups were less defined. The results of the intervention indicated that students related the learning processes of goal setting, cooperative learning, and unit organizers to academic achievement.

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Appendix A

Teacher Survey

As many of you know, we are working on our Master's degree through Saint Xavier/Skylight. At this point we are working on our Action Research Project which involves trying to solve a problem relevant to our school. We have chosen to work on addressing the needs of all students in a heterogeneous/homogeneous classroom. It would be extremely helpful to us if you could take a few minutes to fill out the following survey and return it to us as soon as possible. We would appreciate getting a survey from everyone. It's anonymous, so don't sign it. THANKS IN ADVANCE FOR YOUR HELP!

Rich Thurman and Kent Wolfe

1. My classroom instruction is geared to students of (circle one):
   high ability, average ability, low ability.

For the below questions; 1 = strongly agree, 2 = agree, 3 = disagree, 4 = strongly agree

2. Adequate classroom time is available for addressing the needs of students of all ability levels. 1 2 3 4

3. I can easily identify the different ability levels in my classroom. 1 2 3 4

4. The majority of my students are self-directed learners. 1 2 3 4

5. All of my students persist when problems occur in their learning. 1 2 3 4

6. All students require constant stimulation to learn. 1 2 3 4

7. I observe students using higher order level thinking skills on a regular basis. 1 2 3 4

8. All students feel challenged by the goals set in my classroom. 1 2 3 4

9. Students in my class set goals and actively monitor them. 1 2 3 4

10. Do you feel you have sufficient strategies to address the extreme ends of the ability ranges in your classroom? YES NO

11. Do you plan any extra activities or use any additional strategies to address students individual needs? YES NO

If yes for 10 and 11, please give examples on the back.

Appendix B

Unit Goals of Achievement

Student: **Date:**

Unit of Study:

Assignments **Date Due**

Labs/Projects:

Quizzes/Tests:

Short Range Goals -To better prepare for class each day I will:

Medium Range Goals – To effectively complete all my assignments I will:

Long Range Goals – My academic goals for this unit will be:

Appendix C

Self Evaluation of Unit Progress
Homework and Class Participation

Student: **Date:**

Scoring: 2 Often 1 Sometimes 3 Never

_____ I make sure I know about and understand homework assignments before I leave the classroom each day.

_____ I spend enough time completing an assignment to do it well.

_____ I turn in complete assignments on time.

_____ I come to class with necessary books, materials, and assignments each day.

_____ I participate in positive ways and to the best of my abilities in the classroom.

_____ I am considerate of my teacher and other students during the class period.

My preparations for class were:

My accomplishments for this unit were:

I will improve the next unit by:

Appendix D

Appendix E

Student Questionnaire

1. Write down three words that describe your feelings during the competition for round circles.

2. How is learning competitive?

3. Write down three words that describe your feelings during the construction of the collage.

4. How is learning cooperative?

END

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