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Macromolecules and Monologues: How Science and Arts Classes Motivate Students for College

Abstract

This study investigates how science and performing arts classes motivate high school students, particularly students of color, to pursue higher education. The changes in funding and perceived importance of Science, Technology, Engineering and Math (STEM) vs. Visual Performing Arts (VPA) classes and programs, as well as the underrepresentation of students of color in these areas, make this topic important. Existing literature independently examines the positive effects of science and arts classes on student success but fails to compare the benefits of these programs and to include the student voice. Through the use of participant observation, questionnaires, and interviews, this study aims to compare if and how a physiology and an acting class at Charlotte High School motivate students to pursue college. Findings suggest that science and arts courses influence students' motivation differently. Questionnaire findings show that acting students were more likely to agree that their class is fun, helpful, and motivating than their peers in the physiology class. Interview findings matched these results. For example, questionnaire data reveals that students enrolled in the acting class are more motivated to pursue a college degree than those in the physiology class. This may be due to more engaging pedagogy and activities that build confidence in the class. Study implications highlight the need for continued funding of arts education to nurture unmotivated high school students' college aspirations.

Keywords

STEM, performing arts, education, motivation, college

Cover Page Footnote

Thank you to UCLA's Educator's For Tomorrow Research Scholars Program for supporting this research project.

How STEM and VPA Courses Affect Motivation for Higher Education

Research questions:

- 1) How does being enrolled in STEM courses affect motivation for going to college amongst high school students?
- 2) How does being enrolled in Visual and Performing Arts (VPA) courses affect motivation for going to college amongst high school students?

Hypothesis:

Students enrolled in VPA courses will be more motivated to go to college than students enrolled in STEM courses and not VPA courses.

Problem and significance statement:

The recession of 2007 led to the loss of funds for public education as a whole, particularly in California, causing programs such as the visual and performing arts (VPA) to suffer from budget cuts (Rowe, Castaneda, Kaganoff, Robyn, 2004) as they are deemed non-essential in light of the rising need for science, technology, engineering, and math (STEM) education in the United States (Spohn, 2010). At the same time, however, there has been an increase in the investment of money and time in STEM programs due to the shortage of well qualified workers in these areas, as well as the implementation of No Child Left Behind, which pushed schools to focus on raising test scores in these areas or face negative consequences (Hetland, 2013). It has been noted that following a STEM career path will provide a stable and successful future for youth as jobs in that sector are rapidly increasing and in great need

(Sanders, 2009). As such, STEM programs for students are highly favorable and found to be beneficial for student success and the well being of states, such as California who is facing a shortage of STEM workers (The Campaign for College Opportunity, 2009).

By comparison, research has also been done showing the benefits of visual and performing arts programs on student success and critical thinking (Deasy, 2002). In a retrospective study, for example, elementary school students who practiced music had overall higher state test scores than their peers who did not study music (Wetter, 2009). Students have shown enthusiasm toward participating not only in musical courses, but practicing for and attending music festivals where they can perform in front of new crowds and receive constructive criticism from adjudicators (Gouzouasis, 2012). It has been shown that arts programs can even aid in dropout prevention for at-risk youth by providing them with a creative outlet, a sense of belonging, and motivation for improving their attendance (Florida State University Center for Music Research, 1990). While there is an abundance of information regarding the positive impacts of both STEM and VPA courses on students, little is known about how, in comparison, these two types of programs affect high school students' motivations for pursuing higher education.

Literature Review

There is plenty of literature on how visual performing arts programs (VPA) and programs emphasizing Science Technology Engineering and Math (STEM) positively influence students in K-12 education. Both focused programs have unique benefits for students in the short

and long-term, such as greater probability to be accepted at an institution of higher education or more advanced critical thinking skills.

Visual and performing arts programs are a unique and creative way for students to grow socially and academically in secondary school. For example, at-risk students have shown that their participation in VPA programs can help them become involved in school and remove their “at-risk” label. The Florida State University Center for Music Research (1990) conducted a study, in which administrators, arts teachers, and at-risk students enrolled in these classes were interviewed and observed in their visual arts courses, specifically drawing and painting. It was found that there were several aspects of VPA classes that were helpful in improving at-risk students’ performance in school, namely, providing a creative outlet, a sense of belonging, and motivation for attending school. These aspects made VPA classes something to look forward to for the students, improving their attendance. At-risk students commonly struggle with good attendance, so this improvement made VPA classes very valuable to the students and school because it helped students improve in a basic yet essential part of their academic success. It was also noted that when an at-risk student was involved in a VPA class and was faring well in it, his or her performance improved in other classes as well. The creative outlet, sense of purpose and sense of belonging helped students sort through issues or problems affecting them outside of school and helped them reach their full academic potential.

While STEM programs may not necessarily provide a fun outlet for most students, research has shown that schools that have a heavy STEM focus outperform schools without a STEM focus in many areas, particularly in STEM subjects of state standardized tests (Scott, 2012). Scott (2012) reviewed over 10 schools in various regions of the United States through

both qualitative and quantitative approaches. Student test scores and principal and teacher evaluation and training were among the characteristics that were studied. The admissions process at most of these STEM focused schools provided an opportunity for students who were interested in STEM to join the space, regardless of socioeconomic background, previous schooling, or grade point average. The curricula in these programs also included projects, internships, and units on career relevance throughout the students' time there, increasing hands on learning and interest. With this structure, Scott (2012) found that a STEM focused education helped students excel not only in STEM, but also in reading. STEM students outperformed students at regular public schools on the reading portion in state standardized tests. It is clear that both STEM and VPA programs have positive influences on students' performance, but the way in which this is affected is quite distinct.

Whatever the benefits of STEM and VPA programs may be, students' opinions about them vary. Jenkins (2005) reviewed several studies about student opinions regarding science education. The *Student Review of the Science Curriculum* (Planet Science, *et al.*, 2003) conducted questionnaires for science students of several ages and found that student interest in science was much lower than what would be preferred. Only 48% of 14-16 year olds expected to continue their studies in the sciences after the age of 16, while the remaining 52% did not expect to continue in this area of study after 16. Moreover, 42% of the students who participated in the questionnaire responded that their science courses had not made them more interested in science or about the world. It is clear that, despite the known benefits of a STEM education, student interest is not as high as teachers, parents, policy makers, and other educators wish it would be. This could be attributed to a perceived irrelevance of science amongst students, as 69% of the

respondents answered that they wish their science courses would cover controversial issues in science. Currently, science courses are not providing curricula that is interesting to young students.

Another study that Jenkins (2005) reviewed was the *Science and Scientists (SAS)* project conducted in Norway. *SAS* found significant gender differences in the topics within science that students found interesting. Girls, for example, were interested in “topics related to the self and, more particularly, to health, mind and well-being” (Jenkins, 2005, p.5). Boys, on the other hand, expressed more interest in destructive technologies and events. These international findings could imply similar results for students of American schools. Further research into student opinions about both STEM and VPA programs in the United States is necessary to come to conclusions about how students feel regarding their science classes.

Some literature has focused on the motivation behind pursuing STEM fields. Due to the shortage of workers in the STEM force, researchers have been scrambling to find a way to encourage students to enter the STEM fields. Hall (2011) conducted a questionnaire study in which high school students, parents, teachers, counselors, and college engineering majors were asked a series of questions ranging from their interest and knowledge about STEM careers, and what factors motivated students to pursue STEM majors. Hall’s (2011) research questions centered around what motivated students to pursue a STEM major, and ultimately, a STEM career, as well as further analyzing the influences of the students. It was found that the most influential factor in high school students’ decision to pursue STEM was personal interest, followed by encouragement by peers (parents, friends, counselors, etc.). Job characteristics, such as starting pay, were also an important factor. Freshman and senior engineering college students

ranked these factors almost the same as high school students, with the difference being that earning potential superseded parent influence. Interestingly, Hall (2011) found that while parent and teacher influence rank high as motivational factors for students, their knowledge of the STEM field was limited. This could potentially reduce motivation for pursuing STEM and could prevent students from being introduced to the field entirely. Ultimately, personal interest in STEM majors and careers are what most strongly influence high school and college students' decision to pursue and stay within the STEM field.

Research has shown that there are academic benefits for students who are involved in the arts. Catterall, Chapleau, and Iwanga (1999) found that arts students outperformed their peers in academics and gained important interpersonal skills. Results from a multi-year survey of over 25,000 students during the first draft of the project were used to provide this data. The researchers divided the students into a high socio economic status (SES) group and a low-SES group to analyze the different influence the arts has on advantaged and disadvantaged students. Students were also divided into a "high-arts" group, in which they stated that they had taken one or more arts class weekly since 8th grade, or a "low-arts" group, where they took fewer than one arts course since 8th grade. These differences were made because high-SES students are more likely to have the opportunity to be involved in the arts because they attend schools that offer these opportunities, and their parents can help offset the costs of the arts. Low-SES students are less likely to be enrolled in the arts.

Most of the findings of this study focus on students from the low-SES group. It was found that 71.4% of "high arts," low-SES students in 8th grade had mostly A's and B's in English courses, while only 58.8% of "low arts," low-SES students had mostly A's and B's in English

courses. Twice as many “low arts” students in this group drop out of high school by 10th grade than “high arts” students. Similarly, 10th graders in the “high arts” group outperformed their “low arts” counterparts. Over 39% of “high arts” students had a level 2 reading proficiency in standardized state tests and only 29.2% of the “low arts” students had this level, which is considered satisfactory.

While academic achievements, particularly in reading, are one of the benefits of the arts, this project’s focus on theater showed that students benefit in other areas as well, including learning about empathy and tolerance for diverse groups. Theater provided students with the opportunity to interact with students from diverse backgrounds at their school, making them more open to others. More students in the high arts group reported being friendly with students from other racial groups than students in the low arts group. When surveyed, students in the high arts group believed with more frequency that it was acceptable to make a racist remark about others, while those in the low arts group disagreed more frequently. There was a 5% difference between the two groups, implying that students with high arts experience are more empathetic to their peers due to their arts experience.

Moreover, McCammon, Saldaña, Hines, and Omasta (2012) recorded adults’ perceptions of the benefits they reaped from being involved in theater during high school. This mixed methods project contacted high school theater alumni from various high schools from over 50 years and asked them about what they felt were the lifelong effects of their theater (and speech) classes were, advice for the future of high school theater, and their demographic information through interviews and a survey. Respondents listed many benefits from their theater classes on a variety of levels. Many respondents listed that they overcame personal challenges, such as being

shy, through their involvement in theater. They learned to be more confident, and presentable to others. Another benefit of theater that was listed was the care students received from their teachers, if they were good teachers. These teachers were remembered throughout the respondents' life because they cared about the students and their work, created a safe haven for them, and demanded high quality work from them. This, in turn, resulted in respondents learning valuable lessons that they applied in their work, which varied from being a global representative for a major corporation to an internet strategy consultant. Lessons of lifelong resilience and work ethic are valuable assets to these respondents. In theater, they learned how to commit to themselves and others, accept rejection, develop work ethic, and ask for high quality work from themselves and their coworkers. Additionally, respondents felt that their experience in the theater arts helped them develop their sense of identity. One respondent said, "If the experiences of life make you the person you are, then I am positive that my experiences in drama have helped to influence the person that I am, and I have to say I am pretty darn great! And I have drama to thank for the self-confidence to say that!" While 10% of the respondents stated that their experience in theater was negative, mostly due to bad teachers, it is clear from this report that theater has long-term benefits that help people in all areas of life.

Methods

Chosen method: I am doing a case study of students of color at Charlotte High School. I have chosen to conduct a case study due to a limited amount of time and resources available to me; conducting a study with a larger amount of students across a variety of schools is not a viable option. A case study will also capture the in-depth experiences and opinions of the

students I am studying than a large-scale quantitative study would. I believe that the students' opinions and diverse, rich experiences should be heard, as they can provide insight on the variety of factors affecting their decisions and feelings. Moreover, I will be conducting on site observations at Charlotte High School, both in and outside the classroom. I will keep an objective perspective throughout the study, however, my involvement in the classroom and the students' lives may range from being an outside, uninvolved observer, to serving as a teaching assistant in their classes. This role may make the relationships between myself and the students more friendly than if I were to solely act as an outside observer. Participant observation will provide me with the means to provide both an insider and outsider perspective of the events in the classroom. I have also chosen to use a questionnaire and to conduct interviews. The questionnaire will allow me to get a look at how students feel about their STEM or VPA classes and how they motivate them to pursue higher education and to guide my observations. The interviews will provide an in-depth perspective of how students, particularly students of color, feel about this topic. The combined use of these methods will ensure that I collect as much data as possible within the short time frame I have.

Site and student selection: I selected Charlotte High School as the site to conduct my research for its diverse student population, strong programs in VPA and STEM, and because of its proximity to my university. I had no previous experience at Charlotte prior to this research project. I decided to conduct my research with two teachers, Ms. V, a science teacher who teaches physiology for juniors and seniors, and Ms. S, the theater teacher on campus. I contacted both teachers via email to introduce myself and provide a background on my research project. I was granted permission to work with them on the project after contacting the house principal and

meeting in person and outlining more details about the work I would be doing in their classrooms.

The students and programs at Charlotte are relevant to the research topic. Charlotte High School has a diverse student population on a variety of aspects, such as socioeconomic background, race, or interests, as is confirmed by the teachers. About 59% of the students enrolled are students of color (California Department of Education Educational Demographics Unit) and many of them are involved in the performing arts and are taking required math and science courses. While students of color may be the majority at Charlotte, students and persons of color are underrepresented in both STEM and VPA programs and careers. Therefore, Charlotte School is a prime location for studying how these programs affect students' motivations for pursuing higher education.

Recruitment: I plan to recruit students from both Ms. V and Ms. S's classes. These students will not be difficult to recruit because I will be establishing a friendly relationship with them as a teaching assistant in their classroom weekly. I will use incentives to encourage students to help me bring more depth into the research through interviews, such as gift cards or UCLA souvenirs. When I announce that I will be conducting a questionnaire and interviews to the classes I am observing, I will emphasize that participation is voluntary in both aspects of the project, and that questionnaire results will remain anonymous. Interview information will remain confidential and I will respect the privacy of all my research subjects.

Data collection: I will be collecting data through both quantitative and qualitative measures by distributing questionnaires to students in the classrooms and conducting interviews with a smaller group of students outside of class time. I will be collecting data at Charlotte on

Fridays from 10am to 3pm from April through June 2014. My interviews with students will be recorded using a voice recorder so as to keep their responses for later reference. I plan on interviewing 5 students from each class about how their classes in VPA or STEM have affected their motivation for going to college or their career path, and how these classes help them grow as a person. All audio-recorded interviews will be transcribed. Additionally, I will log at least ten hours of participant observation field notes.

Analysis: Data analysis will consist of analyzing interview transcriptions for recurring themes, as well as analyzing descriptive statistics from the questionnaires.

Limitations: This study is limited in that it is a case study and its external validity is low; because it is a study about students of color at one particular high school, this study cannot be generalized to other students at other schools. Additionally, my sample size is small, further limiting the generalizability of the study.

Strengths: While there are some limitations to this study, it also has many strengths. Having a small sample size will allow me to have an in-depth understanding of the students' experiences. Also, I will have the opportunity to build good rapport with the students, hopefully encouraging them to feel more comfortable with me and trust me with their honest feelings about the topic. Finally, I am bi-literate in English and Spanish. If I encounter any student who prefers to have their interview conducted in Spanish I can communicate with them and not miss an opportunity for more information.

Findings

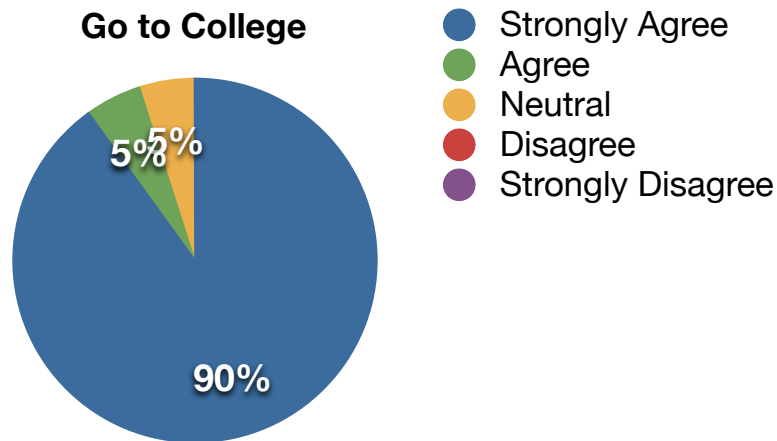
The research questions studied in this project were the following: 1) How does being in a science class influence student motivation for higher education? and 2) How does being in an arts/acting class influence student motivation for higher education? I applied a mixed-methods approach where I observed each classroom once a week, disseminated a questionnaire in each class, and conducted interviews with individual students who self-identified as students of color. The classes I studied were a regular physiology class with juniors and seniors and an acting class that had students of all grades. Overall, study findings reveal that students in the acting class exhibited more motivation for pursuing higher education than those in the physiology class. These students were also more focused, enjoyed their class more, and found it to be of more value to them than the physiology students. The charts and interview excerpts below support these claims.

Evidence

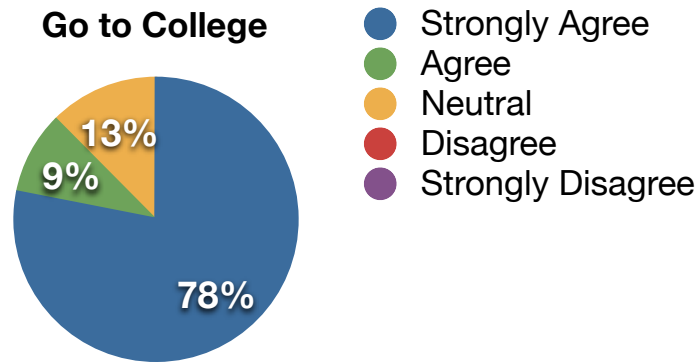
Motivation to pursue college

Both the questionnaires and interviews focused on asking students about their college aspirations. Students responded whether or not they agreed with a statement using a traditional Likert scale of 1 to 5, where 1 represents strongly agree and 5 represents strongly disagree. Results show that there is a significant difference between the proportion of students who wanted to pursue higher education in the acting class and the physiology class. Two statements focused specifically on motivation for college: “I want to go to college,” and “STEM/VPA motivates me to go to college.”

Graph 1 shows the percentage of students in the acting class who agreed with the statement “I want to go to college.” Only 5% of the students were neutral about pursuing college, while the remaining 95% agreed or strongly agreed with the statement “I want to go to college.



Graph 2 shows the percentage of students in the physiology class who agreed with the statement “I want to go to college.” Almost three times as many students in the physiology class felt neutral about pursuing college compared to their peers in the acting class (13%). Overall, 87% of physiology students agreed or strongly agreed with the statement. This difference is over 10% and is significant especially because students in the acting class are from grades 9-12, while those in the physiology class are juniors and seniors. Hypothetically, juniors and seniors would be more focused on their college aspirations or be in the process of applying to college. However, it seems that students in the acting class were more focused and motivated to pursue higher education than those in the physiology class.

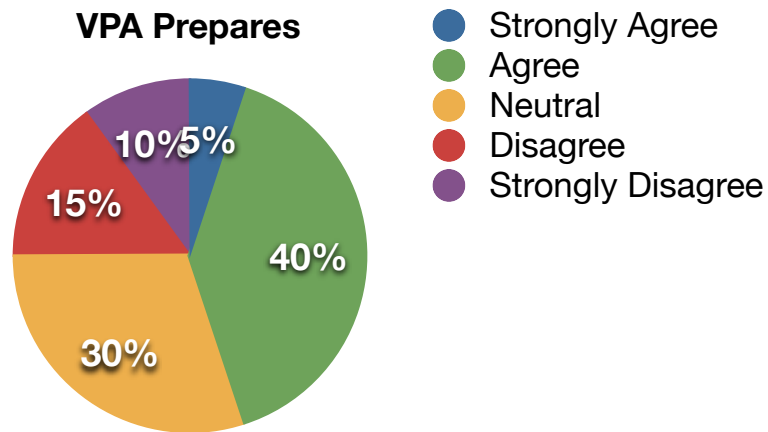


Open-ended questions on the questionnaire also support this result. A student in the physiology class responded to the open-ended question “what motivates you to succeed in school (Success is whatever you define it to be: good grades, learning a lot, getting into a good college, etc.)” by stating “I only do well in school so that my Latina mother doesn’t yell at me”. Another student wrote, “I do the bare minimum to get an A, B, or C.” On the other hand, comments such as “Having a successful future and getting into a good college motivates me to do well in school” were common answers amongst acting class students.

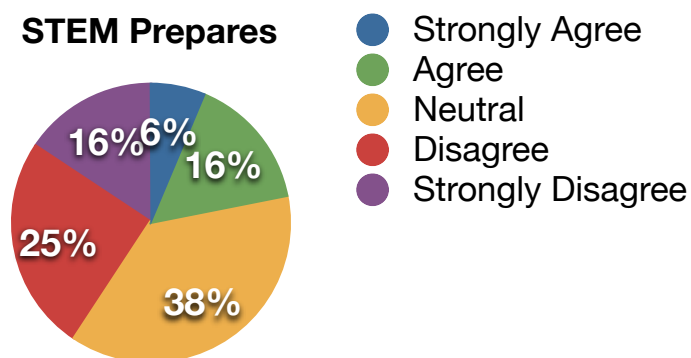
Feeling prepared for college

Via the questionnaire, students were also asked whether they felt their respective acting or physiology class made them feel prepared for college. The statement “My STEM/VPA classes help prepare me for college” was also rated using a Likert scale. Graph 3 titled “VPA prepares” shows the results from the acting class who saw the statement “My VPA classes help prepare me for college.” Although acting is not an “academic” topic that most students will have to use in college (such as in a general education course), 45% of the students agreed or strongly agreed

that their acting class helped them prepare for college. This could be on an academic or social basis.



Students in the physiology class saw the statement “My STEM classes help prepare me for college.” Graph 4 shows that only 21% of the students agreed or strongly agreed with this statement. This finding is significant because students are more likely to have to apply knowledge they learned in their science or STEM classes when in college in order to fulfill general education or major requirements. However, students in this science class do not feel that their STEM classes prepare them for college.



Comments in the open-ended questions and interviews further support this evidence. Students answered the open ended question “What motivates you to succeed in school?” with the definition of “succeed” being open to interpretation. Students from both classes wrote about real motivational factors such as external forces (family, peers, teachers) and a desire for a stable and successful life. Many stated that being a first generation college student was their motivation. While both classes wrote similar things, there were significant differences between the groups as a whole.

Acting students were consistent in citing real motivational factors. Some students answered the open ended question by stating “I would like to have a good life and in order for that to happen I have to do my best.” This student knew that working hard in high school is important for a successful future. Similarly, another student said that “Knowing that I have a dream to accomplish” motivates her to succeed in school. No students answered that they were unmotivated or that they were motivated by superficial factors, such as money or not getting in trouble.

Science students, on the other hand, did mention some superficial factors of motivation. One student wrote: “I do the bare minimum in my classes enough for a C, B or A. I do it mainly so my parents don’t have to give me lectures and I can go on vacations.” In the questionnaire, this student stated that he wanted to pursue a higher education in computer science, but also stated that he did not enjoy his current or previous math and science classes. This student also stated that his GPA was between a 3.0 and 3.4. While this student has high aspirations and good grades, STEM classes and school overall are not a motivational factor for this student; getting by and finishing high school may be motivation for him. Other science students stated that “money

and friends” are motivation for success in school, while another wrote that “not getting yelled at by my mom” was a motivation for school success.

While students in the science class had a more negative attitude about motivation for school success than those in the acting class, there were also positive comments amongst their questionnaire answers. For example, “Getting into college and making my parents proud” or “getting to a good college to help me achieve [my] goal of being in FBI” were positive comments from physiology students. These comments were much more frequent than the negative comments, however, there were no negative comments in acting student questionnaires.

Interview Results

Furthermore, student interviews reinforce questionnaire data and provide insight about students’ opinions about being a student of color in the arts or sciences. In the physiology, I asked one young woman, Liliana, who is interested in pursuing medicine, whether she thought her science class influenced her motivation to pursue college. Liliana said “It definitely reassures me that I wanted to go into the medical field, but I’ve kinda known that since I was in elementary school.” Liliana may be one of the 78% of students in her class that agreed that their STEM courses motivated them to pursue college. In observing her in class, Liliana has been one of the most focused students in the whole class. We can thus interpret that Liliana’s STEM courses do motivate her to pursue college, however, she may be among the minority opinion in her class.

Moreover, I asked Liliana, who identified as Latina, how she felt being a person of color wishing to pursue the sciences. She responded that being a person of color did not affect her negatively in her journey through science education. If anything, being a person of color made

her more determined to pursue the sciences. When speaking of her goals of pursuing medicine, she said “I think of like, [how] the Caucasians overrun that field, and I think it makes me more determined to just prove that people of color can also do it.”

A student in the acting class, Clayton, who identified as mixed (Black and White) was asked the same questions as Liliana. Clayton wants to pursue business and take over his family’s senior care home when he is older. As such, his acting class did not influence him to pursue the arts, it just confirmed that he would pursue business. However, Clayton is very involved in the acting class and it is clear that he is not amongst the 5% minority in his class that feels neutral about pursuing college. “I have big plans,” he said.

Being a person of color in the arts did not influence Clayton at his school or amongst his peers because the school is very diverse. However, he does feel that his acting teacher did not have very high expectations of him. Clayton did not enroll in the class because it was easy, but because he wanted to try something new and has aimed to prove his teacher’s assumptions wrong. Clayton had much insight on people of color’s presence in the arts. He gave the following answer:

“People will look at, say John [Caucasian student in class]. If I’m next to him right here and [someone asks] “Who’s the better actor?,” its always going to be him cuz he’s White. I always get that feeling. It’s a stereotype, like ‘Oh no I’m just taking that class cuz it’s easy’...Ms. S told me that kinda, she’s like ‘I know you’re just taking this class because you need to get some credits out the way’ and that’s not what it was. I wanted to try acting. And that’s just because I’m a football player.”

While Clayton does not plan on pursuing the arts in college or as a career, he spoke about enjoying the arts in high school and how being a student of color in the arts can be discouraging because of the lack of Black people in the arts. Despite this discouraging fact, Clayton wants to improve as an actor and is inspired to increase the small amount of Black people in the arts. He said “I guess the interview made me kinda realize I should make a movement for like Black people to get in the arts.” Clayton shows that his participation in his acting class has motivated him to improve as an actor, prove his teacher and peers wrong, and expand into the community to get more people like him involved in the arts.

Discussion

The results of this study are not generalizable to other schools or situations because of its small scale and short period of time. I conducted a total of 5 interviews and distributed questionnaires in two classes, receiving between 15-30 questionnaires back. Although the findings may not be generalizable and are not representative of a larger group of students, their opinions and thoughts about how their respective science and acting class motivates them to pursue higher education is no less valuable to our knowledge about this relationship. The questionnaires and students opinions in the interviews reveal from a first-hand experience perspective that their classes influence their goals for college and careers in distinct ways. STEM students expressed that, in general, their class does not motivate them to pursue higher education unless they are already planning on pursuing the sciences. VPA students mostly did not want to pursue the arts in college but generally agreed that their acting class was a source of motivation for college indirectly. This study does not examine nor answer what it is about STEM and VPA

classes in particular that motivates students differently. Future research should continue to explore student opinion about STEM and VPA courses and programs, as well as study pedagogical differences between STEM and VPA classes and their influence on student motivation.

Some may suggest that pedagogy may be influencing students' motivation for school and college in particular. The acting class has students stand up and be involved in their work. Acting in general may be a more enjoyable activity to students, making them feel that their acting class is more enjoyable because it is not "school." Science students may not be as motivated because the pedagogy of the course is more traditional, where the teacher lectures and the students sit at their desks and listen. It can be argued that it is pedagogy, not the class topic itself, that motivates students to pursue college because it is fun.

My research shows that pedagogy is not the only thing to attribute to this difference in motivation. Although pedagogy is surely a large influence, there are students in each class who are not interested in pursuing the arts or sciences but still do not feel that their class motivates them for college, as shown in the questionnaire. Clayton, for example, is planning on pursuing business but still feels that his acting class is a motivation for doing well in school. Another student who is in the acting class, Jason, will be pursuing business as well but is interested in science. He is part of the 95% of students who agree or strongly agree that the arts motivate him to pursue college and will be attending California State University, Northridge this Fall. People may believe that the pedagogy in the acting class may engage and excite students more than in the science class, however pedagogy may be irrelevant if students are not interested in pursuing a college major or career in the course topic.

Because there was a significant difference between the motivation of students in the acting and physiology class, it is important for future research to expand on my topic to explore what is at the root of the difference. Perhaps pedagogy is at the root of this motivational gap between science and arts students. If this is so, we must analyze what this means about our education system and rethink how we teach our students. An interactive, hands on approach may not only help with student learning, but with student motivation and success in and beyond high school. Finding the root of this motivational difference is important for our educational system's and students' success as the opportunity and achievement gap between students persists. Finding the answers to the cause of these differences will aid in improving and perfecting our struggling educational system and create career-ready students.

Both a STEM and VPA education are important to a student's success, however it is clear that the arts are very influential in making a student's high school experience more valuable to them. Our country is concerned with the amount of students who are dropping out of high school or not pursuing higher education, amongst other issues, and the arts may be a part of a greater comprehensive plan to solve this problem. We must advocate for the arts as an essential part of students' education and actively ensure that support for the arts does not dwindle, as students motivation for pursuing higher education could be highly jeopardized.

This research project was exciting and eye opening for me as a new researcher. As a former arts education student, I thought that what I believed about the benefits of arts in education were unique to my and my classmates' experiences at our particular high school. It was fascinating, however, to see that students in a distinct location also reaped the benefits of the arts as I did. It was rewarding to see that some of the students saw the importance of the arts and

were moved to take action on preserving arts education. At the same time, it was difficult to differentiate between pedagogy and the role of the teacher in how students felt that STEM or VPA influenced their motivation for college. In sum, this research project was enlightening and enjoyable because the experiences and benefits I reaped as an arts student have been validated and I created some special relationships with the students I observed. I am highly interested in expanding on this project and investigating how the arts benefit and influence students' motivation for higher education.

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