How Can High School Teachers Use Motivational Techniques and the Active Physics Curriculum to Change Educational Trends of Language Minority Students?

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Recent high school enrollment records have shown an increase in language minority students attending Falls Church High school in Fairfax County. These students have emigrated from other countries or were born in the United States from immigrant parents. Educational studies have shown that these students make up a large percentage of non-college bound students. This trend would infer: 1) the lack of student attentiveness in science and other high school courses, 2) low grades and 3) grade level retention. In this paper I will look at a variety of educational and social issues of language minority students. I will also describe my interaction with these students and the issues and motivational techniques used in teaching three separate Active Physics classes.

Active Physics Curriculum

Active Physics is a national curriculum project sponsored by the National Science Foundation and developed by the American Institute of Physics and the American Association of Physics Teachers with support from the American Physical Society. Active Physics is a physical science based class. The Program of Studies for Fairfax County demonstrates that the curriculum is intended: for students to achieve a solid base of knowledge in physical principles, make informed decisions based on this knowledge, analyze and communicate information, actively conduct scientific explorations and make connections within science disciplines and with other disciplines. Active Physics emphasizes student learning through inquiry and discovery laboratory investigations and all activities are hands-on. Furthermore, Active Physics allows students to investigate physics concepts without having to perform rigorous mathematical problems. This course was created to help low level academic high school students to receive science credit. Students enrolled in this course are students who have not passed algebra or received low science grades their first two and/or three years in high school.

The philosophy behind the Program of Studies for the Active Physics curriculum accentuates that learning starts by hands-on explorations. The curriculum incorporates strategies that will address a broad range of learning styles and learning needs. The students whose learning styles and needs I encountered were: ESL students, some with behavior-disorders, typically ADD, and some students with physical disabilities. The presentation of concepts follows a logical approach that first gives an overview of the content area and clearly states the assessment criteria; it then breaks down the curriculum into
manageable activities that provide a guided path to reach the overall objectives. In order to achieve the assessment criteria students are required to reflect and merge concepts from each activity. All activities make a thorough attempt to put students in realistic situations.

In the beginning of the school year, teaching ESL students, special need students, and students with learning disorders did not present many problems, but in the later months teaching these students became very challenging. Many students were unmotivated to problem solve on their own. Each class period, I was bombarded with students asking me to explain and re-explain the activity instructions. This also demonstrated to me their limited understanding of the English language. The evidence of students’ short attention span became apparent. Most students were only able to stay focused for three minutes. This was a major class disrupter, because those students would began to distract other students. At this point I had to invoke discipline procedures to regain control of the class. Students responded well to discipline procedures such as temporary removal from the classroom and after school detentions.

Student Attitudes

I taught three classes of Active physics. Class 1 consisted of 19 students: 10.5% white, 10.5% African-American, and 78.9% Asian and Hispanic. Class 2 had 22 students: 22.3% white, 4.5% African-American, and 68% Asian and Hispanic. Class 3 had 19 students: 21% white, 15.8% African-American, and 63.2% Asian and Hispanic. In September, students were very excited about the activities Active Physics had to offer. The first set of concepts studied was sports; the students enjoyed these energetic activities. They received opportunities to work in teams, gather data, and make charts and graphs of data from sporting performances. Students looked forward to coming to class because many activities were performed outdoors. The grading of students’ activities was outcome based, thus if student responded to an activity question correctly and neatly he/she could receive a perfect score on each activity. Students could not fail the course by failing a test or quiz, proving that this class was designed specifically for this caliber of students to succeed and remain focused.

As the year progressed, students’ absences started to increase and visits to the counselors started to increase. Attendance and special education personnel visited the class more frequently. The request for my participation at Individual Education Plan (IEP) meetings for my students also increased. Students’ enthusiasm began to decrease, as their problems became evident; grades and performance started to decrease as well as time on task. Although students knew classroom routine, at the beginning of class they would not open books and start work until told to do so by the teacher.

These actions caused me to use a variety of techniques to motivate students to improve their attendance and take pride in their work. My first technique was to increase my level of enthusiasm in greeting the students as they entered the classroom. I embraced the role of a mentor and tried to become more personable with students. I talked to students about their academic and
future goals, emphasizing to students that the way to accomplish these goals was by taking pride in their work, using academic resources to help them achieve success, and point out the importance of not missing class.

I also had students write academic goals for the year, which I saved and redistributed to them at the end of each quarter. This forced students to evaluate their performance and not be in denial about their progress or lack of progress. I also posted student grades biweekly so they could continue to evaluate their progress.

Student Attentiveness

From my own past experience, science seems to be a popular subject for every student since it provides exciting visual experiments with observable outcomes and constant intriguing of the mind. The Active Physics curriculum was designed around the same principles, but it was specifically geared for continuous student success. This continuous success should lead students to have a great appreciation for science and the ability to receive high grades throughout the curriculum. Like many high school courses when students are successful in these courses, student attentiveness should increase, thus making the class exciting to both the teacher and the student. Although Active Physics seemed to be a complete course that would increase students’ attentiveness, it did not happen in every class.

I began to think that the lack of student attentiveness to the topics studied in Active Physics was my fault, but according to a 1980 study by Mary Budd Rowe (“Evaluating Student Attentiveness to Science and Technology”), this was the norm of non-college bound students. Ms. Rowe states that high school students who are college bound are more attentive to topics in science and technology than non-college bound students. Rowe defined attentiveness as having three different dimensions: (1) Interest, which disposes a person to pay attention to some things more than others, (2) Knowledge of science and technology, roughly measured by responses to open-ended questions, and (3) Acquisition of information on a regular basis, as measured by active, voluntary seeking of information through print media.

Rowe’s research indicates that non-college bound students seemed to be almost unresponsive to the ratings in the three dimensions of attentiveness. In grade 10, she found that 97% of students studied were rated as inattentive to science and technology. By the 12th grade the percentage had decreased to 93%. Rowe’s study extended beyond science and technology, she also surveyed non-college bound students on topics of civil rights, economic policy and foreign policy. She found that almost 90% of the non-college bound students scored very low on the attentiveness survey. She asked, “Just what is high school accomplishing?”(P.28)

Like many educators, Rowe also attributes students’ attentiveness to career aspirations. In her study, students who were more attentive to science and technology aspired to enter careers such as: physicians, engineers and prospective public servants. From my experience as a teacher, language minority high school students continue to receive very little exposure to
opportunities that will motivate them to pursue these particular careers. I try
diligently to put students in roles as physicians and engineers when problem
solving. Students enjoy role-playing, but the majority consistently gave very poor
solutions to medical and engineering issues. Many students gave weak written
responses in their journals and they continue to take very little pride in their work.
The only way to overcome these issues is to have very energetic, enthusiastic
and innovative team teachers teaching these students. I also believe that our
expectation of student success should start in the 9th grade and not wait until 10th
through 12th.

Educational and Social Trends

My Language Minority students also had a consistent pattern of poor
attendance. Students would miss two or three days of school. Amazingly, when
they came back to school some were not very concerned that they missed the
days and one or two activities. Many students lacked effort to come after school
to make up activities. When told by the teacher the grade they would receive for
missing days and activities, some students did not show much concern. I was
very concerned about this pattern and began to interview teachers and
counselors to see why so many students had poor attendance.

In this paragraph I will list and elaborate on reasons for students’ poor
attendance. Many Language Minority students were required by parents to baby-sit younger
brothers and sisters because parents worked two jobs or long hours. Many
students worked five to six hours after school to help their parents support the
home, and some students put these same hours into family owned businesses.
Some students came from countries where education was not a priority, thus
they had a very weak educational background and didn’t value America’s free
education systems. ESL students experienced great amounts of peer pressure
because of their lack of comprehension in the classroom; students were
embarrassed to participate in class. When students fell behind in their class and
received low grades on report cards, they frequently stayed in denial about their
academic standings. Some students continued the same inconsistent patterns
and never realized that they would fail for the year. Many students didn’t look for
support at home because there was none. Parents frequently went to work
before students left for school and didn’t come home until late in the evening.
Students took advantage of this situation by not going to school and not showing
parents report cards. Many students were from poor and/or war torn countries
and never grew up in a strong educational system, and lacked educational role
models. Some students came from broken families where they did not grow up
with parents because the parents were in America trying to work in order to send
for the children. Some parents sent for the child ten years after establishing
themselves in this country. Once the children came to America it was hard for
the parent to control and discipline the child because of the gap of time in the
relationship. Some students felt a lot of animosity towards parents because of
feelings of abandonment.
The American culture may also have a great effect on Language Minority students in that they become a part of the "MTV generation." Do what you want, how you want and when you want. These students, like many high school students, have little respect for themselves or any one else. Unlike the American student, many language minority students from countries with poor educational systems don’t understand the rules of success. The American students understand that success means establishing yourself as a dominant figure in the American work system. To become this dominant figure you have to discipline yourself and endure the rigors of going through the educational system or working your way to the top. The immigrant student may only understand success to be working at a job and acquiring material objects, such as a nice car and a decent place to live.

Parent Expectations

In many professional books, college lectures and counseling sessions, educators have come to understand the effects of parent involvement in their children’s education. First, we know that it bridges the gap between home and school. When parents are aware of what their children are learning in school and they ask questions about their children’s comprehension of class material, this reinforces learning. Second, this gives students a sense of pride in their work, they understand that someone other than their teacher is concerned with their achievement. I had a conversation with an “A-B” Latino student in my class and he stated that his high achievement was a result of his parents being very supportive. Iowa’s Department of Education states that parental involvement stimulates in their children a more positive attitude toward school, higher achievement in reading, and completion of more homework on weekends. This department of education also states that low-income and minority children have the most to gain when schools involve parents.

Although these statements provide exclusive evidence of grade variation among language minority students in my Active Physics class; I interviewed counselors to investigate immigrant parents’ level of expectation for their children’s academics. It is apparent that immigrant parents come to America to pursue better opportunities for themselves and their families, but most immigrant parents come to America with a poor command of the English language. These parents may also come to America poorly educated. This puts tremendous pressure on their children who have to become fluent in English and get educated. Students may miss days at school because they serve as translators for their parents when visiting the doctor’s office or federal offices. Since parents are economically hard pressed and many work two jobs, their school-aged children will baby sit siblings after school or work after school to help support the family. If parents are working two jobs, one job can start before students go to school and the second one ends late in the evening. Many parents are not aware if their children attended school; they only know what the children/students tell them. Another major reason why parents greatly depend on teachers for their children’s success is that some students are separated from parents and grow up in war torn countries with grand parents and relatives. After five or ten years,
parents may send for their children. By this time, children have aged to adolescence and there is a gap in the relationship with the parents. Also children may feel bitterness about being left behind with neglectful or abusive relatives. These issues attribute to an unstable relationship between parent and child, and it is difficult for the parent to push the student to be serious about school.

Parents expect teachers to develop and fulfill students academically and morally. This truly creates an "uneven playing field" where parents are looking for teachers to take the role of parent and give the student the same love and attention that they would give their own child. On the other hand, teachers are looking for these parents to become more involved in their children's academics. The teacher may understand how busy the parent is but still desire for them to be involved enough so that the child is more accountable to some one at home. In the midst of these two different desires of relationships to the child, there is no balance established. The parent, student, and teacher remain unaware of where and if the student is getting support through the year.

During the beginning of the school year there is little communication between the parent and the teacher, and the only time parent and teacher may interact is when the student is in danger of failing the class. This communication between parent and teacher can be weak because parents are not fluent in English. This becomes a major hindrance to the teacher because now the teacher must schedule an interpreter to speak to the parent.

**Strategies for Success**

It is obvious why teaching Active Physics can be very challenging for many teachers. In this section I will discuss ways to achieve success. One effective strategy is to relate each activity to the students' personal lives and experiences. Integrate your students' opinions by having in-depth openers at the beginning of class, try to get each student to make comments on concepts and share your own experiences. Be enthusiastic, positive, and patient at all times. This is very important because you are dealing with a great range of learning needs. Many students will come to class and try to sleep. Some students will miss two days of school, come back to class and try to distract other students by talking during your openers. Many students may have a great amount of potential and don't know how to use it. It will take a lot of motivation from the teacher to just make that student aware of his/her potential.

The majority of students that will take Active Physics at Falls Church High School will be language minority students. These students may not have a strong command of the English language and it will be necessary to walk them through lessons and make the context very simple. Use visual aids such as concept mapping and brainstorming webs to help make connections. It is important that teachers know the background and problems of the students and that they communicate often with parents and guidance staff regarding student and problems. Lastly rely on positive reinforcement rather than confrontation. It helps greatly to question students about their misbehavior and present them with options of discipline so they can truly be aware of their wrongdoing.
Charts

On the following page I displayed three charts showing grade fluctuation for three sections of Active Physics. The first chart shows that I had the most success with period three. It is proof that the strategies of success I discussed previously can work for all students. Many students in this class section aspired to enroll in institutions of higher learning; this is not a trend for many Active Physics students. The chart displaying period four’s grades have the highest number of F’s. This was my largest class. In period four I had the greatest number of students with low self-esteem and poor parental support. Period five’s grades are about average for Active Physics students, but many students had poor academic endurance when their motivation fluctuated through out the year.

**Active Physics Grades 1999-2000**

*Period 3*
References