Effect of Differentiated Instruction on Student Achievement Gap

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I. Purpose of the Study and Objectives

A. State the topic and purpose of your study in one sentence.

The purpose of this study is to determine the effects of differentiated instruction based on student readiness, interest, and learning profile on standardized test and student achievement gap.

B. State your purpose in the form of a hypothesis.

There is a correlation between differentiated instructional methods and frequency used in the classroom to student achievement. Students who are taught through differentiated instruction in the area of mathematics based on readiness, interest, and learning profile will have increased academic achievement. The students who receive frequent differentiated instruction in math will receive higher scores on district wide benchmark assessment that test Washington State standards in mathematics.

C. Explain how your study will contribute to knowledge about education.

In the past few years that I have been in education I have heard mention about teacher accountability, the emphasis on students meeting state standards, and instruction methods. We all know that students do not learn in the same manner, so it would make sense that we should not teach them all the same way. This research supports the work of learning style theorist, their findings suggest that differentiation strategies of choice and interest play a vital role in student achievement (Dunn, Griggs, Olsen, Beasley, Gorman, 1995). I want to explore various instructional methods and see which instructional strategies are directly related to reducing student achievement gaps and increasing the performance on standardized tests. Researching various instruction methods of differentiation vs. single-approach will help educators decide which instruction methods are most effective in impacting student achievement gaps and increase the number of students meeting state standard on standardized test.

II. How your study relates to previous research

A. What one study is your study most directly based on?

This study is based on Beecher, Margaret; Sweeny, Sheelah M. (2008). Closing the Achievement Gap with Curriculum Enrichment and Differentiation: One School’s Story [Electronic version]. Journal of Advanced Academics, v19 n3 p502-530.

B. How does your study build on previous research?

In effective homogeneous classrooms, the needs of all learners are specifically and systematically addressed (Tomlinson, 1995). Anchoring activities help teachers manage class time and by creating meaningful activities that students work on independently — at the beginning of class, when students are finished with assignments, or when waiting
The study demonstrated that learners can benefit from accelerated or differentiated classroom environments.

C. If possible give the names of specific scholars, constructs, or theories upon which your work is based.

This school year my administration has set high expectations around student engagement & discourse. Every teacher in the building is expected to differentiate instruction that is available to students. One text study that has been introduced is called *Teach Like A Champion* written by Doug Lemov. This text has various techniques on how teachers can differentiate instruction and increase student learning. Some key points from this text are the use of entry routines, how to tier lessons by levels, establishing thinking routine & protocols for student dialogue, and anchor activities that are always available to extend and challenge student learning.

III. Literature Search


EFFECT OF DIFFERENTIATED INSTRUCTION ON STUDENT ACHIEVEMENT GAP


**IV. Sampling**

A. What is the population you will study?

The population studied will be fourth grade students in the Clover Park School District.

B. Describe the characteristics of the population that you will study.

The Clover Park School District is located in Lakewood, Washington and serves both Ft. Lewis and McChord Air Force bases. The district population is 18% African American, 6% Asian, 19% Hispanic, 4% Pacific Islander, 2% Native American, 43% Caucasian, and 6% multi-racial. There is an approximate of 67% of students who
qualify for the free/reduced meal program, 13% special education, 11% ELL, and 51% male & 49% female.

C. Identify your sampling procedure (e.g., simple random sampling), and explain why you selected it.

The sampling procedure will be done by using a cluster sampling. There are 17 elementary schools within the clover park School District and 8 classrooms from these schools will be selected. From the selected classrooms, 10 students will randomly be chosen using a class rooster. Cluster sampling is used for this study because of the simplicity of using naturally occurring groups of fourth grade students from a school district where I am employed. The clover Park School District provides training on differentiated instruction through professional development, so I am more familiar with the strategies and instructional methods that are being used within the selected classrooms.

D. Indicate the sampling unit (e.g., individual students, classes of students, schools).

The sampling unit will include fourth grade student from the Clover Park School District.

E. Indicate the size of your sample, and explain why that sample size is sufficient.

The size of my sample will include 80 students, 10 students from 8 classrooms for this study. I feel as though the sample size is enough to obtain sufficient data for the study.

F. Indicate whether the sample will be formed into subgroups, and if so, describe the characteristics of the subgroups.

It is not intended for the sample to be formed into subgroups.

G. What risks, if any, does your study pose for your research participants? What steps will you take to minimize these risks?

There may be some problems that arise around identifying which differentiated instructional strategies are being used and the frequency. Identifying the instructional methods may be a challenge, due to the fact that I cannot observe all of the classrooms at the same time. I could incorporate the use of video recordings for the classrooms to help minimize this issue.
V. Variables

A. Specify the dependent variable(s) in your study.

The dependent variable in this study will be student achievement on standardized test such as the Clover Park School District Standards Benchmark assessments.

B. Specify the independent variable(s) in your study.

The independent variables in this study are the strategies & differentiated instructional methods used by the individual teachers and the frequency they are utilized within the classroom.

C. What other variables, if any, will be considered in your study?

There are confounding variables in this study that relate to the individual teachers’ experience level, technique in delivering instruction, personality, and rapport with their students.

VI. Instruments / Measures

A. List the measures that you will select or develop for your study.

Student achievement will be measured by the Clover Park Benchmark assessment in the area of fourth grade mathematics. Teachers can also use formative assessments after lessons (exit task) to assess if the differentiated instruction had a positive effect on the students’ ability to retain the lesson content.

B. Indicate how your measures will assess each variable in the study.

Fourth grade math classrooms in the Clover Park school district that are included in this study will be observed on the use of differentiated instruction methods and frequency of them in the classroom. The investigator will use a collection sheet to record the differentiated instructional method and how often it is observed in each classroom.

Student achievement will be assessed using the Clover Park school district 4th grade math benchmark assessment. This assessment will be given three times during the school year, to track student achievement progress.

C. For each measure, indicate which type of validity and reliability are relevant, and how you will check them.
The data collection of differentiated instructional methods and frequency will be documented by weekly observations.

The three benchmark assessments that are given throughout the school year. The Clover Park Benchmark assessment has been used for two years at grade levels 3-12 grades. It is a reliable and valid source to collect student achievement data from. The District benchmark assessment is a pilot assessment. Experts in the field of educational assessment will review the assessment tool for validity of the content and format.

VII. Research Design

A. Describe the research design that you will use for your study (e.g., descriptive, correlational, comparative, causal comparative, experimental, quasi-experimental).

This research design would investigate the correlation between differentiated instructional methods and their frequency of use to student achievement.

B. What are the threats to the internal validity of your research design? What will you do to minimize or avoid these threats?

Subject Attrition and Subject Effects are some possible internal threats with the research design. Subject Attrition: This is a factor because the Clover Park school district has a high transient population, serving education for two military bases. Students and their families often are relocated several times, and that may affect the data collected from the study. By including 80 students in the study, this threat of internal validity will be reduced.

Subject Effects: Some students who are aware that they are part of the study may begin to become more engaged during instruction and put forth more effort. Subjects in the experimental group may try harder because they are aware they are the experimental group. Also, subjects in the controlled may try harder because they are aware that they are in the controlled group. It is ideal for the subjects and experimenter to act naturally and honesty. To help reduce the subject effect threat of internal validity, the subjects will be unaware of which group they are placed in.

Instrument: The Clover Park School District will be using a pilot Benchmark assessment, so there will be the question of effectiveness and validity. Experts in the field of educational assessments will review and provide constructive feedback.

Diffusion of Treatment: Teachers of students in the controlled group may find out about the differentiated instructional strategies that are being used by the experimental group and begin doing the same. This threat of validity may be difficult
to minimize due to the fact that teachers working within the same school district have the same opportunities to attend professional development on differentiated instruction.

C. What are the limitations to generalizability (external validity) of the findings that will result from your research design? What will you do to maximize the generalizability of your findings?

Interventions and situation may be limitations to generalizability of the data collected from the research design. Teachers’ experience level may contribute positively or negatively to their ability to differentiate instruction. The time of day that students are in the classroom may also affect the results in the data collected from the research design.

D. If necessary, give operational definitions for key constructs in your study.

Benchmark assessment: Assessment instrument formatted similar to the Washington state MSP, which assesses subject on the core concepts for 4th grade mathematics.

Differentiated Instructional Methods:
Exit task: quick activity, usually four focused questions that allows the teacher an opportunity to get a good idea on how well their student are doing on a specific concept.

Homogeneous grouping: based on performance level from data collected from exit task items students are grouped within one of three groups (low, medium, high). Tiered lessons: lessons are leveled for high, medium, and low levels that focus on the same standard or concept. Each level will work at a different challenge level to meet their academic needs.

Anchor activity: This is an extension or challenge to the learning. Students at higher levels can choose this activity after they complete their classwork for the day’s lesson. The anchor activity challenges students and is engaging, the higher level group will not have to interrupt the teacher who may be teaching a small group and ask what to do next.

Stretch it: learning does not end with a right answer; reward right answers with follow-up questions that extend knowledge and test for reliability. (Lemov, 2010)

E. If there is a treatment or intervention, specify what it is.
Intervention will be provided to students based on the formative data collected from exit task which are used to help drive the differentiated instruction. The exit task would consist of four questions that cover the standard that was taught in the lesson. Students, whom receive 4 correct answers out of 4 questions, will be categorized as benchmark. These students have a good understanding of the content and should be challenged further the following day. Students, whom receive 3 correct answers out of 4 questions, will be categorized as strategic. These students need some interventions to help them further grasp the content. Students, whom receive 2 or 1 correct answers out of 4 questions, will be categorized as intensive. The teacher will reteach the standard using another differentiated form of instruction to help meet the needs of intensive students. These students will also receive interventions throughout the unit to increase achievement.