

COMPARING THE EFFECTIVENESS OF STUDENT-AUTHORED
MULTIMEDIA INSTRUCTION TO TEACHER-LED AND DUAL
ENROLLMENT AT INCREASING SAT SCORES FOR URBAN HIGH
SCHOOL STUDENTS ACROSS RTI TIERS

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ABSTRACT

Historically, urban high school students encounter socioeconomic, educational, and systematic barriers in pursuit of college acceptance and admissions (VanTassel-Baska and Willis, 1987; Freedle, 2003; Dixon-Roman, Everson, and McArdle, 2013). These same hurdles are ever present for these students in their enrollment in SAT test then the SAT scores. Furthermore, urban students with learning and/or language differences are further disadvantaged by compounding variables of socioeconomics, disability, and access to resources. Given the significance of SAT scores in college admission, it is imperative that disadvantaged students from urban communities are provided proper support, guidance and instruction through non-profit community organization that serve as college access conduits. This research study examine SAT Verbal prep offered through the Upward Bound program. SAT Verbal was offered through two instructional modes: teacher-led lecture or student-authored multimedia instruction. SAT Verbal instruction type was compared with a small sampling of students enrolled in Dual Enrollment to determine which SAT instruction increased scores beyond exposure to college level coursework. Three different groups were used in this pre-posttest design that utilized a combination of unique randomization and non-randomized group placements (n=101). Pre and posttest were analyzed with ANCOVAs to evaluate mean changes across the groups. Results indicate that students participating in high frequency academic vocabulary CAPs experienced a highly statistically significant casual effect of increasing scores on SAT Composite ($p < .00$) and SAT Verbal scores ($p < .00$). These results are even more pronounced in student groups with learning or language differences. Diverse students enrolled in multimedia instruction saw their SAT Composite scores increases (ELL=5.34%, IEP=18.12%) and SAT Verbal scores (ELL-3.67%, IEP 12.88%). These results support use of CAPS to address language, learning, access, and socio-economic

issues that hinder urban students from high achievement on SAT, and ultimately college admission.

To my guardian angels –

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TABLE OF CONTENTS

	Page
ABSTRACT.....	ii
DEDICATION.....	iv
ACKNOWLEDGMENTS	v
LIST OF TABLES	ix
 CHAPTER	
1. USING MULTIMEDIA INSTRUCTION TO IMPROVE SAT SCORES1	Statement
of Purpose	2
Research Design.....	5
Terms	6
Limitations	7
2. REVIEW OF LITERATURE	13
SAT Test and College Admissions.....	13
College Access Concerns.....	17
Students with Disabilities	17
Urban Students.....	19
Role of College Access Programs.....	21
Intervention Components.....	24
Academic Vocabulary.....	24
CAPS	30
Vlogs.....	34
3. METHODS	36
Participants	37
Recruitment of Non-UB Students.....	37
Attrition	41
Setting	42
Materials	44
Academic Vocabulary List	44
SAT Verbal Strategies	44
CAPs	45
Vlogs.....	47
Measures	47
SAT.....	47
Interrater Reliability.....	48
Study Design.....	49
Procedure	53
Pre-Intervention Procedure.....	53
Lecture	53
CAPs/Vlogs.....	56
Peer Review	60
CAPs/Vlogs Production Rubric	61
Data Analysis	62
Pre-Test Scores	62
Non-Parametric	68

4. RESULTS	70
Group Assignment	71
Research Question No. 1: Does participation in SAT Verbal prep, in either the teacher-led or student-authored group, demonstrate a significant difference in SAT Composite scores for high school students than those without any SAT prep instruction?	74
Research Question No. 2: Is there a significant difference in learning outcomes on the Verbal section of the SAT for students who create student authored multimedia instruction versus those who rely upon teacher-led instruction for SAT Prep?	77
Research Question No. 3: Does instruction type for students with disabilities or language differences demonstrate a significant effect on SAT performance?	81
5. CONCLUSION.....	85
Connections with Previous Work	87
Conclusions for Group Assignments	90
Attrition.....	90
Limitations	91
Implications of Intervention.....	94
Practical Implications	96
Social Implications	100
Future Research	102
BIBLIOGRAPHY.....	105
APPENDICES	
A. LETTER OF INTENT	114
B. CONSENT/ASSENT FORM	119
C. DATA COLLECTION FORM.....	123
D. CONTENT ACQUISITION PODCAST GRADING RUBRIC	125
E. VLOG GRADING RUBRIC	128
F. CONTENT ACQUISITION PODCAST PRODUCTION REQUIREMENTS: PEER REVIEW FORM.....	131
G. VLOG PRODUCTION REQUIRMENTS: PEER REVIEW FORM	134
H. CAP KNOWLEDGE SCALE: PEER REVIEW FORM.....	137
I. VLOG KNOWLEDGE SCALE: PEER REVIEW FORM	139

LIST OF TABLES

Tables	Page
1. Description of Sample.....	39
2. Multimedia Groupings.....	46
3. Variable Used in Analysis	51
4. Lecture Only SAT Overview	54
5. Multimedia SAT Overview.....	58
6. Means and Standard Deviation: Pre-Composite.....	63
7. Means and Standard Deviation: Pre-Verbal	63
8. ANOVA Results: All Group Pre-Test Composite SAT	63
9. ANCOVA Pre-Composite Interactions for All.....	64
10. ANCOVA Controlling Pre-Composite.....	64
11. ANCOVA Interaction Pre-Verbal.....	65
12. ANCOVA Controlling Pre-Verbal	66
13. Pre- Scores T-Test for Randomization for All.....	68
14. Paired Samples T-Test All Groups	73
15. Post Scores T-Test for Randomization for All	74
16. Means and Standard Deviation: Post – Composite.....	74
17. ANOVA Post- Composite.....	75
18. Tukey Post-Composite.....	75
19. Pairwise ANOVA Post-Composite.....	76
20. ANCOVA Post – Composite	76
21. Pairwise ANCOVA Post-Composite	77
22. Means and Standard Deviation: Post – Verbal	78
23. ANOVA Post-Verbal	78
24. Tukey Post -Verbal	79
25. Pairwise ANOVA Post-Verbal	79
26. ANCOVA Post-Verbal	80
27. Pairwise ANCOVA Post-Verbal.....	81
28. ELL Group Comparisons.....	81
29. IEP Group Comparisons	82

CHAPTER 1: USING MULTIMEDIA INSTRUCTION TO IMPROVE SAT SCORES

As high school students begin to prepare for college, many often stress about achieving high scores on the SAT. Research has proven that SAT scores are the most significant predictors of college success (SAT relationship to retention – Mattern & Patterson, 2013; SAT Essay and College Performance – Shaw & Korbin, 2013; SAT Scores Predicting First-Year Grades –Mattern & Patterson, 2013). More recently, SAT scores are linked to funding provided from colleges and universities. Thus, colleges are using SAT scores as integral parts of college admission decisions. Students are aware of this practice, and, as a result, want to achieve the highest score possible to increase their chances of being admitted into their preferred college. This is seen in the increase in SAT tutor providers, high costs of private tutors, and development of social programs to offer free or discounted tutoring for low-income high school or aspiring first generation college students. However, research into SAT prep demonstrates that traditional instructor-led SAT prep is proven beneficial to those from middle to high economic backgrounds that have acquired social capital which leads to retention and application of new skills (VanTassel-Baska & Willis, 1987; Dixon-Roman, Everson, & McArdle, 2013; Park & Becks, 2015).

Van Tassel – Baska and Willis (1987) explain that urban high school students often lack the social capital schema that enables traditional SAT prep instruction to be a fruitful investment. Many have financial concerns that remove private tutoring as a viable option. Others attend high school that cannot provide access or resources linked to SAT preparation. Research demonstrates that in large metropolitan areas, high school

counselors are inundated by the number of students they serve and therefore cannot coach and counsel about SAT to the degree that many students to make college an accessible goal (VanTassel-Baska & Willis, 1987). These hindrances are only amplified for students with disabilities, students at risk for academic failure, and students from culturally or linguistically different communities. The socioeconomic and cultural restraints linked to academic performance distress attributed to these communities on statewide exams are replicated in their score deficiencies notes in SAT scores. Mattern (2011) and Lane (2009) propose that college admissions linked to SAT scores as an indicator of collegiate success presents a disadvantageous rubric to students from diverse communities as it often disqualifies them from the admission process (Buchmann, 2012). Several factors demonstrate the urban student's understanding of and acknowledgement of financial restraints to SAT testing and preparation associated with college preparatory practices a: low participation in private SAT preparatory programs, low attendance for SAT testing, and low enrollment into four-year colleges and universities (Johnson & Wallace, 1989; Feedle, 2003; Conway, 2010; Roderick, Coca, & Nagaoka, 2011).

Statement of Purpose

The Revised SAT score ranges from 400-1600 with Verbal and Math sections being awarded 200-800 points each. Given that many high school students harbor a math phobia, especially regarding standardized testing, many students begin to look for ways to increase their chances of success on the verbal section of SAT (Mattern, 2011). While many SAT prep services devote time to coaching strategies for reading comprehension, eliminating distractors, and choosing the best guess, there is research that supports vocabulary instruction to increase both verbal and written scores. In the age of

technology, learning vocabulary through routine flashcard fluency serves a small population. Interventions into content area vocabulary has led to the development of CAPs, content acquisition podcasts. CAPs are videos, traditionally built from PowerPoints, that display the term, illustration, key words, examples, and non-examples (Kennedy, Thomas, Meyer, Alves, & Lloyd; 2014; Kennedy, Deshler, & Lloyd; 2015). CAPS are traditionally made by the teacher or shared by an interested researcher. When used in mainstream and specialized classrooms, CAPs have been proven to increase vocabulary retention and comprehension amongst students in middle school and high school in history and science.

Additionally, a previous CAPs research study demonstrated vocabulary growth and increases in SAT Verbal scores for students (Lee, 2018). Yet, increased vocabulary knowledge only resulted in a 2% increase in SAT Verbal scores which questions if vocabulary retention will necessarily carry over throughout the SAT Verbal section. The small increase in pilot study research was due to three reasons: a lack of normal distribution in SAT scores, small sample size (n=45), and outliers at both ends that skewed the pre and post-test scores. When discussing their experience with CAPs and performance on PSAT, students felt vocabulary was not helpful regarding grammar and language questions nor essay completion. Pre-post descriptive analysis of their performance on SAT reading comprehension questions determined their feelings were justified. Since the pilot study focused solely on SAT reading questions from the entire Verbal section, students were able to increase their scores on questions about main idea, story development, and implicit meaning. There was no change in vocabulary-based nor explicit meaning questions. This pattern was also seen with grammar and language

questions presented in the remainder verbal section questions. To address their needs, two changes were made to the design. First, SAT strategy instruction was expanded to include reading comprehension, grammar and language, and essay tips. Additionally, vlogs are introduced as an instructional intervention. Vlogs are video-based instructional podcasts that are used in this study to teach SAT verbal strategies. This study will now compare if the experienced of creating student-authored multimedia instruction, vocabulary CAPs or SAT strategy Vlogs, are effective in increasing SAT Verbal and Composite scores when compared against teacher-led “business as usual” instruction and college course experience instead of SAT prep participation.

By addressing an expressed need or SAT prep through community programs or urban high school students, this research study builds upon the research of using morphological awareness in an academic vocabulary intervention to increase SAT scores. Students gained morphological experience with academic vocabulary by creating content acquisition podcasts (CAPs). As noted in the literature, students were encouraged to speak, write, think, and listen to academic vocabulary as part of general classroom practices. CAP production required each student to demonstrate word segmentation and phonetic pronunciation, research definitions of the terms and various derivational morphologies of the word, match academic terms with visuals and key words to trigger recall, and personalization of the term by sharing a personal experience with the word. Students were asked to present the word in at least three different morphologies to demonstrate understanding of word structure and phonological awareness associated with morphology. These elements provided for explicit vocabulary instruction situated in meaningful contexts. In this way, the research study provided a morphology-focused

academic intervention that is most likely to result in increasing reading comprehension scores for CLD high school students and students with learning disabilities.

Research Design

This study sought to continue research into student authored multimedia by identifying which multimedia tool, CAPs or vlogs, when used in an SAT prep course for urban high school students would have a statistically significant interaction with SAT Verbal and Sat composite scores. CAPs and Vlogs gave students practice with learning and acquiring skills needed for future autonomous learning. Student-authored SAT strategy Vlogs were added as a comparative new dimension to this research. SAT strategy Vlogs are a multimedia comparison or CAPs. Both multimedia tools enable culturally and linguistically relevant instruction that presents unfamiliar words or SAT test strategies in evidence-based practices know to be successful at increasing reading scores for CLD and disability communities.

This study was pre- and post-design. The independent variable was student's production of multimedia tools. The dependent variables are SAT Composite and SAT Verbal scores. This research investigated outcome differences between high school students across RTI tiers that received either no SAT Verbal prep, teacher-led SAT prep, or student-authored multimedia instruction. ANCOVA analysis was used to determine instructional influence on post-test scores since this is the most fitting analysis for pre-post study designs.

Terms

Following are terms that will be used throughout this study as they relate to the investigation and data analysis for the research questions. These terms are listed in alphabetical order.

Academic vocabulary: words that appear frequently in texts across academic disciplines, but rarely occur in oral conversation; abstract, specialized, and conceptually dense language often found in academic texts.

Vocabulary Tiers:

- Tier 1 (Basic): words that rarely require direct instruction and typically do not have multiple meanings. Examples: book, bird, apple, sand, it, him
- Tier 2 (High Frequency/Multiple Meaning): words used across a variety of domains, but often occur in mature language situations such as adult conversation and literature. These words tend to be significant to speaking and reading academic texts given their abstract meanings and use. Unlike basic or domain-specific words, these words rely upon morphology and syntax to convey meaning to readers. Examples: area, access, export, federal, panel, welfare
- Tier 3 (Domain-Specific): words most often found in domain-specific texts; specificity is connected to content knowledge and typically defined within the text or taught a subject-specific vocabulary. Examples: chromosomes, confederation, diameter, electrons, isotopes, limerick

CAPs: Content Acquisition Podcasts (CAPs): a multimedia-based intervention that reflects the principles of Universal Design for Learning along with providing an instructional design framework (Multimedia Design Framework) empirically proven to increase vocabulary performance in adolescents with and without disabilities. CAPs are visual podcasts that display the targeted vocabulary term and pairs it with visual aids to teach keywords, examples and non-examples, and word segmentation for proper pronunciation. CAPs rely on repetition of the word several times within a 2-minute video to teach.

Response to Intervention: a multi-tier approach to the early identification and support of students with learning and behavior needs. Includes high-quality instruction and universal screening of all children in general education classrooms.

- Tier 1 (General Education): high-quality classroom instruction, screening, and group intervention; for the purpose of this study, Tier 1 will be referenced as the general education classroom

- Tier 2 (At-Risk): Targeted interventions in a small group setting received in addition to general education classroom instruction; for the purposes of this research, students enrolled in Tier 2 are referred to as at-risk students. At-Risk identification is determined by TRIO Regulations are any student who has not completed Algebra 1 by tenth grade, scoring Basic on either the ELA or Math state assessment, or having below a 2.5 GPA.
- Tier 3 (Individualized Instruction): Intensive Intervention and comprehensive evaluations designed for students who do not demonstrate desired levels of progress in previous tiers, often offered supplementary to Tier 2 instruction. Non-responders in Tier 3 are then referred for comprehensive evaluation and special education identification. Students enrolled in Tier 3 in this study are termed students with disabilities

Randomization: This research uses a unique randomization of 31 high school students. 21 students were identified for SAT Verbal participation as a part of the Upward Bound program that they were enrolled in. They were selected due to their underperformance on previous PSAT tests. Students selected for randomization scored below 400 on previous SAT Verbal sections and had less than a 1000 composite score. The remaining 9 students were recruited through the “invite a friend” program. All 31 were randomly assigned to either the lecture-only group or multimedia group.

Vocabulary skills:

- *Morphological awareness*: recognition, understanding, and use of word parts that carry significance such as root words, prefixes, suffixes, and how to pluralize words typically attributed to comprehension and fluency (grammatical inflection). Example: category, categorize, categorical
- *Morphemic awareness*: recognition, understanding, and use of independent word parts typically changing tense or possession, but not parts of speech attributed to phonological (how they word is pronounced) and orthographical (conventional spelling) abilities
Example: play, played, plays, playing
- *Phonemic awareness*: ability to hear and manipulate units of sound such as onsets, rimes, and syllables, associated with word segmentation and word decomposition skills

Vlog: video blogging commonly used in instructional videos posted to social media platforms. Vlogs are short form videos that typically last between 6-10 minutes, however for this study’s purpose the vlogs were limited to 2-3 minutes. Contemporary research indicates that students and instructors often use YouTube videos to supplement traditional classroom instruction. Students also rely on YouTube videos to troubleshoot academic gaps.

Limitations

One limitation of this research was the number of students enrolled in the study.

At the time, there were 125 high school students enrolled in the Upward Bound program

(UB). These students were admitted into Upward Bound based on any single or combined selections criterion: low-economic background, aspiring first generation college students, and/or at risk for academic failure. Of the 125 high school students enrolled in UB, only 92 participated. Of the 92, 22 were randomly assigned to either the lecture or multimedia groups, 14 were used as a comparison group to determine the effect of not enrolling in SAT Verbal course for the summer, 37 were new admits starting in the summer, and 19 were rising seniors. Initially, the idea to include new admits seemed most fitting as the “business as usual” lecture-only group as their introduction to SAT prep and to the UB program. Upward Bound (UB) students receive a summer stipend due to their enrollment into the program. This stipend was not a given; students qualified for the summer stipend by completing and submitting at least 80% of all assignments, 90% attendance, and earning at least a 6 (out of a 10-point scale) per subject on the College Success Rubric (CSR). These scores were used as progress reports for students. Parents were given these reports as an academic update on their student’s status in each class. UB students received three stipend allotments for a total of \$1000 for completing the summer program. However, this proved to be a limitation in that many new admits had difficulties adhering to the program’s attendance, assignment submission, and stipend eligibility policies. Their lack of attendance, failure to attend 80% of all programming, and/or failure to submit at least 80% of all class assignments caused them to not earn their UB participant stipend and therefore caused de-investment on the SAT prep class and core content.

Another limitation presented in this study was class timing. The SAT Verbal prep class is offered at the conclusion of Upward Bound’s instructional day as an elective for

students. This time could have deterred more outside participants because it was middle of the afternoon (3:00 – 3:50) and many may high school students have summer jobs or other summer programs operating at that time. Additionally, outside participants who joined through the “invite a friend” program later requested to not be separated from their peer (n=2). To address these concerns, the class schedule followed a block pattern (Mon and Wed or Tues and Thurs) with group enrollment determined by sampling stratification. Once non-Upward Bound students were notified of their scheduled class, they were given a chance to ask for re-assignment based on work constraints or scheduling concerns with their assigned day. Both non-UB scholars requested to be reassigned to the lecture-only class so that they could be with their newly admitted friend.

Costs and transportation presented a challenge for this one “invite a friend” student enrolled study. UB participants are provided transportation via public transit passes, yet this allowance was not shared with non-UB participants. Since the class was offered on a university campus, this student often could not afford to travel to campus for class. To this end, participation stipend was made available for non-UB students participating in the research study. To earn this stipend, students had to adhere to the attendance policy and participated in the practice SAT offered on the last day of the summer program. If a student could not attend the test due to scheduling constraints, they were required to submit scores from either their upcoming SAT test or PSAT offered by the school district to earn the stipend. The participation stipend totaled \$100 for completing the program, which breaks down to \$10 per day.

Student engagement also hindered the project. Pilot research with UB identified that students’ engagement waxed and waned in accordance with their skill and comfort

with the SAT strategies. During the pilot study, if a student did not feel they were learning the material sufficiently, they were less inclined to put forth rigorous effort on the PSAT. For example, many students reported using “I yam what I yam” on the writing section instead of writing a complete response because they were told this response warrants a score of 3. Furthermore, with the intention of increasing class size by enrolling non-UB students, peer-based distractions can contribute to lack of vocal participation due to shyness, peer-based intimidation, or crowd-based performance anxiety.

To mitigate these concerns, student participation was accessed by homework submission and online discussion posts. Both treatment group students were assigned practice sessions via Khan Academy to receive immediate feedback. Their Khan Academy accounts were linked to their CollegeBoard profiles to enable individualized practice and progress monitoring. After students completed the assigned practices, they were encouraged to continue with Khan Academy probes for additional practice on under-developed skills without discouragement.

Students in the lecture groups were additionally assigned to post animations, gifs or memes, that demonstrated their response to their Khan Academy practice score. These animations served two purposes in that it informed the researcher of how each student felt about their scores and allowed the students to discuss their understandings of the course content. Originally, these posts served as discussion board topics where students commented on each other’s submissions. Many of the early posts acknowledged celebrant animations with shared success stories or praise. Fused or discouraged animations, others would either agree with their confusion or offer support. Yet, later the animation became a means to distinguish those who attempted the assignment and those who did not. Those

who began to dis-engage with the course and content posted apathetic or “sleep” animations and thus attracted like-minded individuals. Once this began happening, at week 4, there was very little time or space to redirect and re-engage those students.

The research questions guiding this study:

1. Does participation in SAT Verbal prep, in either the teacher-led or student-authored group, demonstrate a significant difference in SAT Composite scores for high school students than those without any SAT prep instruction?
2. Is there a significant difference in learning outcomes on the Verbal section of the SAT for students who create student authored multimedia instruction versus those who rely upon teacher-led instruction for SAT Prep?
3. Does instruction type for students with disabilities or language differences demonstrate a significant effect on SAT performance?

CHAPTER 2: LITERATURE REVIEW

This research study investigated two phenomena at the heart of college access for urban students with disabilities and urban students from culturally and linguistically diverse communities: the importance of supporting college readiness through SAT prep and the role of community organizations in providing college access for underserved urban students. After examining educational policies and school-level factors linked to post-secondary transitions, a literature review of key components to this proposed study will be presented. The aim of this review is to stake out an argument in support of the research questions posed in this study:

1. Does participation in SAT Verbal prep, in either the teacher-led or student-authored group, demonstrate a significant difference in SAT Composite scores for high school students than those without any SAT prep instruction?
2. Is there a significant difference in learning outcomes on the Verbal section of the SAT for students who create student authored multimedia instruction versus those who rely upon teacher-led instruction for SAT Prep?
3. Does instruction type for students with disabilities or language differences demonstrate a significant effect on SAT performance?

For this research, urban was defined in accordance to the TRIO federal regulations used for Upward Bound recruitment description. TRIO regulations outlined eligibility as any high school student who came from a low-income household, a first-generation college student, or a student at academic risk for failure (US Dept. of Educ, 2020). Additionally, urban as used in this research included students from racial or ethnic minority backgrounds that attended urban public or charter schools within the school district. Culturally and linguistically diverse students is used to capture all students from non-English speaking households as represented the home-language demographic. This demographic category as defined in this research account for students with ELL designation and black students whose home language was not English. Additionally, this research asserts that black students from English speaking homes should also be included in the culturally and linguistically diverse community based on their familiarity with AAVE and its oppositional use to standard academic English.

SAT Test and College Admissions

Oesterreich and Knight (2008) assert that in order to increase college access and opportunities for “students who are first-generation, working-class, and underrepresented culturally and linguistically diverse students labeled with a disability,” the educational system should extend beyond K-12 into a K-16 structure (301). By doing this the priority of high school completion is lessened to that college access, acceptance, and graduation are the earmarks of success. In their research, they found that high school special education teachers that approached on creating college access bridges for white students with learning disability identification were successful in increasing college enrollment from 16.1 % to 40.4% over the past 12 years (301). While this practice was successful

with white, mostly affluent students with disabilities, these results did not carry over across race and class. They link this discrepancy to the power of special education identification in stigmatizing students of color, lack of access and preparation in culturally and linguistically diverse communities, and the focus on high school completion being terminal goal for students from underserved, underrepresented communities with and without disabilities.

Furthermore, there is an abundance of research that correlates and scapegoats socioeconomic status with academic achievement regarding SAT scores. Yet these studies engage low socioeconomic status as a flat, simple dynamic without separating out details such as parental social and academic engagement, familial motivation, student academic skill, immigrant or native status, and/or school-level effects on achievement (Dixon-Roman, Everson, and McArdle, 2013). Dixon et. al highlight the need for further investigation into the achievement gap debate by imploring researchers to closely “relative effects of poverty on SAT performance” (8). By doing this, researchers will move away from the simple trope of socioeconomic status and towards a more dynamic encompassing of mitigating and mediating measures effecting urban participation in and achievement with SAT testing. Additionally, little research in race-based achievement research differentiates between immigrant and native student groups’ standardized achievement (Conway, 2010) or within-group differences among racial identities along economic tiers. Both of these constraints were a relevant and impressionable factor on the much-discussed achievement gap relative to SAT testing (Dixon-Roman et al, 2013.).

To this extent, and other social pressures, the College Review board attempted to implement the adversity score to capture these factors (Hartocollis, 2019). The Adversity

score, which had a range from 1-100, was designed to colleges a robust metric to analyze hardships experience by students from underserved, disadvantaged communities. This scale assessed SAT test takers along fifteen criteria to determine their personal adversity score to be reported to colleges as more holistic student profile. In its release, College Board applauded that higher merit and rigor could be discerned via the student's adversity score in that it demonstrated student resourcefulness despite actual resources and access. Concisely, students with higher adversity scores demonstrated achievement in relation to resources, access, and supports made available to the student via school, neighborhood, parents, and/ or community organizations. The intention was that those with low SAT scores, ones that would traditionally remove them from college admissions, would receive an additional review based on the adversity score.

Adversity scores were a short-lived policy, lasting from May to August, in that it received complaints of flagging practices for students, neighborhoods, and schools. Many complained that the practice of only allowing admissions counselors to access scores and could potentially lead to “students being judge by disadvantaged score” without context that provided in supporting documents selected and provided by the student (Hartocollis, 2019). In this way, the College Board re-invented a flagging practice that previously used with students with disabilities. Prior to the adversity score fiasco, College Board was sued due to its practice of flagging test scores of students who qualified for extended time given their disability (Cahalan-Laitusis, Mandinach, Camara, 2003). Similar to the pushback experienced with the Adversity score, extended time flagging received complaints about “concerns with how disabled students were identified, what documentation was required for and what services were provided to these students” (18).

These two instances underscore and amplify minority communities and students with disabilities adverse interaction and engagement with the SAT and College Board. These reasons plus more are why researchers have termed the SAT a “wealth test” (Guinier & Torres, 2002) and view College Board as an extension of a white, affluent beneficiary. By terming the SAT a “wealth test” researchers link success on it to several concepts: wealth as a predictor for test taking success, wealth as a need for test-taking strategies tutoring, wealth in relation to school and familial resources asserted for success, wealth in the social capital and networking reflected in the topics and examples found on the test, and lastly wealth in the correlation of “selective criteria for admissions into selective universities” (Dixon-Roman et. al, 7).

In order to address educational equity differences propagated by the SAT, Oesterreich and Knight (2008) promote developing college-going identities within disadvantaged and marginalized communities such as students with disabilities, students at academic risk of failure, and students from culturally and linguistically different communities. Programs such as Upward Bound attempt to do this by placing value in post-secondary education as social and cultural capital. It also links college admission and completion to tangible, terminal careers that students understand to be akin with economic and social mobility. However, SAT improvement is not conclusive on increasing these factors alone. Feedle (2003) argue that to correct the SAT for ethnic and social class, the ethnic implications and statistical bias must also be accounted for. In this regard, ethnic implications capture cultural and linguistic differences that may affect how questions are interpreted and thus responded too. Statistical bias, according to Feedle, is the practice of students receiving the same score regardless of external criteria (such as

GPA, AP/Honors enrollment) and receiving the same score regardless of performance on subtests. He offers that in order to ameliorate bias, students should be scored solely on how well they perform on “hard items...that are often dependent on rare vocabulary” (2). In his assessment, scoring the “hard” items will reverse the effect of cultural and statistical bias by removing any “wealth test” attributes associated with the SAT. He further positions that students’ performance on hard items is more indicative of their competency and preparedness for college.

College Access Concerns

Students with Disabilities

College access and college admissions are key components to educational policies such as No Child Left Behind (NCLB) and Every Student Succeeds Act (ESSA). These policies are in response to a perpetuate pattern of the “overrepresentation of working-class culturally and linguistically diverse students with disabilities in special education” and their “underrepresentation in college attendance” (Oesterreich & Knight, 2008; Tierney & Hagedorn, 2002; Gandara & Maxwell-Joy, 1999). To support successful transitions from high school to college, these acts attempted to shift from preparing students with disabilities for vocational or low skills jobs upon graduation towards transitioning post-secondary admissions. Spoele and Cutting (2016) note that the Individuals with Disabilities Education Act (IDEA) granted college access to a larger variety of disabilities to attend college, however, the largest groups of students with disabilities on college campuses continues to be white, affluent, students with learning disabilities (Oesterreich & Knight, 2008).

While these students with disabilities are gaining admission to college, their access point stands in contrast to students entering without a disability. Recent data reveals that approximately 20% of all students with a disability achieve an SAT composite score over 1150, with the vast majority (some 54%) scoring under or at 1000 (Characteristics and Outcomes of Undergraduates with Disabilities, U.S. Department of Education, 2017). Further examination of postsecondary data reveals that students with disabilities are less likely to enroll in AP class than their non-disabled peers (37% versus 48%), take a longer break before enrolling in college (38 months versus 24 months), and are less likely to enroll in bachelor degree seeking programs (41% versus 52%). In fact, students with disabilities are more likely to enroll in certificate programs or associate degrees instead of pursuing a 4-year degree (11% and 40%, respectively). Fairweather and Shaver (1990) note that students with disabilities enrollment into college is far below their non-disabled peers and students from low economic backgrounds due to lack of college preparatory programs specifically designed for their college access, lack collaboration and connection between high schools and colleges in regards to continual resources and support, and lack of overall transitional programs associated with college access and success.

This trend underscores several concerns about the college admissions process and how college access is understood and addressed. Thorough college preparation is critical for the successful transition and retention of students with disabilities in college. Foley makes note that incoming college students with learning disabilities arrive with “varying levels of skills and degrees of preparation” express difficulty in navigating a system with less structure, less specifically designed support, and the demand to respond to with more

robust academic skill repertoire (642, 2006). For low-income minority students in urban areas, many of the same transitional challenges wait for them once they arrive at college. Both, students with disabilities and low-income minority urban students, typically lack the “prerequisite cognitive and academic skills” such as rigorous study skills, command of learning strategies, and self-advocacy skills linked to success in higher education. This is no fault of the students, rather it exemplifies the gulf between legislated policy and the realistic implementation of said policies. Part of bridging this gulf is understanding the role and influence college access testing (SAT and ACT) have on the process, examining school-level factors that determine college readiness, and how wealth and resource distribution effect college readiness and college access.

Urban Students

Given what is known about the SAT as a college success predictor, college funding mediator, and college admission gatekeeper, a deep exploration of obstacles students with disabilities and urban students encounter is critical to this research. Park and Becks (2015) positions high schools as influential to SAT preparation and participation. They are keen to illustrate two details about the connectedness between high school culture and SAT preparation. They first note that students in high poverty high schools have little to know knowledge about the actual test. They see SAT preparation as a responsibility for schools in that students “rely on their schools as the primary source of information regarding admissions tests. However, the schools did not provide accurate information, and students were unaware that there were study skills and test-taking strategies” available as preparation (2). They also highlight that students who experience SAT score increases through preparation is more likely for students enrolled

in “rigorous academic coursework” and “from higher socioeconomic backgrounds” (3). These assertions support the sociological theory of Matthew Effect. Precisely, the students in SAT prep courses were more likely to benefit from the practice because students enrolled in more rigorous courses often come from wealthier households. Parks and Beck do comment on the growth experienced by these students when they describe the increase as modest, resulting in 5-10 points for the verbal section and 10-20 points for math.

While these gains are marginal; they speak to larger discrepancy between high-income schools and low-income schools. Students from high-income communities are more likely to capitalize on educational opportunities and tangential resources associated with college access. Since these students are more prone to navigate these realms, their marginal increases act as incremental signals of their academic growth. It is assumed that these students traditionally score over and above low-income students and students with disabilities and therefore are not seeking large percentile increases. Whereas, students in high-poverty communities are often misinformed and unprepared for admissions testing practices and procedures. Parks and Beck detail the students from high-poverty communities often do not have access to SAT practices or test-taking strategies. These components familiarize low-income student with high-stakes standardized testing in ways that their high-income have adapted to and are socialized to understand and accept as a challenge (5). Schools failure to provide these experiences to students perpetuate underperformance that limits stifles their power to provide college access and limits their students’ chances at college admission.

Cates and Schaeffle (2011) bring the connection between high school tracking and student achievement in their research on at-risk students. Similar to previous research findings, they present that “low-income students are less likely to enroll in college” than their high income peers (321; Cabrera, Burkum, & La Nasa, 2003), have “lower rates of college readiness” (321; Cabrera & La Nasa, 2001), are less likely to enroll in AP or Honors course, have less access to resources critical to college attendance, and are more likely to be effected by their parent’s educational attainment. Smartly, they point out that students’ whose parents have “less than a high school education were enrolled in a ‘less than standard’ curriculum” thus putting that at academic risk for failure (322).

VanTassel-Baska and Willis (1987) believe that at-risk students “lack valuable educational experiences that provide the bases if effective cognitive development” because many are not “exposed to quality teaching and programming that best serve their future development” (169). Combining the effect of academic tracking, low quality teaching and programming, and lack of education and support around SAT preparation, it is no surprise that low-income at-risk students have low attendance to and participation in SAT testing. (VanTassel-Barka & Willis, 1987; Cates and Schaeffle, 2011). Of those who do attend SAT testing, the majority of low-income at-risk test takers struggle to meet the minimum score of 400. A score off at least 400 per SAT subject is what colleges deem indicative of being able to handle the advanced course work associated with college level course (VanTassel-Baska & Willis, 1987).

College Access Programs Role in Urban Settings

Cates and Schaeffle support the integration of college preparatory programs into high schools to provide the needed access, resources, and support these students to

become college ready. In their study, they highlight the work of GEAR UP's ability to provide "college awareness or exposure, goal of promoting academic skills, parent college awareness, parent assistance with financial forms and involvement in student activities, SAT/ACT training, and tuition reimbursement" (324). Their findings indicate that students who participate in academic advising sessions and college tours and visits, were more likely to participate in PSAT and eventually take the SAT in route to college admissions. This facet is crucial considering VanTassel-Baska and Willis's assessment of low enrollment of low-income students, at all educational achievement levels, in SAT testing.

Park and Becks's research demonstrate how college preparatory programs compensated for the lack of information and preparation provided by urban high schools. According to them, at risk students were less likely to connect the importance of participating in SAT prep course, attending Practice SATs, and enroll in SAT Testing, because they could not see themselves as college bound. Due to their school track, they were not engaged with nor introduced to post-secondary educational avenues. If this disconnect was identified in students at risk, it can easily be assumed similar disengagement and misinformation persist for students with disabilities. It then became the function of outside organizations to fill in where their schools left off. Palombi (2000) identify programs such as "Second Generation" that specifically serves students with disabilities by providing instruction on "how to study and organize study time and space...develop written language skills, and learn how to take standardized tests such as the Scholastic Aptitude Test (SAT)" (33).

In addition to overcoming challenges, students with disabilities also face struggles gaining access to testing accommodations needed to competitively compete with their peers. For students with a learning disability or ADHD, qualifying for appropriate testing accommodations proves to be a larger deterrent to testing. Given the extensive amount of documentation need to indicate their disability is “severe enough to be considered a disability (Lindstrom & Lindstrom, 2017, 34). This population of students, with the inclusion on Emotional Disturbance (anxiety, bipolar disorder, depression), makes up the largest population of college-bound student with disabilities, yet their application for testing accommodations are most scrutinized. The variability in clinical diagnosis of LD and ADHA, along with a lack of universal understanding of appropriate accommodations, carry strengths and weaknesses unique to each individual with this disability. Once accommodations are granted, the student must then carry the accommodations flag into the application process with them. Lindstrom and Lindstrom (2017) note that college and universities could misinterpret the accommodations flag as it “breaks in standardization” and has “the potential to compromise the predictive validity of a measure” (33). Students with disabilities must decide whether to disclose, what all to disclose, and the cost-benefit of disclosure at every step of the college access process.

It is for this reason, that students from high-poverty schools, students at risk for academic failure, and students with disabilities are priority students for college access programs. Through programs such as Gear UP, Second Generation, and Upward Bound, students receive experience and exposure to SAT prep courses that they would not receive through their standard high school offerings. Furthermore, it is through these programs that they can receive test-taking strategies and advice to familiarize them with

standardize testing system oriented towards college access. Bellafiore (1998) believes that since the SAT is designed to highlight skill deficiencies and unearth disability traits that serve as triggers for these communities that these students are “at high risk of low scores unless he or she is thoroughly prepared for all demands of the tests” (28). Given the limited resources, knowledge, and action taken by high schools, it is incumbent on community programs to address and remediate the historically low SAT performance of these student groups.

SAT Testing combines cognitive processing, decoding, and familiarity with academic register. This information is compounded by higher-order academic skills presented SAT Testing (Patrick, Uccelli, Dalton, & Snow, 2016; Scarcella, Fisher, Schleppegrell, Townsend, & Collins, 2012; Schleppegrell, 2004, 2012). Given the metacognitive load associated with the level and speed of processing need to excel on the SAT, many CLD students face similar challenges as students with learning disabilities in being successful on the SAT. Both groups are disadvantaged by the cognitive demands of processing abstract academic terms. The degree to which this disadvantage is leveled varies between the groups and is dependent on access, ability, and resources. Programs such as Gear Up, Second Generation, and Upward Bound work toward leveling the field for these students.

Intervention Components

Academic Vocabulary

Fuller and Wheman (2003) identify the need to increase the academic vocabulary of students with disabilities as a necessity of college access. In their assessment of most

useful SAT prep strategies the insert that “there is no quicker way to improve your SAT score than to improve vocabulary (SAT Vocabulary)” (196). Kuder (2017) identifies vocabulary interventions as yielding the “largest effect size” for students with reading difficulties, greater than interventions grounded in “word study, fluency, or other multicomponent” interventions (155). Specifically, for urban students, the use and understanding of academic vocabulary is noted as the line of educational demarcation. Students from linguistically diverse backgrounds and underserved minority communities struggle with academic vocabulary because its structure and composition stand in sharp contrast to language patterns of their home language (Alim et al., 2013; Charity, Scarborough, & Griffin, 2004; Fisher & Lapp, 2013). Fisher and Lapp (2013) extended this perception to include familiarity with the academic register. They suggest that academic English is a “power code” used to distinguish the “potential for upward social mobility and greater employment choices” (635). The lack of vocabulary depth that urban students encounter on standardized test measures sure as the SAT speaks to the ethnic bias presented by Freedle (2003). Fisher and Lapp offer that many students “who do not speak academic English well enough to succeed at school often hold this negative image of themselves as scholars” (635, 2013). Their argument makes correlation of academic vocabulary and academic success on test such as the SAT made more salient belief that these college access measures as a “wealth test”.

Differences between colloquial language and academic language are further noted in research conducted by Lesaux, Kieffer, Faller, and Kelly (2010). Their work notes that vocabulary differences in students extend beyond home language differences and defines the CLD population as language minority learners. This term moves the conversation

away from English proficiency towards students whose vocabulary is well below average. In this way, black students could also be considered as part of the CLD population given the propensity of limited vocabularies attributed to children from urban, low socioeconomic status. Lesaux et al's intervention employed core language skills (reading, writing, speaking, and listening), collaborative peer interactions and tasks that promoted active metacognitive processing. The vocabulary intervention resulted in statistically significant effects on target word mastery, morphological decomposition, and word meaning-in context. They also reported marginal effects on reading comprehension.

Stanovich (1986) identified that students who did not understand academic words also struggled with reading comprehension. His research, based primarily in inner cities, included students from culturally and linguistically diverse communities. He further asserts that this lack of reading comprehension understanding is attributed to a lack of exposure to academic language. This notion is furthered in other research that highlights limited vocabulary knowledge among struggling readers as a by-product of race and socioeconomics (Papalewis, 2004; Lesaux, Kieffer, Faller & Kelley, 2010). Furthering this argument into Black communities is also important. Black students could also be included in this classification of linguistically distinct minority groups because although their home language is English it stands in stark contrast to the structure and composition of English encountered in academic settings (Charity, Scarborough, & Griffin, 2004; Alim, 2005; Fisher & Lapp, 2013). Regarding academic vocabulary comprehension and proficiency, urban Black students from low economic backgrounds display similar struggles with academic texts and standardized measures as CLD students. This has led to the perpetuation of a race based academic achievement gap.

Numerous studies focused on English language learners (ELL) academic achievement establish a difference in academic language comprehension in comparison to students whose home language is English. These studies argue that the academic language differences impair ELL students' comprehension and processing speed. Lesaux, Kieffer, Keely and Harris state vocabulary differences in "students' language backgrounds and initial vocabulary knowledge are likely to predict the impact of a language-based academic intervention" (p. 1185, 2014). Lesaux et. al position that pre-packaged language-based interventions are inadequate at addressing minority students' vocabulary. They further point out that comprehension difference is enhanced by testing content that would alleviate cultural and linguistic difference presented by CLD students.

Snow, Lawrence, and White (2009) analyzed "the learning, maintenance, and consolidation of academic vocabulary for students from English-speaking homes, proficient English speakers from language-minority homes, and limited English-proficiency students" (p.440). Their work proves a discrepancy is present for English proficient students and limited English proficient based on academic vocabulary's cognitive demands. They note that while both groups struggled to learn academic vocabulary, "English proficient students could direct their capacities toward conceptual and vocabulary development; LEP (limited English proficient) students were simultaneously learning the phonological, grammatical, and pragmatic features of English" (p. 449). Cognitive processing of academic vocabulary is key to CLD, limited English proficient and students with disabilities. Increasing metacognitive process is pivotal in addressing delays in vocabulary acquisition associated with CLD students and students with limited English proficiency. It is also crucial for students with disabilities.

Fischer (2007) conducted a multi-year academic vocabulary study with urban high school students investigating increases in comprehension scores. In his findings, he reports that students were bored with traditional instructional approaches and teacher-led instruction. Fischer urges that academic vocabulary interventions should provide students with valuable, engaging experience with the academic register beyond teacher-led instruction. His findings are supported by Townsend and Collins (2009) vocabulary instruction that incorporated the use of a battery of games and interactive tasks to familiarize and engage students with academic words. Results of this study prove that when students can engage with academic works in non-traditional ways, students increase their academic vocabulary, increase English proficiency scores, and also increase reading comprehension scores. By removing the cognitive barriers presented in traditional instructional formats, urban students are more likely to grasp and retain vocabulary knowledge in more dynamic ways.

Nagy, Berninger, and Abbott (2006) compared the influence of morphological awareness, phonological memory, and phonological decoding on literacy skills of middle school students. Their study of 4th through 8th grade students found that morphological awareness is highly correlated to reading vocabulary and phonological decoding skills. Beyond linking this finding to previous research on the relationship between reading disabilities and phonological deficits (Stanovich, 1986; Olson, Wide, Conners, Rack & Fulker, 1989; Adams, 1990; Shankweiler, 1995; Morris, 1998), they suggest a student's ability to distinguish phonological shifts increases as well. Students' ability to identify word changes in parts of speech (e.g. noun to adjective form) are more likely to decode for phonological shifts (how pronunciations change due to affixes) which increases

overall comprehension. In turn, students were able to decode academic language with more accuracy. Nagy et al's research is further supported by Kuder's (2017) appreciation for morphological awareness. Kuder adds that students who possess morphological analysis skills are prone to learning more words, interpret word meanings, and learn not only the target word, but other related words as well. This process effectively speeds up learning in that it introduces more words, semantic structure, and syntax than traditional word study.

Keiffer and Lesaux (2007) continued this research by moving into an urban setting. Changes in setting also caused changes in the study demographics as CLD students became participants. However, the increases discovered in previous works continued in this diverse population. The stability and reliability of morphological awareness as a critical aspect of academic vocabulary interventions remained salient. In follow-up research, the same authors (2010) present that morphology awareness familiarizes CLD students with differing words structures indirectly through derived words, which rely on high-order processing of word structures. Kieffer and Box (2013) expand this analysis of the metacognitive process by examining which elements of vocabulary development were most significant to comprehension. They examined fluency, morphological awareness, and academic vocabulary as contributors to reading comprehension among CLD students. Their research found a significant correlation between derivational morphology awareness and reading comprehension for CLD students. Derivational morphology is knowledge of how affixes change the part of speech of a given word. In their analyses, they found that knowledge of morphological

awareness increases reading fluency as an indirect effect of vocabulary development and derivational morphological exposure.

In this research study, students gained morphological experience with academic vocabulary by creating content acquisition podcasts (CAPs). As noted in the literature, students were encouraged to speak, write, think, and listen to academic vocabulary as part of general classroom practices. CAP production required each student to demonstrate word segmentation and phonetic pronunciation, research definitions of the terms and various derivational morphologies of the word, match academic terms with visuals and key words to trigger recall, and personalization of the term by sharing a personal experience with the word. Students were asked to present the word in at least three different morphologies to demonstrate understanding of word structure and phonological awareness associated with morphology. These elements provided for explicit vocabulary instruction situated in meaningful contexts. In this way, the research study provided a morphology-focused academic intervention that is most likely to result in increasing reading comprehension scores for CLD high school students and students with learning disabilities.

CAPs

Content Acquisition Podcasts (CAPs) are a multimedia instructional tool crafted and developed by Michael Kennedy (2014). These 2-minute video clips integrate four evidence-based practices proven to promote vocabulary retention for students with and without disabilities: universal design for learning, Mayer's cognitive theory on multimedia learning, explicit fast paced vocabulary instruction, and empirically supported vocabulary instructional elements. While watching the videos, students are

introduced to vocabulary terms through repetitive pronunciation, word segmentation, key words or root word analysis, synonymic examples, antonymic non-examples, and contextual use. This information is paired with visual aids that support the word by illustrating its meaning or providing a memorable image for recall ease. Previous research on CAPs demonstrates an increase in content-area specific vocabulary learning for students with and without disabilities in middle school and high school settings. (Kennedy, Thomas, Meyer, Alves, & Lloyd, 2014; Kennedy, Deshler, & Lloyd, 2015). More recently, Kennedy has used CAPs in professional development trainings for teachers demonstrating how CAPs support universal design for learning and differentiated instruction. By introducing CAPs to teachers, Kennedy can share an evidence-based practice with teachers and practitioners to teach tech savvy instructional concepts. It also welcomes teachers to practice and develop CAPs for their own classrooms to allow for contemporary avenues of instruction that moves beyond the textbook and notes.

To ensure that CAPs represent the best evidence-based practice to teach high frequency academic vocabulary, a literature review for research that intentionally sought out CLD students as research participants. The first part of this review examines interventions in language minority communities using academic vocabulary interventions. Next, a closer review is given to a specific attribute of student made CAPS: student direct experience with derivational and morphological awareness. These elements demonstrate current trend in the field (diversifying interventions to be relevant to CLD communities), an underrepresented population in current research (need to include black students in CLD classification and the need for robust investigations in urban students),

and shifting the direction away from researcher or teacher-directed interventions towards student-centered and student-generated learning.

Prior to Kennedy's development of CAPs, Kim and Gilman (2008) researched the use of "visual text and added graphics or visual text, added graphics, and added spoken text" (123). In their study, they concluded that students who were taught using a multimedia approach demonstrated increased scores on test when compared to lecture-led students. O'Hara and Pritchard (2008) found that student hypermedia authoring, enabled students to create "PowerPoint slides representing their understanding of each target word [by] incorporating text, images, and sounds", promoted "vocabulary development, improved students' understanding of target vocabulary, and improved attitude towards vocabulary instruction" (64). These factors remain ever-present in the development of content acquisition podcasts.

A multimedia approach to vocabulary learning proves to not only be helpful for students with and without disabilities, but also English Language Learners as well. Hatch and Brown identified five factors that help alleviate linguistic and cultural influences on vocabulary acquisition for English Language Learners (1995). These factors include: having text sources to encounter new words, either a combination or singular dose of visual and auditory stimuli of the word in various forms, experience learning the new word, developing a connection between the various forms and their meanings, and frequent use of the new term. Using technology to teach vocabulary is combines text with audio and graphic aids, which promote vocabulary acquisition (Kennedy, Deschler, Alves, Lloyd, Thomas, 2014). These elements align with the instructional design of CAPs. This research examines the effects of using CAPs in urban classrooms. Not only

are these strategies useful for ELL students, they also are effective instruction for students with disabilities.

CAPs pair with constructivist learning theory. Students construct new knowledge by integrating and organizing previous knowledge with new relevant information (Mayers & Moreno, 2002). CAP production requires the developer to become familiar with: word consciousness, closely related terms, keyword mnemonics, and multimedia expression of word meanings through audio and visual components (Kennedy et al., 2014). Learning these components of vocabulary transcends content-specific learning as it exposes students to other high academic terms, sentence structure and composition associated with the academic register, and provides a scaffold for decoding future unfamiliar words (Kelley, Lesaux, Kieffer, Michael, & Faller, 2010; Kennedy, Deschler, & Lloyd, 2013).

In preparation for this study, a pilot study was conducted to investigate the ability of student-authored CAPS to increase verbal scores on the SAT for high school students from urban settings (Lee, 2018). Based on results from the pilot study of this research, students who participated in CAP production demonstrated increases in answering reading comprehension questions pertaining to vocabulary, implied reasoning, and passage development. Increases in these areas attributed to an increase in SAT Verbal scores (Lee, 2018). Interestingly, students reported using CAPs in unintended ways. Students reported listening to CAPs during non-school hours, often deceptively learning during commutes to school and work. Based on previous research, students reported they relied heavily on the audio of CAPs, neglecting the visual components due to travel constraints or need for a clandestine study tool. Students were able to listen to CAPs

without fear of being mocked or intimidated for learning while around peers. Relying solely on the audio component also allowed them more user determined application as students were able to listen by downloading on their phone; not being dependent on PowerPoint or internet access to use the vocabulary tool. Students appreciated the audio component of CAPs in that it allowed them to blend in with their peers who assumed CAP-listeners were listening to music (Lee, 2018).

Previously, Kennedy's research tested CAPs effectiveness with Curriculum Based Assessments and teacher-made assessments. Positive effects on the SAT have not been previously documented with CAPs. The success of the pilot study contributed to furthering this research into CAPs and how they would compare to vlogging. The increases noted on this topic, and within this population, indicate that CAPs are effective at increasing SAT Verbal scores. Furthermore, it demonstrates that students are capable of developing CAPs as a vocabulary tool with results like those reported by researcher-made CAPs. Moreover, it gives weight to a larger argument that CAPs can be used in culturally, linguistically relevant way that promotes achievement in urban students.

Vlogs

Vlogging, or vodcasts, is a relatively new avenue for student-generated learning research. Vlogging is a video-based blogging shared through web-based formats such as YouTube, Instagram, and Twitter. Recent research has demonstrated vlogging to be useful addition to multimodal instruction in that it presents a means to "promote text-based communication, participation and engagement with learning tasks" (O'Byrne & Murrell, 2014, 928). From the student perspective, Minocha (2009) can more readily demonstrate understanding by being able to "create, integrate, and structure video clips,

photos, and hyperlinks relevant to their projects” (930). Other elements for vlogging that are beneficial to students is the ability to be create agency, support divergence by sharing, encapsulate multimodality, and assess how students understand and conceptualize content (La Caze, 2017, 17). Currently, there is little literature on high school student-authored vlogs as an educational tools, however, there are a few studies that demonstrate vlogging is more successful than podcasts or blogs at teaching and assessing knowledge (Benedict & Pence, 2012; Lowman, 2014; O’Byrne & Murrell, 2014; Condruz, 2017)

This study sought to continue research into student authored multimedia in coordination with SAT Verbal prep classes. Student-authored SAT strategy Vlogs were added as a comparative new dimension to this research. The aim in adding SAT strategy Vlogs to this research was to make the connection to SAT Verbal increases more salient and distinct. In doing so, the aim was to enable culturally and linguistically relevant instruction that presents unfamiliar words and SAT test strategies in ways that resonate more significantly than having a non-peer (teacher or researcher) developed CAP or Vlog. Student-made CAPs and Vlogs gave students practice with learning and acquiring skills needed for future autonomous learning. Brozo (2010) supports the use of CAPs and Vlogs for CLD students as they often have “different experiences and outside-of-school discourses” that often are best demonstrated in “multimodal forms of representation and meaning making” (279).

CHAPTER 3

METHOD

This research investigated outcome differences between high school students across RTI tiers that received either not SAT Verbal prep, teacher-led instruction, or those who author multimedia instruction. Three research questions guided this investigation:

1. Does participation in SAT Verbal prep, in either the teacher-led or student-authored group, demonstrate a significant difference in SAT Composite scores for high school students than those without any SAT prep instruction?
2. Is there a significant difference in learning outcomes on the Verbal section of the SAT for students who create student authored multimedia instruction versus those who rely upon teacher-led instruction for SAT Prep?
3. Does instruction type for students with disabilities or language differences demonstrate a significant effect on SAT performance?

Vocabulary content acquisition podcasts (CAPs) and SAT Verbal strategy vlogging provided an avenue for explicit instruction through modeling, guided practice with feedback, and independent practice through a multimodal strategy. Students in the multimedia group were familiar with CAPs and vlogs through previous SAT Verbal instruction. Students developed their own CAPs and Vlogs under the guidance of the researcher and undergraduate research assistances. Once students randomly selected their multimedia instruction, they worked within that intervention group. Students assigned to CAPs, worked exclusively with other CAP students. The same principle applied to Vlog students. Two different multimedia tools used apart from, and exclusive to each other, allowed for an examination of the effects of both multimedia tool on the culminating Practice SAT test. This also established the multimedia group as a comparative group to

those who received business as usual teacher-led SAT instruction and those who did not take any SAT prep during the summer program.

Participants

This study included high school students from public schools in a Mid-Atlantic metropolitan area who enrolled in or expressed interest in the Upward Bound (UB) program. Upward Bound is a federally funded TRIO program that provides college access through college admissions advice and counseling, college tours and visits, and SAT preparation. Federal TRIO programs are “federal outreach and student services programs designed to identify and provide services for individuals from disadvantaged backgrounds” (US Dept. of Educ, 2020). UB’s enrollment criteria consist of either one of the three entry points: low-economic background, being at risk for academic failure, and/or aspiring first-generation college students. UB’s goal is to “increase the rate at which participants complete secondary education and enroll in and graduate from post-secondary institutions” (US Dept of Educ., 2020). At the time of the study, this specific UB program served 125 high school students. However, only 92 students enrolled the research study. Of the thirty-three unaccounted for UB students, 10 attended other competitive summer programs or internships, 16 did not attend the summer program due to familial obligations, and 7 were recent high school graduates who no longer needed SAT prep.

Recruitment of non-UB Participants

High school students that are not UB participants are eligible to be research participants as a part of the “invite a friend” initiative. This outreach program began to

expand SAT prep to other high school students. Recruitment for these students included UB student referrals, parental inquiry in response to programmatic news blast in the program's newsletter and social media sites, and through partnerships with other community organizations servicing students from similar backgrounds. The total number of non-UB students enrolled in the SAT Verbal class was 9. These students were like UB participants in their academic performance at their respective schools. Of the nine non-UB participated, six were first generation students, four had ELL designations, but none reported any learning disability or at-risk designation. All non-UB students had to submit a PSAT or SAT score as an eligibility requirement. Parental consent and student assent were obtained prior to the start of SAT Verbal class.

Table 1 provides a breakdown of student demographics. Demographics were collected from each student describe the student's age, gender, racial/ethnic identity, home language, socio-economic status, GPA, type of high school, and/or RTI Tier. These categories were later confirmed by school records as noted on end of the year report cards. Note that the percentages displayed represent the total population per category (i.e. 57% of the randomized population were assigned to the lecture only group). The 14 students in the control group were rising sophomores and juniors who had already either scored over 400 on the SAT Verbal section or had a composite score of over 1000. Additionally, they enrolled in Dual Enrollment for the summer. It was estimated that their participation in Dual Enrollments would accelerate their SAT scores without having to take SAT prep given the nature of collegiate level coursework.

Table 1:
Description of the Sample

	Students in Control Group (n)	Students in Strategy Only Group (n)	Students in Multimedia Group (n)	Total
Total	14	54	33	101
Randomized	0	57% (17)	43% (13)	30
Gender				
Female	9% (6)	49% (31)	42% (27)	62% (64)
Male	22% (8)	62% (23)	16% (6)	38% (37)
Race/Ethnicity				
Black	17% (13)	55% (43)	28% (22)	79% (78)
Asian	0	46% (6)	54% (7)	12% (13)
Hispanic	33% (1)	0	66% (2)	3% (3)
Other	0	71% (5)	29% (2)	6% (7)
ELL Identification				
Yes	0	50% (7)	50% (7)	13% (14)
No	16% (14)	54% (47)	30% (26)	87% (90)
IEP/At Risk Identification**				
Yes	17% (5)	69% (20)	13% (4)	29% (29)
No	13% (9)	47% (34)	41% (29)	71% (72)
Type of High School				
Public	10% (4)	59% (24)	32% (13)	41% (41)
Charter	10% (3)	52% (15)	38% (11)	30% (29)
Magnet	21% (6)	46% (13)	22% (9)	26% (28)
Other	33% (1)	66% (2)	0	3% (3)
GPA				
2.5* or Below	9% (1)	55% (6)	36% (4)	11% (11)
2.6 - 3.0	32% (6)	58% (11)	11% (2)	18% (19)
3.1 - 3.5	5% (2)	51% (19)	43% (16)	36% (37)
3.6 - 4.0	14% (5)	50% (14)	32% (9)	27% (28)
Above 4.0	0	50% (4)	50% (4)	8% (8)

*Note: 2.5 or below is the TRIO identified GPA to determine at risk for academic failure.

**For the purposes of this research, students with 2.5 or below are identified as Tier 2 high school students based on their "at-risk" status.

The “as-is” control served as the comparison group for students in the “business as usual” teacher- led instruction. Since the students in the control group came from similar backgrounds, schools, and RTI Tiers as the lecture-only group, they are considered representative of “advanced” students in the research study. Their “advanced status” is noted in their SAT scores and Dual Enrollment placement and is used to track if standard SAT instruction can assist “underperformers” in closing the achievement gap among peers.

29 students either with an IEP or identified as at-risk corresponds with the two tiers of intervention for RTI, tiers 2 and 3. Tier 1, the foundation tier, is for students in receiving general education instruction and supports. The total number for general education students in the research is 72. Tier two, the number of students identified as at-risk for academic failure, is 15. The number of students in Tier three, students with an IEP, is 14. Federal TRIO guidelines determine at risk for academic failure to be determined by at least one of the following criteria:

- 1) a student has not achieved at the proficient level on State assessments in reading or language arts;
- 2) a student has not achieved at the proficient level on State assessments in math;
- 3) a student has not successfully completed pre-algebra or algebra by the beginning of their tenth-grade year; or
- 4) a student has a grade point average of 2.5 or less (on a 4.0 scale) for the most recent school year for which grade point averages are available. (US Dept. of Educ., 2020)

As determined by the at-risk federal guidelines, students with GPAs below 2.5 are identified as at risk. Using this marker, GPA was broken down into .5 increments to group students into more specific academic categories. Additionally, students enrolled in either Advanced Placement or International Baccalaureate course options, had the ability to earn above 4.0 GPAs. The above 4.0 range captures students whose GPAs were above the typical 4.0 scale given their performance in weighted coursework.

In relation to this research study, students without any learning or language difference are representative of Tier 1, students identified as at-risk represent students in Tier 2, students with IEPs represent students in Tier 3 of RTI for high school students. Understanding a key demographic in this research are students with either learning disabilities or language differences, 14 students in this study were identified as ELL and 29 were students with IEPs or identified as at-risk for academic failure. The lecture group received the bulk of the students with IEPs or at risk (n=20) due to large enrollment of this category in the new admissions process. Of the 20 students with IEPs or at-academic risk, 6 were students with IEP and 5 were students identified as at-risk. These 11 were assigned to lecture-only by their new admit status. The remaining 9 were returning UB students randomly assigned to the lecture-only group. This group consisted of 6 students with IEPs and 3 identified as at-risk. As a whole, the RTI tiers are represented by those in general education (Tier 1 n=61). Tier 2 students identified as at risk by TRIO GPA standards (n=11) or by scoring basic or below on PSSA assessments (n=9). Tier 3 students were students with IEPs of 504 plans (n=9).

Attrition. Given that SAT prep is required as a mandate in Upward Bound's TRIO regulations, UB students could not be removed from the study due to lack of class

attendance. This was determined because removal from the study would result in removal from the mandatory class. UB participants were removed from analysis if they did not attend the PSAT posttest. This was determined to be the best point to remove them as they could not be removed due to attendance. Attrition rates for UB scholars in the lecture only class was 23% (n=11). Attrition rates for UB scholars in the multimedia group was 16% (n=5). UB scholars in both groups were removed from analysis due to failure to attend the culminating PSAT or failure to submit a post-summer SAT score.

Non-UB participants were removed from participation if they were absent more than two times during the research study. Attrition rates for non-UB students in the lecture only group was 50% (n=3). Two of the three students self-elected to be removed from the study: one due to family emergency and the other due to a sports related injury. The other student was removed by the research due to non-compliance with the attendance policy. The student missed three days by week 3. Attrition rates for non-UB students in the multimedia class was 20% (n=1). The one multimedia student was removed for failure to attend the culminating PSAT test or submit a post-SAT score. Group numbers reported throughout the study reflect group enrollment with attrition quantities removed. Attrition removal resulted in a loss of power analysis in that the sample number was reduced by almost 20.

Setting

This study took place on a public 4-year university's campus in a metropolitan area located in the Mid-Atlantic region. To accommodate the size of the control and treatment groups, classes were held in an auditorium with a capacity of 125. Class sessions were 50-minutes long and offered on a rotating block schedule. The instructor -

led lecture group met on Mondays and Wednesdays, the student-authored multimedia group met on Tuesday and Thursdays. Class lectures consisted of a PowerPoint, handouts for guided and individual practice, and homework assignments posted through Google classroom but provided by Khan Academy. All students were required to enroll in both Google classroom and Khan Academy to participate in the class. Khan Academy provided assigned homework and additional individualized practice for the students with tracking and reporting to College Board, the publisher of the SAT. Google classroom acted as the submission portal and an interactive messaging board for meme/gif submissions. Students in the lecture-only group used Google classroom as their peer discussions forum where they had to respond to each other's meme/gif posts demonstrating their comfortability with the strategy or how they felt about their assignment performance. Students in the multimedia treatment group used Google classroom for permanent product submissions and allowed for intervention-group interactions. Following both lecture and multimedia class lectures, the PowerPoint lecture taught in class were posted to Google classroom. Although both groups received PowerPoint instruction, they did not view the same PowerPoints. Both Google classroom and Khan Academy are offered as free apps to students with mobile devices to download. Additionally, laptops were available and accessible to students during class and throughout the programmatic day; Monday through Friday from 8:00 am to 5:00 pm.

The researcher, who served as instructor for both groups, is a black woman Ph.D. Candidate in Special Education with 2 years of inclusive middle school teaching experience. She also serves as the Upward Bound Coordinator. Additionally, the lecture-only group class had one assigned undergraduate student assistant and the multimedia

group had two. In the lecture-only class, the undergraduate assistant was used to aid dispersing and collecting laptops, assist with guided practice and provided corrective feedback during independent assignments. For the multimedia group, the undergraduate assistants aided during multimedia production, recording and editing feedback. Undergraduate assistants in the multimedia class were also assigned to one of the multimedia instructional groups and asked to ensure there was no crossover during in-class production, editing, and review times. All assistants were trained and supervised by the researcher-instructor.

Materials

Academic vocabulary lists. Seventeen (17) high frequency academic vocabulary words identified by students in the treatment group from Berkeley Unified School District Grade Level Academic Vocabulary List (Tugwell, 2016). The researcher-instructor along with the assigned undergraduate assistants tabulated the number of unknown words reported by the students in the treatment group. The most frequently unknown words were used for CAPs. The seventeen selected terms were identified by at least 28 students, up to at most 30 students, as being unfamiliar. Students who drew CAPs as their multimedia tool were the only ones with exposure to these 17 words. No words were repeated.

SAT Verbal Strategies. Ten (10) SAT Verbal strategies from the assigned course book (The Princeton Review's Course Workbook for the SAT, 2015) were selected for students in the Vlog group. Students in the multimedia group that drew vlogs were assigned SAT Verbal strategies according to the slip of paper. No strategies were repeated. These same were taught to all students in the lecture-only and multimedia

group. Students in the vlog multimedia group were provided the coursebook information for their strategy and were instructed to take notes on how their strategy was taught by the instructor noting what they understood about the strategy, what was helpful in learning, and what/how they could teach the strategy differently.

CAPs. Content acquisition podcasts are an evidence-based multimedia tool typically used to teach content area specific vocabulary. CAPs follow a standard formula that incorporates Mayer's model of instructional design principles and the "six elements of effective vocabulary instruction" (Kennedy, Deschler, & Lloyd, 26, 2015). Traditionally, CAPs are made by the researcher and/or teacher, however, in this study, students watched a model podcast prior to making their own. Students were given a grading rubric and instructional guide as to how to develop CAPs. CAP groups selected to make either 2-minute Kennedy-Mayer's based CAP or a 2-minute audio-based podcast for each term. The Kennedy-Mayer's CAP is a more visually oriented podcast, often relying on graphics to illustrate key terms and concepts as their key instructional method. Audio-based podcasts are the podcast most widely known to the public. These podcasts rely on elaborate storytelling as they are more auditor focused and do not require the listener to watch images or graphics. Based on feedback recorded from the researcher's pilot study, audio-based podcasts were included as an option to fit student's practice of listening to the vocabulary podcast during screen-free times. Groups selecting an audio-based podcast were required to maintain CAP integrity by verbalizing each aspect traditionally featured in CAPs through descriptive storytelling. To provide the visual stimuli associated with Kennedy- Mayer's CAP, audio-based groups had to provide a podcast cover that visually depicted their word. CAPs were shared and viewed within the

intervention group for peer feedback on peer review day, Day 7, and then again for final presentations, Day 9.

Table 2
Multimedia Groupings

<i>Number in Group</i>	<i>Vocabulary Words</i>	<i>SAT Strategy</i>	<i>Meaningful Identification</i>
3	Ubiquitous, Wrought with, Posit		1 ELL
4	Subjugate, Vehemently		1 ELL, 1 IEP/At Risk
3	Acerbic, Unilateral, Deleterious		1 ELL*
2	Loquacious, Vilify		None
3	Fortuitous, Facetious		None
3	Visceral, Periphery		1 Non-English home language, 1 IEP/At Risk
3	Vested, Lexicon, Ephemeral		1 IEP/At Risk
3		Dual Passages, LOTD, Scores and SOAP	2 ELL
2		Say Hear, Do	None
3		Preview, Types of Qs	1 ELL, 1 IEP/At risk
2		Charts and Graphs, Writing Tips	None
2		POE, FANBOYS	None*
33	17 words	10 strategies	6 ELL, 4 IEP/At risk, 1 Non-English home language

* Denotes home language other than English but no ELL designation

Vlogs. Video vlogs are multimedia tools that teach content through developing “students’ understanding and skills to be critical thinkers and creators who can share their perspective with the world and be agents for positive change” (La Caze, 2017, 27). Students viewed vlogs posted on Khan Academy and YouTube as video models. Students were given the option to model their vlogs after the Khan Academy videos or the YouTube videos. Khan Academy vlogs are text heavy videos that demonstrate how the author uses the strategy without showing the author. The author narrates each step of applying the Verbal strategy use without ever being present on camera. The YouTube video example featured a host present who described the strategy and demonstrated its use. These options were given to alleviate any anxiety related to on-camera performance for student-authored. Students were given a grading rubric and instructional guide that detailed how to develop Vlogs. Vlog groups selected either to make a 3-minute video that combined strategies or a 3-minute video per SAT strategy. Vlogs were shared and viewed within the intervention group for peer feedback on review day, Day 7, and then again on final presentations, Day 9.

Measures

SAT. The Scholastic Aptitude test served as the pre and post- test measure. Students submitted SAT scores prior to the beginning of SAT Verbal sessions. The 10-day of the program consists of all students taking a Practice SAT as their post-measure. According to CollegeBoard, the SAT is a valid measure for predictive of college performance and retention through the first two years of college, and aid in identifying students who may need academic support in college (Westrick, Marini, Young, Ng, Shmueli, and Shaw, 2019). In their validity study, CollegeBoard reports that the combination of high school

GPA and SAT score produces an predictive correlation of .61 (highly predictive), the SAT score alone as being .51 (highly predictive) and the SAT Verbal score as being .49 (moderately predictive) (Westrick et. all, 11, 2019). CollegeBoard also reports that the two sections of SAT Verbal have a reliability rating of .91-.92 for the critical reading section and .89 -.91 for the writing multiple choice section. These numbers indicate the SAT Verbal scores have high reliability (CollegeBoard, 2015). Given its high predictability of college success and retention, the SAT is critical to college admission decisions. As noted in the research, urban students, especially urban students with disabilities, are most often less enrolled, less successful, and most historically disenfranchised by this measure when compared to suburban students (Park and Beck, 2015). Due to the role that SAT scores play in college admissions, this measure is salient to the research questions.

Interrater reliability. A twenty percent sampling was selected from both the CAPs group and Vlogs group to measure interrater reliability. Three undergraduate assistants viewed two sample videos for their assigned multimedia tool. These two videos were the same videos used during class and instructional models for multimedia overview lecture (Day 2). After viewing both videos, the undergraduate assistants were then trained on how to identify key instructional components in each video. They were then asked to view the videos again and score them using the student peer review rubric. Once interrater reliability was performed at least 95% agreement, assistants were then allowed to score three student authored multimedia tools using the form for peer review 1. Each undergraduate assistant individually viewed one student authored multimedia one at a time. The interrater reliability from this process was used to determine reliability in

overall scoring and accuracy of production. Once all three assistants viewed all three videos, they submitted their peer review rubrics. Then, undergraduate assistants scored the three multimedia tools with the peer review rubric used for the second peer review. The interrater reliability from this process was determined to be 89% for CAPs (8/9 agreement) and 100% for vlogs with a 90% confidence interval. Interrater reliability for student feedback rubrics was 88% (8/9) with a confidence interval of 90%. The “FANBOYS” vlog was the outlier for graduate assistant and students’ agreement feedback.

Study Design

This study is pre- and post-design. A total of 90 students participated in the SAT Verbal preparatory sessions, 14 did not participate in any SAT Verbal preparatory sessions and therefore serve as the comparison group. Comparison group students were rising 10th and 11th grades in UB that previously scored over 400 on SAT Verbal. They are included in this research to analyze the effect of not enrolling in SAT Verbal class on “high achieving” students. They serve as the comparison group for both the lecture and multimedia in that they capture “as-is” performance rates. 37 students were assigned to the lecture group by new student status. New UB students were assigned a specific block rotation for SAT Verbal prep class. These UB students were either rising 10th or 11th grades who recently were accepted and began the Upward Bound program with the Summer Program. The SAT Verbal course was their first experience with the research-instructor and their first reported structured standardized test prep course.

20 participated were assigned to the alternative block schedule. These students, all rising seniors, were completing their final semester of SAT prep. These seniors had

previously completed at least one year of SAT prep and had previously participated in the CAPs pilot study the summer prior. Based on their amount of exposure to the material and the researcher, it was decided that this group would best serve as the multimedia group given their experience creating CAPs the previous summer, request to create CAPs, and desire to explore more auditory based instruction. Separating experienced students from new admits was a suggested best practice to limit contamination of groups and ease of instruction for those in the multimedia class. To account for the overrepresentation of older students in the multimedia group, younger UB scholars and friends invited to participate were randomly assigned to this group. Additionally, in post-test analysis, grade was a covariate used in ANCOVA analysis.

31 students in the study were eligible for randomization because they were either: recruited outside of the Upward Bound program or were current UB students. For rising 10th or 11th graders in UB that had not scored above 400 on the Verbal section of the PSAT, they were selected for SAT Verbal enrollment. This group of students were randomly assigned to either the lecture only group or the multimedia group by use of a random number generator. In accordance with stratification parameters, students with IEPs or identified as at-risk were first to be randomly assigned. Students with ELL designations were then randomly assigned. The last group to be randomly assigned were students with no identified learning or language differences. Two weeks prior to the start of class, students were notified of their class assignments. They had a week to notify the instructor of any scheduling conflicts.

Table 3 denotes how demographics were coded for this study. A clear coding distinction was used for group assignments to better identify which intervention type, if

any, produced the most significant results. In this way, group assignments were also more susceptible to ANOVA analysis. This coding also allowed for SPSS to generate case study summaries used for descriptive comparisons of means for questions three analysis.

Table 3
Variables Used in Analyses

Variable	Code
Group Assignment	
Control: no SAT	0
Strategy Lecture	1
Vlogs	2
CAPs	3
Gender	
Female	0
Male	1
Race/Ethnicity	
Black	0
Asian	1
Hispanic	2
Other	3
ELL Identification	
Yes	1
No	0
IEP/At Risk Identification	
Yes	1
No	0
Type of high school	
Public	0
Charter	1
Magnet	2
Other	3
Home Language*	
English	0
Spanish	1
Other	2

**p<.01 significant on pre-test ANCOVA analysis for SAT-Composite and SAT-Verbal

After all students were assigned to either CAPs or Vlogs, the class was given the option to create their multimedia instructional individually or as a group. The instructor provided a list of pros and cons for both and solicited feedback from the class to expand the list. The list of pros and cons was displayed on a PowerPoint and students were given a chance to discuss their options before deciding. Discussions were monitored by the instructor and undergraduate assistants to ensure there was no crosstalk among the two different groups.

After discussions, the majority of the class voted for group work arguing that they wished to increase their exposure to their assigned intervention. Students were then allowed to form groups of no more than 3 members per group. They were given 3 minutes to form their groups. CAP vocabulary terms and SAT Verbal strategies are noted in Table 3 along with group composition. Note that the group of 6 and group of 4 are than the original group limits as they captured UB students that were absent for the first week of class. Those 4 students did participate in the random assignment of intervention type, but due to the limit of strategies and academic terms, joined a peer group that matched their intervention type. Each group was given the option to accept or decline new additions. Three late participants randomly selected CAP and then joined a CAP group and one randomly drew Vlog and was accepted into Vlog group.

Multimedia students were not permitted copy or reproduce any material or examples provided in the instructional material or presented by the instructor. Vlog students had to demonstrate understanding of utilization of their assigned strategy using examples from the SAT practice book that accompanied the instructional coursework book. Each student received a copy of the SAT practice book. CAP students relied upon

their podcasts to demonstrate their vocabulary knowledge through either storytelling or visual stimuli.

Procedures

Pre-Intervention Procedure. The researcher held an orientation for all interested and enrolled in the SAT Verbal class. At orientation, the researcher presented the focus of the research, the intent of the research, and described assignments that both groups would complete. Parental consent and student assent forms were dispersed and required documentation were collected. For those who could not produce proof of SAT, they were given an additional ten days to acquire this information. Participants were required to submit SAT scores prior to the start of class.

Lecture Only Group. The teacher-led instruction group attended class on Mondays and Wednesdays for fifty minutes. The topics for each class along with homework assignment are detailed in Table 4. Each class started with a review of previously taught material. Reviews were typically limited to five minutes and followed the same general format in which the instructor would name the strategy and students would take turns describing the strategy, when to use it, and why. Then, the instructor gave an overview of the lesson for today. Typically, each strategy introduced was taught by the instructor providing a twenty-minute detail of the strategy, its use, why to use it, and how. Each lesson was taught using PowerPoint with embedded memes, gifs, videos, or other relevant multimedia. Prior to concluding class, the instructor posted the lecture to her Google Classroom.

Following the strategy lecture, students participated in a guided practice with the instructor and undergraduate assistants for ten minutes. During this time, the instructor

would ask to follow the tips presented in class as prompted by her. For example, for the “Preview” strategy, the instructor would ask the class, “What is the first step of preview?”. The class would then respond and then be prompted to complete that step. This form of ask-prompt-do would continue until all the steps of the strategy were presented. Students would then be given 5 minutes to complete as many questions as possible to complete the strategy practice. After that time elapsed, the class discussed their answers and were invited to ask clarifying questions. Students were then given a worksheet for independent practice. Independent practice was either timed or untimed, depending on time remaining before the end of class. The instructor reserved the last five minutes to announce the day’s homework assignment and demonstrate how to access it on Khan Academy.

Table 4:
Lecture Only SAT Overview

Week, Day	Topic	Summary	Homework
Week 1, Day 1	Reading Comprehension: Basic Approach	Preview and Basic Approach	Khan Academy: Reading Literature Practice (11 Questions); Meme/Gif #1
Day 2	Reading Comprehension: Dual Passages	Parallel POE for General Paired Questions; Strategies for Dual Passages	Respond to peer's meme/gif;
Week 2, Day 3	Reading Comprehension: Charts and Graphs	Review Types of Questions; Strategies for Charts and Graphs	Khan Academy: Reading History (11 Questions); Meme/Gif #2

Table 4:
Lecture Only SAT Overview (cont.)

Week, Day	Topic	Summary	Homework
Day 4	Grammar and Writing: Basic Approach	Timing and Pace; Strategies: POOD, No Change, and POE	Khan Academy: Reading Science and Reading Social Science (22 Questions)
Week 3, Day 5	Strategy Review and Application	Strategies for Types of Questions; POE, LOTD	none - in class application
Day 6	Writing and Language: Grammar Clues and Punctuation	Grammar Review: Verb tense, plural v singular, and possessive v contraction; Strategy - POOD	Khan Academy: Effective Language - Syntax, Style, and Tone; Precision and Concision (15 Questions); Meme/Gif #3
Week 4, Day 7	Timed Practice	Abbreviated Reading Comprehension and Writing and Language Practice	Khan Academy: Writing - Argumentative, Writing - Informative, Writing - Narrative (33 Questions); Meme/Gif #4
Day 8	Essay Writing: Reading to Understand	Strategy: SOAP	Essay Outline
Week 5, Day 9	SAT Final: Completing the Essay	Use of SOAP in writing SAT Essay	Meme/Gif #5
Day 10		PSAT Test	

Students in the lecture only group used Google Classroom as a message board.

Unique to this research study, students were asked to post memes or gifs to the assigned

page on Google Classroom that best demonstrated how they felt after completing the graded Khan Academy assignment. Once a student posted their representative multimedia, they then had to respond to two peer's post. In preparation for next class after students submitted their homework, the instructor reviewed the overall performance of the class. The instructor categorized the graphics and responses into two or three groups that most accurately represented the class's content with their Khan Academy practice performance. The themes were presented by hyperlinked texts that directed the class to the mem or gif that best represented the theme. After stating the theme and clicking the link, the instructor asked how many students felt similarly and opened discussion of how and why to explore the theme further. She discussed the questions that were most frequently missed and coached students on how to better attack the questions. This "housekeeping" practice lasted approximately five to seven minutes prior to the strategy review.

CAPs/Vlogs Intervention.

Students in the multimedia group attended class on Tuesdays and Thursdays for fifty minutes. Daily topics and assignments are detailed in Table 5. On the first day of class, the instructor explained the research study. She showed video examples of both multimedia instructional tools both groups would be producing. Students were given two models for each multimedia. For CAPs, students were shown an example from Michael Kennedy's research and an audio-centered podcast. For Vlogs, students were shown a Khan Academy SAT video and a YouTube SAT Strategy video. The instructor then detailed the timeline of the class in respect to project deadlines (see Table 5 for deadlines). To conclude the first day of class, students were given a list of 85 high

frequency academic vocabulary terms from the Berkeley Unified School District Grade Level Academic Vocabulary List (Tugwell, 2016). Students were asked to circle, highlight, or note any words that were unfamiliar to them. Unfamiliar was defined as a word that a student could not pronounce without hearing it first, could not use in a sentence correctly, could not provide a rough definition for, or had never heard or seen before. The vocabulary lists were collected before dismissal and tabulated for CAP use by the instructor and graduate assistants. Table 2 contains the 17 high frequency vocabulary terms and the 10 SAT Verbal strategies and their group assignment for student-authored multimedia instructional tools. Although all students in the multimedia class were involved in identifying unfamiliar words, only those randomly selected for CAPs were intentionally exposed to these words beyond the first day.

The next class, students drew slips of paper from a bowl. The slips of paper assigned students to either CAP or vlog production. CAP slips stated “CAP – assigned word” and vlog strips said “Vlog – assigned strategy”. After drawing their multimedia tool, the instructor reviewed the production expectations, requirements, and rubrics for each tool. Students were then given the chance to vote whether they wanted to work individually or in groups. Prior to voting, the instructor outline strengths and weaknesses for each method. Students were given 2 minutes to deliberate prior to voting. During deliberation, the strengths and weaknesses remained on the screen for student view and discussion. The majority of the students voted to work in groups. Groups were paired based on multimedia type. This means students could only work with students who had the same multimedia type. Student groups ranged from 3 – 6 people per group. Groups were then asked to meet as a group and exchange contact information, decide how they

would meet (time, place, date), and begin brainstorming ideas of how they could complete their projects. Students also began researching their term or strategy as a part of brainstorming. During the last 5 minutes of class, the instructor assigned homework and demonstrated how to access the Khan Academy assignments. Prior to in-class production day in week 4, students were assigned pre-production group work to begin brainstorming and conceptualizing their multimedia tool during weeks two and three.

Table 5:
Multimedia SAT Overview

Week, Day	Topic	Summary	Homework
Week 1, Day 1	Multimedia Tools Overview	View Examples of CAPs, Vlogs; Discuss Timeline, and Select Vocabulary Terms	none
Day 2	Group Assignment Lottery; Multimedia Requirements and Rubrics, Class Vote	Research vocabulary term or SAT Strategy	Khan Academy: Reading Literature and Reading Social Science (22 Questions)
Week 2, Day 3	SAT Verbal: Reading Comprehension	Strategies: Preview and Basic Approach, POE, LOTD	Meet with group members and decide presentation style and content
Day 4	Understanding Writing and Language Questions	Types of Grammar Questions, POE, Charts and Graphs	Khan Academy: Effective Language - Syntax, Style, and Tone; Precision and Concision (15 Questions)

Table 5:
Multimedia SAT Overview(cont.)

Week, Day	Topic	Summary	Homework
Week 3, Day 5	Grammar	Strategies for Punctuation: FANBOYS; Say, Hear, Do; Possessive v Contraction	Submit script or story board for multimedia tool
Day 6	Analyzing Essay: Reading to Understand	SOAP, Scoring	Submit theme/concept, equipment/materials needed, and production timeline
Week 4, Day 7	Multimedia Production		Submit multimedia product for review;
Day 8	Peer Review		Submit peer reviews; Make requested changes
Week 5, Day 9	Multimedia Viewing		Submit multimedia knowledge review
Day 10		PSAT Test	

Weeks two and three, the instructor lead strategy instruction. Each strategy that vlog groups were assigned were presented during this time. This was for several reasons. The most salient was to provide a more detailed explanation of the strategy, its use, and its purpose or rational. Students were encouraged to take notes on the material, the context, and any teaching notes that aided in their understanding or were confusing.

These notes could be used and referenced during student production; however, students were not allowed to repeat, reuse, or reproduce graphics, examples, or key instructional tools used by the instructor in their productions. Like the lecture only class format, the instructor reserved the last five minutes of each class to present the homework assignments and post the lecture to the Google Classroom.

After the teacher-led instruction days, students spent class time filming, editing, and producing their multimedia tools on day 7. Students could film anywhere on campus granted they were under the supervision of the instructor or one of the undergraduate assistants. Students had access to camcorders, video recorders, computer, editing software, and any other materials reasonable materials they requested. After their first in-class production day, students completed the first peer review on day 8. This review was a quality check to receive peer feedback on if each group adhered to production requirements.

Peer Review. Students in the multimedia treatment group received two forms of peer review. The first, Day 8, review involves providing students with the designated rubric according to their intervention group (see Appendix G and H). Each group views the intervention and provides feedback for every other groups' product with the same intervention type according to the assigned rubric. Students gave specific feedback through an open-ended short answer fill-in. After receiving feedback from all groups, the creating groups are given the opportunity to edit and adjust their multimedia tool in response to the peer feedback prior to submitting to the instructor. The next peer review consisted of peer groups viewing the corrected multimedia tool and assessing if the tool taught the intended material. The set up for this feedback is similar to the Vocabulary

Knowledge Scale, ranging from: “I do not know or understand this word/strategy” to “I know how to use this word/or strategy” then providing an example.

Peer reviews were restricted to like-groupings, meaning students assigned to CAPs only reviewed other CAPs and students assigned to Vlogs only reviewed other Vlogs. Once peer reviews were completed, each reviewing group submitted their review to the authoring group and discussed their comments. After completing peer reviews students received feedback from each group that explained their notes and comments. Following this exchange, the instructor collected the peer review forms. Students were then assigned any edits or revisions discussed during peer review as their homework assignment. Final submissions were due the Monday prior to class for week 5.

CAPs/Vlogs Production Rubric. In addition to the peer reviews, students in the multimedia group received a score for completing CAPs and Vlogs completed by the researcher. The rubric has six categories that correspond to the six elements of multimedia instruction. Each category is scored according to a four-point scale that ranges from 0 (not present) to 3 (clear and coherent understanding demonstrated). For more information on the second peer review format please see Appendix I and J. To ensure CAPs meet production criteria, students will receive feedback scores from peer reviews and an initial instructor review. Groups were given advice and guidance as to how to correct any scores below 2. For groups that received a score of 2 on any category, students received instruction on missing elements needed to demonstrate coherent understanding of vocabulary term. Groups were expected to incorporate feedback from peer reviews and the researcher’s review to increase their score the multimedia production submission assignment. The researcher also used this method to help ensure

track editing from the draft to revised submission to ensuring all elements of evidence-based multimedia components were present in the final submission.

Students then viewed final multimedia projects on Day 9 and completed another peer review. This review was a check for understanding of the term or strategy taught. The peer rubric mimicked the format for a vocabulary knowledge scale where students identify their understanding by noting a Likert scale with “1” representing “I’ve never seen this word/I’ve never seen this strategy” and “4” representing “I know this word well. I can use it in this sentence/ I know this strategy well. I can use it with ease on the SAT/PSAT”. For any students indicating a “4” in their knowledge and comfortability, they were asked to use the term in an original sentence or give an example of when they would use the strategy on the test.

Students in all groups - control, lecture only, and multimedia – completed the Practice SAT on day 10. The location for the PSAT was the site of SAT class sessions. Students with disabilities tested in a separate classroom in accordance with their testing accommodations. Students in the accommodations group were given extended times for testing. For each section, the timing was extended to match the time extensions granted by ETS for typically SAT Testing. Time and a half was allotted for each testing section along with extended breaks.

Data Analysis

Pre-test Scores. To determine if the groups were statistically different from each other, a one-way ANOVA was conducted on both pre-test measures: SAT Composite scores and

SAT Verbal scores. Tables 6 and 7 display the means and standard deviations for both measures.

Table 6
Means and Standard Deviation: Pre-Test Composite Scores

	<i>n</i>	<i>M (SD)</i>	<i>95% CI</i>
Control	14	870.71 (122.13)	[800.2, 941.23]
Lecture	54	873.33 (106.41)	[844.29, 902.38]
Vlogs	15	924.67(205.35)	[810.95, 1038.39]
CAPs	18	905.56 (217.23)	[707.53, 1013.58]

Table 7
Means and Standard Deviation: Pre-Test Verbal Scores

	<i>n</i>	<i>M (SD)</i>	<i>95% CI</i>
Control	14	447.14 (55.81)	[414.92, 479.36]
Lecture	54	450.00 (50.84)	[436.12, 463.88]
Vlogs	15	484.64 (101.06)	[428.70, 540.63]
CAPs	18	452.22 (86.54)	[409.19, 495.26]

Table 8 displays that the assumption of homogeneity of variance was met for both measures. SAT composite scores were not significantly different among the groups, $F(3, 97) = 0.61$. Additionally, SAT Verbal scores were not significantly different among the groups, $F(3, 97) = .34$. An alpha level of .05 was used for subsequent analyses.

Table 8
ANOVA Results on Pre-Comp SAT Scores for all Groups

Pre-Test Composite		F	Sig.
	Between Groups	0.61	0.76
Pre-Test Verbal	Between Groups	1.12	.34

To investigate any variable interactions at play, a one-way ANCOVA was conducted to compare role of student demographics on SAT pre-test scores. ANCOVA

results table for Composite scores (Table 9) and Verbal scores (Table 11) when demographic covariates were analyzed for their interactions with these measures. This analysis was done to prove the homogeneity of variance assumption, verifying if each group as a similar pattern of variance among their reported demographics.

Table 9
ANCOVA Results - Pre-Composite
Interactions for All Groups

	SS	df	MS	F	Sig.	R ²
* Home language	132863.21	3	44287.74	2.39	0.08	0.09
* ELL	30553.59	3	10184.53	0.55	0.65	0.02
* IEP/ At-Risk	181557.23	4	45389.31	2.45	0.05*	0.12
* Race	22739.36	4	5684.84	0.31	0.87	0.02
* Time in UB	22253.71	4	5563.43	0.30	0.88	0.02
* Grade	95918.98	3	31972.99	1.73	0.17	0.07
* Gender	77190.60	3	25730.20	1.33	0.27	0.05

* p < .05

Results indicated that there is a significant interaction between students' IEP or At-risk identification, $p = .05$, and their SAT composite score with their RTI identification accounting for 12% of the variance. Since there was an interaction observed, another ANCOVA was conducted to determine if controlling for this interaction would result in a statistically significant finding (Table 10).

Table 10
ANCOVA Results - Pre-Composite
Controlling for All Groups

	SS	df	MS	F	Sig.	R ²
Home language	200829.5	1	200829.5	9.58	0.003**	0.096
ELL	6394.093	1	6394.093	0.31	0.58	0.003
IEPAtRisk	43664.04	1	43664.04	2.08	0.15	0.023
Race	3466.832	1	3466.832	0.167	0.69	0.002
TimeinUB	2294.783	1	2294.783	0.11	0.74	0.001
Grade	5280.332	1	5280.332	0.25	0.62	0.003
Gender	37.814	1	37.814	0.002	0.97	0

Controlling for these same demographic covariates resulted in identified home language as statistically significant covariates. This dictated that home language should be controlled for during post-test analysis.

Another ANCOVA was conducted to test for any significant interactions present between demographic covariates and the SAT Verbal outcomes. Table 11 demonstrates the results of this analysis. Like the ANCOVA process with pre-test Composite scores, the first ANCOVA analysis was needed to determine if any demographic covariates presented any statistically significant interactions with SAT Verbal scores. Results found that a student's grade classification had a statistically significant interaction with SAT Verbal scores, $p < .05$, and accounts for 11% of the variance. Additionally, interaction analysis found group assignments were statistically significant on pre-test verbal scores.

Table 11
ANCOVA Results – Interactions
with Pre-Verbal Scores for All
Groups

	SS	df	MS	F	<i>p</i>	<i>r</i> ²
* Home language	17825.97	3	5941.9	1.773	0.16	0.069
* ELL	7999.956	3	2666.7	0.796	0.5	0.032
* IEPAtRisk	17881.77	4	4470.4	1.334	0.27	0.069
* Race	3243.523	4	810.9	0.242	0.91	0.013
* TimeinUB	7849.015	4	1962.3	0.586	0.67	0.032
* Grade	30658.02	3	10219.3	3.05	0.034*	0.113
* Gender	16516.45	4	4129.1	1.232	0.3	0.064
* Group Assignment	30000.81	2	15000.4	4.476	0.015*	0.111

* $p < .05$ ** $p < .01$

Tables 12 display results for ANCOVA once covariates were controlled. Once covariate interactions were established, additional analysis controlling for these interactions are needed to best demonstrate if controlling for these interactions nets any statistically significant covariates. When controlling for covariates on pre-test verbal

scores, home language had a highly significant effect on SAT Composite scores, $p < .00$. Home language accounts for approximately 10% of SAT Composite score variances among the group. However, controlling for group assignment or grade captured the interaction indicated in the analysis.

Table 12
ANCOVA Results - Pre-Verbal
Controlled

	SS	df	MS	F	p	r^2
Home language	33513.46	1	33513.46	7.775	0.006**	0.08
ELL	198.67	1	198.67	0.046	0.83	0.001
IEPAtRisk	10570.02	1	10570.02	2.452	0.12	0.027
Race	0.337	1	0.337	0	0.99	0
TimeinUB	58.616	1	58.616	0.014	0.91	0
Grade	9810.927	1	9810.927	2.276	0.14	0.025
Gender	3605.673	1	3605.673	0.836	0.36	0.009
Group Assignment	24480.38	3	8160.127	1.893	0.14	0.059

* $p < .05$ ** $p < .01$

When controlling for grade and group assignment, ANCOVA analysis resulted in no statistically significant relationship with SAT Verbal scores. Both ANCOVA analyses found that controlling for demographic variables resulted in home language having a highly statistically significant effect on SAT scores. In SAT Composite scores, home language was highly significant statistically, $p < .00$, accounting for approximately 10% of the variance. Home language had a strong statistically significant relationship with SAT Verbal scores accounting for approximately 8% of the variance. These results inform controlling for home language for post-test ANCOVA analysis on both SAT Composite and SAT Verbal scores.

This study investigated the effects types of SAT Verbal prep instruction on increasing SAT scores for urban high school students across RTI Tiers. This comparative

work examined if participation in an SAT preparation course increases scores more than exposure to Dual Enrollment course. It explored two types of SAT instruction, one being the teacher-led lecture only course. The other being a student-authored multimedia experience. This work examined if teacher-led instruction increased student SAT scores more than student-authored multimedia instruction for urban high school students. Students participating in this research represent students across all three RTI Tiers: general education, at-risk for academic failure, and those with an IEP. Additionally, this work compares which teaching technique increased performance of students with ELL designations. The goal of this study was to offer insight on instructional interventions that were student-centered and offered an avenue for personal, cultural, and/or linguistic expression that was not typically associated with standardized test prep.

ANOVAs with post hoc analysis and ANCOVAs controlling for home language was used for post-test analysis of group differences. The dependent variable for both research questions one and two were the SAT Composite score, question one, and the total SAT Verbal score for question two. The independent variable for both questions was group assignment. Student demographics and Pre-test scores are the covariates used in ANCOVA analysis for both questions. In all post-test analysis, home language will be a controlled ANCOVA variable. Results for the first two research questions are reported by intervention type but reflect the three different groups: Control (no SAT prep), lecture (lecture only) and the multimedia group (CAPs and Vlogs). Analysis for both questions began with an ANCOVA to test if different type of instruction significantly interacted with post-test scores. Once this analysis was completed and significance was determined, ANCOVA analysis was conducted to test if other variables demonstrated a relation with

SAT scores. For ANCOVA analysis for both research question one and two, the three covariates analyzed were home language, pre-test scores, and group assignment. Results from ANCOVA analysis will be used to determine instructional influence on post-test scores since this is the most fitting analysis for pre-post study designs.

Nonparametric Analysis

Since there was a group of students uniquely randomized into the lecture and multimedia group, an independent samples t-test was conducted pre-test scores. This analysis was needed to determine if the 31 students uniquely randomized would cause a statistically significant change among the treatment groups. T-test results on pre-test measures were used to determine if there was a statistical mean difference between those randomly assigned and those non-randomly assigned participants. Table 13 demonstrates there was no statistically significant difference between the means of scores between those randomized (n = 31, M = 853.33, SD = 164) and non-randomized (n=71, M = 898.17, SD = 142.15) for composite scores. Verbal scores were also not statistically significant for students randomly assigned (n=31, M = 430, SD = 72.11) and those not randomly assigned (n=70, M=465.77, SD =64.87).

Table 13
T-Test for Randomization (All)

Pre-Test Composite		n	M (SD)	Sig.
	Randomization	30	858.33 (164)	0.27
	Non- Randomized	71	898.17 (142.15)	
Pre-Test Verbal				
	Randomization	30	430 (72.11)	.30
	Non-Randomized	71	465.77 (63.87)	

T-test results indicated there was not statistically difference in means among the randomly assigned and the non-randomly assigned students in the research study. An additional t-test will be conducted on post-test results to analyze if the initial randomization caused an interaction between the intervention and participants that would alter their SAT Composite and Verbal scores. While an affect is expected between the two treatment groups, a t-test analysis of post-test measure will also be useful in analyzing the comparison groups' "as-is" status. Results from this analysis help support casual effects indicated in ANCOVA analysis and better demonstrate effect of student-authored multimedia. Additionally, descriptive analysis of means difference were performed for students with IEPs, identified as at risk, and those with ELL designations. Due to their small representation throughout all groups, this was selected as the best means to chart any changes due to group assignment and intervention.

Chapter 4

RESULTS

One hundred one urban high school students participated in this research study. Thirty-one of those students were randomly assigned to two classes, lecture only and multimedia plus lecture. Students in the control group (n=14) did not attend any SAT prep classes but agreed to submit PSAT scores and demographic information for research analysis. Control group students were enrolled in Upward Bound's Dual Enrollment courses and took up to two English-related college courses and/or one college math course over a ten-week period. Students in the control group were students who scored above 400 the verbal section before and therefore could not be recruited for research participation. All 101 participants completed the PSAT posttest during the last week of the research study.

Fifty-four students were enrolled in the lecture only group. This group received instructor-led SAT Verbal instruction for four weeks. SAT Verbal instruction consisted of introducing SAT Verbal instruction and allowing for guided practice and independent practice during the 50-minute class. Ten SAT Verbal strategies were taught over the four-week period. Students were assigned homework from Khan Academy and asked to submit memes or gifs that depicted their performance or confidence level once their assignment was completed. After receiving instruction and completing independent practice drills, the research-instructor reviewed the strategy and answered any questions for clarity, prior to introducing a new strategy.

Thirty-three students were assigned to the multimedia group. There were two interventions used for comparison in this study: CAPs and Vlogs. Both these

interventions were taught to the multimedia group. Students in the lecture only group had no exposure to this multimedia instruction. However, both research groups were taught the same SAT strategies by the researcher-instructor. Students in the lecture-only group had instructor lead guided practice with these strategies. Students in the multimedia group taught authored vlogs to teach their peers these SAT strategies. Their vlogs were also demonstrations of how well they understood and could apply these SAT strategies. Only students assigned to SAT strategies viewed these student-authored vlogs. Multimedia students assigned to vocabulary CAPs created podcasts of high frequency academic vocabulary terms. CAPs students only viewed other CAPs and no access to SAT Verbal strategies beyond the initial research-instructor led instruction.

Group Assignment

As a quantitative study, this research is a pre-post analysis that used a combination of unique randomization (n =31) and non-random group assignment (n=70). Upward Bound (UB) offered two classes for SAT Verbal instruction that resembled a typical block schedule. The Monday-Wednesday class was the teacher led course, whereas the Tuesday-Thursday class was the student-authored multimedia class. Each semester, the program admits new high school students into the program (n=31). These students are termed new admits and were either rising tenth or eleventh graders from various district and charter schools. These new admits were assigned to the Monday-Wednesday class. Rising high school seniors were assigned to the Tuesday-Thursday class (n=20). Results from UB's Spring SAT were evaluated to determine SAT participants for the summer session. A score of 400 on the Verbal section was determined to be the cutoff for continued SAT course enrollment. Students who scored below 400 were assigned the

SAT course as one of the summer electives. Those with scores above 400 were excluded from the class (n=14) but served as the comparative control group for the lecture-only group. There “advanced” SAT scores were used to compare the effects of “high achieving” students taking no test prep to those of new and “underperforming” students enrolled in the test prep course. Returning Upward Bound students and non-UB students subject to stratified randomization for class assignments (n=30). All participants had to complete a demographic survey to assist in stratification.

Some demographic information was used as randomization strata. Strata followed the following selection pattern: IEPs and 504 plans, then at-risk identification, followed by ELL identification, and lastly general education placement. At-risk identification was determined by UB’s recruitment and acceptance policy. At-risk is determined by a student’s GPA below 2.5 at the time of application, not having taken Algebra prior to completing the tenth grade, or below basic performance on Keystones or PSSA assessments. Once all students were stratified by their student identification, group assignments were conducted. Group selection was determined by a random number generator (random.org). The random number generator was set for a range of 0-10. When an odd number was generated, the student was assigned to control and even number assigned to treatment. When zero was drawn, it was treated as an even number.

An additional layer of randomization occurred for students in the Tuesday-Thursday class. Students in the multimedia plus lecture group selected their assigned multimedia instruction tool by retrieving a labeled slip from a hat. The label indicated whether the student would be assigned to producing CAPs, with an identified academic vocabulary term, or assigned to producing SAT strategy vlogs, with the assigned SAT

strategies. Once all slips were drawn, the multimedia class elected to work in groups to produce their multimedia instructional tool. The results of this research study are reported below.

Tables 14 displays the initial analysis to examine if there was a significant difference in pre and posttests. A paired samples t-test was conducted to assess any changes in scores since exposure to instructional intervention. T-test results indicated a statistically significant difference in verbal scores, $p < .05$, but not in composite scores, $p = .67$. Further analysis was conducted to gain insight on causation of this difference.

Table 14
Paired Samples for all Groups

Pre-Post Composite		n	M (SD)	p
	Pre-Test	101	4.554 (108.51)	0.67
	Post-Test			
Pre-Post Verbal	Pre-Test	101	-12.574 (54.29)	.022*
	Post-Test			

* $p < .05$ ** $p < .01$

An independent t-test was conducted to compare mean differences for students who were randomly assigned to either the lecture group or multimedia group. Table 15 records the results of this analysis. For both SAT Composite, $p = .87$, and SAT Verbal, $p = .84$, confirmed pre-test analysis of randomization having no statistically significant relationship on SAT scores. However, since paired samples results indicated a statistically significant effect on the post-test verbal scores, further analysis was conducted to better determine causal effects of the intervention.

Table 15
T-Test for Randomization (All)

Post-Test Composite		n	M (SD)	p
Post-Test Composite	Randomization	30	887.67 (146.87)	0.87
	Non- Randomized	71	900.42 (141.35)	
Post-Test Verbal	Randomization	30	445.33 (63.72)	0.84
	Non-Randomized	71	477.18 (60.88)	

Post- Test Scores

Q1: Does participation in SAT Verbal prep, in either the teacher-led or student-authored group, demonstrate a significant difference in SAT Composite scores for high school students than those without any SAT prep instruction?

Posttest composite analysis began by conducting an ANOVA for all research participants to investigate the association of participating in a SAT Verbal prep course. Descriptive data used in this analysis can be found in Table 16. Main effect results found a statistically significant effect of group assignment on SAT composite scores, $F(3, 97) = 7.901, p < .001$. Further post hoc analysis were then performed to investigate the effectiveness of each instructional format on SAT Composite scores. Post hoc analysis indicated the large group difference to be between the lecture only class and the CAPs subgroup in the multimedia instruction class.

Table 16
Means and Standard Deviation: Post- Composite Scores

	n	M (SD)	95% CI
Control	14	885.00 (92.38)	[814.55, 955.45]
Lecture	54	830.93 (101.83)	[795.06, 866.80]
Vlogs	15	930.67 (175.64)	[8562.61, 998.72]
CAPs	18	991.11 (190.72)	[991.11, 1053.24]

ANOVA results, presented in Tables 13, identify a statistically significant interaction between group composite scores with a medium effect size ($r^2 = .19$). Note the increased means for Lecture ($M = 830.93$, $SD = 101.83$) and multimedia groups -- Vlogs ($M = 930.67$, $SD = 175.64$) and CAPs ($M=991.11$, $SD 190.72$) for composite scores. Tukey SD post hoc analysis determined a significant difference between the lecture only group Vlogs group, $p > .05$, and the CAPs group ($p=0.01$). These findings suggest that SAT Verbal Prep participation class does demonstrate an increase SAT Composite scores for students. In the multimedia group, specifically the CAPs group, there was a highly statistically significant interaction. This means students in the multimedia group that authored high frequency academic vocabulary podcasts were more likely to increase their composite scores than students in the lecture only group, comparison group, and peers authoring multimedia instructional vlogs.

Table 17
ANOVA Results for SAT Composite Score

Pre-Test Composite		F	Sig.	R ²
	Between Groups	0.492	0.61	
Post-Test Composite	Between Groups	7.901	.000**	.19

* $p < .05$ ** $p < .01$

Table 18
Tukey HSD Analysis - Composite

		Pre-Test	Post-Test
Lecture	Control	.954	0.529
	Vlogs	.244	0.05*
	CAPs	.432	.000**

* $p < .05$ ** $p < .01$

Tukey post hoc analysis depicted in Table 18 showcase a statistically significant interaction between the lecture and Vlogs group and a highly statistically significant

interaction the lecture and CAPs group. Table 15 reports post hoc comparison evaluating pairwise differences among group means. This comparison further revealed significant differences in group means for lecture and vlogs, $p < .05$. Additionally, students in the multimedia CAPs group were highly statistically significant difference in mean scores between the lecture group and the CAPs multimedia group. The significance of this ANOVA allows for further ANCOVA analysis.

Table 19
Pairwise Post-Test Composite - Group

	<i>M Diff</i>	<i>p</i>
Lecture		
Control	-54.07	0.178
Vlogs	-99.74	0.012*
CAPs	-160.19	.000**

* $p < .05$ ** $p < .01$

ANCOVA analysis was needed to help determine if the reported significance in the ANOVA could be influenced by a demographic covariate at play. Based on the previous pre-composite analysis, three variables were noted to have a significant relationship with SAT Composite scores. When controlling for home language, group assignment, and pre-composite scores, all the covariates remained significant, Composite $F(4) 35.53, p < .00, r^2 .604$. Table 20 reports the results of this analysis.

Table 20
ANCOVA – Post
Composite

	<i>F</i>	<i>p</i>	<i>r</i> ²
Home language	8.095	0.005**	0.083
Pre-Test Composite	35.53	.00**	.604
Group Assignment	3.475	0.02*	0.104

* $p < .05$ ** $p < .01$

Controlling for home language’s main effect on SAT composite scores, group assignment has a statistically significant effect, $p < .05$. Group assignment accounted for 10% of the variance among scores. This percentage accounts for a larger proportion of the variance than home language, $p < .05$, $R^2 = .08$. Home language’s interaction with the post-composite score is small, not only in effect size, but also in comparison to the influence of group assignment, a medium effect size, and that of the pre-test score. The large effect sized noted in this analysis is better explained by the pairwise comparison report in Table 21. Pairwise analysis identify the multimedia instruction demonstrated a statistically significant relation to increasing SAT composite scores. This analysis establishes a relationship between participating in SAT Verbal Prep scores and likelihood of improving your SAT Composite score. It also shows multimedia instruction had more of an influence on scores than exposure to college level coursework or only experiencing “business as usual” lecture-only approach.

Table 21
Pairwise ANCOVA –
Pre*Post Composite

		<i>M Diff</i>	<i>p</i>
Lecture	Control	-57.23	0.03*
	Vlogs	-64.64	0.01**
	CAPs	-138.95	0.00**

* $p < .05$ ** $p < .01$

Q2: Is there a significant difference in learning outcomes on the Verbal section of the SAT for students who create student authored multimedia instruction versus those who rely upon teacher-led instruction for SAT Prep?

Another ANOVA was conducted to determine if there was a significant difference in learning outcomes on the Verbal section of the SAT. The previous research question

demonstrate that CAPs caused an interaction that increased SAT Composite scores but considering this increase could be linked to Math increases, an examination of verbal scores were needed. The purpose of this analysis was to determine if specific SAT Verbal instruction format effected SAT Verbal scores for students participating in the experiment. Table 22 depicts descriptive information for SAT Verbal scores to be analyzed through ANOVA.

Table 22
Means and Standard Deviation: Post-Verbal Scores

	n	M (SD)	95% CI
Control	14	470.00 (49.92)	[441.18, 498.82]
Lecture	54	452.59 (50.92)	[436.69, 466.49]
Vlogs	15	477.33 (76.95)	[434.72, 519.95]
CAPs	18	501.43 (62.32)	[456.25, 480.48]

Main interaction results found a statistically significant effect of group assignment on SAT composite scores, $F(3, 97) = 3.46, p = .024$. Table 23 provides the ANOVA results demonstrating a small effect size. A post hoc analysis was then performed to investigate the effectiveness of each instructional format on SAT Verbal scores.

Table 23
ANOVA Results for SAT Verbal Score

Pre-Test Verbal		F	p	r ²
	Between Groups	1.241	0.34	
Post-Test Verbal	Between Groups	3.462	.024*	.09

* $p < .05$ ** $p < .01$

Table 24 displays Tukey SD post hoc analysis for the SAT Verbal comparison among groups. ANOVA results indicated a statistically significant effect caused between the groups, comparing group means for statistical differences identified a highly statistically significant relationship between the student-authored CAPs group and lecture group.

Table 24
 Tukey SD Analysis – Post-Test Verbal

		Pre-Test	Post-Test
Lecture	Control	0.99	0.78
	Vlogs	0.31	0.51
	CAPs	0.99	.002*

Tukey post hoc comparisons of group means showed a highly statistically significant relationship between the CAPs multimedia group and SAT Verbal scores. Table Pairwise analysis further demonstrated a strong relationship between CAPs multimedia instruction and verbal scores. Table 25 posts results for the pairwise comparison. These findings suggest that CAPs had some casual effect on SAT Verbal scores.

Table 25
 Pairwise Comparison - Post-Test Verbal

		M Diff	P
Lecture	Control	-17.4	0.344
	Vlogs	-24.74	0.168
	CAPs	-50.74	0.003**

* p < .05 **p < .01

To better identify factors at play in SAT Verbal score changes, an ANCOVA analysis was need. Additionally, ANCOVA analysis would also better identify controlling for statistically significant variables identified during pre-test analysis were also influence scores in post-test analysis. After controlling for home language, pre-test-scores, and group assignment, a robust effect size was noted in two covariates, $F = (3) 6.388, p > .00 r^2 .171$. Table 26 details the result of this analysis. Again, home language had a small interaction with post-verbal scores accounting for 6% of the variance. Pre-test

scores had the most sizable interaction with its robust interaction with SAT Verbal scores. Pre-Test Verbal scores accounted for approximately 50% of the variance.

Table 26
ANCOVA – Post Verbal

	F	p	r²
Pre-Test Verbal	23.659	.000**	.504
Home language	6.692	0.011*	0.069
Group Assignment	1.407	0.25	0.045

* p< .05 **p<.01

Pairwise comparisons are outlined in Table 27. This analysis illustrated the mean differences between group means for pre-post scores. Again, CAPs multimedia instruction had a highly statistically significant relation with SAT Verbal scores. These findings further support the positive relationship between CAPs multimedia instruction and increasing SAT Verbal Scores.

Interestingly, the mean difference between the lecture group and the vlogs group was relatively small. For comparison, the means difference between lecture and vlogs in post-composite scores was approximately 99 points. Controlling for pre-test scores, students in the lecture series shrank the gap between them and vlog lecture group. Descriptive analysis of pre scores demonstrate that students in the Vlog group were the top tier of achievers (pre-comp=924, pre-verbal=484). The growth expressed in this interaction support a positive relationship established between “business as usual” lecture only instruction.

Table 27
Pairwise ANCOVA - Pre* Post Verbal

		<i>M</i> Diff	<i>P</i>
Lecture	Control	-20.07	0.14
	Vlogs	-3.23	0.81
	CAPs	-51	0.00**

* $p < .05$ ** $p < .01$

Results from pairwise analysis demonstrate that students in the CAPs multimedia group greater likelihood of increasing SAT verbal grades caused by the strong relationship between the instruction type and SAT Verbal scores. Additionally, “business as usual” lecture-only demonstrated a marginal increased towards their “high performing” peer groups. However, this growth was not large enough to warrant statistical significance.

Q 3: Does instruction type for students with disabilities or language differences demonstrate a significant effect on SAT performance?

One third of this sample population were student with either an IEP, identified as At-Risk of academic failure, or and students with ELL designations. These students were in represented throughout all groups within the study. For this population, a descriptive analysis was conducted to evaluate any instructional relationship for these specific populations. Pre-Post means and standard deviations for students with ELL identification for is presented in Table 28.

Table 28
ELL Group Comparisons -

	<i>n</i>	Pre-Comp (SD)	Post-Comp (SD)	Pre- Verbal (SD)	Post-Verbal (SD)
Control ELL	-	-	-	-	-
Lecture ELL	7	808.57 (81.94)	797.14 (62.64)	418.57 (37.61)	440 (31.62)
Multimedia ELL	7	982.5 (126.03)	1035.42 (253.52)	499.59 (99.97)	517.92 (104.91)

ELL students in the multimedia group saw a measurable increase (5%) increase in their post-composite score. They also demonstrated a 3% increase in their verbal scores. By comparison, students with ELL designations in the lecture group saw a slight decrease in composite score (-1%), while experiencing a 5% increase in their verbal score. This suggests that SAT Verbal instruction, either through teacher-led instruction or student-authored multimedia, has a positive correlation with increasing SAT composite and verbal scores for students identified as ELL.

Table 29 details pre-post means and standard deviations for students with IEPs or identified as at-risk. Similar to ELL students' results, students with IEPs and at-risk in the multimedia group also saw an increase in both composite and verbal scores. Mean scores for students in the multimedia group increased by 18% for composite scores and 12% for verbal. Lecture group saw a 6% decrease in composite scores and a slight decrease in verbal (-1%). Students in the control also had decreased composite scores (-4%) but increased their verbal scores by 3%.

Table 29
IEP Group Comparison -
Composite

	n	Pre- Comp (SD)	Post-Comp (SD)	Pre- Verbal (SD)	Post-Verbal (SD)
Control IEP	5	930 (132.29)	938 (57.21)	468 (68.70)	486 (57.21)
Lecture IEP	20	847 (77.47)	794 (25.6)	439.5 (45.48)	433.5 (25.60)
Multimedia IEP	4	726.67 (149.26)	858.34 (144.97)	388.33 (68.07)	438.33 (63.13)

Given the consistent trend at increases in composite scores and verbal scores for ELL students and students in RTI, the relationship between the intervention and SAT score increases were strengthened. Students with IEPs or at-risk in the multimedia production demonstrated the largest composite score increase (18%) and verbal score increase (12%) for students with in RTI. ELL students in the student-authored multimedia instruction group also saw increases across both measures (composite 5%, verbal 3%). The repetition of positive results further supports the relationship between student-authored multimedia instruction and increasing SAT scores for students across the RTI tiers.

ANCOVA and descriptive analysis findings support a causal effect was established between student-authored multimedia instruction and improving SAT scores. Specifically, for students with learning and language differences, student-authored multimedia instruction had a greater chance of improving their SAT scores through developing CAPS. Students in the CAPs group outperformed composite score increases for students in the teacher-led lecture class and those not participating in SAT prep. They were second in mean scores for SAT Composite to students in the vlog group. Lastly, participating in student-authored vocabulary multimedia instruction for SAT prep was shown to have a statistically significant relationship with increasing SAT scores. This research has produces evidence of and interaction between multimedia instruction is comparable, if not better than, increasing SAT composite or verbal scores better than teacher-led instruction. Furthermore, this research captured that students enrolled in Dual Enrollment instead of SAT prep matched the national trend of increasing scores for composite (approximately 5-10 points for verbal), but student-authored multimedia

instruction demonstrated the ability to increase SAT composite scores and Verbal scores above the typical SAT test preparation outcomes.

CHAPTER 5

CONCLUSION

Results from this research present two statistically significant relationships between student-authored multimedia instruction and increasing SAT scores. The first was shown in the ANCOVA analysis that found a statistically significant relationship between group assignments and improving SAT Composite scores. Students in the CAPs multimedia group demonstrated the largest percentage increase for composite scores (9.45%) a causal effect that netted a highly statistically significant relationship with the measure. Findings also support that “high achieving” students in the control and vlog group saw marginal increases (control=1.6%, vlogs=.6%) in SAT composite scores through their respective group assignment. Lecture only had the least desired effect on SAT composite scores as evidence by its -4.85% percentage change. The positive interaction captured between CAP performance and post-composite scores lay the first claim to this intervention having a correlation to SAT performance.

The second occurrence was presented in SAT Verbal scores. Again, students in the CAPs multimedia group outperformed other peer groups with a 10.88% increase from pre to post-verbal test scores. For students in Dual Enrollment, their experience with college level course material also displayed a positive relationship with post-verbal scores in that their scores increased by 5.11%. Vlogs, previously high performing groups, saw a slight decrease in verbal scores (-1.5%), while lecture group theoretical remained stable with an increase fluctuation of .51%. This small change in both groups resulted in them being near each other’s mean scores, hinting at a possible regression towards the mean. CAPs large percentage increase supports the presence of a causal effect between

student-authored multimedia of high frequency academic vocabulary terms and SAT Verbal scores. Albeit a small effect, these results of CAPs exposure registered a highly statistically significant relationship with SAT Verbal scores.

Finally, both multimedia instructions collectively increased scores for students from diverse learning backgrounds. ELL and IEP/At-risk students' descriptive analysis support the use of multimedia instruction. Students with ELL identifications saw an increase of 5.34% in composite scores and 3.67% in verbal scores. The largest score increases were noted in students with IEPs. Their composite score increased by 18.12%, while their verbal score saw an increase of 12.88%. The increases noted in these special populations lend to the use of multimedia instruction to address learning and language differences that may hinder skill acquisition and content understanding presented in the lecture-only. These populations also benefited from being group with high performing general education students. The heterogeneous multimedia groupings and use of student-authored were crucial to these performance changes. Much akin to the improvements attributed to a causal effect of CAPs on SAT scores, these results are replicated in students with learning and language differences. These results support that CAPs are an appropriate multimedia intervention that students can self-author to increase SAT composite and verbal scores.

CAPs were effective at increasing SAT Composite and Verbal scores due to the morphological and phonological experience the students were exposed to during production. As demonstrated in previous research, Students' ability to identify word changes in parts of speech (e.g. noun to adjective form) are more likely to decode for phonological shifts (how pronunciations change due to affixes) which increases overall

comprehension. Along with the increases in comprehension, students in the CAPs group effectively saw the most significant interaction in Verbal scores which resulted in the increased scores in SAT Composite scores. Their experience with authoring CAPs demonstrated CAPs to be more effective at raising SAT scores than simply attending an SAT prep course or pairing SAT instruction with authoring SAT Verbal strategies vlogs.

Connections with Previous Works

This research is the first to date that compares type of instruction for urban high school students taking the SAT as a means of college access. In relation to past research into the effects of SAT prep on urban, underserved students, this research expands on Cates and Schaeffle's (2011) assertion that urban and at-risk students need exposure to SAT training through PSAT exposure as a means to increase their college readiness, preparedness for standardized testing, and likelihood of college admission. This assertion has a long history linked to the economic barriers many urban and at-risk students face when with high stakes testing.

VanTassel-Baska and Willis (1987) noted that low-income high school students who do not receive SAT practice are less likely to cross the 400-cut-off level deemed necessary for college admissions. In his 2003 study, Freedle saw similar patterns that VanTassel-Baska and Wallis encountered demonstrating that even with time and instructional advancement, socio-economic status continued to be a barrier for urban high school students completing the SAT. Dixon-Roman, Everson, and McArdle (2013) note that for many black students, "family income levels the effect was nearly twice as large for Black teenagers than it was for White test-takers" (22-23). This research tests the best instruction to aid those students in reaching the desired levels and determined that CAPs

demonstrated a more significant effect for raising SAT scores for low-income students enrolled in a SAT prep course. This study demonstrates the continued need for SAT prep for students of low economic background as an exposure and preparatory experience for taking the actual SAT and a best practice needed to supplement traditional instruction as a means to mediate any economic barriers that may disadvantage urban high school student on standardized testing measures.

Park and Becks set the groundwork for this research study in their 2015 study of SAT Prep in context to type of high school and race or ethnicity. In their findings, they discuss that “Black students and students from the Northeast – who take SAT prep at higher rates than their comparison group peers but have lower test scores present researchers with a chicken and egg conundrum” (18). They continue to by noting that “Asian Americans are the only group where higher past achievement was linked to SAT Prep” (19, 2015).

Regarding SAT Prep and students with disabilities, there is limited research available as much of it pertains to testing accommodations or transitioning and enrollment into college. This research fills a void as it explores intervention strategies for students with disabilities in SAT prep courses. Bellafiore’s research (1998) identifies meta-cognitive strategies to help students “evaluate the correctness of their own responses” (28), yet the results from her interventions demonstrated similar effects as the teacher-led results in this proposal (learning disability score – verbal: 450). Lindstrom and Gregg (2007) focus on the role of extended time on testing for students with disabilities. While this is not an intervention-based research article, this work explores how extended time may attribute to an increase in scores for students with disabilities

acknowledge cognitive demand and processing speed need to excel on the SAT. Students with disabilities from both experimental groups in this research study received extended time accommodations as designed by the SAT. Lindstrom and Gregg's research found "only negligible variability between groups...internal consistency analyses of Critical Reading, Math and Writing sections of the SAT, which revealed no appreciable differences in reliability estimates across test sections and groups" (92). This finding supports the notion that the multi-media intervention was the direct cause for increased SAT Verbal scores for students participating in the research study.

This research also furthers the interest in the use of multi-media instruction for effective student-centered instruction. Kennedy's (2011) dissertation research with CAPS resulted non-statistically significant mean differences between student with disabilities in CAP groups receiving explicit instruction and those receiving CAPs and mnemonic strategy instruction only. CAPs proved to be the statistical difference in learning outcomes for students with disabilities for SAT Prep as it marked the difference in group performance and outperformed students assigned to the vlog intervention. This research contributes to the field in that it not only further research into CAPS, it compares CAPs to burgeoning field of video-based multimedia instruction, demonstrates use beyond the standard academic curriculum, and posits the influence CAPS has on student performance when they are given the ability to apply it for their own instructional needs. Student-authored CAPs demonstrate that equipping even the most marginalized group of students with contemporary modes of instruction enables them to create effective means of instruction the met their goals.

Conclusions for Group Assignments

Treatment integrity for students in lecture group and the multimedia group may contribute to difference in results. Students in the multimedia groups completed all assignments in relation to the creation and completion of their multimedia components. Lecture only students did not create or produce a multimedia component, and thus their engagement is solely reflected in their submission of homework assignments and meme/gif submissions. Comparing homework and class assignments given to both classes, the completion and submission rates were 64% for Upward Bound (UB) students in the lecture only group, 95% for non-UB students in the lecture group, and 95% for all students in the lecture plus multimedia group. The stipend ascribed to students participating in the study may have contributed to their motivation to complete assignments and attend the testing day. However, students in the UB program and grouped in the lecture only class, completed and submitted less work than those in the lecture plus multimedia group. A thought that could explain this difference is that UB students were deemed stipend ineligible by their lack of participation or submissions in other classes were not motivated to perform their best in the SAT prep class and on the SAT post-test. This can be verified and validated by the continued engagement and improvement noticed in non-UB students who had to complete and submit all assignments to earn their \$100 stipend. Of the nine non-UB students in the study, all completed and submitted all assignments.

Attrition. A total of 20 students removed themselves from final analysis by either not participating in the conclusion PSAT test or by excessive absences. Many of these students were in the lecture group (n=14) and their exit resulted in an increase in pre-test

scores as many were students who attended schools that did not participate in the district wide PSAT testing date. They also were students that were disengaged in classroom lecture, did not routinely submit homework, and demonstrated the most frustration with learning the SAT Verbal strategies. Students that left the multimedia group displayed similar disengagement patterns, however, their behavior most immediately affected those in the groups with them. These groups often assigned lessor roles to their peers that were not fully participatory so that the final products would not be sacrificed by their role and responsibility. Ultimately, students in both groups navigated the course by limiting how much they were distracted or disengaged by those that would end up leaving the class or being removed from analysis.

Limitations

Limitations of this study reflect a difficulty in recruiting students with learning disabilities for the Upward Bound program and for this research. As a federally funded program, UB recruits high school students from public and charter schools that are either one or a combination of three eligibility criterion: first-generation college students, low-economic status, or at-risk for academic failure. While at-risk for academic failure includes students with IEPs, 504 plans, and ELL designation, it also carries specific stipulations as to how wide of a catchment it can be. For instance, any high school student who has not completed Algebra 1 by the tenth grade are considered at risk. However, students identified as at-risk must have a GPA near or approaching 2.5 at the time of enrollment. This stipulation limits the population of participants as many students with learning and language differences are excluded from UB recruitment for grades and thus not interested in participating in SAT prep courses offered through Upward Bound.

Another limitation was introduced through the “invite a friend” program. Since UB students were inviting their friends to join them, randomization of assignments was a challenge for three friend sets. Ultimately, it was decided that new students (those beginning UB for the first time during the summer) would be placed with their friends in the lecture only group. Returning students with friends were placed in the lecture and multimedia group. This would control for any additional exposure to the teacher-led instruction of returning students and demonstrate higher fidelity of difference between teacher-led instruction of new students and student-authored instruction for returning students.

An additional limitation to the research were the two different populations involved: UB students and non-UB students. As many of the lecture-only participants were new admits into the program, many attended schools that did not participate in the district-wide PSAT testing date. Additionally, UB’s new admits are limited to rising tenth and eleventh graders with no PSAT or SAT scores to report as their pre-test scores (n=6). For those six students, group means were calculated by SPSS as their score. Their subsequent score taken were used for post-test analysis. All non-UB participants were asked to submit proof of previous SAT experience by submitting either PSAT scores or SAT scores

Relaying on group averages for pre-test scores skewed the data in that there is no true means of growth for this population until they have tested twice while in the UB program. While the second score is reflective of a teacher-led course, without a true pre-test score an indicator of progress or change cannot be validated. These scores serve the

program as an initial benchmark, but due to academic year scheduling they will possibly be the only indicator scores on record for these scholars.

Despite these limitations, it could be hypothesized that the findings in this study could be made more robust with a larger control group. The comparative control was significantly smaller than the other two groups and were excluded from the study based on their previous SAT scores. Additionally, these students represented a small group of students enrolled in Dual Enrollment. Relying on this small group to represent the totality of 36 students enrolled in Dual Enrollment limits the amount of inferences that can be made by their inclusion in the study. In the future, perhaps limiting each intervention group to a specific number would result in an even participant distribution. This change would have best demonstrated the effects of the intervention.

Ultimately, student-authored multimedia instruction was generalizable. By design, the students in the multimedia group had experience with CAPs through multiple exposures. Their first instruction to CAPs occurred when the researcher introduced teacher-authored CAPs as part of their SAT reading comprehension test prep years prior. The following year, students gained CAP production experience in the pilot research examining the effect on SAT reading comprehension test prep. With the introduction of vlogs for this study, students were able to build on previous skills and incorporate SAT grammar and language strategies with reading strategies. Giving students choice in how the present information allowed for personalization and individuality which promoted ease of instructional transmission. Additionally, students were able to bring in skills they had not previously utilized with SAT Verbal prep. Many students noted they enjoyed having an opportunity to film, edit, develop scripts, and draw or design their visual

stimuli featured in the CAPs and vlogs. With proper scaffolding, students were autonomous learners by week 3, which was also aligned with when they began multimedia production.

Implications of Intervention

An unintended theme developed during the “business as usual” lecture-only students assigned to the lecture only group. They began to complain about the lack of connectivity to the lecture. Many expressed that the standard approach of learning SAT strategies was unrelatable and difficult to apply in real time. Although the intervention timeline did not allow for stoppage for more practice times, more classwork was given to allow for more guided practice of each strategy. However, even with the additional practices, students continued to struggle with comprehending and applying the strategies appropriately and in a time effective manner. This disconnect could be ascribed to this being the first class that many have taken on testing strategies. Their unfamiliarity with the content and understanding of the text format caused many delays in instruction and proved to be an unintended learning curve witnessed between the lecture only group and the lecture plus multimedia group.

As the course continued and the multimedia group began to create their instructional technologies, students in the lecture only group continued to complain about lack of connectivity with the methods. They often asked if they could switch to the other group so that they could develop videos and podcasts. They saw the multimedia group’s products as a means to further understanding of the class content. Multimedia groups students’ ownership of the material allowed for different approaches to the material than what was available in commercially packaged SAT prep. The lecture groups’ request for

more student created learning avenue proved to be another difference in how students performed on the post-test. As indicated in the results, group assignments and language differences were significant relationships with SAT performance. Conversely, it can be argued that the lack of cultural and linguistic relevancy in standard SAT curriculum presents a great disadvantage for urban students who often come from diverse backgrounds. This idea is supported by the large effect seen in those in the multimedia group who were able to create their own understanding of high frequency vocabulary terms or SAT strategies. They were not only able to teach themselves, but also taught their peers as indicated by high scores on their peer reviews.

Students who produced CAPs outperformed their peers on SAT Composite and Verbal scores further supports vocabulary interventionist through experience and exposure to morphology, phonology, and morphemic practices accelerates and amplifies their learning beyond the simple learning of vocabulary and terms. As evident in the results, students with CAPs saw increases in Verbal scores and Composite scores. Given the likelihood that the terms these students worked with appeared on the post-test, it can be deducted that their experience with creating and producing CAPs provided valuable experience with complex academic skills and understanding that more closely aligned with the phrasing, structure, and format of the SAT. This semblance is made more salient performance difference between Vlog participants and CAPs students. Vlog students demonstrated a larger percentage increase on SAT Composite scores than those in the lecture only group, however, their experience with creating SAT strategy Vlogs did not surpass the performance of the CAPs intervention group.

Practical Implications

This study paves two paths for practical implications. The first, is the implications for teachers and how to better incorporate student-authored multimedia instruction into effective classroom practices. The other is the implications for SAT preparatory classes and college access programs. The features of CAPs lead itself to more classroom integration than vlogs. Additionally, the results of this research support the use of CAPs to increasing standardized test scores beyond vlogging. Moreover, vlogging is a multimedia instructional tool that lends itself to more interactive teaching of a desired method, practice, or approach. Given this limitation of vlogging, CAPs would be a more useful multimedia tool than vlogs.

CAPs are easy to integrate into standard classroom routines. This study demonstrates how CAPs can be incorporated into a weekly schedule while being limited to two full class days. Teachers can divide this same timeframe over multiple days or break down the production into small daily activities. Additionally, this study proves that student groups can collectively build CAPs together to increase exposure to high frequency terms. Furthermore, once students have demonstrated the ability to independently build CAPs during class, this can become a take home assignment. Students were able to work as a team in class and away from class to research and produce their vocabulary CAP. This practice enabled the study to only have to obligate one day of the research schedule to CAP production. It also removed the reliance of all technology and resources having to be in the class for filming, editing, and producing. Students were able to be creative in their presentation and production of CAPs which supports Hatch's notion of expression and understanding (1995). In order to demonstrate

they understood the word and its morphology, they had to be able to express it in every form. This practice also aligns with LeSaux, Keiffer, Faller, and Kelly's (2010) belief that students gain more from experiences with morphological decomposition and word meaning in-context.

Previous research has shown that academic vocabulary is key to increasing scores on high-stakes and standardized testing. This research showed that CAPs was effective at increasing composite and verbal scores on the SAT. Teachers should look for ways to increase students' knowledge, understanding, and use of academic vocabulary to increase student academic achievement. CAPs required students decode complex sentence structures featured in the academic register. They must demonstrate an understanding of this structure to compose and produce their own teaching tools. Kim and Gallman (2008) identify this practice as key to learning targeted vocabulary and lessening the cognitive load on students with disabilities and for CLD students. As students began to deconstruct and decode the academic register, they are then challenged with presenting the information in visually stimulating and captivating way. Final products are tools that require less cognitive demand to acquire, understand, and retain target vocabulary terms. High frequency academic vocabulary growth is crucial to aiding struggling readers' and CLD students' success on standardized measures (Freedle, 2003). In this way, students began to learn the power code of academic register (Fisher and Lapp, 2013).

The group work aspect of this research is also beneficial to teachers. Group work focuses on student-led peer instruction. Students not only learn the word; they teach the words to their peers as they develop teaching concepts and script ideas. They continuously repeat, re-develop, and re-construct terms in culturally relevant and

meaningful ways. Teachers no longer have to rely on standard interventions that are void of cultural and linguistic differences in favor of student-authored CAPs. Empowering students to create learning tools that are interactive and engaging. Townsend and Collins (2009) established that using interactive tasks to teach academic vocabulary familiarize and engage students with academic vocabulary. CAPs allow students to be interactive with academic vocabulary and depart from traditional intervention approaches (Fischer, 2007). Students create culturally representative multimedia that connects their experience with academic vocabulary in ways that demonstrate their understanding, share culture, and promote a sense of accomplishment. For many students in this study, CAP production was the first time they were to explore cultural, linguistic, and learning differences they had or shared with their peers. It is from these interactions that some of the most diverse and entertaining CAPs were produce. This CAPs best showcased the range and diversity of each group.

Teachers would benefit from incorporating CAPs into their classrooms as it is proved effective in increasing mean scores on standardized measures. CAPs research continues to be effective for students with disabilities, however this research demonstrates a positive interaction with at-risk students. CAPs should be a viable option for any RTI Tier instruction when attempting to identify learning disabilities and learning differences. It can also be used in conjunction with standard intervention curriculum as a supplemental vocabulary instruction. In this way, it can be used to support either content specific or academic vocabulary to increase academic goals.

Additionally, given the means increases for ELL students in the CAPs multimedia group, this intervention could be used in RTI interventions for students with language

differences. CAPs interventions that are quickly implemented with high fidelity and great ease of use, CAPs would be an ideal addition to RTI interventions. Additionally, student-authored CAPs lessen the teacher's workload by not them not having to dedicate more hours towards creating and developing CAPs. Student-authored CAPs transfers the tool and knowledge directly to student who is the intended beneficiary of this intervention. These benefits are amplified by the responses to intervention and possibility of returning to a full Tier 1 instruction course load.

Regarding SAT prep and college access, this study demonstrates the effects of SAT prep on urban high school students from diverse backgrounds. Historically, these students are often the minority populations in research involving high school students and achievement test. This research presents students from diverse racial and ethnic backgrounds as the primary targets for intervention and thus, position this paper as the evolution of achievement research. This research is not done in a majority-minority comparison, rather a within group comparison among peers. In doing so, it allows several points to resonate.

The first being, the expected increase for students on the SAT Verbal section after completing an SAT prep course was limited to 5 -10 points. This research demonstrates an average score increase of 30 points for students on the Verbal section. Not only does the increase surpass previous research, it begs the question of if more minority students were included in prior studies, would the increase in results be similar to this study. While SAT Verbal prep offered in this course was abbreviated to fit within the intervention plan of this study, its results would indicate that urban students are capable of acquiring the testing knowledge and test taking skills in a fast paced learning

environment that outpaces the national norm whom pay for a more elongated and elaborated approach to test prep.

Lastly, the effect on students with learning differences is also critical to this study. Understanding that the national average of high school students with disabilities is 14%, this study's participation be a representative population. This study illustrates that students with learning disabilities can also see growth when given multimedia SAT instruction. Similar to the national pattern of effectiveness with SAT prep courses, students with learning disabilities no notable gains from receiving teacher-led SAT instruction. This research posits both student-authored instruction and multimedia instruction as best practices to integrate with students with disabilities regarding SAT score improvement. Again, the robust effects of multimedia instruction over a short time should be expected for SAT programs that offer more traditional scheduling – typically 6 to 12 months.

Social Implications

Given the importance of the SAT in college admissions it is imperative that students from low-income, high poverty areas receive proper access and instruction in preparation for taking the SAT. Even as many colleges and universities began to embrace a “test-free” culture, this practice places an undue burden on students who come from less privileged backgrounds as many institutions’ merit based funding continues to be link to success on standardized tests. Recent research from the likes of Freedle (2003), Cabebra (2001), and Richardson (2016) demonstrates that students from economically diverse and culturally diverse backgrounds continue to struggle with the structural and systematic barriers associated with standardized achievement often associated with high-

stakes testing like the SAT. This research study agrees with their premises, yet looks to find a way to mitigate many of the barriers urban students face when confronted by low college entrance test enrollment and the lack of instructional integrity and validity of test prep course for SAT courses. While fully acknowledging the cultural bias cultivated by high stakes testing, this study aimed to make standardized achievement a realistic goal for all students involved in the research.

This research demonstrates that allowing students to create and produce peer-based interventions, a more robust effect is seen in populations that had previously seen marginal effects. In doing so, students in both intervention groups were able to learn translational skills that prepare them for standardized testing. Not only are they more prepared than those who did not participate in the preparatory sessions, statistics show that they are also more likely to enroll in the test, seek continued improvement on the test, and are more likely to gain college admission to the college or university of their choice (Cates, 2011, Hagedorn and Tierney, 2002). By granting these students access to test-taking skills, the SAT should no longer be a line of demarcation between the economic haves and have nots. Instead it can be viewed as an opportunity to develop college ready skills and showcase academic ability. Holding true to the belief that a score of 400 or better per subject identifies a student as being college ready, the average for each group in the post-test analysis indicate that all participants are at or approaching college readiness. This feat is something truly impressive and worth commending.

Students with disabilities are most benefitted by this study in that it succinctly identifies an effective method of SAT instruction for this population. As previous research as suggested, typically students with disabilities in college are white students

from affluent backgrounds. These facts do not include or account for students of colors with disabilities and their college trajectory. Even more concerning is that only 20% of college admitted students with disabilities scored above 1150 composite score on the SAT. Again, noting that these students largely represent wealthy white students causes great concern for the achievement and college acceptance rates for students of color with disabilities; especially those from urban, disadvantaged areas.

The strong effects of multimedia SAT instruction for students of color with disabilities demonstrates that this group is not a hopeless venture for additional research. Furthermore, the growth of students across group assignment indicate that students of color with disabilities are a viable audience for college readiness intervention. While the students with disabilities in the vlog group had a more statistically significant result than their other peers, the responsiveness to CAPs instruction outpaced that of standard lecture which leads to the understanding and implementation of more universal design based approaches to SAT prep instruction. With the growth seen in students of color with disabilities in this research, it is expected that they will also be deemed college ready by obtaining scores above 400. Akin to the social effects of making college access achievable for their non-disabled peers, students of color with learning disabilities gained a more competitive edge towards college admissions based on their participation in the SAT prep course and by raising their composite and verbal scores.

Future Research

This work has important implication for future research. As it relates to multimedia instruction, the students participating in both groups found this aspect of the research the most invigorating aspect of class. For the teacher-led group, they began to

put immense thought and concentration into selecting the meme or gif that best represented their feelings about their performance. There were a few key notes learned about this aspect. First being, many students submitted gifs or memes without having attempted the practice. During class discussions, many felt so confused or lost about how to apply the strategy that they felt the practice was pointless and the best way to get my attention was by submitting a distressing meme or gif. While this was the intent of the multimedia submission, it may have affected their engagement in the course, effort in their practical assignments, and performance on the PSAT.

Another item that developed during the study was that students in the teacher-led course began to see the multimedia submissions as a competition, and not an informative tool. Once I introduced thematic discussions of their memes or gifs during the second week, I noticed that for the following weeks, students would gloat or cheer if their meme or gif was selected. Those who were actively trying to get selected responded with disgruntled sighs and would need encouraging to remain academically present during the feedback session. To counter this disappointment, the researcher or a research assistant would visit the student during independent practice time and discuss their submission, understanding of the strategy, then direct them back to the assignment.

Lastly, towards the end of the study, the teacher-led group found out about the student-led group's use of multimedia instruction. They requested the chance to be able to do the same, since much of their feedback was the strategy lessons "didn't make sense" or "had nothing to do" with them. When they were declined to chance to make SAT strategies, they asked if they could create their own memes or gifs. The researcher again declined this as an option because not all students knew how to perform this task,

had the technology outside of class to create these, nor did the schedule would allow for a day for multimedia production instruction. Also, it was clear that there was a clear gulf between those who wanted to make SAT strategies (highly engaged and participatory students) and those who wanted to make gifs or memes (low engagement, non-participatory students). Since the focus on this class was SAT strategy acquisition, the research determined it would not be effective to allow the disengaged students an opportunity to further dis-engaged from the material. This decision played a significant role in their continued participation in the course as many of these students further withdrew their efforts and attention to the class. Again, their disengagement is reflected in the data and their performance on the PSAT.

These lessons indicate that future research could explore how different levels of engagement and disability effects SAT performance. This type of study could address issues observed with academic effort and resilience for urban high school students at risk for failure and/or with disabilities. Additionally, research into self-efficacy and maturity for this population would benefit in effort to provide approachable and consumable SAT instruction as these two elements became clear distinctions between the students in the teacher-led course.

Lastly, future research should explore multimedia instruction of memes or gifs as an expression of cultural and linguistic difference that may hinder learning outcomes for urban students. One of the main topics of this research was to explore cultural and language differences effect on SAT strategy acquisition and application for urban students. However, the closest this study got to capturing these agents was the student-authored multimedia group. This restraint did not produce a reasonable measurement for

students in the teacher-led group. Furthermore, randomization of CAPs and Vlogs, limited the ability to solely identify these facets as distinct. Future research could explore allowing students in both groups to work independently with the multimedia tools assigned. Then permanent products could be analyzed thematically to identify cultural or language distinctions that may surface in their productions.

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APPENDIX A:
LETTER OF INTENT

Letter of Intent

Temple University
College of Education, Teaching & Learning
367 Ritter Hall
1301 Cecil B. Moore Ave.
Philadelphia, PA 19122
DATE

Parent of Student

Dear Madam/Sir,

I am interested in conducting an academic research study at your school. My research topic investigates the effect of using student-authored multimedia to teach vocabulary terms and SAT strategies to urban high school students. The two forms of multimedia components used in this intervention will be Content Acquisition Podcasts (CAPs) and educational YouTube videos (vlogs). This research study has been approved by Temple University's Institutional Review Board and is under the supervision of Dr. Joseph R Boyle associate professor in the College of Education for the Special Education program. This study completes dissertation requirements assigned to completion of the Special Education doctoral program at Temple University. Through my dissertation study, I plan to answer these questions: *Does participation in SAT Verbal prep, in either the teacher-led or student-authored group, increase SAT Verbal scores for high school students than those without any SAT prep instruction? Is there a significant difference in learning outcomes for students who create student authored multimedia instruction versus those who rely upon teacher-led*

instruction for SAT Prep? If any, what is the significance those for with or without disabilities? Do students participating in CAP production outperform Vlog students on SAT verbal scores? Is there a significant effect of the intervention type on a student's disability or language identification? How are cultural and linguist differences demonstrated in student's multimedia submissions for students in both teacher-led and student-authored instructional groups?

Should you require further information regarding the research study, please contact the Office of the Vice President for Research of Temple University, 3400 N. Broad Street, Philadelphia, PA, 19140, 215-707-3390 or Joseph R. Boyle, Associate Professor, Special Education Program, at (215) 204-1099 or joseph.boyle@temple.edu. Tamla Lee, the primary investigator, can be contacted at (678) 76303175 or tamtlee@temple.edu.

Thank you for your time and consideration. I look forward to hearing from you about your child's participation.

Best,

Tamla Lee
Ph.D. Student, Special Education
Temple University

Intervention Schedule

The intended intervention schedule consists of 10 days. The intervention protocol is conducted according to the following schedule:

Week - Day	Group: Assignment
Week 1 - Day 1	Control: Reading Comprehension - Basics CAPS + Vlogs: Identifying Vocabulary
Week 1- Day 2	Control: Reading Comprehension – Dual Passages CAPS: Group Assignments and CAP Overview Vlogs: Group Assignments and Vlogs Overview
Week 2 – Day 3	Control: Reading Comprehension – Data and Graphs CAPS + Vlogs: Strategy Overview
Week 2 – Day 4	Control: Grammar and Writing - Basics

	<p>CAPS: Word Research</p> <p>Vlogs: Video Research</p>
Week 3 – Day 5	<p>Control: Grammar and Writing - Punctuation</p> <p>CAPS: Construction</p> <p>Vlogs: Story boarding</p>
Week 3 - Day 6	<p>Control: Timed Practice</p> <p>CAPS: Recording</p> <p>Vlogs: Filming</p>
Week 4 - Day 7	<p>Control: Essay Writing – Understanding the Prompt</p> <p>CAPS: Editing</p> <p>Vlogs: Editing</p>
Week 4 - Day 8	<p>Control: Essay Writing – Drafting and Writing</p> <p>CAPS: Watch CAPS</p> <p>Vlogs: Watch Vlogs</p>
Week 5 – Day 9	<p>Control: Review</p> <p>CAPS: Review in context</p> <p>Vlogs: Review in context</p>
Week 5 - Day 10	SAT Post-Test

APPENDIX B:
CONSENT/ASSENT FORM

**Comparing the Effectiveness of Student-Authored Multimedia
Instruction to Teacher-led Instruction in Increasing SAT Composite
and
Verbal Scores for Urban High School Students across RTI Tiers**

Tamla T. Lee, M.A.T., M.A

PhD Candidate

Temple University

College of Education - Special Education

I am conducting a research study at Temple University through the Upward Bound (UB) program. My research topic investigates the effect of using student-authored multimedia to teach vocabulary terms and SAT strategies to urban high school students. The two forms of multimedia components used in this intervention will be Content Acquisition Podcasts (CAPs) and educational YouTube videos (vlogs). This research study has been approved by Temple University's Institutional Review Board and is under the supervision of Dr. Joseph R Boyle associate professor in the College of Education for the Special Education program. This study completes dissertation requirements assigned to completion of the Special Education doctoral program at Temple University. Through my dissertation study, I plan to answer these questions: *Does participation in SAT Verbal prep, in either the teacher-led or student-authored group, increase SAT Verbal scores for high school students than those without any SAT prep instruction? Is there a significant difference in learning outcomes on the Verbal section of the SAT for students who create student authored multimedia instruction versus those who rely upon teacher-led instruction for SAT Prep? If any, what is the significance those for with or without disabilities? Do students participating in CAP production outperform Vlog students on SAT verbal scores? Is there a significant effect of the intervention type on a student's disability or language identification?*

Families and students will attend an orientation. At this orientation, the researcher will explain the project, schedule, and expectations for student participation. Families and students will receive consent forms and can submit them at this time. Students who do not submit consent forms at orientation will be given a week timeline to submit. Assignment to lecture or multimedia classes will follow a randomization priority stratification. Priority will be given to students with IEPs, 504 plans, ELL identification, academically at risk, then general education students into groups. Each class sessions is scheduled for 50-minutes of instruction on an alternating schedule, excluding Friday.

Lecture only classes are on Monday and Wednesdays. Multimedia classes are on Tuesdays and Thursdays. Students will be notified of their classes on Wednesday. They are expected to attend classes the following week. Students enrolled in the multimedia group will be divided between CAPs and Vlogs. Each group will have 10 days of instruction according to the schedule previously outlined.

Schedule Overview

Day 1 for both groups will consist of selecting unfamiliar vocabulary terms from a 12th grade academic vocabulary list. These words will be researched and serve as the teaching materials for CAP production. Students in the SAT Vlogs group will compose, film, and edit 2-minute vlogs demonstrating their assigned SAT Verbal strategy. Each vlog will state the strategy, explain the strategy, show the strategy in use as an example, and show the strategy in use with a non-example. Students must show use of the strategy in their vlog. Students are allowed creative freedom in how they teach their strategy for their vlogs.

On the second day of intervention, both groups in the multimedia class will receive an overview of their respective production. For those selected in CAP production, this overview includes dispensing of CAPs instructional guide, example of previous student-authored CAPS, and an instructional rubric for composition. Students selected for SAT Vlogs will have a similar overview. A vlog instructional guide, instructional rubric for vlogging, and YouTube searches for vlogs associated with their topic or strategy. The instructional rubric for both groups serves as a Do's and Don'ts of composition and production. Day 3 will be an instructor lead day that presents all the SAT Verbal strategies with brief descriptions and practice.

Days 4 through 6 are dedicated to student productions of each intervention as outlined in the schedule. Day 7 allows students to make corrections and compile CAPs and SAT Vlogs posting for group-wide viewing on Day 8. During group wide viewing, students will view CAPs and SAT Vlogs according to their group assignments while taking notes. Day 9, review in context, will allow for viewing with test information for direct practice. Day 10 will be the post-test for all groups and conclude the research study.

Students participating in the research study, but are not Upward Bound scholars, will receive a \$100 participation stipend at the conclusion of the study. This stipend is intended as reimbursement for travel expenses to and from Temple University for the research study. Should a student miss more than two days, he or she will be removed from the study and forfeit their participation stipend.

Students participating in the research study as a scholar in the Upward Bound program, will their standard summer stipend as a part of the program. However, should a student fail to meet the program's participation criterion, he or she will be removed from the study and forfeit their stipend.

Signature Block for Child Subject

Your signature documents your permission for the child named below to take part in this SAT Verbal research study.

Printed name of child

Signature of parent or individual legally authorized to consent to the child's general medical care

_____ Date: _____

Printed name of parent or individual legally authorized to consent to the child's general medical care

Assent from child/student

- Obtained
- Not obtained because the capability of the child is so limited that the child cannot reasonably be consulted.

**APPENDIX C:
DATA COLLECTION FORM**

Data Collection form

Comparing the Effectiveness of Student-Authored Multimedia Instruction to Teacher-led Instruction in Increasing SAT Composite and Verbal Scores for Students in RTI Tiers

Tamla T. Lee and Joseph R. Boyle, Investigators
Temple University

The information collected on this form will be used during the de-identification process required under FERPA regulations. This information will not be used to re-identify students.

Student code: _____

Grade: _____

Class: _____

Student Classification (Gen Ed, 504, IEP): _____

If IEP, please indicate disability category: _____

Gender: _____

Race/Ethnicity: _____

Home-Language or ELL status: _____

Free/Reduced Lunch status: _____

GPA: _____

SAT Composite score:

SAT Verbal score:

Intervention group:

Prior to returning this form to the Investigator(s), please ensure the top margin is removed to ensure student anonymity.

APPENDIX D:
CONTENT ACQUISITION PODCAST
GRADING RUBRIC

CAPs Rubric

Name: _____ CAP Word: _____

1. Statement of Purpose or Rational:

0	1	2	3
not provided	limited description	some description	full description

2. Word Consciousness (pronunciation, spelling, syllables, affix) 1 pt

- | | | |
|--|---|---|
| a. Pronunciation: | Y | N |
| b. Spelling: | Y | N |
| c. Word segmentation (syllables) | Y | N |
| d. Affixes (Prefix, root word, suffix) | Y | N |
| e. Keyword Mnemonic | Y | N |

3. Definition:

0	1	2	3
not provided	limited description	some description	full description

4. Synonyms:

0	1	2	3
not provided	limited description	some description	full description

5. Antonyms:

0	1	2	3
not provided	limited description	some description	full description

6. Contextual Use (Academic examples):

0	1	2	3
not provided	limited description	some description	full description

7. Personalized Use:

0	1	2	3
not provided	limited description	some description	full description

8. Use of Visual Aids

0	1	2	3
none used throughout	limited use	some used	fully incorporated throughout

9. Narration:

2	1	0
clear speech	muddled speech/bad audio quality	not provided

10. Submission:

2
on time

1
late

0
not provided

Total: _____ / 30 = _____ %

Notes:

APPENDIX E:
VLOG GRADING RUBRIC

Vlogs Rubric

Name: _____ SAT Strategy: _____

1. Statement of Purpose or Rational:

0	1	2	3
not provided	limited description	some description	full description

2. Strategy Instruction: 1 pt each

a. Strategy stated:	Y	N
b. Strategy in print:	Y	N
c. Step by step approach	Y	N
d. 2 Strategy examples	Y	N
e. At least one non-example	Y	N

3. Use of time:

0	1	2	3
dead air	inefficient use of time	time consciousness	great use of time

4. Transitions:

0	1	2	3
not provided	misuse of transition	applicable transition	masterful editing

5. User friendly Instruction:

0	1	2	3
not provided	unclear instruction	somewhat clear	easy application

6. Clarity in Non-Example:

0	1	2	3
not provided	unclear instruction	somewhat clear	easy application

7. Creativity:

0	1	2	3
Lacks creativity	limited creativity	somewhat creative	original idea

8. Use of Visual Aids

0	1	2	3
none used throughout	limited use	somewhat supports term	enhances understanding

9. Narration:

2	1	0
clear speech	muddled speech/bad audio quality	not provided

10. Submission:

2	1	0
on time	late	not provided

Total: _____ / 30 = _____%
Notes:

APPENDIX F:
CONTENT ACQUISITION PODCAST PRODUCTION REQUIREMENTS:
PEER REVIEW FORM

CAP Production Requirement
Peer Review

Group Members: _____

Vocabulary Terms: _____

Directions: **Please use the boxes to the right to check off required CAP elements. If an element is missing, use the box to note the number present or place an “X” by the missing element.**

- Podcast should be 2 -3 minutes long
- Must state word at least 4 times - once with slow pronunciation (word segmentation)

Must provide:

- Definition
- Synonyms (at least two): List two

- Antonyms (at least two): List two

- Root word/keyword: List word -

- Morphological Awareness (use in another form)
- Visual Aid: either cover art or moving visuals

APPENDIX G:
VLOG PRODUCTION REQUIREMENTS:
PEER REVIEW FORM

Vlog Production Requirement

Peer Review

Group Members: _____

SAT Strategy: _____

Directions: **Please use the boxes to the right to check off required Vlog elements. If an element is missing, use the box to note the number present or place an “X” by the missing element.**

Vlog should be 2-4 minutes long

Must:

State and have strategy name in print

Demonstrate use of strategy on at least 2 examples: List examples

Demonstrate one non-example of strategy: List non-example

Explain reasoning behind strategy (when or why is it used)

Visual Aid:

Have at least one transition

**APPENDIX H:
CAP KNOWLEDGE SCALE:
PEER REVIEW FORM**

Name:

Directions: Please copy the chart below for each podcast you hear. Complete the chart for each word according to your experience.

CAP Term:

Definition:

1 I have never seen this word.	2 I've seen the video but don't know the term.	3 I know something about this word. I think it means:	4 I know this word well. I can use it in an original sentence:

APPENDIX I:
VLOG KNOWLEDGE SCALE:
PEER REVIEW FORM

Name:

Directions: Please copy the chart below for each podcast you hear. Complete the chart for each word according to your experience.

CAP Term:

Definition:

1 I have never seen this word.	2 I've seen it but don't know it.	3 I know something about this word. I think it means:	4 I know this word well. I can use it in this sentence: