Differentiation Through Learning Centers in the Art Classroom: Findings and Implications

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EDUC 495: Implementation of Instructional Strategies

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Fall 2010

Abstract

Introduction

Students sat at six different tables in the colorful art room, all engaged in different activities. Two students were at a table doing a color wheel puzzle. Three students sat around a laptop listening to songs about color and looking through a children’s book. A table of students was busy at work coloring vocabulary words. The table next to them was coloring two paintings by Vincent van Gogh. Four boys sat around a slightly messy table experimenting by mixing watercolors to create secondary colors. The table in the corner was filled with different colored objects to be sorted by three anxious first graders. Students were working intently and appeared to be engaged, but the question of the matter is was the education effective? Were the learning centers in which these students were participating positively influencing student growth and achievement? Were they learning the material that the state standards require in a meaningful way?

Art educators are faced with many constraints in a typical school setting. One of the biggest constraints is time. In the elementary school where this implementation took place, each class has art class for 40 minutes once a six-day cycle. With set up and clean up time that leaves about 30 minutes with about five minutes of instructional time. Then the students do not have art class again for another nine days. It is very rare that a student is able to retain any information with that much time in between. I chose this topic, because I was looking for a way to make instruction more meaningful and more memorable.

Another issue faced by art educators, as well as any educator, is varying abilities and interests of students. When there is barely enough time for direct instruction the implementation of differentiated instruction seemed unfathomable. I theorized that occasional learning centers would be the best and simplest way to provide differentiated instruction. With every lesson there are always those students that finish early and need more of a challenge and there are students that struggle with basic skills. If learning centers are set up in the classroom the teacher could use them for an introduction to the lesson and can be used through out the lesson if students finish early. Centers could also be used after the lesson to supplement material or enrich the original lesson.

Review of Literature

*Differentiated Instruction: Making it Work by Patti Drapeau*

What is differentiation? “Differentiation is a modification of curriculum that enables all students to learn [and] provides a structure of fluid and flexible tiers to challenge students at the appropriate level of instruction” (Drapeau, 2004, p. 11) This term is often misunderstood or misused. Many teachers incorrectly believe differentiated instruction means grouping students by scholastic ability, but instead it should be about providing effective instruction that matches the academic, social and emotional needs of the child (p. 10). Differentiation also does not mean individualized instruction, but instead small group instruction. The term also does not mean simply offering different end products for the student to choose.

Differentiation helps teachers “modify the standards and curriculum objectives in order to meet all student’s needs” (p. 12). The following things are necessary for effective differentiation. Teachers should modify the content, process and product by taking into account student characteristics, interests, and readiness. Differentiation should allow for flexible grouping, variations of pacing and depth, open-ended activities and a combination of student and teacher choice (p. 12).

Vgotsky had a theory about Zone of Proximal Development; this is the difference between what a student can do independently and what they can do with a little adult help. Vgotsky theorizes for actual learning to occur a student must be in their Zone of Proximal Development (ZPD) where students occasionally need a question answered or their work checked to make sure they are on track. If the student has no questions then the work is too easy, they are in the Zone of Actual Development, and the student is not being challenged. Pretesting is important to place students in their proper zone and create appropriate and challenging activities (p. 12-13).

Howard Gardner’s theory of multiple intelligences identifies eight intelligences; linguistic, logical-mathematic, visual-spatial, bodily-kinesthetic, musical, interpersonal, intrapersonal and naturalist. These intelligences have helped educators in several ways. “Teaching students through specific, identified strength areas, allows teachers to reach more students” (pp. 16-17). It is important for students to use their strengths and particular intelligences to demonstrate their knowledge (p. 17).

A learning center is one effective way to differentiate in the classroom. A learning center helps to accommodate a variety of different ability levels, learning styles, student choice, student needs, student independence, and cooperative learning (p. 80). Drapeau recommends using centers in conjunction with small group direct instruction by the teacher, and independent work (p. 82). She describes an effective learning center as being arranged on a visually stimulating tri-fold board with one panel containing task cards, another containing a theme panel with pictures and information regarding the topic, and another panel for activities to complete when they finish their assigned tasks or have extra time (p. 86). Drapeau also recommends use of a task sheet to write the required or chosen tasks and a completion date (pp.92-93).

*How to Differentiate Instruction in Mixed-Ability Classrooms by Carol Tomlinson*

Tomlinson notes the importance of “anchor activities” which are options for students after assigned work is completed at a high level of quality. Once the class learns how to work independently on the anchor activity the teacher can take small groups away to work on a differentiated task and then switch (Tomlinson, 2001, p. 35). The goal is to get students into a routine where they move automatically to an anchor activity.

Concept-based teaching is something Tomlinson recommends to help student learning. “In my classrooms, students ‘cover’ lots of facts, vocabulary words…unfortunately, they also forget much of what they ‘learn’ [when] they…move on to another topic or lesson…because they never understood or saw the purpose of what they learned” (p. 74) Differentiation helps teachers focus on essential understandings, making the information more meaningful and transferable than memorization and drill of facts (p. 74).

Learning Centers are great for teaching overall concepts. Tomlinson describes learning centers or “stations” as collections of materials learners use to explore topics or practice skills” (p. 103). The teacher can break the class into practice groups and direct instruction groups. The activities can be modified and assigned based on the readiness level, interest or learning style of individual students. Tomlinson recommends the teacher monitoring what students understand at the centers and teaching them to monitor and record their own progress. Clear directions and criteria are important for a successful center. She also recommends avoiding having all students do all work at centers (p. 103).

*The Differentiated Classroom: Responding to the Needs of All Learners by Carol Tomlinson*

Centers are a little different than a station because stations rely on each other to develop a particular skill*.* Centers do not need to visit each center in order to achieve proficiency with a particular topic or skill (Tomlinson, 1999, p. 75).

A learning center is a collection of activities that are meant to teach, reinforce or extend a concept or skill. An interest center is meant to motivate students to explore topics in which they have interest. Tomlinson recommends providing instructions about what a student should do if they need help and what to do when they finish an activity (p. 75-76).

Methods and Design

*Subjects and Setting*

This study was done in a rural elementary school of York, Pennsylvania, consisting of grades kindergarten to sixth. The test study group consisted of four first grade classes and three fifth grade classes. My research aimed to explore how learning centers would affect the growth and achievement of both younger and older elementary students. This was a three-week study done with each class for three 40-minute class periods during their scheduled art class.

*Instrumentation and Procedure*

Each student was administered a pre-test about color terms and vocabulary, and a survey about multiple intelligences. Then I chose one first grade class and one fifth grade class to be the control group. These two groups were given five to ten minutes of direct instruction about color theory and vocabulary and then were given a worksheet to fill out.

The other remaining classes were given various types of learning centers; exploratory, enrichment, and skill centers. One first and one fifth grade class were given exploratory centers, where there was no direct instruction. Students were meant to learn as they explored and constructed knowledge for themselves at the various learning stations. Another first and fifth grade class were given five to ten minutes of direct instruction and then participated in enrichment centers. Students were separated into groups based on their learning style or multiple intelligences indicated on their survey, and then participated in activities that reflected those intelligences. The last two first and fifth grade classes were given five to ten minutes of direct instruction and then based on their pre-test results, were separated into skill groups.

*Instructional Activities*

This experiment featured six learning centers. One station featured several color wheel puzzles; some beginner and some more advanced featuring the tertiary colors. It also had several word sorts attached by Velcro to the bulletin board with the words primary, secondary, warm, cool and complementary. It also had information about the color theory artist Chuck Close.

Another station had a laptop that was playing “The Red, Yellow, Blues” and “The Secondary Samba” by Greg Percy. The station had a children’s book titled “Mouse Paint” by Ellen Stohl Walsh. Students were asked to listen to the songs and read through the book. They had the option to write their own song, their own story or just read and listen.

Another learning center had crayons and packets of the vocabulary words; primary, secondary, warm, cool, and complementary colors. Students were asked to color in the appropriate word with the appropriate colors. There was an example packet that students could look at for reference.

One station had a folder with two coloring pages, “Sunflowers” and “Starry Night” both by Vincent van Gogh. The students were asked to color one painting with warm colors and the other with cool colors. Then students were asked which painting looked happy and which painting looked sad?

Another learning center had a blank color wheel and some blank paper and watercolors. Students at this station were supposed to experiment by mixing the primary colors to create the secondary colors. Then they were asked to paint the color wheel; primary colors first and then secondary. Fifth graders were also asked to mix the tertiary colors.

Another station had an object sort with three boxes of nature objects like fruits, vegetable, plants, and pictures of animals. Students were directed to use two boxes to sort primary and secondary, and then warm and cool. Then they were directed to use the and then use the third box to sort the objects into complementary pairs.

Results

*Teacher surveys*

Before implementing the learning centers, I sent out surveys to the teachers, kindergarten through sixth grade, at the elementary school where my research was conducted. Of the thirty surveys, eighteen were completed and returned. Only one specialist returned the survey. All eighteen surveys indicated the teachers used centers as a form of differentiation. Eight said they used centers daily, eight used centers weekly, and one used them monthly. The younger grades used the centers more frequently than the higher grades.

*Pre-tests*

Each class participating in the research study was first administered a pre-test to determine what the students knew prior to the instruction. The pre-test for the first graders had eight questions about primary, secondary, complementary and warm and cool colors. The fifth grade pre-test had fifteen questions about primary, secondary, complementary, warm and cool colors and value. The pre-test was read aloud and students were asked to follow along and circle the correct answer. Students were given a piece of construction paper to cover their answers from other students’ wandering eyes. Students were told not to blindly guess. If they could not eliminate enough answers to make an educated guess they were asked to skip the question.

*Multiple Intelligence Surveys*

Students were given a survey based on Howard Gardner’s theory of eight intelligences; linguistic, logical-mathematic, visual-spatial, bodily-kinesthetic, musical, interpersonal, intrapersonal and naturalist (Drapeau, p. 16-17). Students

*Direct Instruction*

The control group of this study was the direct instruction group. Students in these groups received five to ten minutes of direct instruction about color theory. Then the students were given a worksheet relating to the information taught in the direct instruction.

During the direct instruction group I observed more dissatisfaction among students. There was less engagement, less participation and less student interaction. First grade post-test results showed 30% improvement rates. Scores increased from 23% to 53%. Fifth grade post-test results showed 20% improvement. The scores increased from 50% to 70%.

*Exploratory Centers*

The exploratory group is what I considered the “un-control” group. Students in this group received no direct instruction about color theory. They were introduced to the directions of each learning center and then were on their own to explore the stations to learn the material. Students were randomly assigned to a center and when they were finished they could move to any center that interested them as long as there were no more than five students already there.

The first graders were very teacher dependent during the exploratory group. With little prior knowledge to color theory, students were confused and completed several activities incorrectly. Students appeared to be actively engaged in the activities, but the engagement seemed to be with the materials like the watercolor paints, puzzles and computer. Students seemed less concerned with what those materials were supposed to help them learn. First grade post-test results showed 35% improvement. Scores increased from 24% to 59%. Fifth grade post-test results showed only 14% improvement. The scores increased from 59% to 73%.

*Enrichment Centers*

The enrichment center was based on the students’ multiple intelligence that was identified on their intelligence survey taken along with their pre-test. The surveys were created based on the theory of multiple intelligences by Howard Gardner.

Students were organized into six groups based on their top intelligence although many students fell into several categories. Students that identified themselves as logical-mathematic were sent to the puzzle center. Musical-rhythmic students were sent to the table with the laptop playing songs about color theory. Bodily-kinesthetic was the largest group so it was split, some students went to the color mixing center and some went to the object sorting center. Verbal-linguistic were assigned to word sort, literature or word coloring centers. Visual-spatial students were assigned to either the color mixing center or the Van Gogh coloring center. Students identified as naturalist were placed at the nature object sort. Interpersonal and intrapersonal students were spread out into groups depending on whether the activities were group or individual.

Stations were set up to rotate clockwise around the room. Assuming that each student would have time to visit two to three centers, centers were grouped next to intelligences of similar learning styles. First grade post-test results increased by 22%. Scores increased from 33% to 55%. Fifth grade post-test scores increased by 22%. The scores increased from 51% to 73%.

*Skill Centers* The skill centers were conducted with only the first grade participants*.* For the skill center group I looked at the student’s pre-test scores. I performed item-analysis on the pre-tests to determine which skills the students needed more practice with. Students were separated into skill groups; primary colors, secondary colors, warm and cool colors, complementary colors.Students were given a checklist so they could go through the centers as the finished to assure they were reaching all skills.

In my opinion, activities in this study group went very smoothly. Students worked very independently and contently. Although parent visitation First grade post-test results improved by 20%. Scores increased from 20% to 40%.

*Figure 3: Improvement Comparison Chart*

*Figure 1: Fifth Grade Test Score Data*

*Figure 2: First Grade Test Score Data*

*Inconsistencies in Data*

I believe that several inconsistencies occurred during my research. The results greatly differed from what I hypothesized. I expected the enrichment centers and skill centers to be the most effective centers. I thought the direct instruction would be less effective because it was too rigid and did not differentiate, and that exploratory would be less effective because it was too unstructured and did not offer any direct instruction. I also expected the results between first grade and fifth grade would be similar, and they are not.  
 Several things contributed to the inconsistencies of the results. The biggest problem was with the first grade results. As much as I attempted to simplify directions and test questions to account for a first grade reading level, reading remained the biggest issue for this experiment. Although the test questions were simplified, enlarged, read aloud, and pointed to, the students that were not paying attention or following along took wild guesses when they could not read the question or answers. During the center activities students had a difficulty reading the directions so there was a lot of confusion leading to either teacher dependency or wrongly completed activities.

A first grade teacher observed the students during the center activities and post-test. She said the instruction was great, the center activities seemed engaging and well done but the test format was the problem. She shared with me that when they take tests in the classroom they are written in size twenty or larger font with only a few words per page, then they are projected on an overhead projector.

The fifth grade results, I feel, are more accurate although some of the same issues occurred. My research project was about differentiation, yet I did not differentiate the pre-tests or post-tests. For my results to be more accurate I should have reviewed all IEP’s regarding testing environments and assistance for learning support students. Several test groups had more learning support students and others had more gifted students. Results indicated that the lower the pre-test scores, the lower the improvement rate. I would assume that students with lower academic skill would also have lower test-taking skills and would find it more challenging working independently at the centers.

Scheduling conflicts raised the second biggest obstacle. A half-day caused the second implementation to be pushed back a week for one first grade classes and one fifth grade class. Then Thanksgiving break interfered with the third session of implementation, which was rescheduled for a different day. The first grade skill group was rescheduled for a double period during parent visitation day.

Parents were instructed not to help the students with any of the activities and not to speak to them during the post-test. To ensure that the parents were busy I set up a learning center for parents at a separate table where they could explore what their children were learning in art. There was one angry parent upset that the instructional aide would not give her son answers to the post-test. When the aide told the parent she could only help him by reading the questions to him, the mother tried to give him the answers. She was removed from the room and her son’s test data was removed from the research study.

Conclusion

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