

Applying diversity research to educational lesson plan



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Introduction

This paper is a continuation to Module 3 where I did some student research on the achievement gap for Hispanic students in Bogota Junior/Senior High School. I created a table that provides some insight on trends, issues, evidence-based remediation practices, and learning preferences for Hispanic students. Utilizing that information I will create a Math/Science lesson plan utilizing the UDL principles to further enrich and simplify the material my students will be learning.

Part 1: Lesson Plan

The lesson plan below will demonstrate how I will be addressing the emotional elements of learning preferences. I will incorporate Universal Design for Learning (UDL) principles in my lesson plan is to provide learners various ways in which they can learn the information. Alternative forms of assessments and utilizing multiple means of engagement. Because I work with students with behavioral and cognitive disabilities the lesson plan will be created for Hispanic students grades 7th through 8th as those are the grade levels I am exposed to and can modify lessons to instruct multiple grade/learning levels.

1. Lesson Title: Forces of Motion Content Area: Math/Science Grade Level: 7

Overview of Lesson: Prior to lesson I will show a video about race cars on a race track. Students will be grouped in threes, depending on their learning styles/ability.

Learning Objectives: Students will design a racetrack to test push and pull forces on

of objects to determine which objects move faster when mass is added. They will use what they learned of potential and kinetic energy. Students will then have races with other groups to see whose car traveled farthest and what the time was and how much weight they added (using quarters).

Target Student Group: Hispanic students, 7th to 8th grade. The learning preferences of Hispanic students in my school are kinesthetic and group learning.

Key Content Concepts: By engaging in play students will explore the forces behind different motions. Students will hypothesize time and how what changes they can make to create a more efficient racetrack.

UDL- Supported Remediation and Accommodation Strategies:

2. Teacher provides notes/outlines.
3. Directions for assignment is written on smartboard in big letters, each student is handed out a sheet with assignment directions typed out.
4. Depending on the student, allow for extra time on assignments/shortened assignment length.
5. Provide students with choices on how they want to participate in the racetrack building: they can either choose to build it, or come up with questions/answers about the racetrack.
6. Grading will be based on work completion. Pass/Fail grading.

Materials/Technology Required for Lesson:

7. Smartboard
8. Youtube Link

9. A large piece of poster board or cardboard for each student or pair of students (empty cereal, or shoe boxes cut open along one edge and trimmed to remove edges, work well).
10. Pencils, markers, rulers, quarters, nickels, dimes, pennies.
11. A group of things to use to form the outside bumper of the racetrack, such as paper towel tubes, egg cartons, tissue paper, stickers, sticks, foam, etc. This will prevent the cars from falling/flying off the track.
12. Adhesives (Elmer's glue, glue sticks, Scotch tape, masking tape, etc.)
13. Science journals

Instructional Steps for Conducting the Lesson:

14. Show students a video of the project being done by other students.
15. Open up to a new page in the Science journal, write the date and the topic "Building a Racetrack."
16. I write the same on the smartboard, I divide my page in two sections-Will Work and Won't Work.
17. I provide the students with initial hypothesis for the track and what effect the mass of the cars will have on the speed and time. Example: Car with quarters will go faster and further while car with no initial push will move on its own. I remind them of Newton's Third Law of Motion, for every action there is an equal and opposite reaction. The law is written on the board for reference.
18. Students will use the poster board/cardboard, to design a road that the cars can travel on. They are working independently in their groups. The more race tracks they create; the more experiences they will have.
19. Students will divide the assignment work amongst themselves, so every member of the group is participating.

20. One student will write down the data collected, another will collect the materials needed for their track and as a group they will build their racetrack.
21. To design the racetrack, locate a starting place on one side of the cardboard, draw a small square and write 'start'. This is the starting line, where the students will place the cars when they are ready to test the course. Then, they are going to draw the track on the other side of the cardboard. They want it to be an efficient and interesting racetrack, so add plenty of different turns. When their road ends at the other side of the poster board, they will draw another square and write 'finish', this will be the ending line. They will use a pencil first to outline the track, then after I check it, they will trace the lines with a marker.
22. Since students work at different speeds, some will work more quickly than others, so once they are finished designing they can spend time decorating their track or helping some of their peers. The students who need it, will be provided additional time during study skills to finish and decorate their track.
23. Students will now collect data a total of three times to see when the racetrack/car are the fastest and most efficient. Data will be written down on a sheet that will then be added to their science journals.

Formative and Summative Assessment Strategies:

24. Formative Assessment strategies for this lesson will be an exit ticket with the question: What helped you learn the material today? I expect a short 2 sentence answer. I will use this information to gauge whether or not the students understand the material.
25. Summative Assessment strategy for this lesson will be completed data collection sheet/journal check. The data collection sheet will show what the students learned.

analyzing the hypothesis and the conclusion.

1-2 Strategies to Collaborate/Share with Your Professional Learning Community:

26. Enlist some of the teachers to collaborate some ideas when building my racetrack to give the students a visual. Ask for feedback.
27. Record successes and challenges of the lesson to share and learn from.

1-2 Strategies to Involve Parents/Caretakers, Families and Communities in student learning:

28. Send home a English/Spanish newsletter explaining what the class is working on and how they can help from home. Also include this on the classroom blog so it is accessible to all.
29. Once the assignment is complete inform the guardians so they can ask their students questions about the lesson. For proper engagement of guardians to take place constant and continuous communication between home life and school life to be in sync.

I plan to keep the students motivated to complete the assignment by having music in the background as they work, I will have only two of the four classroom lights on. I will be walking around the room checking on the progress of the assignment. Asking the students questions such as: Why did you add a ramp? and so on to get them really engaged and excited about the project.

Part 2: Assessment Rubric

The rubric below will assess the students based on the science journals and data collection sheet that will show their understanding of how math and

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science are intertwined. When reading the rubric, the sources I refer to are other students in the classroom, the internet or the teacher. For this particular assignment completion was not the goal, the goal was to demonstrate understanding of Newton’s Third Law and how math is used to analyze science.

Rubric	4	3	2	1
Information of Data	Data collection from 4 or more sources	Data collection from 2 or more sources	Data collection from 1 or more sources	No data co
Scientific Knowledge	All group members indicate a clear and accurate understanding of scientific principles underlying the construction and modifications.	All group members indicate a relatively accurate understanding of scientific principles underlying the construction and modifications.	Most group members indicate a relatively accurate understanding of scientific principles underlying the construction and modifications.	Several me of the grou illustrate m understand scientific p underlying construction modification
Plan	Plan is neat with clear measurements and labeling for all parts.	Plan is neat with clear measurements and labeling for	Plan provides clear measurements and labeling for	Plan does r measurement clearly or is otherwise r

		most parts.	most parts.	properly la
Construction - attention to detail	Attention to detail was taken in the construction process so that the structure is neat, attractive in appearance and follows plans accurately.	Construction was careful and accurate, but 1-2 details could have been refined for a more appearance.	Construction accurately followed the plans, but 3-4 details could have been refined for a more attractive appearance.	Constructio appears ca messy. Ma details nee refined for or attractiv appearanc
Journal/Log - Self-reflection	A complete record of planning, construction, testing, modifications, reasons for modifications, and some self-reflection about the strategies used, and the results are written in the journal.	Entry supplies insight and a complete record of planning, construction, testing, modifications, and reasons for the modifications.	Journal entry supplies quite a bit of detail about planning, construction, testing, modifications, and reasons for modifications.	Journal ent supplies ve to no detai several asp the plannin constructio testing pro modificatio track were

Maximum Total of 24 Points

Part 3: Applying Research and Key Learning

Prior to beginning my research on the Math achievement gap that Hispanics students face, I was not aware that according to the 2010 Census, the Hispanic student population has increased by almost 20%, that population is expected to rise by 16% by 2050 (Webley, 2011). Yet, in the state of New Jersey Mathematics average is 40% while the Hispanic students school average is 26%, that is a difference of 14%. I found that the main reason for this lagging for Hispanic students is that they are being taught the same way as the other students. Teachers are not using comprehensible input, they are not getting background knowledge from the students. Even when they utilize background knowledge it is usually based on assumptions instead of facts. Some strategies that researcher Christopher Howe advice for teachers and anyone in education: Develop professional development to help teachers and staff adequately teach Hispanics students based on their needs. Set high expectations for the students. Some teachers may want to take it easy on the students because they might feel bad for them, but instead of helping the students they are doing them a disservice by not challenging them to let and improve themselves. Place value on the students' home language and encourage parents/guardians to become involved in the child's education. If the students feel their education is being valued they will in turn value their education as well.

First, I think the staff and administration at my school, Bogota Junior/Senior High School need to be properly trained in how to teach minority students. The professional development should address cultural diversity, dynamics of the population and strategies that have been proven to be successful with Hispanic students (Howe, 2011). Common and sometimes detrimental

mistakes can be avoided by just being informed. Second, I would suggest beginning every school year with a student survey, this is so that all the teachers can be informed on the students background, thus they can get information needed to properly teach from the student (who are experts about their lives) and other resources. Finally, I would start a program to engage the culturally diverse community of parents/guardians/caretakers. Edward Graham states that student success comes from parent involvement at home and school. Continuous communication between the school and parents is essential for promoting learning in minority students. Some ways communication can be done is by: providing newsletters to the parents in their home language, sending home positive notes about student behavior, writing a short summary of the days events in the school website so the parents can access it at their convenience, and the one strategy that is more time consuming but ultimately worth the effort is a call home to give parents feedback on their child is always appreciated.

Conclusion

Using the skills and strategies I learned while researching the math achievement gap among Hispanic students in my school has shown me that we as a nation have a lot of work to do if we ever want to close the achievement gap. I believe to get success we as educators have to work hard as do the students and anyone involved in their education, which should be everyone from their coaches to the school librarian. In order to close the achievement gap we, educators, need to learn about the students first, build a rapport and then use the background knowledge to create unique lessons that will excite and teach the students.

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