EFFECTIVE MUGS:

A GRAMMAR CURRICULUM FOR BASIC WRITERS

by

Katherine Cottle

An executive position paper submitted to the Faculty of the University of Delaware in partial fulfillment of the requirements for the degree of Doctor of Education in Educational Leadership

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"…this is the oppressor's tongue

yet I need it to talk to you…"

--Adrienne Rich

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ABSTRACT

The purpose of this study was to design a grammar curriculum that could help college age students in basic writing classes to identify and correct grammatical errors in their own writing. After reviewing literature in best practices in grammar instruction as well as other kinds of instructional best practices, the grammar curriculum, *Effective MUGs* (MUGs stands for mechanics, usage, and grammar), takes advantage of these best practices including sentence combining, sentence revision, sentence creation, grammar in context, strategies instruction, and Bring Your Own Device (BYOD). The study was designed to measure how effective the grammar curriculum was (by examining student writing in essays as well as grammar exercises), how students used tools in the curriculum (by examining results from cognition labs), and how students and instructors perceived the curriculum (through interviews). The data on student grammatical error from this study must be viewed with reservations because of the lack of statistical significance. The most significant findings were qualitative and offered insight into the strengths of the Effective MUGs curriculum as well as which aspects that need revision. Both students and instructors thought that the gradual release of strategies instruction was one of the most effective tools and they both enjoyed using BYOD in conjunction with Google Docs. Students were most challenged by subject-verb identification and feeling confident about use of unfamiliar sentence elements; instructor interviews confirmed these student challenges. The data from the study will prompt revision to the curriculum as well as enhanced professional development.

Chapter 1

INTRODUCTION

Grammar is a controversial topic in American education. We disagree about whether it should be taught, how it should be taught, and why all of the current widely-used solutions remain unsatisfactory. In terms of a larger cultural argument, we don't disagree that there should be standards in grammar, seen in the concentration on grammar in standardized testing at many levels (ACT, 2016; College Board, 2016; Common Core State Standards Initiatives, 2016; Educational Testing Service [ETS] [GRE], 2016; and ETS [Praxis], 2016). The Council of Writing Program Administrators, The National Council of Teachers of English, and National Writing Project (2011) collectively asserted that "knowledge of conventions" is essential to students being successful college writers in *Framework for Success in Postsecondary Writing*. However, what we're calling a standard in grammar is not really the standard people think it is. People in popular culture think about grammar incorrectly and then classroom practitioners teach grammar incorrectly. Because of ineffective instruction, people who speak and write dialectically continue to be linguistically disenfranchised both in work and in school. The first question of whether grammar should be taught can be answered positively. The questions around how grammar should be offered are more challenging to answer.

There are numerous issues around grammar and grammar instruction; this project is an exploration of those issues in pursuit of a grammar instruction that teaches students how to become more aware of the markers in their own writing that

are in violation of common language conventions. Using multiple educational tools and incorporating a variety of educational aims, this project (the Effective MUGs grammar curriculum) is an attempt to build a curriculum that will teach students how to have greater control over their own writing and speaking. These educational aims include redefining how our students and instructors think about grammar and asserting people's right to their own language by increasing awareness and respect for language differences. This project/curriculum's aims also include reframing the conversation about dialect in a positive way, repositioning Standard English as a dialect (professional academic English), and then offering students reasons that explain the importance of knowing professional academic English. Finally, the curriculum aims to offer prescriptive and explicit grammar instruction and use limited metalanguage to help students analyze their own sentences.

To create a grammar curriculum, the first task is to explore and define the idea of grammar in order to align the definitions into a coherent whole for the purposes of this project. Most people define grammar by the errors they see, hear, or make themselves. These are not violations of grammar, which encompasses all language, but rather Nelson Francis's (1954) "linguistic etiquette." So grammar is a larger idea than just noting errors. However, because we culturally think of grammar as errors, that is what people focus on rather than the idea of grammar as something that describes all language acts. Then the issues (how to instruct) around grammar instruction need to be explored.

One of the issues around how we teach grammar is how we discuss English. We call one English standard, and we call all other languages non-standard. At the same time, we say students have a right to their own language (National Council of

Teachers of English, 1974). This tension can be resolved through educators changing the conversation around grammatical conventions. Instead of discussing English as a standard, in the Effective MUGs curriculum, language use is discussed in terms of choice and context (Strong, 1986; Blaauw-Hara, 2006). The conversation centers around different registers: home language and professional academic English. The discussion of dialects states that while standard English is perceived as a monolith, real language is much more diverse and context-driven.

Another issue with how grammar should be taught is the lack of information that most instructors offer students about dialectal differences. Instructors, for the most part, stop at the binary of Standard English and Non-Standard English. Most students are never taught about dialects in America or globally and especially not that dialects are viewed as linguistically complex and valid (Fogel & Ehri, 2000). Students and instructors are unaware that standards have existed since 1974 that have asked for a multiplicity of language experiences for different communicative tasks (NCTE, 1974a; NCTE, 1974b; and NCTE, 1991). This issue is resolved by changing the conversation around dialectical English to a positive one rather than a negative one (Dyson & Smitherman, 2009; Fogel & Ehri, 2000; Wolfram, 2000). English Language Arts (ELA) instructors, once they learn more about dialectical English, will know better how to discuss dialectal English or home language in terms of strength and achievement (Smitherman, 1998).

Positioning dialectical English/home language as a positive allows educators to position professional academic English and home language as equals rather than one being substandard. In doing so, professional academic English is repositioned as an additional dialect whose conventions are important to learn. While they are equals

linguistically, one dialect (professional academic English) is preferred both educationally and professionally. In school, students are directly assessed repeatedly on the conventions of professional academic English (ACT, 2016; College Board, 2016; Common Core State Standards Initiative, 2016; ETS [GRE], 2016; ETS [Praxis], 2016; NCTE & International Reading Association [IRA], 2012). In school and at work, people are judged morally, intellectually, and disciplinarily for dialectical speech and writing (Blaauw-Hara, 2006; Carlson & McHenry, 2006; Christian, 1997). Educators are obligated to offer grammar instruction that will help students to become better writers; it is part of our mission as teachers to help students to be successful in school and work.

Another issue of how grammar should be taught is that some instructors would prefer not to offer prescriptive grammar; instead, they would like to offer descriptive grammar. An important aspect of this issue is whether grammar instruction should be implicit rather than explicit. Implicit or a lack of grammar instruction can feel like "hidden codes" (White & Ali-Khan, 2013, p. 27), leading to a lack of comprehension for students and a lack of ability to act on the instruction they are receiving. The feelings of incomprehension and frustration are both barriers to learning and retention (Rose, 1980; White & Ali-Khan, 2013). Despite its importance, many students are not motivated to learn professional academic English because of the difficulty of learning a new dialect in one's own language (Fogel & Ehri, 2000). In spite of the difficulty, students have to understand the significance of professional academic English. Students also have to be able to look at their writing and see where the conventions of their home language and professional academic English differ, so they can match the conventions of professional academic English (Fogel & Ehri, 2000). Explicit

instruction is needed to help people adjust their dialects. Further, explicit instruction about academic language can encourage a student to persist (Pascarella, Siefert & Whitt, 2008). This issue is resolved by actually offering prescriptive grammar using explicit instruction with limited metalanguage. This approach is owed students so they can learn the professional academic English dialect and have enough terminology to analyze their own sentences.

Another issue with how grammar should be taught is that the research is very clear about prescriptive or traditional school grammar (TSG), divorced from writing. It, at best, has inconsistent test results; at worst, TSG can have a negative effect on writing quality (Andrews, Torgerson, Beverton, Freeman, Locke, Low, Robinson & Zhu, 2004; Graham & Perin, 2007; Graham & Rogers, 2008; Hillocks, Jr., 1986; and Smith, Cheville, & Hillocks, 2006). The NCTE has had a policy since 1985 stating that grammar instruction in isolation ("drilling") has been proven to be ineffective or even deleterious in improving student writing; in the same statement, the NCTE urged educators to research better methods of grammar instruction. There is still not a research-based consensus on how to offer grammar instruction so as best to impact writing (Hudson, 2016). To resolve this tension, instructors need to be able to explain how a particular approach to grammar is different and develop evidence that demonstrates effectiveness.

After exploring grammar itself and the issues associated with grammar instruction, I researched the most effective approaches or tools in grammar instruction. The grammar curriculum developed for this project, Effective MUGs, employs several evidence-supported grammar tools like sentence combining, sentence revision/transformation, sentence creation, and grammar in context. In addition, the

Effective MUGs curriculum makes use of widely used but not data-supported approaches like consciousness raising, use of metalanguage, and ensuring that the curriculum meets standards from professional organizations for English Language Arts teachers. In addition, I used tools for general instruction that are already a part of the writing curriculum like self-regulated strategy instruction (SRSI), including tools embedded in SRSI like gradual release and collaborative learning. Lastly, I looked for best practices for adoption and use of technology/Bring Your Own Device (BYOD) in the classroom through the standards of technology education organizations and the English Language Arts organizations. The reason for adopting all of these positions and best practices is simple, and it is the overarching goal for all language instruction. Our goal is to offer tools that align students' communication goals and their communication skills as well as give them tools for success in their scholastic and professional lives.

Educational Context

The university where the intervention will be implemented is a medium-sized (20,000 students) university in the Mid-Atlantic region. The university offers associates degrees through doctoral degrees in numerous disciplines (Allied Health, Business, and Education). The university offers open enrollment on the undergraduate level and conditional acceptance on the graduate level. Because of open enrollment on the undergraduate level, the university's students have a range of skills as first-year students. The university places them in English/Writing and Math classes through use of Accuplacer. A majority of these students are placed into one of two levels in Basic English, ENG 095 and ENG 110. ENG 095 is the first in the sequence and ENG 110 is the second, leading up to ENG 121, which is the first college-level composition

class. Students who enter ENG110 come from a variety of backgrounds: traditional age students, returning students, people with high school diplomas, people with GEDs, people who are native English speakers, and people for whom English is a second language. Students in ENG 110 are roughly balanced along gender lines with African-American, Caucasian, and Hispanic students comprising the largest ethnic groups. Because of the broad range of demographics, students have different language instruction needs: some students only need help with mechanics while others need help with mechanics, usage, and/or syntax.

In ENG 095 and ENG 110, the university uses *Supporting Strategic Writers*, a self-regulated strategies instruction curriculum (MacArthur & Philippakos, 2016). Currently, there is no grammar instruction as a part of this curriculum, so individual instructors make decisions about grammar instruction. What individual instructors do (as well as what students experienced K-12) is ineffective judging from the feedback I get when discuss writing at professional development sessions and meetings across the university. Grammatical issues are, by far, instructors' biggest concern. One of my biggest instructional concerns is that when I talk to students about how to improve their sentences, they don't know how to analyze or identify any of the parts of their own sentences. There is a tangible need for an effective grammar curriculum with enough grammar metalanguage to support student diagnosis and revision of their own sentences.

Effective and Prescriptive Grammar Instruction

Direct grammar instruction that is effective in terms of students being able to notice and correct their own errors starts with changing the conversation around grammar, making students aware of their errors, and then employing a number of

instructional approaches or tools, both evidence-supported and not evidence-supported but widely used. Many of the following grammar approaches must be offered with one caveat. Almost all grammatical studies have used K-12 students as their subjects. However, these grammatical approaches can be generalized to students in ENG 110 because they are not yet writing at a college level.

Approaches to grammar instruction that are evidence-based include sentence combining, sentence creation, sentence revision/transformation, and grammar in context. Sentence combining has been employed and researched for a number of years; there are numerous studies attesting to its efficacy (Andrews, et al, 2004; Cooper, 1973; Graham & Perin, 2007; Saddler & Graham, 2005; Saddler, 2012; Saddler & Preschern, 2007; and Strong, 1986). Sentence combining asks students to take simple sentences and combine them into more complex sentences or to take simple sentences that are repetitive and combine the sentence elements by word or phrase embedding. Fogel and Ehri used both explicit instruction and sentence revision/transformation in their 2000 study with positive results. Explicit instruction asks students to look for specific grammatical structures and change them; sentence revision/transformation is when students apply the explicit instruction to their own sentences and make those changes in their sentences (Fogel & Ehri, 2000). Sentence creation was used successfully by Fearn and Farnan (2007). Sentence creation is asking students to write a sentence from a very specific prompt, e.g. “write a compound sentence” (Fearn & Farnan, 2007).

Another data-supported grammar instruction tool is grammar in context. It is also called embedded grammar or contextualized grammar. It is one of the most popular approaches to grammar instruction because of its face value. (Why would an

instructor not approach grammar instruction this way?) The central concept is that instructors look at what mistakes students make or how the student sentences are lacking. The instructor offers grammar instruction as a part of the writing instruction in response to the student errors or lacks. Then students are asked to correct themselves. Constance Weaver (1996) was the first person to codify this approach and Susan Jones, Deborah Myhill, and Trevor Bailey (2012) have since found data to support this approach as effective in improving students' syntactic maturity.

In addition, there are approaches that are not statistically validated but mirror other best practices or are advocated for by researchers. These include consciousness raising, advocated for by ESL researchers like Rod Ellis (2002) and Diane Larsen-Freeman (2009). Consciousness raising mirrors an approach offered by the National Research Council (2000) in *How People Learn* where the exercise is done first and then an explanation is offered contextually as the problems are solved. Another approach is giving students a framework or scheme to use with editing for grammatical issues. This approach is one used in *Supporting Strategic Writers* (MacArthur & Philippakos, 2016). Larsen-Freeman (2007), Myhill (2010), and the National Research Council (2000) also advocate for this approach. Many other researchers as well as ELA organizations have ideas for how the framework should be built and how the standards, practices, and assumptions should be met. Finally, one approach with no data validation but numerous researcher opinions is the use of limited metalanguage in grammar instruction (Hudson, 2016; Kolln & Hancock, 2005; Myhill, 2010).

There are approaches used in other parts of writing instruction that can be used for grammatical instruction in order to reduce student cognitive load and increase

student persistence. Self-regulated strategies instruction (SRSI), used in the *Supporting Strategic Writers* curriculum for ENG 110 classes, has been statistically validated over a wide range of writing activities by numerous researchers (Graham & Perin, 2007; Harris, Graham, Mason, & Friendlander, 2008; MacArthur, 2011; MacArthur, Philippakos, & Ianetta, 2015). SRSI instruction includes guided practice/gradual release, student-centered learning, collaborative learning, and self-assessment; these elements are widely seen as best practices outside of SRSI, also (National Research Council, 2000; Oakley, Felder, Brent, & Elhajj, 2004)

An instructional approach to hopefully increase student engagement in the difficult task of learning professional academic English that will be used is Bring Your Own Device (BYOD). Students will be encouraged to bring in computers, tablets or phones to complete in-class exercises; their familiarity with their own devices will help them to work in new environments more rapidly. Again, students will not have to devote as many cognitive resources to new processes and they will be using their devices to create content (rather than consume content). Use of BYOD will be guided by educational technology standards and serves as a tool for student engagement.

Project Goal

The goal of this project is to create a grammar curriculum that is effective, using instructional tools (activities) that students are already familiar with as well as some new tools. “Effective” means that student skill with identifying and correcting grammatical errors in their own writing is increased so that the number of grammatical errors decrease.

Instructional Design

Currently, the *Supporting Strategic Writers* (MacArthur & Philippakos, 2016) curriculum does not offer grammar instruction, but mini-lessons can be offered every class session or 14 times. The sequence of instruction in the grammar curriculum, Effective MUGs, is guided practice or gradual release: the instructor models the process of sentence combination or transformation (using the Sentence Analysis Strategies Sheet [SASS] [Appendices B and C]), the instructor and class collaborate through the process of combining or revising one or two sentences, and then the instructor releases the students to work independently. Students are asked to self-monitor their processes to judge if the strategies they are using are effective or if they should consider other academic strategies as a part of the *Supporting Strategic Writers* (MacArthur & Philippakos, 2016); asking students to be aware of their own processes will also be reinforced by the grammar curriculum.

The lessons in the grammar curriculum first prepare students for the technology demands and then move into the grammatical exercises and instruction. In the first lesson, students use their own devices to access the lessons and add answers to a form through invites from Google Docs and links from Blackboard.

The next 13 lessons in the curriculum are divided into two types: the first eight lessons each concentrate on specific grammar concept/target MUGs element (tied to a common error); these eight lessons use example sentences from the essays in the *Supporting Strategic Writers* (MacArthur & Philippakos, 2016) textbook and from additional class readings. The last five lessons review frequently occurring errors; the in-class exercises are comprised of unknown student sentences that current students are asked to correct using the Sentence Analysis Strategies Sheet (SASS) as a tool to help them. All 14 lessons have an in-class component of an exercise and the review of

the exercise. For all of the in-class exercises, students are asked to reflect on the effectiveness of their new sentences using sentence review questions like “Is my sentence concise?”

One reinforcement for every lesson is an independent sentence practice that asks students to look at sentences in their own essays and revise them, or write new sentences based on the weekly target MUGs lessons using the SASS as a tool. Students are then asked to identify the elements in the sentences they just wrote or revised including subjects, verbs, and other target MUGs elements (based on what was covered in the class). They are also asked to reflect on the effectiveness of their new sentences using the same sentence review questions as in class. A second reinforcement occurs in each lesson with students being prompted to look for the common errors in their essays and correct the errors in their revised essays using the SASS to aid them in correction.

An intervention model of the Effective MUGs curriculum can be found in Appendix D. The model shows the sequence and iteration of the lessons in the curriculum.

Research Questions

I designed this curriculum to take advantage of multiple instructional tools to achieve the goal of improved student ability to identify and correct sentence errors. This study is a work in development, focused on improvement. I have completed a few cycles of redevelopment already and have planned for more recursive development cycles. The continued development cycles will assess the curriculum for whether it is meeting the goals/outcomes questions (reduction of errors in student writing and student engagement), whether it is feasible with other teachers in other

classrooms, and whether there are gaps in the instruction or delivery. In order to best assess outcomes questions, there are numerous design questions to be answered because any of these could impact meeting the overall goals. The number of design questions reflects the numerous instructional tools being used.

Student Performance Outcomes Questions

Does the intervention (as a whole) reduce student error in writing?

What kinds of errors in student sentences were reduced (mechanical, usage, or syntax)?

Curriculum Tasks and Strategies Questions

Could the students follow the directions for/complete the classroom practices and independent practices?

Were students able to demonstrate that they could use the strategies from the Sentence Analysis Strategies Sheet (SASS) in independent grammar practice?

Student Perceptions of the Curriculum

What was easy to use and what was challenging to use (strategies instruction, sentence combining, sentence revision, sentence construction, and BYOD)?

Did the students find the SASS to be helpful?

Instructor Perceptions of the Curriculum

What was easy to use and what was challenging to use (strategies instruction, sentence combining, sentence revision, sentence construction, and BYOD)?

Did the instructors find the SASS to be helpful?

Did the lesson take an appropriate amount of time?

Chapter 2

LITERATURE REVIEW

The overall goal of this study is to create a grammar curriculum that helps students becomes more aware of the common errors in their writing as well as giving them strategies for fixing those errors. In order to create this curriculum, a short review of historical grammar instruction was completed. Then, I looked at various definitions of grammar to complete a working definition of grammar for this project as well as investigated the reasons why knowing grammatical conventions in English is important but why current instruction and non-discussion of dialects is misdirected. Next, I researched the various controversies or issues around whether and how grammar should be taught, including what kinds of grammar instruction don't work and standards from English language arts organizations. As grammar should be taught, both to improve writing in general and to improve student control at the sentence level, I looked for evidence-supported ways to teach grammar that make writing better (sentence combining, sentence revision/transformation, sentence creation, and grammar in context). In addition, I found some approaches to grammar that are widely used, but not data supported (consciousness raising, frameworks, and use of metalanguage), including theorists and professional organizations discussing guidelines for teaching grammar. Lastly, I found best practices in general instruction, most of which are encompassed by self-regulated strategies instruction (SRSI) (already employed in the classroom setting for this project), and best practices and standards in classroom technology/BYOD use.

Brief History of Grammar Instruction

Grammar, or people's desire to describe their language, has existed since Babylonian grammarians described Sumerian (Huber, 2007; Hudson, 2016). English grammarians have been no different. According to Baugh and Cable (1978), English is a Germanic language structurally with words adopted from various Romance languages first and then world languages later. In the late 17th – 18th century, the Enlightenment ran concurrent with a desire to impose order on English; as a result, several authors wrote English grammar books (Baugh & Cable, 1978). These grammar authors applied Latin (a synthetic language) rules to English (an analytic language) syntax, producing many rules in error (e.g. not ending sentences in prepositions and not splitting infinitive verbs) (Baugh & Cable, 1978; Riley & Parker, 1998). Before the 20th century, English grammar was studied as its own subject as a way to prepare students for foreign languages and as its own mental discipline (Baugh & Cable, 1978; Hudson, 2016). In most countries globally, study of language and grammar is still considered very important and explicit instruction is offered (Hudson, 2016).

Anglophone countries like the US, Britain, and Canada are exclusions to varying degrees to the trend of grammar study being central to education (Hudson, 2016; Kolln and Hancock, 2005). For most of these countries, teachers slowly stopped offering direct grammar instruction in the classroom in reaction to Noam Chomsky's *Syntactic Structures*, culminating in "anti-grammar" sentiment in English teaching organizations (NCTE) and classrooms in the early 1970s until present (Kolln & Hancock, 2005, p. 15). Part of the problem was that the academe was resistant to prescriptive grammar, preferring to work descriptively. However, researchers were also confronted with repeated studies that demonstrated that traditional grammar

instruction (TSG) separate from writing was ineffective in teaching students how to write better (Hillocks, Jr., 1986; Hudson, 2016; NCTE, 1985). The prevailing lack of explicit grammar instruction has produced multiple generations of teachers who struggle with grammar because they are not well-grounded in it themselves (Hudson, 2016; Myhill, Jones, & Watson, 2011). The problem may have compounded itself. In 2003, the National Commission on Writing in America's Schools and Colleges reported the results from a NAEP report showing 20% of students having consistent and numerous grammar errors in their writing. In addition, it is evidence that Kolln and Hancock's "anti-grammar" environment still prevails when reading statements that devalue grammar education like "Writing extends far beyond mastering grammar and punctuation. The ability to diagram a sentence does not make a good writer" (National Commission on Writing in America's Schools and Colleges [NCWASC], 2003, p. 13).

What Is Grammar and Why Is It Important?

Grammar, as most people think of it, is errors: what grammatical errors do people make that other people build assumptions upon? However, grammar is much more than that. Grammar is the building blocks of consciousness and expression because it is one of the primary vehicles for people demonstrating what they are thinking. However, it is hard to build a grammar curriculum on such a big idea, so we have to look at other theorists' more finite definitions of grammar. One definition of grammar is W. Nelson Francis's (1954) multiple grammars, discussed by Mark Blauuw-Hara (2006). Francis writes that people have three grammars: the first is hard-wired in the brain through linguistic exchanges (Chomsky's syntactic structures), the second is a set of conventions that is supposed to define the first (academic

grammar), and the third is “linguistic etiquette” (1954, p. 374) (grammar for judging other people). “Linguistic etiquette” is where people judge others based on linguistic markers (correct/incorrect), but this is not grammar per se (Blauuw-Hara, 2006; Francis, 1954). Hartwell goes on to redefine Francis’s (1954) grammar two as “scientific grammar” [linguistics] and then to define two new grammars; grammar four is “school grammar” and grammar five is a grammar meant to teach style (1985, p. 110). Grammar five is dominated by rhetoric and composition theorists like Richard Lanham, William Strunk and E.B. White (Hartwell, 1985). These are the grammars of people using the language.

However, for people researching teaching grammar, there are further definitions. Grammar can be also be defined as descriptive, prescriptive, generative, or transformative. Prescriptive grammar is Francis’s grammar two and three as well Hartwell’s grammar four: a system of rules offered that everyone is expected to follow in order to stay in the norm (Riley & Parker, 1998). Descriptive grammar is what linguists do: they describe what is happening in people’s language, but they don’t tell people how to speak or write or even what their errors are (Riley & Parker, 1998). Generative and transformative grammar are both based on Noam Chomsky’s syntactic structures and use kernel sentences and students’ intrinsic language abilities to generate new sentences or transform existing sentences (Riley & Parker, 1998). Sentence combining, sentence revision/transformation, sentence creation, and grammar in context are all offshoots of generative/transformative grammar.

Larsen-Freeman describes Chomsky’s syntactic structures a little differently in her description of grammar as “…a system of meaningful structures and patterns that are governed by...form, meaning and use” (2009, p. 521). Form describes the student

making choices, knowing how to add words to create phrases or inflect words; meaning is what the student intends to communicate about time, number, or relationships; and use is the student knowing which form to use to create which meaning (Larsen-Freeman, 2009). Sentence combining, sentence creation, and sentence transformation all take advantage of form and use to create meaning and a framework. The “grammar” for this project is prescriptive, a combination of Francis’s (1954) grammar three, Hartwell’s (1985) grammar four and five, and Larsen-Freeman’s (2007) definition of grammar in terms of choice and development of tools. This grammar also is transformative in that the data-supported grammatical instructional tools have been generated from Chomsky’s work. Lastly, the grammar curriculum is about student command of grammatical conventions and knowing that there are different choices to make in sentence composition.

Issues Associated with Grammar Instruction

People’s Right to Their Own Language

However, a designation of grammar like the one in the previous section does not begin to address the cultural and language complexities that linguists see and describe. Many classroom teachers call one dialect Standard English and all others Non-Standard. "Standard" English is a problematic phrase when used as a criticism of student work. When educators use “standard/non-standard” to describe English, educators tell dialectical or ESL students that their language is non-standard. In telling students that their language is non-standard, educators are telling them that their language is incorrect, undesirable and flawed (Dyson and Smitherman, 2009). Instructors and teachers present correctness in the classroom as the only ideal

(ignoring students' home languages), and this approach sometimes devolves into discussions about the conventions of Standard English that offer rules without coherence. Students then fixate on ideas of correctness at the expense of structure and expression (Dyson & Smitherman, 2009; Graham & Harris, 2009). This desire for correctness in one dialect without recognition of other dialects' value is still a prevailing attitude in classrooms.

However, this attitude runs counter to a National Council of Teachers of English (NCTE) resolution first published in 1972: "Students' Right to their Own Language" (1974a). The resolution states that "We affirm the students' right to their own patterns and varieties of language -- the dialects of their nurture or whatever dialects in which they find their own identity and style" (NCTE, 1974b). The NCTE resolution was published over 40 years ago, yet most educators still do not approach language instruction with the fluidity offered by viewing language use as guided by context and choice. Educators are losing an educational opportunity when they lack information about students' home language because then they can't use home language as a tool for synthesis.

Direct and Positive Communication about Dialectical Difference

Most English language arts curricula, texts, and instructors still adhere to the binary of standard/non-standard and this fixation ignores advances in linguistic and communication theory that holds that all dialects are different, but equally valid (Gabrielle Hermon, personal communication, Fall 2015). Grammar is an element of communication that people use to judge each other's intelligence and achievements, yet it is actually a very poor marker of intelligence (Blaauw-Hara, 2006; Christian, 1997). The NCTE also holds this position: "Language scholars long ago denied that

the myth of a standard American dialect has any validity" (1974a). According to Wolfram (2000), the focus from instructors and students on correctness instead of linguistic diversity shows where more education needs to be offered. Wolfram (2000) asserts that more information needs to be provided to both instructors and students around dialectical language in the classroom at all levels and Wolfram's assertions are supported Dyson and Smitherman (2009). In addition, Donna Christian (1997) writes that dialectic variations do not signal "linguistic and cognitive deficiencies" and that information about dialectical variations need to be central to curriculum design.

In addition to awareness and acceptance of home language as a tool for transformation, other aspects of dialectical language use that have been negatively viewed in previous educational experiences should also be transformed into positives. One example of turning something negative into a positive is students learning that all dialects are internally consistent and complex, just like professional academic English and African American Language (AAL) (Gabrielle Hermon, personal communication, Fall 2015). Fogel and Ehri (2000) write that linguists have viewed African-American language as equally internally complex as professional academic English since the early 1970s. Another example of a transformed positive is the linguistic markers of the resilience of African-Americans. When literacy in English was denied slaves, they adapted African verb conjugation patterns to English verbs (to be) (Smitherman, 1998). This linguistic adaption was powerful, seen in its current place as a part of AAL.

This educational transformation is also necessary for educators because in labeling dialectical English as non-standard, educators risk marginalizing students, reducing their motivation, and lowering their potential for success (Rose, 1989; White

& Ali-Khan, 2013). Instructors should use students' dialectical, or home, language as a bridge to understanding professional academic English. Blaauw-Hara (2006) writes that by using students' home language, students will be more motivated to engage in grammar instruction. Geneva Smitherman (1998), in her analysis of a court case where a school district was found liable because they had ignored students' home languages and left the students illiterate, writes "...when students' primary/home language is factored into language planning policy and the teaching-learning process, it is a win-win for all" (p. 142). All of this information can be used to transform students' attitudes towards their own language, transforming a negative perception of standard/non-standard English into a more positive perception. This new, empowered view shifts Standard English to the dialect of professional academic English and gives non-standard English validation and increased status by naming the dialect home language.

Communicate Importance of Professional Academic English

While it is important to frame discussions about home language in terms of being linguistically equal and contextually desirable, there is no doubt that knowing the conventions of professional academic English is essential to students' success in the classroom and beyond school in their professional lives. People who use professional academic English in speaking and writing have an advantage over those who speak and write dialectically. First, knowing the conventions will help students on standardized testing. Most American curricular standards have language around the importance of grammatical conventions. The Common Core calls them "The Standards of Written English" (Common Core State Standards Initiative, 2016); NCTE's Standard Six speaks to conventions: "Students apply knowledge of language

structure, language conventions (e.g., spelling and punctuation), media techniques, figurative language, and genre to create, critique, and discuss print and non-print texts" (NCTE & IRA, 2012). The *Framework for Success in Postsecondary Writing* more broadly labels grammar "knowledge of conventions" (Council of Writing Program Administrators, National Council of Teachers of English, & National Writing Project, 2011). In addition, standardized tests such as the ACT, SAT, Praxis and GRE test knowledge of professional academic English either through writing or sentence analysis (ACT, 2016; College Board, 2016; ETS [GRE], 2016; ETS [Praxis], 2016).

Knowing the grammatical conventions of professional academic English is not just necessary in testing situations, but it is necessary in classroom situations as well. If students speak and write dialectically, they are judged incorrectly by their instructors in terms of their "intelligence, motivation, and even morality" (Christian, 1997). Dialectical speech also means that students struggle more with writing because the language they use and the language used in educational situations are different (Scardamalia & Bereiter, 1986). This pattern follows people to the workplace. Holly Carlson and Monica McHenry (2006) found a negative correlation between people's strong accents or dialects and their ability to gain employment and rise in rank and position: the accents of study participants could only be “minimally perceived” for them to be considered for hiring and advancement. Mark Blaauw-Hara (2006) cites a 2000 Writing Program Administrators survey that had the same findings: grammatical mistakes lead to “…adverse judgements about the writers” (p. 166). While having others perceive an individual’s accent or dialect can be deleterious for that individual, changing accents or dialects without explicit instruction is a very difficult task (Fogel & Ehri, 2000).

This is one solution for how the tension between using home language and learning professional academic English is resolved. Even though professional academic English has been repositioned as a dialect, students are told directly why it's important for them to master the conventions; it is a dialect whose importance will be central to students' success. Professional academic English is a tool students can use academically and professionally to ensure there is no barrier between others' perceptions of students' skills and intelligence and the students' actual skills and intelligence. The information about why students need to learn professional academic English will also serve as a motivational factor for students.

Because mastering a new dialect in one's own language is so challenging (Fogel & Ehri, 2000), educators owe students explicit instruction on grammar that makes them aware of the legitimacy of their home language or dialect. At the same time, educators need to convince students that being able to code-switch or change registers to professional academic English is something worth pursuing even though changing registers is a difficult task that will require persistence, discipline, and a willingness to look uncomfortably closely at one's own writing.

Argument for Prescriptive and Explicit Instruction

Another issue in the how of grammar instruction is whether or not the instruction should be prescriptive and whether explicit instruction (including grammar metalanguage) should be used as a pedagogical tool. Grammar instruction has an inconsistent history in American classrooms (Blaauw-Hara, 2006; Kolln & Hancock, 2005). Since the early 1960s, there have been people advocating for prescriptive and explicit grammar instruction that is contextualized with reading and writing, and these experts have called for more research in addition (Graham & Perin, 2007; Hillocks,

Jr., 1986; Kolln & Hancock, 2005; Jones, Myhill, & Bailey, 2012; Larsen-Freeman, 2007; and MacArthur, Philippakos, & Ianetta, 2015). Jones et al. (2012) cite a Finnish study (cited by Hudson, 2016) where students were able to improve their punctuation by studying clause structure.

In the meantime, there are rhetoric-composition theorists who have argued against explicit instruction. Directly after pointing out how essential it is for students to observe the conventions of professional academic English, Peter Elbow (1981) writes "the process of learning grammar interferes with writing" (p. 169). Other researchers acknowledge an ambivalence about grammar. Mark Blaauw-Hara (2006) writes that while grammar is less important than structure and it should come last in the composing process, it is still a necessary part of writing instruction. Some researchers have found that any time taken away from writing instruction is not time well-spent (Hillocks, Jr., 1986; Sipes, 2006). Ambivalence may be because of a lack of preparation and comfort with the subject material (Jones et al., 2012).

In spite of these barriers, educators owe students effective and explicit instruction in grammar and academic language in order to help students understand the language conventions of school that will then become the slightly more informal conventions for their work. White and Ali-Khan (2013) call the language of college, including speaking in class and writing for class, "hidden codes" because, most often, direct instruction in these skills does not occur (p. 27). One of those hidden codes is registers: informal or home language and professional academic English. Larsen-Freeman (2009) advocates strongly for explicit instruction in order to reduce seeming randomness in English. Labeling dialects and asking students to be aware of the differences between home language and professional academic English is the

beginning of students adopting more conventions of professional academic English. Explicit instruction in academic language can encourage students to persist because they sense their own growing competence (Pascarella, Siefert, & Whitt, 2008). Students' self-efficacy starts to match their skills.

Without explicit instruction, students do not learn the conventions of the professional academic English dialect used in classrooms and the workplace; this lack of knowledge is detrimental to students in school and after. The detrimental effects are seen in attrition rates in minority students (White & Ali-Khan, 2013), faculty perceptions of student intelligence (Christian, 1997), concerns on a national level that students can't write well (National Commission on Writing in Americas Schools and Colleges, 2003), and an eventual lack of professional promotion (Carlson & McHenry, 2006).

Review of Grammar Instruction

What Does Not Work: Traditional School Grammar

Traditional School Grammar (TSG) is the grammar most people are familiar with from school: filling out drill sheets and taking quizzes. TSG has been studied for decades in this country and the results have been not positive. Richard Braddock, Richard Lloyd-Jones, and Lowell Schoer (1963) wrote in their meta-analysis *Research in Written Composition* that TSG did not improve student composition, but Braddock et al. were reviewing objective testing about writing rather than writing itself. Braddock et al. (1963) did conclude that TSG would have a very small effect on student writing and, because it would be time spent on grammar instead of writing, had the possibility of lowering the quality of student writing.

George Hillocks, Jr's. (1986) grammar meta-analysis found most kinds of TSG to have no positive effects on student writing. Hillocks, Jr. is often cited for the statement: "None of the studies reviewed…provides any support for teaching grammar as a means of improving composition skills. If schools insist upon teaching the parts of speech, the parsing or diagramming of sentences…they cannot defend [the practice] as a means of improving the quality of writing" (1986, p. 138). Steve Graham and Dolores Perin (2007) found TSG instruction to have a -.32 effect on writing quality.

The meta-analyses completed by Hillocks, Jr. as well as Graham and Perin included studies in which grammar was the control condition, not the treatment condition. TSG was the default, not the intervention. A later meta-analysis by Andrews et al. (2006) corrected for that factor by examining studies where grammar instruction was the treatment condition; they still found TSG to have no positive effect on writing. In a British study, students who had been admitted to high-ranking universities were required to take a French class for a second language requirement; after more than 30 hours of explicit grammar instruction, students made minimal to no gains in production (writing) skills (Macaro & Masterman, 2006).

Some researchers think that the lack of data support for TSG is because of the researchers' decontextualized approaches. Jones, Myhill and Bailey (2012) note that in the majority of the TSG studies, the various grammar curricula are administered and then the writing is assessed. However, the instruction in grammar is decontextualized from the writing instruction, and this reduces the success of the intervention (Jones et al., 2012). Other researchers describe the same phenomenon: many people learn grammar on drill sheets, and the skills don't transfer into their writing (Andrews, et al., 2006; Larsen-Freeman, 2009).

Sentence Combining

Sentence combining is an approach employed by various educators since the 1970s (Cooper, 1973), but it has not seen widespread use despite it having the best data support (Saddler & Preschern, 2007). Sentence combining uses Noam Chomsky's ideas of kernel sentences and generative/transformational grammar (Riley & Parker, 1998) and has shown a consistent and positive effect in improving people's writing (Andrews et al., 2006; Hillocks, Jr., 1986; Hudson, 2016; Saddler, 2012; Saddler & Graham, 2005; Saddler & Preschern, 2007; Strong, 1986). Steve Graham and Dolores Perin (2007), in their meta-analysis comparing the effectiveness of various writing interventions, found sentence combining to have a medium positive effect (.50) on writing quality. In Hillock, Jr.'s 1986 meta-analysis, the only methods that he found to be successful in improving student writing were sentence combining and sentence construction; he recommended additional research into sentence combining because it showed the strongest effects.

The data support showed specific and varied effects. Hudson (2016) wrote that sentence combining shows students new ways to arrange words and sentences and so it increases their "knowledge of grammar" (p. 292); Charles Cooper made the same assertion in 1973. Saddler & Graham (2005) found that students wrote better on the paragraph level, and students revised more after learning sentence combining. Andrews et al. (2006) asserted that sentence combining leads to "syntactic maturity" (p. 51). Sentence combining has also been recommended as an instructional tool by Assembly of Teachers of English Grammar (ATEG) (Haussaman with Doniger, Dykstra, Kolln, Rogers & Wheeler, 2017). In addition to using sentence combining for

improving writing, Strong (1986) asserted that sentence combining can be a system for literacy/reading content delivery. Saddler and Preschern (2007) urged teachers to deliver both content and rhetoric in sentence combining by using sentences from class textbooks.

Sentence combining is a method of teaching sentence revision and has a multitude of executed styles. In one style, students are given kernel (simple) sentences and asked to combine them into either compound or complex sentences using conjunctions, or students embed phrases and words into other sentences (Strong, 1986). Strong (1986) first discussed cues; Bruce Saddler (2012) also employed cues in his curriculum. Cues can be a word in parentheses or an underlined section of a sentence that shows students what needs to be in the combined sentence (Strong, 1986); uncued sentences offer students no clues for how to combine the sentences. Instead of students being offered terminology, they are offered the cues to help them combine sentences. Andrews et al. (2006) defined sentence combining as taking incorrect sentences and simplifying or revising them; the revision can be embedding additional phrases to kernel sentences to make the sentence richer. Constance Weaver (2007) used sentence combining in her book, *The Grammar Plan Book: A Guide to Smart Teaching*; her model has students embedding different kinds of phrases into sentences. According to Saddler (2012), sentence combining is a powerful intervention because it has minimal terminology use, and students are shown that there are multiple choices for how they could write or revise their sentences. This knowledge/control will help students reduce errors in their writing (Saddler, 2012). One of the features of sentence combining is ensuring that students are aware of the

linguistic choices that they have when they combine sentences. This is an approach that was advocated by Myhill (2010) and Sipe (2006), also.

Saddler (2012), Strong (1986), and Weaver (2007) asserted, within sentence combining, that students should develop measures to judge their own sentences. Weaver (2007) further asserted that effectiveness is better than correctness as a yardstick. Effectiveness is judged by "clarity and directness of meaning…rhythmic appeal, and…intended audience" (Weaver, 2007, page 12). It is interesting that "intended audience" is part of "effectiveness," but "error correction" is not part of the definition of "effectiveness" when the errors are the first thing the audience will make note of, reducing the effectiveness of the writing.

The sentence-combining lessons for the grammar curriculum for this project were modeled after a sequence of lessons that Bruce Saddler and Steve Graham used in their study in 2005, and Saddler expanded to book length in 2012. The Effective MUGs curriculum kernel sentences and cues came from the *Supporting Strategic Writers* (MacArthur & Philippakos, 2016), and other readings from the class for the lessons in the first part of the semester. In the latter part of the semester, students revised uncued sentences from unknown peers in the Effective MUGs curriculum.

Sentence Revision

Sentence combining is heavily researched compared to the next two approaches, but both approaches are evidence-supported. The first approach is sentence revision. Fogel and Ehri (2000) asked what would happen if students were given specific African American Language (AAL) markers to correct for (without telling any of the participants that it was from AAL) that were in violation of the conventions of professional academic English. Fogel and Ehri (2000) made an

important assertion about how to offer grammar instruction because learning another dialect in one's own language is difficult and even more so without explicit instruction. The researchers offered the teachers professional development, but were careful not to name the errors as AAL; Fogel and Ehri (2000) presented the errors as common errors and the teachers agreed. The education materials that Fogel and Ehri (2000) designed were explicit and direct instruction that showed students where their dialectical markers were different from professional academic English conventions. Students could differentiate the dialectical markers and professional academic English markers (Fogel & Ehri, 2000), but the students were never told the origin of the linguistic markers they were looking for.

The first group of students was given exposure to the materials (E), the second group of students was given both exposure to the materials and they were offered strategies (ES), and a third group was given exposure, strategies, time to practice with the materials, and feedback (ESP) (Fogel & Ehri, 2000). The ESP group improved dramatically over the other two groups; in addition, the students retained the knowledge, and they were able to apply their new skills to assignments not directly tied to the learning tasks for this project (Fogel & Ehri, 2000). The study was cited by Andrews et al. (2006) as an approach that justified further research.

One interesting thing about the study was that as students became more aware of their errors, their self-efficacy dropped (Fogel & Ehri, 2000). The students who improved the most (had the fewest AAL markers in their writing and were able to identify the most AAL markers) were the ones who took the biggest losses in self-efficacy (Fogel & Ehri, 2000). However, this is not the negative factor that it could be. Once students have a more realistic view of themselves and their abilities, they are

motivated to make their abilities match their goals. It is the beginning of Vygotsky's Zone of Proximal Development (Hofstetter, 2015). Discussion about home language, contextual communication, and the difficulty of switching dialects could help to motivate students past the beginning of the process when all they can see is the gap between their current skills and what skills they wish they had.

Sentence Creation

A second approach that has very promising empirical evidence (although not as rich a body as sentence combining) is sentence creation. A study by Leif Fearn and Nancy Farnan in 2007 found that asking students to write sentences in response to specific grammatical prompts improved both their writing and their ability to perform in high stakes grammar testing. Fearn and Farnan (2007) agreed with Hillocks, Jr. (1986), Jones et al. (2012), and Kolln & Hancock (2005) as well as numerous other researchers in writing that grammar instruction (TSG) separate from writing instruction can be deleterious for students. Fearn and Farnan's (2007) aim was to create a grammar curriculum that performed two tasks: improving writing and helping with standardized test scores. Fearn and Farnan (2007) made their grammar instruction function-based (What is the word doing in the sentence?) as opposed to label-based (What are the eight parts of speech?) in order to perform both tasks.

The treatment group received function-based instruction; they wrote and analyzed their own sentences (Fearn & Farnan, 2007). Fearn and Farnan (2007) described their treatment approach as "…feature[ing] prescriptive rather than descriptive instruction…students wrote in the grammatical functions (i.e., prescriptions)….[and] search[ed] for them in what other people wrote" (2007, p. 66). This approach used the knowledge of sentence construction that all students bring to

the task with them already (Chomsky's syntactic structures (Riley & Parker, 1998) and Francis's (1954) internal grammar two). The control group wrote a lot more than the treatment group and engaged in TSG (Fearn & Farnan, 2007). Fearn and Farnan's (2007) experimental group saw improvement in both writing quality and in tests for fluency and mechanical control. The control groups saw roughly the same rate of improvement on tests for fluency and mechanical control. However, the control groups saw a slight decrease in the quality of the writing (Fearn & Farnan, 2007).

The Effective MUGs curriculum asks students to either revise sentences or rewrite sentences based on prompts (independent sentence practice, first drafts of essays, and revised essays), using the Sentence Analysis Strategies Sheet (SASS) to remember the conventions of professional academic English. Students are then taking advantage of both sentence revision/transformation and sentence creation in their independent sentence practice as well as being mindful of their sentences in their essay writing.

Grammar in Context, Embedded Grammar Instruction, and Contextualized Grammar

Grammar in context is a teaching approach that is commonly used, but it doesn't have the rich research support that one might expect. Except for Jones, Myhill, and Bailey (2012), this practice has not been empirically studied. Grammar in context is an approach that was first theorized and proposed by Constance Weaver (1996). The basic model of grammar in context is that instructors note which errors students make, teach to those errors, and hold the students responsible for self-monitoring and self-correcting. As Weaver (1996) originally conceived grammar in context, there was direct instruction in sentence elements (subjects and verbs) and parts of speech. Fogel

and Ehri (2000) were working in the grammar in context model when they applied sentence revision and transformation to a local problem. In addition, grammar in context has been employed as a best practice by Blaauw-Hara (2006); MacArthur, Philippakos, & Ianetta (2015); and Sipes (2006).

Grammar in context is embedded grammar because the grammar instruction is embedded in the writing instruction. Christy (2005) describes embedded grammar as a mix of prescriptive and descriptive grammar that is tailored to students through use of prior learning assessments and then planned in response to student errors. Contextualized grammar is also embedded grammar because the grammar instruction is embedded in the reading, as designed by Jones, Myhill, and Bailey (2012).

Contextualized grammar instruction is when a certain grammatical construct is seen in what students are reading, so instructors draw students' attention to it and have them practice the construction (Jones, Myhill, and Bailey, 2012). Deborah Myhill has employed contextualized grammar instruction in many of the studies she has worked on, based on the work of Fogel and Ehri (2000), Fearn and Farnan (2007), and Weaver, (1996) (Jones et al., 2007; Myhill, 2010; and Myhill, Jones, Watson & Lines, 2013). In addition, Willis and Willis (1996) recommended an embedded grammar practice in first calling student attention to classroom texts for grammatical structures, and then asking students to analyze and reproduce examples as a part of consciousness-raising.

Many theorists write about grammar in context as a best practice. Hudson advocated for grammar instruction that "…lead[s] directly to applications of grammar" (2016, p. 291). Bruce Strong (1986), a sentence combining researcher, posited that grammar in context benefits sentence combining lessons. Strong (1986)

also wrote that embedded grammar allows students to be aware of "'situational contexts' (situation, purpose, [sic] audience)" when they are revising sentences (p. 26). For Strong (1986), as long as sentence combining lessons are closely aligned with areas of individual student need, they are highly beneficial to students; otherwise, they can be seen as busywork. Saddler and Preschern (2007) made the same assertion; they advised instructors to first see what issues students have.

While many theorists support grammar in context, very few looked for data until Susan Jones, Debra Myhill, and Trevor Bailey (2012), using Weaver's ideas, created a curriculum using targeted grammatical features, and tied the features to specific writing genres that students were writing and reading. The researchers were focused on syntax and other sentence features as signs as improvement; they did not measure reduced frequency of errors. Jones, Myhill, and Bailey's (2012) use of grammar in context tied to specific prompts produced a significant improvement in the writing quality of those students in the treatment group. The students in the comparison groups did not make nearly the same gains in syntactic maturity. However, there is an interesting thing in this study. The more able students had greater gains than the less able students (Jones et al., 2012). The failure to address error correction and the lack of gains on the part of the less able students indicates a need for more explicit instruction. The more explicit instruction is necessary for students to have command of their sentences and then they will be able to work with the linguistic features of Jones et al.'s (2012) study more easily.

What Might Work: Widespread Approaches That Lack Empirical Evidence

Consciousness Raising

The first approach that is not directly validated by data but is used in ESL instruction is consciousness-raising. According to Ellis, as cited by Willis and Willis (1996), consciousness-raising is a practice that has students working with a grammatical element that has been identified, then they are given information about the grammatical element, and then they work with the grammatical structure through analysis or duplication. Willis and Willis (1996) further identify consciousness-raising as "guided problem solving" (para. 6). This practice allows the students to see something concrete about the concept they are about to learn and directly apply the knowledge (Ellis, 2002; Larsen-Freeman, 2009; and Willis & Willis, 1996). The indirect evidence for using consciousness-raising as a part of the curriculum comes from *How People Learn*: the authors have a concept called "progressive formalization" where students show what they know, see where they have misconceptions, and then make corrections based on new knowledge (National Research Council, 2000, p. 137). Consciousness-raising and progressive formalization are the same sequence of steps. Sentence combining and consciousness-raising also follow the same steps of self-regulated strategies writing instruction of gradual release (MacArthur & Philippakos, 2016). This is ideal because the grammar curriculum will mirror the writing curriculum; this will remove the barrier of a new process.

Willis and Willis (1996) first advocate that students be able to identify subjects and verbs in sentences so they can see where clause structures sit. This practice has been incorporated into the Effective MUGs curriculum as a part of the Sentence

Analysis Strategies Sheet (SASS) as well as the in-class exercises and the independent sentence practices (homework).

Standards from the National Council of Teachers of English (NCTE) and the Conference on College Composition and Communication (CCCC)

The NCTE and CCCC, professional organizations for English language arts teachers, have assumptions, positions, and standards that have informed this project. The standards that directly address language instruction directly follow while standards that address technology use in English language arts classrooms are in the later technology section. NCTE and CCCC standards address spatial, cultural, and instructional classroom expectations.

In 1991, the NCTE published their *Position on the Teaching of English: Assumptions and Practices* and it includes how to design a classroom space. These standards demand that instructors construct option–rich learning experiences where student acquisition is based on their choices and what they learn from it (NCTE, 1991). The standards demand that students honor and learn from other students' cultures, abilities, languages, audience awareness, and previous learning/personal experiences (NCTE, 1991). Language is defined as the vehicle of growth, expression, social connections, and, largely, how people are perceived; knowledge is defined as continuously being built, based on (but not consisting of) information and awareness of what forces influence culture (NCTE, 1991). Instructors are asked to be fluid in their roles in the classrooms (as both instructors and learners), reflective of their practices, and able to create a safe classroom community for students where mistakes are valued as learning opportunities (NCTE, 1991). The standards assert that students

should be assessed for what is important for them as learners now and professionals later (NCTE, 1991).

An additional part of the framework is offered jointly by the NCTE and International Reading Association (IRA). From the *NCTE/IRA Standards for the English Language Arts* (2012), standards three and six speak to using multiple tools when analyzing or creating text including knowledge of syntax and conventions. Standards four and nine speak to recognizing changes in register and having the tools to write and speak more or less formally as the communicative situation demands (NCTE, 2012). Standard nine also speaks to recognizing and valuing diverse cultures and dialects (NCTE, 2012).

Use of Metalanguage

There is one approach, use of limited grammar metalanguage, that I am using which is not data-supported. It is not data-supported because of the tie between grammar metalanguage and TSG. While all of the previous approaches are best practices or widely used, this one element that has been called into question by research. Grammar metalanguage has been shown to be barrier in improving sentences and writing in some studies (Larsen-Freeman, 2009; Willis & Willis, 1996). Myhill (2010) seemingly supports this position when she wrote that some researchers think that knowledge about language doesn't need to be explicit as long as students are writing effectively.

However, other theorists, including Myhill, disagree. Hudson (2016) wrote that, concerning grammar metalanguage, students need to be able to label the parts of the sentence and how they interact, so some metalanguage is valuable. Myhill (2010), however, does support use of metalanguage; she wrote that use of metalanguage in

instruction at all levels (words, sentences, and whole text) might help students identify how their language choices impact their message. Students who use metalanguage will be able to better to judge their own sentences as well as metacognitively analyze their own choices (Myhill, 2010). Both of these analyses are means towards better writing (Myhill, 2010).

ATEG offers some very direct recommendations about metalanguage use (Haussaman with Doniger, Dykstra, Kolln, Rogers, & Wheeler, 2017). Guidelines from Haussaman et al. (2017) include that instructors should use metalanguage in order to show students how to be deliberate in their communicative practices. Instructors should limit the number of concepts they introduce, and they should show parallel structures in both reading assignments as well as writing assignments (Haussaman et al., 2017). Instructors should avoid employing traditional parts of speech identification; instead, instructors should present sentence "frames" or tests they can perform on sentences to determine subjects and verbs in sentences (Haussaman et al., 2017; Noguchi, 1991). These tests include inserting tag questions, negative adverbs, pronouns, and an introductory clause ending in a relative pronoun (Haussaman et al., 2017; Noguchi, 1991).

The most powerful argument for use of limited metalanguage is that in order to identify what potential sentence errors they are producing, students have to be able to name basic sentence elements and know how to manipulate them. The Effective MUGs curriculum contains a manageable amount of metalanguage so students can describe the basic elements of their sentences (subject, verbs, conjunctions, punctuation, infinitive verbs, and prepositional phrases) and adjust their sentences to match professional academic English. The tension between offering metalanguage or

not is resolved by offering minimal metalanguage in this curriculum and always applying it directly to the text that the students are reading or writing. Students are also not asked to identify parts of speech, but, instead, a word's function in the sentence. Even without metalanguage, students can describe what the words are doing in the sentence.

Strategies Instruction

The *Supporting Strategic Writers* curriculum (MacArthur & Philippakos, 2016) draws from a rich body of research in self-regulated strategies instruction (SRSI), cognitive theories of writing, and theories of motivation (MacArthur, 2011; MacArthur, Philippakos, and Ianetta, 2015). The central tenet of SRSI is that struggling student writers can learn how to employ the tools that experienced writers use (MacArthur, 2011; MacArthur et al., 2015). SRSI is an effective method for teaching writing that is cited in numerous studies including meta-analyses from Graham and Harris (2009), Rogers and Graham (2008), and Santangelo, Harris, and Graham (2016). In addition, Graham and Perin (2007) show a strong positive effect (d = .82) of strategies instruction on improvement in writing.

One tool of SRSI is guided practice or gradual release (MacArthur, 2011; MacArthur et al., 2015). Many studies of sentence combining (and writing in general) feature both guided practice and scaffolded instruction (Saddler & Graham, 2005; Saddler & Preschern, 2007). The gradual release model seen in *Supporting Strategic Writers* is also seen in Diane Larsen-Freeman's work, termed "present, practice, and produce" (2009, p. 523). In the *Supporting Strategic Writers* curriculum (MacArthur & Phillipakos, 2016), students are guided through the steps in the writing process (planning, drafting, and revising) first through the instructor modeling and thinking aloud. Then the students and instructor collaborate to produce a text before the students produce a text themselves. The goal is for students to take the tools learned in the class and use them independently, not just in this class, but also across the curriculum (MacArthur & Phillipakos, 2016). While the writing process is being

released to the students, instructors are also reinforcing the writing process with self-regulation, self-evaluation, and motivation tools. These processes show students how to train themselves to be persistent and patient over a long task (MacArthur & Phillipakos, 2016).

A tool used in SRSI that helps with the engagement of students is use of collaboration. By allowing students to work in groups, some of the resistance that people express when confronted with a grammar lesson will be lessened because students will feel less intimidated. Collaborative learning has proven to be a very powerful tool in numerous educational settings (Oakley, Felder, Brent, & Elhajj, 2004), not the least of which is writing interventions (Rogers & Graham, 2008). Students in this class will already be familiar with peer review from the *Supporting Strategic Writers* curriculum (MacArthur & Philippakos, 2016), so this collaboration will feel familiar to them. The Purdue Online Writing Lab (OWL) (2009) and Mark Blaauw-Hara (2006) also consider collaborative peer review a best practice.

Every tool used in the *Supporting Strategic Writers* curriculum is evidence-supported and the curriculum has been tested over numerous stages in a study (MacArthur et al., 2015). (The local context/university participated in an earlier stage of the MacArthur et al. [2015] study.) For writing quality, students who were a part of the treatment group improved an average of 2.5 points on a 7 point scale; the control group improved an average of 1 point out of 7 (MacArthur, et al., 2015). However, in this study, there was minimal to no grammar error reduction seen and no difference between the control group and the treatment group; this study called for additional research into grammar instruction to support the self-regulated strategies instruction curriculum (MacArthur et al., 2015).

Best Practices in Classroom Use of Technology

Best practices for classroom technology use are drawn from standards from several professional organizations including the Association for Education Communications and Technology (AECT), International Society for Technology in Education (ISTE), the National Council of Teachers of English (NCTE), The College Conference on Composition and Communication (CCCC), and the US Department of Education. Standards are drawn from these areas because of the content matter (writing and grammar) as well as various media and technology tools used to work with the grammar curriculum for this project. Many of the standards repeat across professional organizations, both in technology education and ELA technology use.

All five standards from AECT directly address this grammar curriculum project: content knowledge, content pedagogy, learning environments, professional knowledge and skills, and research (2012). The first AECT (2012) standard, "content knowledge," requires that instructors are first grounded in their subject and then the instructors use technology to enhance student learning of the content (para. 1). For this standard, it is important that educators think about the technology they use and whether it is increasing the efficacy of the lesson (AECT, 2012). Figuring out which technology to use to improve the grammar lessons has been an important consideration throughout this project because the technology had to engage students in the study of grammar but the technology could not overwhelm the grammar content. Google Docs was the best choice for ease of access and variety of formatting options.

Lesson efficacy is also addressed in the second AECT (2012) standard, "content pedagogy" (para. 3). This standard asks that not only do the lessons and technology offered to students improve their skill set, but that instructors have a clear view when they look at student performance and use those results to improve the

lessons (AECT, 2012). This standard also asks that instructors design curriculums with multiculturalism, flexibility, and inclusion in mind as well as a safe space for students to help each other learn (AECT, 2012). All aspects of this standard are important features of the Effective MUGs curriculum, especially the iterative nature of improving the materials. Multiculturalism, inclusion, and safe spaces are hopefully axiomatic in the curriculum because these are features that are fundamental to education as a whole as well as best practices in all professional standards that were consulted (AECT, 2012; International Society for Technology in Education [ISTE], 2008; NCTE, 1991). In the in-class exercises, students being put in pairs to work is one response to this standard; this pedagogical strategy helps students to teach each other. Students having access to the classroom computer is another response to this standard; a student does not need her own device to complete the exercise. Students being able to work on paper or a device (or their own device at all in the classroom) is a way to offer flexibility in the curriculum.

AECT's (2012) third standard is about "learning environments" (para. 5). The standard asks that instruction is based on best practices and that the designer work to remove all potential barriers to student learning (AECT, 2012). Further, the standard asks that data about student performance is collected from several different kinds of assessments to determine if the instruction is effective, and instructors think about strategies for technology needs as the needs change (AECT, 2012). Lastly, this standard again asks for consideration of diversity as well as offering students freely accessible materials and educating students about Fair Use and copyright (AECT, 2012). The learning environment of the Effective MUGs curriculum is modeled after the *Supporting Strategic Writers* curriculum (MacArthur & Philippakos, 2016), so

many evidence-supported best practices are built into the grammar curriculum already; I hope to use future iterations and studies to improve the Effective MUGs curriculum. In addition, students are assessed across multiple writing tasks over the course of the semester. The materials for the curriculum are freely available on Google Docs; the materials model ethical use of sources in the citations of the in-class exercise sentences from *Supporting Strategic Writers* (MacArthur & Philippakos, 2016).

The fourth AECT (2012) standard is about "professional knowledge and skills" (para. 7). This standard asks that instructors explore the use of technology to enhance learning and form their own learning communities to help (AECT, 2012). Instructors should be able to work on teams as well as lead teams to look at the multiple assessments to see where instruction needs to be revised to improve student performance and where assessment needs to be redesigned to align with changing instructional needs (AECT, 2012). While I do not have a team of peers for this project, I do have multiple stakeholders (instructors, students, and advisors) whose experiences with the Effective MUGs curriculum created a learning community and informed revision plans for the instructional materials and professional development for technology-assisted grammar instruction.

The last AECT (2012) standard, "research," asks that instructors use past and present educational and technological research as touchstones, the scientific method in examining student performance, and rigorous study of results to determine what are the most effective instructional materials and delivery mediums (para. 9). The Effective MUGs curriculum was designed by consulting past researchers, creating a case study to see how successful this iteration of the curriculum was, and then reviewing results to revise the curriculum.

In addition to AECT, there are other standards around technology in education. Educator standards for the International Society for Technology in Education (ISTE) (2017) echo the AECT standards (2012), but ISTE organizes their standards by the multiple roles of an educator. The first role of an educator is that of a "learner," an educator who is diligent about researching best practices in his field as well as in technology education (from proximal and face-to-face learning communities to digital and far-flung communities as well as more traditional resources) in order to improve his students' learning (ISTE, 2017, para. 1). This standard is met by ongoing research into best practices in grammar instruction in the United States as well as other Anglophone countries like England and Australia (Hudson, 2016; Myhill, 2010).

The second ISTE role for educators (or standard) is that of "leader" (2017, para. 2). This role asks that teachers look for chances to promote positive change in their environments (ISTE, 2017). Educators should advocate for student control of students' own learning processes but also provide students "equitable access" to learning materials; "equitable" in this case means adaptable to many different kinds of learners and rich in the use of technology (ISTE, 2017, para. 2). This standard is met by creating a grammar curriculum that offers students tools that will help them learn professional academic English by taking advantage of multiple best practices in grammar instruction, best practices in writing instruction, and use of Bring Your Own Device (BYOD)/Google Docs. BYOD, Google Docs, and paper copies make the Effective MUGs materials more equitable because students have multiple modes that they can employ to interact with the Effective MUGs curriculum.

The third ISTE (2017) role for educators, "citizen," asks instructors to model digital citizenship (para. 3); the Effective MUGs curriculum shows ethical use of

resources in citing the sentences used in the curriculum from Supporting Strategic Writers (MacArthur & Philippakos, 2016), but it does not contain other activities supporting positive online presences. The fourth ISTE (2017) role for educators, "collaborator," asks instructors to create professional learning communities as well as get student feedback on instructional materials (para. 4). It also asks that instructors make use of technology to increase contact with global learning communities for educational experiences that are perhaps problem-based, but definitely based in later professional needs (ISTE, 2017). This standard also asks that instructors demonstrate "cultural competence" (ISTE, 2017, para. 4). Students being able to revise their own sentences to communicate professionally is something that is essential for their success, and that point is communicated frequently throughout the curriculum. Other ideas that are communicated throughout the curriculum that address the idea of cultural competence are respect for students' home language and the difficulties of learning new dialects in one's own language. Discussing these ideas starts students from a position of strength in learning professional academic English.

ISTE's (2017) fifth role of an educator is that of a "designer"; educators are asked to design materials that offer flexibility for different kinds of learners and use technology to improve learners' experiences and achievement (para. 4). Educators are additionally asked to design learning materials that are interactive and engaging as well promote learning that will transfer into other subjects (ISTE, 2017). Effective MUGs is offered through multiple modes for in-class exercises and independent student practices. BYOD and Google Docs were chosen for the ease of interaction and formatting. They were also chosen because hopefully the novelty of getting to use devices in class engages students. The sixth role of an educator, according to ISTE

(2017), is that of “facilitator” (para. 6), and that role dovetails with the “designer” role (para. 5). The curriculum design that an educator completes has to be carried out in a classroom where students are responsible for their own achievement and offered strategies to meet their goals (ISTE, 2017). All students want their communicative skills to match their communicative goals, and this curriculum offers students a reason to achieve (future academic and professional success) and tools to help them achieve their goals. (The curriculum offers students pragmatic strategies for being thoughtful about their own sentences like tag questions and word placement in a sentence).

The last role of an educator that ISTE (2017) delineates is that of “analyst” (para. 7). This standard asks that educators produce data for themselves (so they can improve instructional practices) and for students (so they can take ownership of their learning) (ISTE, 2017). This standard also asks that educators assess students in multiple ways and use technology to offer multiple strands of student assessment (ISTE, 2017). In the Effective MUGs curriculum, the student is already centered as who is in control of that student’s success because of a tool in the *Supporting Strategic Writers* curriculum called “The Strategies for Academic Success” that helps students set and monitor progress towards goals (MacArthur & Philippakos, 2016). This data gathered from this project was gathered from technology-based sources like learning management systems (Blackboard) as well as Google Docs. To gather data for this study, students were assessed through multiple kinds of class activities like first drafts of essays, revised drafts of essays, independent sentence practices, a pretest, and a posttest, but only the pretest was limited in its use of technology.

The education leader standards for ISTE (2018) are focused on inclusion and empowerment of both instructors and students. While some of the standards here are

future goals that I aspire to ("empowering leader," "visionary planner," and "systems designer") (ISTE, 2018, paras. 2-4), the roles that most apply to this project are "equity and citizenship advocate" and "connected learner" (ISTE, 2018, paras. 1 & 5). The educational leader as an advocate for equitable treatment for her students seems axiomatic, but this standard also asks for technology as a tool for equitable treatment and making sure people have the technological access and tools that they need, both instructors and students (ISTE, 2018). For this project, both BYOD and students using the class computer meets this standard. BYOD ensures that students bring in the technology they're most comfortable with, but use of a computer means that students have access to a full range of tools that they might not have on a phone or a tablet. This standard was met for instructors by designing the Effective MUGs curriculum around the standard technology set-up in the classrooms we teach in. All technological access and tools that instructors would need were a part of this standard set-up except for Google Docs, but both instructors already had experience with Google Docs.

The other ISTE (2018) education leader standard (or role) that applies to the Effective MUGs curriculum is that of "connected learner" (para. 5). This standard speaks to the necessity of developing the lifelong learners' discipline of always trying to improve knowledge of technology and pedagogy as well as remain connected to local and global learning communities (ISTE, 2018). This standard also speaks to the importance being able to negotiate and develop educational technologies, and how reflection can be a tool of continuous learning as well as change management (ISTE, 2018). This standard is addressed in the Effective MUGs curriculum through the numerous iterations and revisions that went into creating the lessons. Because the accessibility was an issue for students in earlier iterations (due to a systems change), I

looked at numerous other pieces of software to see if any were easier than Google Docs for access and formatting, and looked at educator's chat rooms as well as the educational technologists I work with to see if there were better options. (There were not.) In the future, I need to consider universal design for learning as a part of this technology standard.

In addition to technology education organizations standards, there are standards in English language arts instruction related to technology use in the classroom. One of the most basic standards is use of a word processer because it has been shown to have a moderate positive effect (.55) on writing quality (Graham & Perin, 2007). Technology has also been shown to help writers who struggle with writing by hand; those students who struggle to record their thoughts in handwriting are not progressing to more complex writing tasks (MacArthur, 1999). The NCTE College Strand has "assumptions, aims, and recommendations" (1989) about classroom instruction. The NCTE (1989) advocates for active learning, instruction in critical skills for multimedia, and community support of students. Instructors function as coaches in a process that starts with prior learning where the instructor assists students in building their own knowledge. NCTE (1989) emphasizes not just the classroom, but how students' future professional and community lives are impacted by learning processes in college. These aims are met in Effective MUGs by the active learning in the lessons, the expectation of professional academic English regardless of modality or device, and individual feedback.

English instruction on the post-secondary level is recorded and theorized by the College Conference on Composition and Communication (CCCC). The CCCC (2004) standards related to technology require that students learn how technology can

be used to build knowledge and learn how the form of technology influences what students learn. This standard is met by using student devices as tools for creation (in professional academic English) rather than just consumption. Further, the CCCC (2004) asks that classrooms provide hands-on learning opportunities that build skills for use in school, but the skills can also extend to students' careers and communities. The skills of professional academic English across modalities will be benefit students, especially since it is all hands-on learning. The CCCC (2004) also asks that students reflect on their skill building practices, already a feature of the *Supporting Strategic Writers* curriculum (MacArthur & Philippakos, 2016). This standard is met in the Effective MUGs curriculum by the reflective questions students use to review their sentences.

In 2008, the NCTE wrote their *Definition of 21st Century Literacies*. This definition asserts "the 21st century demands that a literate person possess a wide range of abilities and competencies, many literacies" (NCTE, 2008, para. 1). This standard is met in the Effective MUGs by the multiple literacies demanded: reading, writing, print, digital, text consumption, and text creation. Students should be competent with a range of technologies, and this competence will help them to build relationships with diverse communities both locally and at a distance. The ability to build relationships will help in collaborative work as well as improve student critical thinking (NCTE, 2008). This standard is met in the Effective MUGs curriculum with pair work and the whole class review of classroom exercises.

Chapter 3

METHODOLOGY

Context and Participants

The participants in this study were from an open-admissions, non-profit, private university in the Mid-Atlantic. The university has about 20,000 students and has robust online offerings as well as face-to-face classes. All of the student participants in this study were in two sections of a basic writing course that prepares students for college-level writing. The course used a writing curriculum, *Supporting Strategic Writers* (MacArthur & Phillipakos, 2016). Previously titled *Writing in the Modes: Self-Regulated Strategy Instruction* (MacArthur & Phillipakos, 2012), this curriculum uses guided practice, strategies instruction (SRSI), the writing process, structured peer review, and multimodal instruction to walk students through cause/effect and argumentative writing. However, there is currently no grammar instruction that goes with the writing curriculum. This grammar curriculum, Effective MUGs, is an attempt to create lessons to encourage students to be mindful of their most common grammar errors and to give the students strategies for spotting and correcting these errors. Ideally, each class meeting (14) had 20-30 minutes to set aside for a sentence combining exercise and review using the Sentence Analysis Strategies Sheet (SASS) (Appendices B and C).

The class size for sections of the basic writing course runs between 14-17 students typically. The sections where the intervention was run were day classes, so the demographics skewed heavier towards traditional students; all of the participants in the study were aged 18-21. The writing classes are typically mixed with regard to race and sex, but homogenous in terms of skill level because of a student placement

test (Accuplacer). The instructor participants were both master's prepared teachers who were experienced with the *Supporting Strategic Writers* curriculum (MacArthur & Philippakos, 2016).

Informed Consent

The Effective MUGs curriculum had been presented to the instructors already and both had agreed to participate in the study by presenting the curriculum, allowing me access to their classroom materials and participating in interviews. The Effective MUGs curriculum was presented to the students in the second class before the first lesson. Students were informed that, regardless of their participation in the study, they would still follow the Effective MUGs curriculum and would be awarded the same points for the independent sentence practice as students who participated in the study.

The students who participated in the study were asked to take part in focus groups or an interview in order to earn extra credit. Participation in a focus group or interview was not compelled. Students who didn't choose to participate in the study or the interviews/focus groups were offered an extra credit opportunity worth the same number of points as participating in a focus group or interview. Students were also asked to participate in a cognitive lab. Twenty-three students agreed to participation in the study. Five students were dropped from the study because they did not complete the posttest and five students were dropped from the study because they did not complete the cause-effect first draft in addition to the pretest or the posttest, leaving a sample size of 13 for the comparison of the Cause-Effect First Draft to the Posttest. One of the students in the thirteen missed the pretest, but she is included in the study because she participated in an interview and cognition lab. This reduces the number for the pretest to posttest measurement; there are twelve students. Out of the twelve

participants, only seven turned in all of the essay assignments including the pretest and posttest.

Collection Process

I collected student writing from two sections of the same course: pretest and posttest essays for the course from all students who gave consent. In addition, I selected a sample of students to collect additional classwork from three first drafts of essays, three revised drafts of essays, and sentences from MUGs homework/independent sentence practices written as a part of the course. The initial sample included seven students from one class and six students from another. I chose the students first by who had been consistent in submitting work throughout the semester; I did not choose anyone who was missing more than 2-3 assignments. After I identified everyone who had submitted the majority of their work, I picked people based on their Accuplacer score (two low-scoring students, two medium-scoring students, and two high-scoring students from each class). I also added a seventh student in one section because she was the only student who said she used the SASS while working on her essays and I want to see if there was an impact on the number of mistakes she was making. In the ending analysis, different numbers of students were compared, depending on the criteria being compared. To study the statistical significance of the trends from the pretest to the posttest, there were twelve students in the sample. To study the statistical significance of the trends from the cause-effect first draft essay to the posttest, there were thirteen students in the sample. To compare student performance throughout the semester, seven students were in the sample.

I recruited eight students from both sections of the course combined to participate in the interviews and cognition labs. I initially sent invitations for

interviews, focus groups, and labs to the people in the sample and received minimal responses (perhaps one). As a result, I changed the procedure to combine the interview and cognition lab into one session, and I offered an incentive of a $10 gift card for to any participants in the study (in addition to the extra credit) who completed an interview and cognition lab.

All essay drafts were collected from Blackboard, the learning management system (LMS). Some independent practices were collected from Blackboard; I made copies of the hand-written independent practices. The collection of homework turned in during class is incomplete because not all students submitted the grammar homework consistently.

I asked the instructors to save a copy of the in-class exercise before they reviewed it in class, but both instructors' saving of the in-class exercises before they went over it was inconsistent. I collected most weeks work, but I was sometimes unsure if the instructor had saved the version before inserting corrections. I looked at question two for all of the samples that I had and found that most of the answers were correct and the formatting directions had been followed, leading me to think that they were saved after correction. In analyzing the in-class exercises, I was also not able to see which students did which questions because students did not attach names to which questions they did. These results are generalized for the classes. For every class I observed, I took notes, but I didn't note the specific student names as I later would have wanted.

I audio taped the interviews and cognition labs and had them transcribed. I collected the answer sheets that the students completed when they participated in the cognition lab as well. Lastly, in addition to getting an audio tape of the students in the

cognition lab, Dr. Adrian Pasquarella offered his Tobii Pro 2 glasses (after the proposal defense). These glasses digitally track what students are looking at and how long they look at certain objects of "areas of interest" (AOI) (Tobii Pro 2). The data of where the students look at can be applied to the SASS to see if there are areas of the SASS that can be improved or other visual elements that could be incorporated to see the flow of the SASS.

Curriculum Design and Products

Overview

The Effective MUGs curriculum is designed to be used with the writing curriculum *Supporting Strategic Writers* in basic writing classes. Students are asked to use Google Docs on devices of their choice (BYOD) as they participate in classroom activities where they combine and correct sentences as well as learn how to identify sentence elements so that they can be strategic in their independent sentence revision. Students practice the skills independently by revising their own sentences in response to specific prompts and by being aware of their own sentence construction and editing practices.

Technical Features of the Curriculum

For these lessons, students worked in the university learning management system (LMS), Blackboard. Links to the Google Docs materials were posted in Blackboard for each class. In addition, students submitted some of their independent sentence practices and all essays (first draft and revised) through Blackboard.

Students were encouraged to bring and use their own devices (BYOD); BYOD was used to offer immediacy to the lessons and hopefully student engagement. The

best software tools for facilitating learning with BYOD are Google products because they are free, they are easily accessible to anyone with any kind of device, they consistently look the best across platforms, and their text formatting commands are easy to use. While in the classroom, students looked at and worked in the Docs from their own devices, a partner's device, or from a central classroom computer.

In class, students were asked to combine kernel sentences or revise sentences, and then to identify sentences elements using different formatting tools (bold, underline, italicize and highlight) using the Sentence Analysis Strategies Sheet (SASS) to assist them; all of these commands are readily accessible in Google Docs. The in-class exercises were editable so all students could participate in the same displayed Google Doc, but the Google Docs used as independent sentence practices were view-only so students were forced to make their own copies. Once the students completed the classroom sentence practices, they were welcome to reuse the links to the Docs (both emailed and through Blackboard) for models while completing the independent sentences practice and essay revisions. Students were also given the classroom practices, independent practices, and the SASS on paper.

Shared Features of All Lessons

The structure of the lessons in Effective MUGs follows *Supporting Strategic Writers* (MacArthur & Philippakos, 2016) in terms of the recursive nature of the information in the curriculum: activities and terms introduced in earlier lessons are repeated and reinforced in following lessons. The materials for Effective MUGs lessons were distributed before class weekly by invitations to Google Docs. In the classroom, all students were invited to use their own devices to view and work with lesson materials as well as work on papers. Students were given a SASS (both

electronically and on paper) to refer to for all of the Effective MUGs lessons, independent practices, and for essay writing and revision.

The sequence of the activities for all of the Effective MUGs lessons was for the instructor to use the SASS while modeling combining or revising a sentence and identifying sentence elements. The whole class then collaborated to combine or to correct one or two sentences as well as identify sentence elements while using the SASS. Next, paired students practiced on paper, combining or correcting sentences and identifying sentence elements while using the SASS. Students then entered their sentences into a shared and displayed Google Doc.

Following that, the class and the instructor reviewed the sentences collaboratively, using the SASS to identify which sentences had errors and to correct the sentence errors. Students were encouraged to write down all of the correct answers on their paper copy of the exercise for additional practice. To start, the instructor modeled sentence correction, but, as the sequence of lessons progressed, the class would collaborate in sentence correction, paralleling the gradual release of *Supporting Strategic Writers* (MacArthur & Philippakos, 2016).

As independent sentence practice, students were asked to pick four sentences out of their own essays or create new sentences (for each lesson) and to revise the sentences according to the target MUGs element of that lesson. Students were asked to identify the subjects, verbs, and other target MUGs element for each sentence. As students revised their sentences, they were given questions to prompt reflection on whether and how their revised sentences were more or less effective than the previous draft (Is my sentence clear?). In addition, students were prompted to review their revised essays for the target MUGs element (as well as being mindful of their

sentences in general) before submitting the revised essays to the instructor for assessment. Students were prompted verbally by the instructors to use the SASS for support in all writing activities.

Features of Individual Lessons

During the first Effective MUGs lesson, students were given presentations that outlined BYOD, how to download Google Slides and Docs, and how to make formatting changes in Docs. Students were given a test Google Doc where they were asked to enter their name and format the text of their names to preview what they would be doing in the Effective MUGs classroom practices. They were also given a mini-lecture that outlined the theoretical stances of the curriculum as well as outlining the Effective MUGs curriculum (Appendix E).

The 14 lessons were broken up into an introductory lesson, eight in-class exercises of sentence combining from kernel sentences, both cued and uncued, and five in-class exercises of unknown peers' sentences containing errors. Students were asked to combine and revise sentences in the lessons using the SASS, identifying sentence elements and using other strategies they had used in the first nine lessons to complete the last five lessons. Students were also asked to reflect on the effectiveness of their sentences, using sentence review questions on the in-class exercise documents. The sequence of Effective MUGs lessons, with the writing units where they were taught in parentheses, are detailed in Appendix H. All of the writing/text used in the lessons were contextualized in that they were sentences from student reading or writing in *Supporting Strategic Writers* (MacArthur & Philippakos, 2016) (Appendix F).

The independent sentence practice for each of the fourteen lessons reinforced the content of the paired lesson. Each had a graphic organizer for the sentences that would be used for practice. The directions contained prompts that targeted specific MUGs elements (Lessons Two-Eight) or individual student errors (Lessons Nine-Fourteen). Students were asked to either identify sentences from their first draft that could be revised or to write new sentences that matched the prompt. (Writing or revising for a compound subject or for a compound sentence were two potential prompts.) Students were then asked to identify subjects, verbs, and the other target MUGs elements for the lesson. After students revised an individual sentence, they were asked to evaluate that sentence for increased effectiveness. Questions about conciseness, clarity, sounding right, and following the conventions of professional academic English to ask to judge the effectiveness of the sentences are given on the graphic organizer for the independent sentence practice (Appendix G).

In addition to the classroom practices and the independent sentence practices, the Blackboard Assignment portal prompts for the essay submissions in both class sections reminded students which target MUGs elements or patterns to be looking for in their own writing. Students were encouraged to use the SASS when they revised their essays, so they remembered what errors to look for and which MUGs elements they should consider to correct the errors. It was hoped that student ability to identify and correct errors would carry over to peer review at increased levels of competence as the semester proceeded. The sequence of the Independent Sentence Practices is detailed in Appendix I.

Measures

Measure One: Grammatical Errors

The first measure, grammatical errors, is tracked in student essays, independent sentence practices, and the cognition lab. (The in-class-exercises were omitted because they were inconclusive. The in-class exercises were not consistently saved before being corrected in class, and they were consistent in following the directions.) Grammatical errors were calculated by using a grammatical error code created for earlier classes. The MUGs Error Code (Appendix A) labels individual errors by number; the numbers are tied to grammatical error definitions. In addition to being coded for errors, the essays were analyzed for number of t-units, number of sentence fragments, and number of words. (A t-unit is a complete sentence. Both simple sentences and complex sentences are one t-unit while compound sentences are two t-units.) The grammatical error measures include the following:

- Length of t-unit (except for classroom practices)
- Total errors per t-unit
- Total grouped (mechanical, usage, and syntax) errors per t-unit
- Proportion of t-units with no errors
- Proportion of fragments
- Counts of errors on in-class work
- Types of errors on in-class work
- Counts of errors in independent student practices
- Types of errors in independent student practices
- Proportion of t-units/sentences with no errors in independent student practices
- Counts of errors on cognition lab exercise

- Types of errors on cognition lab exercise
- Proportion of t-units/sentences with no errors in independent student practices

Measure Two: Qualitative Student and Instructor Interview Data

The second measure is qualitative interview data from the eight students who agreed to participate in the interview and cognition lab and the two instructors who used the curriculum. Both students and instructors were interviewed for their perceptions about the curriculum. The answers for students were collated along themes of what they found easy or challenging, where they thought they grew the most, what their experiences were with BYOD, metacognition, and how they used the SASS outside of class. The answers for instructors were collated along themes of what they found easy or challenging, their experiences with BYOD, and how they modeled use of the SASS in their class. Information from instructor interviews was also triangulated with class observation data. Measures from qualitative student and instructor interview data include the following:

- Statements grouped by activities that were easy to use or challenging to use (student and instructors).
- Statements grouped by feedback about specific tools (student and instructors).
- Statements grouped along themes as they emerged.

Measure Three: Qualitative Student Think-Aloud Data

The third measure is the qualitative think-aloud from the cognition lab. The same eight students who were interviewed talked through their process as they used a SASS to combine sentences. The answers were collated along themes of sounding out their sentences, identification of the named sentence elements (subject, verb,

conjunction/punctuation, infinitive phrases, and prepositional phrases), statements about difficulty or ease in combining sentences and identifying sentence elements, and metacognitive statements (statements about their own thinking). Measures from the cognition lab think-aloud data include the following:

- Student ability to follow the directions
- Common procedures used by students
- Student use of strategies from the SASS
- Statements grouped by themes as they emerged in the cognition lab
- Variations in people's procedures in the cognition la

Measure Four: Quantitative Student Identification Error Data

The fourth measure comes from both the independent sentence practices and from the cognition labs. These quantitative data measure students' ability to correctly identify named elements in their sentences (subject, verb, conjunction/punctuation, infinitive phrases, and prepositional phrases). These data are used to triangulate students think-aloud comments. This data are grouped by an overall score and by student achievement level. Measures from quantitative student identification error data include the following:

- Student ability to identify subjects in sentences
- Student ability to identify parts of verb phrases in sentences (modal verbs, auxiliary verbs, and lexical verbs)
- Student ability to identify punctuation and conjunctions
- Student ability to identify propositional phrases and infinitive verbs

Measure Five: Student Cognition Lab Digital Visual Data

The fifth measure is from the use of digital visual tracking glasses (Tobii Pro 2) during the cognition lab. According to Scheiter and van Gog (2008), eye tracking data can help researchers gain very specific data about how their instructional tools are being used. In addition, Scheiter and van Gog assert that eye tracking helps to triangulate data obtained from a cognition lab because eye tracking will show data about processes not well described or that happen too rapidly or automatically in the think-aloud (2008). Researchers learn from the eye movements through seeing what people skip past, spend a lot of time on, or go back to (Rayner, Chace, Slattery, & Ashby, 2006). People tend to spend a lot of time on information that they don't understand or are new to (fixation), they skip and hop over information they already know (saccade), and they sometimes return to information they've already read (regressions) (Rayner et al., 2006). When people are reading challenging texts, researchers see the fixations increase in length, the number of saccades decrease, and the number of regressions increase (Rayner et al., 2006). So, with the SASS, I am expecting people to look briefly at the elements that they already know, but I expect that they will get fixated on and regress to what they don't know. The data from the Tobii Pro glasses will show students' gazes, tracked and timed by areas of interest (AOI) when they looked at the SASS while combining sentences. The longer students gazed at an AOI while engaged in a specific task, the more they were trying to learn it. Conversely, the less students look at an AOI while engaged in a specific task means that they already knew the information or they didn't know that the information was there. Measures from student cognition lab digital visual data include the following:

- Which areas students looked at (overall)
- Which areas students looked at divided by class section

- Which areas students looked at divided by achievement level

Analysis

Student Product Analysis (MUGs Errors in Class Essays, Pretests and Posttests, and Independent Sentence Practices)

Individual MUGs errors were coded on student work by using the MUGs Error Code (Appendix A). These grammatical errors were collated and entered into spreadsheets for further analysis. The number of t-units and fragments were added up and used to divide the total number of errors for each essay assignment to calculate errors per t-unit. Errors were also grouped by mechanics, usage, and syntax for the pretest, cause-effect first draft essay, and the posttest before being divided the number of t-units and fragments per essay to calculate which kinds of errors were reduced. Finally, there was a code for correct sentences. The number of sentences with this code were divided by the total number of t-units and fragments per essay to see how many sentences in an essay were correct. Grammatical errors in independent practices and the cognition lab were also calculated using number of sentences and fragments as denominators.

The pretest initially provided the baseline score, the essay first drafts, essay revised drafts, and the independent sentence practices provided formative data while the posttest provided the summative data for error scores in student writing in regular classroom activities. The effect size on the pretest-posttest for all participants in that sample group as well as effect size on the cause-effect first draft-posttest for all participants in that sample were calculated using Hedges G.

The MUGs error codes used to generate the quantitative data are based on which errors are the most common in student writing; the MUGs error codes were

designed by Kate Cottle in a prior independent study with Dr. Charles MacArthur. Since then, the MUGs error codes have been revised over multiple iterations and in response to student errors as well as a desire for more granular information. After initially and unsuccessfully trying to look up some machine-grading system codes, I went back to Warriner's (1987) *English Grammar and Composition Guide*; in addition, I consulted Lunsford (2015) and Dikli and Bleyle (2014) for error codes. In the first iteration of the MUGs Error Code, we tried to identify errors that marked African American Language (AAL) and English Language Leaners (ELL) by creating codes by AAL or ELL markers. Use of these codes proved overly difficult and inconclusive, so all of the dialectical and second-language codes were deleted.

The error codes that remain are mostly modeled on the language of traditional school grammar or mechanics, usage, and grammar (MUGs). Mechanics is defined, both for the curriculum and for the analysis of the data, as "...[sentence] elements you can't hear in spoken language like spelling and punctuation" (Appendix E). Usage is also defined the same for the curriculum and the analysis of the data: "[sentence] elements you can hear in spoken language like verb tense, extra or wrong words, and pronoun form" (Appendix E). However, where the Effective MUGs curriculum calls an element "grammar" for the MUGs acronym used in other disciplines like Psychology and Sociology, the MUGs error code uses "syntax" to describe how words work together in a sentence to create meaning. Syntax errors include subject-verb agreement, sentence fragments, and missing determiners.

The MUGs error codes have been developed in order to increase inter-rater reliability and to avoid ambiguity. Early in the process, we made two decisions about coding. First, errors are only labeled with one error code. Second, certain codes would

take precedence over others like a switch in voice (use of you) taking precedence over a homophone (your/you're). We also decided to specifically define some errors, like a run-on being a compound sentence with a conjunction but no comma while a comma splice is a sentence joined only with a comma and no conjunction (coordinate or subordinate). Codes 40-42 were added for this project for errors in APA formatting and in-text citation. (However, I did not code for missing citations or for missing elements within the citations.)

Student Product Analysis (Independent Sentence Practices and Cognition Lab Exercises)

The independent practices and cognition lab exercises were analyzed to see how many mistakes students were making and what kinds of mistakes they were making. (Were they procedural errors like not labeling sentence elements? Were they knowledge errors like not labeling the correct sentence elements? Were the sentences combined correctly?) Student products were also analyzed to see if students understood and could apply lessons with minimal scaffolding (discussion in class followed by reading the directions on the graphic organizer) as the guide.

The data for this section is incomplete; while both handwritten and electronic samples from both classes were collected, not every homework assignment was completed. Of the handwritten exercises, some had to be discarded because they didn't have student names on them. Initially, both independent sentence practices and in-class exercises were sampled; I looked at question two for all student independent sentence practices and questions three and four for in-class exercises. I ended up not using the data from the in-class exercises. They were inconclusive (both in terms of the ability to follow directions and ability to complete the task correctly) because they

sometimes did not get saved before errors were corrected. (The in-class exercises showed the directions consistently followed and the sentences successfully combined.)

For identification errors in the independent sentence practices and cognition labs, I used named elements in the sentences (subjects, verbs, conjunctions, punctuation, prepositional phrases, and infinitive phrases) as the basis for the code (separate from the MUGs Error Codes). Additionally, verbs were broken up into the parts of a verb phrase to see which parts students couldn't identify: modal, auxiliary, and lexical verbs. Lexical verbs are verbs that contain meaning or action (sleep, eat, watch, etc.). Auxiliary verbs are helping verbs (forms of to have, to be, and to do), and modal verbs are verbs that don't change form (will, would, can, could, should, may, might, must, and shall). A verb can consist of only a lexical verb; in which case, to have, to be, and to do act as lexical verbs. A verb can also consist of a verb phrase which could include a modal verb and/or an auxiliary verb. All of the verb identification errors are presented by type of verb; this presentation is to show which parts of a verb phrase students have trouble identifying.

Student and Instructor Interviews

All of the students who were participating in the study were asked to participate in a focus group or interview. No students elected to participate in focus groups, and interviews were combined with the cognition lab so students could meet once to complete both tasks. Students were all asked the same set of questions about the curriculum as a whole and about individual activities in the curriculum. (Appendix K; Appendix J was the protocol for the focus groups if any students had participated in a focus group.) When students were asked about their perceptions, they were

presented with a list of the curricular activities that they used in the curriculum. Eight students participated in interviews.

The responses to the interviews were transcribed and coded. The data was collated to see what students and instructors thought was easy or challenging about the Effective MUGs curriculum. The data was also collated for themes about individual activities (gradual release, embedded grammar, etc.). The data from the interviews was also analyzed for themes such as use of BYOD (frustration with technology, technology being helpful, etc.), use of the SASS, student growth, and metacognition.

Cognition Lab

A cognition lab is a research method often used in software development. It asks students to talk through their thinking processes in specific tasks or in reaction to specific information so people can study the accessibility and flow of tasks and information (Beaton, Nicholson, Halliday & Thomas, 1998; Shafer & Lohse, 2012). The procedure for a cognition lab is to introduce a task, and then ask people to think aloud as they complete a procedure or exercise. The researchers then record what the subjects say and take notes (Beaton, Nicholson, Halliday & Thomas, 1998; Shafer & Lohse, 2012). If students need to be redirected on the task or if they need to be reminded to think aloud, then the interviewer asks open-ended questions like “What are you thinking about?” or “Was the problem solved?” (Beaton, Nicholson, Halliday & Thomas, 1998; Shafer & Lohse, 2012). The protocol in this study for the cognition lab can be found in Appendix M.

Eight students participated in cognition labs where they were given kernel sentences to combine. Fifteen of the twenty sentences were cued with conjunctions (and, or, but); five had no conjunction clues. For fifteen of the sentences, students

were asked to identify conjunctions and punctuation; for five, students were asked to identify prepositional phrases and infinitive verbs. Students were given a copy of the SASS to use while combining the kernel sentences, and they were asked to think aloud as they combined the sentences. The research protocol includes a number of think-aloud prompts for students like "What are you thinking about?" Every student was prompted to think aloud at least once. Seven out of the eight students thought aloud through their process with minimal prompting, but one student did the exercise in mostly silence unless prompted, and then her comments were metacognitive rather than process-oriented. Students were grouped by their initial placement test (Accuplacer) score as high achieving, middle achieving and low achieving for some data analysis and presentation from the cognition lab.

The information from the cognitive lab was transcribed and coded qualitatively. This data was analyzed to see how the students were following the directions, if the students were completing the tasks, if students were using the strategies (including the SASS) taught in class to analyze and revise the sentences, and if they were correct in their identification of sentence elements. Students also wore Tobii Pro 2 glasses while they completed the sentence combining tasks using the SASS in the cognition lab. This data was analyzed to see where the students were looking on the SASS and if the strategies on the SASS were helping them to complete the sentence combining tasks.

Instructor Interviews and Observations

Both instructors participated in interviews to discuss their perceptions of the curriculum. The interviews were recorded, transcribed and coded qualitatively. The data was collated along themes of positive or negative perceptions of the grammar

curriculum and about individual activities. Instructors were also asked what aspects of the curriculum needed to change in order to make the curriculum easier to use and how long lessons took. The data from the interviews was also analyzed for other themes as they emerged, especially the use of BYOD (frustration with technology, technology being helpful, etc.) and metacognitive statements. Researcher observations of the instructors were an additional source of data about perceptions of the curriculum and if the curriculum was easy to adopt (Appendix M).

How Research Questions Were Answered

The student MUGs error data were trended to see what errors students were able to correct, and what errors students still had difficulty with. The MUGs error data from pretest, posttest, essays, independent sentence practices, and the cognition labs were expected to show which groups of students experienced difficulty with the exercises as well as those who did well with the classroom and independent sentence practices. Data from the pretests, the cause-effect first draft essay, and the posttests were assessed using paired t-tests to see if student growth was statistically significant. In addition, I hoped to be able to see whether students were able to apply the MUGs lesson. Did they have losses when revising their first drafts or when they moved to a new genre of writing? Independent sentence practices and cognition lab exercises demonstrated how well students could combine kernel sentences while making their sentences, concise, clear, sound good, and observe the conventions of professional academic English. Independent sentence practices and cognition lab exercises showed how well student could identify grammatical elements in sentences. Student interview data, where the students identified what they found challenging or easy showed why students were having difficulties. Cognition lab data demonstrated how and how well

students were using the SASS and what other strategies students were using to combine sentences. Digital visual data demonstrated what areas of interest (AOI) on the SASS were getting used and which were not gazed at.

Table 3.1

Research Questions

Question	Data Source/Measures	How Will the Information be Used to Change Curriculum Design
Student Performance Outcomes Questions		
1. Does the intervention (as a whole) reduce student error in writing?	Pretest Posttest First essay drafts Revised essay drafts	Information will be used to change focus or tools within curriculum
2. What kinds of errors in student sentences were reduced (mechanical, usage, or syntax)?	Pretest Posttest First essay drafts Revised essay drafts	Information will be used to change focus or tools within curriculum
Curriculum Tasks and Strategies Questions		
3. Could the students follow the directions for/complete and independent practice and cognition lab?	Cognition lab Independent sentence practices	Information will be used to revise the directions or the activities
4. Were students able to demonstrate that they could use the strategies from the Sentence Analysis Strategies Sheet (SASS) in independent grammar practice?	Cognition lab with students using SASS	Information will be used to revise SASS

Table 3.1, cont.

Student Use and Perceptions of the Curriculum		
5. What was easy to use and what was challenging for students to use (strategies instruction, sentence combining, sentence revision, sentence construction, and BYOD)?	Student interviews Cognition Lab Class observations	Information will be used to change focus or tools within curriculum
6. Did the students find the SASS to be helpful?	Student interviews Cognition lab	Information will be used to revise SASS
Instructor Use and Perceptions of the Curriculum		
7. What did instructors find to use and what was challenging to use (strategies instruction, sentence combining, sentence revision, sentence construction, and BYOD)?	Instructor interviews Classroom observations	Information will be used to change focus or tools within curriculum
8. Did the instructors find the SASS to be helpful?	Instructor interviews Classroom observations	Information will be used to change focus or tools within curriculum
9. Did the lessons take an appropriate amount of time?	Instructor interviews Classroom observations	Information will be used to change elements of lessons

Chapter 4

RESULTS

Student Performance Outcomes Questions

Research Question 1: Reduced Student Errors in Writing

The first research question asked if students reduced the number of errors in their essays. The original research plan was to compare performance on the pretest, posttest, and first and revised drafts of three essays written for the course. However, due to missing data, only seven students had complete data for all five essays; therefore, the plan was changed to provide larger sample sizes for some analyses.

Students were grouped two ways to answer the question with statistical analyses. The first group of students was sampled by choosing all of the students from both sections of the course who completed the pretest and posttest; this sample was twelve students. The second sample included all students who completed the cause-effect first draft and posttest. This sample included the 12 students from the pretest-posttest sample, plus one more student who, even though she missed the pretest, participated in an interview and cognition lab as well as completing the cause-effect essay first draft and posttest. Both of the first two samples are presented on Table 4.1. The second sample of students were added in order to compare the cause-effect first draft to the posttest because the pretest (handwritten and low-stakes in-class diagnostic) and the posttest (high-stakes, word-processed, and timed first draft) were such dissimilar writing assignments. The cause-effect, while low-stakes point wise, was word-processed, a first draft, and high-stakes in terms of instructor feedback. The difference in how students perceived the assignments can be seen in the word count.

For the pretest, students wrote an average of 169.58 words; for the cause-effect essay first draft, students wrote an average of 401.85 words; and, for the posttest, students wrote an average of 491.77 (13 student sample) – 509.50 (12 student sample). For the small sample of seven students with complete data on all five essays, only descriptive data are provided (Table 4.2). Two measures of error reduction were used: errors per t-unit and proportion of correct t-units per essay.

For the analysis of gains from the pretest to the posttest (n=12), a significant effect was found for proportion of correct t-units ($t(11) = 3.27$, $p<.01$; Table 4.1) with a large effect (.73; all effect sizes calculated using Hedges G). However, this comparison is not a fair measure of the results of the curriculum because of the differences in the writing situations from the pretest to the posttest. For the comparison of the cause-effect essay to posttest, the change is proportion of correct t-units was not significant ($t(12) = 1.92$, $p<.10$); however, there was a medium effect size (.40). No significant effects were found for errors per t-unit for either comparison (Table 4.1).

Table 4.1

Data Comparing Pretest to Posttest (Sample of 12) or Cause-Effect First Draft to Posttest (Sample of 13)

		Pretest	Posttest	Cause-Effect FD	Posttest
N		12	12	13	13
T-Units	Mean	11.17	30.75	25.08	30
	Standard Deviation	2.11	10.45	9.75	9.96
Fragments	Mean	0.17	1	1.08	1.49
	Standard Deviation	0.37	1.81	1.08	1.69
Words	Mean	169.58	509.5	401.85	491.77
	Standard Deviation	44	133.35	153.52	137.18
Errors	Mean	20.22	36.58	31.75	37.67
	Standard Deviation	17.02	23.45	12.7	21.99
Number of Errors per T-Unit	Mean	1.69	1.37	1.31	1.38
	Standard Deviation	1.46	1.18	0.7	1.13
Proportion of Correct T-Units in Essays	Mean	0.22	0.37*	0.27	.35
	Standard Deviation	0.19	0.22	0.17	0.22

* $p < .01$.

Given the limited results from statistical analysis with the groups of 12 and 13, the sample of seven students was not analyzed for statistical significance. The descriptive data for the sample of seven students who completed all drafts of class essays the essays are presented in Table 4.2. With each first draft, students made fewer errors per t-unit and had an increased number of correct t-units than the previous first draft. The revised drafts also saw positive trends until the last two assignments of the semester, the argumentative essay with sources revised draft and the posttest.

Table 4.2

Summary of Grammatical Error Data from (Sample of Seven)

N=7		Pretest	Cause-Effect, First Draft	Cause-Effect, Revised Draft	Argument 1, First Draft	Argument 1, Revised Draft	Argument with Sources, First Draft	Argument with Sources Revised Draft	Posttest
T-Unit	Mean	12	27.29	28.86	30	35.43	26.14	27.71	35.71
	Standard Deviation	2.07	10.73	9.17	10.35	14.85	7.24	5.92	7.55
Fragment	Mean	.29	1	1	.71	1.14	.86	.57	.57
	Standard Deviation	.45	1.07	1.07	1.03	.99	.64	1.05	.7
Words	Mean	184.57	468.43	511.43	477	582.57	457.86	496.86	567.71
	Standard Deviation	50.89	160.56	138.78	138.07	201.91	88.77	75.11	110.15
Errors	Mean	25.85	30.14	27.71	32.43	28.14	21.29	26.86	38.43
	Standard Deviation	16.87	8.9	9.81	15.43	12.89	6.25	10.79	21.91

Table 4.2, cont.

Errors/T-Units + Fragments	Mean	1.86	1.26	1.05	1.21	.88	.85	.99	1.09
	Standard Deviation	1.58	.68	.48	.71	.48	.34	.41	.57
Proportion of Correct T-Units per Essay	Mean	.19	.35	.42	.37	.39	.42	.41	.4
	Standard Deviation	.2	.17	.18	.25	.26	.15	.2	.23

Another source of descriptive data for grammatical errors was the cognition lab, performed at the end of the semester for eight participants. While the cognition lab results do not have a comparison for reduction in errors or proportion of correct t-units because students were assessed once, they are a descriptive measure of how well students learned the lessons in the Effective MUGs curriculum. While students did make errors in their sentence combining, the majority of their combined sentences were error-free (63.8% in Table 4.3). All of the grammatical errors coded from cognition labs were mechanical. The errors related to combining sentences (#8 [extra commas in a two-item compound subject or verb], #15, [unnecessary comma separating clauses in a complex sentence], #17 [run-on compound sentence], #18 [run-on complex sentence], and #19 [comma splice]) were expected; the errors related to transmission (#1 [spelling], #2 [missing apostrophe], #3 [unnecessary apostrophe], and #4 [unnecessary capitalization]) were not expected.

Table 4.3

Cognition Lab Grammatical Errors (Sample of Eight)

Error Code	Error Name	Number of Errors	Percentage of Sentences with Error*
1	Spelling	6	.038
2	Missing apostrophe	1	.006
3	Unnecessary apostrophe	1	.006
4	Unnecessary capitalization	2	.013
7	Unnecessary/ extra commas to set off essential information	2	.013
8	Extra commas in a two-item compound subject or verb	3	.019
15	Unnecessary commas separating clauses in a complex sentence	4	.025
17	Run-on compound sentence	33	.206
18	Run-on complex sentence	7	.044
19	Comma splice	1	.006
39	T-unit with no errors	102	.638
Total		162	

*The number of sentences was calculated by eight students completing twenty questions each in the cognition lab.

Research Question 2: Kinds of Reduced Student Error in Writing

The next research question asked what kinds of errors were reduced in student writing. Student error in writing, once divided into types of errors, shows variations in levels of improvement (mechanics, usage, or syntax). When a sample of 12 students was compared from the pretest to the posttest, all categories of grammatical errors showed improvement. (The pretest was a low-stakes, handwritten initial writing assessment in the first class; the posttest was a timed writing assignment completed on a word processor during week fifteen.) When a sample of 13 students were compared from the cause-effect essay first draft to the posttest, mechanical errors were the only type that saw improvement. (The cause-effect essay first draft was untimed but

computerized and due in the third week; the posttest was a timed writing assignment completed on a computer during week fifteen.) (Table 4.4). Both usage errors and syntax errors increased in the posttest. The descriptive results are consistent with the earlier findings of a significant increase in proportion of t-units without errors per essay between pretest and posttest but not between cause-effect and posttest (Table 4.1.)

Table 4.4

Reduction of Grammatical Errors per Sentence Comparison, Pretest to Posttest (Sample of 12) or Pretest to Cause-Effect, First Draft (Sample of 13)

	Pretest	Posttest	Change*	Cause-Effect Essay, First Draft	Posttest	Change*
N	12	12		13	13	
Mechanical Errors	.68	.47	-.21	.59	.47	-.12
Usage Errors	.32	.14	-.18	.11	.14	.03
Syntax Errors	.65	.56	-.09	.45	.56	.11

*A negative score indicates a reduction in errors or an improvement in performance.

Curriculum Tasks and Strategies Questions

Research Question 3: Student Ability to Complete Exercises

The next research question asked about the students' ability to follow the directions and complete the classroom practices as well as independent sentence practices, and the answer has mixed results. The results from the in-class exercises

were inconclusive because some had been saved after correction; they were not used as data in this study. In independent sentence practices, student sentences followed the prompts on most questions sampled (6 out of 63 sentences; Table 4.5) and were correctly underlined and circled (whether handwritten or electronic). In the cognition labs, five students did not have trouble following directions while three did. Three students required three – four repetitions of the directions to understand the procedures. The questions in the cognition lab might have been because of a procedural change. In the weekly in-class exercises and independent sentence practices, students underlined subjects, bolded verbs, and highlighted either conjunctions/punctuation or prepositional phrases/infinitive verbs in Google Docs or on paper; in the cognition lab sentences, students underlined the subjects, double underlined the verbs, and circled either conjunctions/punctuation or prepositional phrases/infinitive verbs on paper.

Data from independent sentence practices were sampled by looking at the second question in every student's independent sentence practice that was available from the sample of seven students who submitted all of their essays. Seven students sampled once over nine homework assignments meant that there were 63 sentences in the sample. When the students who did not complete the homework or did not follow the directions were removed from the sentence sample, this makes the potential number of sentences in the sample 37. Out of those 37 sentences, 24 were correct. The total errors in Table 4.5 represents all of the errors in the 13 sentences that were left. The errors in the sample added up to more than 100% because one sentence had more than two errors. Overall, in independent sentence practices, students made mechanical errors at a 30% rate, usage errors at a 15% rate, and syntax at a 2% rate

(Table 4.5). These descriptive figures can be compared to the descriptive posttest score in Table 4.4: students made mechanical errors at a 47% rate, usage errors at 14% rate, and syntax errors at a 56% rate.

Table 4.5

Grammatical Errors from the Independent Sentence Practice Results (Sample of Seven)

Error Code	Error Type	Error Name	Number of Errors	Percentage of Total Errors
		Sentences not completed	20	
		Sentences that did not follow the prompt	6	
39		T-units with no errors	24	.649
1	Mechanics	Spelling	1	.027
5	Mechanics	Missing capitalization	1	.027
6	Mechanics	Missing commas to set off non-essential information	1	.027
17	Mechanics	Run-on compound sentence	6	.162
18	Mechanics	Run-On complex sentence	2	.054
27	Usage	Homophones/easily confused words	1	.027
30	Syntax	Subject-Verb agreement	1	.027
32	Usage	Verb form	2	.054
Total Errors			39	

While twenty-four of the sentences were marked correct, there were three assignments where two students repeated sentences from previous independent sentence practices.

Research Question 4: Independent Student Use of Strategies from the SASS

The next research question asked if students were able to demonstrate that they could use the strategies from the Sentence Analysis Strategies Sheet (SASS) in independent grammar practice; mixed results were found. Out of the eight students who were interviewed, only two students used the SASS outside the class; one of the students limited her use of the SASS to independent sentence practices (not essay drafts or revisions). Within the cognition lab, the students showed that they used the SASS in different ways, shown in the digital visual data.

Time spent fixated on and regressing to text (gaze) means that the students were reading and learning the material. Thus, the familiarity with or trying to learn about sections or areas of interest (AOI) in the SASS can be calculated by gaze time. In the Tobii Pro 2 software, the gaze time is converted to a heat map. The more time students spent gazing at an AOI on the SASS to read and learn it, the hotter (more red) the AOI on the SASS appears. Students mostly gazed at page one (subjects and verbs) and page two (compound and complex sentences) with only three students looking at page three (reminders and a short error code). (Because so few students looked at page three, it is included in the Overall Heat Map appendix [Appendix N], but it is not included in the other two Heat Map appendices [Appendices O and P]). As an overall group, students were gazing the most at the following AOI: prepositional phrases, infinitive verbs, complex sentences (dependent clause first), and compound sentences (Appendix N).

For Heat Map Appendix O, students were divided by class, and some differences became apparent. Students from class one spent the most time looking at the following AOI on the SASS: prepositional phrases, infinitive verbs, compound sentences, and complex sentences (dependent clause first) (Appendix O). Students in class two spent the most time looking at the following AOI on the SASS: subject-verb identification, infinitive verbs, two compound verbs, and simple sentences (Appendix O). Students in class two did not gaze long at the compound and complex sentence AOIs on the SASS; they gazed mostly on the subject-verb identification and two compound verb AOIs (Appendix O). Conversely, the students in class one were focused on compound sentence, complex sentence, and prepositional phrases AOIs. Both groups of students focused on infinitive verb AOI, but not equally (Appendix O). For Appendix P, students were divided by achievement level and the differences were not as clearly delineated. For page one, the high-achieving students primarily focused on the prepositional phrase AOI while the middle-achieving students (prepositional phrases, subject-verb identification, fragment identification, and infinitive phrases) and low-achieving students (Prepositional phrases, fragment identification, compound verbs, and two compound verb punctuation) gazed at multiple AOIs (Appendix P). For page two, low-achieving students primarily looked at complex sentences with the dependent clause first while middle-achieving students (subject-verb identification, compound sentence with a semicolon, simple sentence and complex sentence independent clause first) and high-achieving students (compound sentence with

comma/ABSO, compound sentence with a semicolon, avoiding comma splices, and complex sentences independent clause first) gazed at multiple AOIs (Appendix P).

Student Use and Perceptions of the Curriculum

Research Question 5: Aspects of the Curriculum That Were Easy to Use and Challenging to Use

The next research question asked what in the curriculum was easy to use and what was hard to use according to student interviews and cognition labs. All eight students interviewed found bringing their own devices (BYOD) to be easy to use and helpful. One student liked it because she rarely sees BYOD in the classroom. Another student liked having her own computer when her partner did because they could answer the prompts rapidly. Out of the eight, one student was not surprised by the use of BYOD in the classroom because she had used BYOD extensively in high school and expected the practice to continue in college.

In conjunction with BYOD, all students who participated in interviews spoke positively about the use of Google Docs as a part of gradual release. One student liked the use of the collaborative Google because "…we could see everybody's idea on the screen and what they're thinking." Another liked it because her instructor was instantly able to give her feedback and see what she and fellow students were not understanding. Other students liked the use of Google Docs because it was convenient, people could fully participate without having to go up to the board, and going up to the board and typing or writing in front of the class "makes everybody uncomfortable."

Students also liked being able to go back and look at the corrected Google Doc sentences from the in-class exercises as a reference. One student had trouble using his device in class, so collaboration with a student on another device worked well for him.

All eight students named gradual release (among other activities and more generally than just Google Docs) when asked what the most helpful tool was, and students also mentioned collaboration, the modeling of the sentence combining, and the identification of errors by the instructor specifically. Students, regardless of their level, spoke to the reduction in anxiety about getting procedures or answers wrong when they first were able to see the instructor model and then collaborate with fellow students. One student said that the "baby steps" of gradual release made her feel more confident as a writer. One low-achieving student felt that the gradual release and collaboration made the classroom procedures easy, but she found the exercises difficult when she got home. In contrast, a high-achieving student followed the classroom practice examples at home and expressed that the all of the parts of the gradual release method made it easier to do the independent sentence practices.

Another strategy that students found effective as a part of the think-aloud was sounding out their sentences. Only one student only used the SASS in the cognition lab and did not sound out her sentences to explore how she could combine them; the seven other students in the cognition lab sample did sound out their sentences. Four of the students would sound out their sentences once and make a decision; three students would sound out their sentences three-four times before making a decision. One of the students who sounded out her sentence once said that she was also doing the process

internally before she said it, “I’m just, like, reading the sentences in my head to see which one sounds better.” “I’m doing [x] to see which one sounds better” was said at least once by all seven students who sounded out their sentences making this one of the most common and easiest strategies used by students in the cognition lab.

However, there were parts of the curriculum that interviewed students found difficult (and their perceptions were proven true in independent sentence practices and the cognition lab); while there were some common themes in these responses, there were also some responses that trended by achievement level. One of the most prevalent themes (regardless of level) in what students found difficult about the Effective MUGs curriculum was that subjects and verbs were hard to identify. Four students identified verb identification as the most challenging. (In five out of the seven observations of classwork, this was what I observed students struggling with the most.) Other difficult grammatical issues students mentioned included identifying prepositional phrases, modifiers, and infinitive phrases as well as placing commas. Two students were challenged in finding incorrect sentences in their own writing, and one student mentioned feeling tentative about when to bring new elements (like semicolons) into more complex sentences. (This student had never used semicolons before this class.)

In the interviews, four students spoke about difficulty in identifying verbs and this difficulty was clearly seen in the transcription of the cognition lab. Three of the students were very confident in identifying their verbs with no qualifiers (“watched is the verb”). The other five students were less confident. The results of the verb

identification errors can be seen in Table 4.6 and Table 4.7, but also in how students talked about the process. In addition to students identifying the wrong words or not all of the words when they were identifying the verbs, they made statements like

- "I think [x] is the verb"
- "[x] could be the verb"
- "Weight went up is also a verb. No, it's not. Weight went up is the verb," "I would say the verb...I'm having trouble finding the verb in this one"
- "I don't know what to do with the verbs"
- "I'm not sure if 'will' or 'have' would be the verb. But 'will' – I think 'have" [is] the verb…I think 'will have' is the verb or 'dad will'"
- "I believe it is my verb here."
- "I'm looking to see when I should – when the verb is two words. I don't know. Or when I should know if the verb is two words."

When it came to subject identification, students felt more confident, seen in their lack of qualifiers when thinking aloud, but they misidentified subjects even when confident, "Walk in the rain is also another subject." (It was not the subject of the sentence.) One student knew to ask "What is the subject doing?" Other students discussed experiencing difficulty in subject identification and confusion about what words could be subjects:

- "[I'm thinking about] whether 'what' and 'is' would be the subject verb. But I don't think 'what' can be a subject. Well, it's not that I've seen it."

- “I’m thinking I have two subjects. Maybe I don’t have two subjects.”
- “I think the subject always has to be the human or the animal, but then there’s other sentences where there isn’t a human or any animal…[another word] is actually the subject in the sentence.”

Students did not discuss difficulty with conjunctions and punctuation in their think-aloud and they did not hesitate in identifying these sentence elements if they were sure that they should use punctuation and conjunctions. However, some students were unsure of where to place punctuation and conjunctions. One student said, “I was looking to see if I should put a comma in between ‘rained’ and ‘but.’ Because I feel like they both sound – like it would sound fine without it and also fine with it. But I think I’m going to put one there.” Another student said, “I’m not even sure if this needs punctuation,” and later said, “So now I have to put like an actual conjunction or something?”

Students’ discussion of their difficulty with sentence element identification was borne out by the mistakes that students made in identifying elements in their own sentences in independent sentence practices and in the sentence identification errors they made in the cognition lab. For the analysis of sentence element identification errors, verbs and verb phrases were divided into modal verbs, auxiliary verbs, and lexical verbs (to see which elements students could not identify). In independent sentence practices, the trend was that students misidentified the majority of their subjects (78%) and lexical verbs (89%). Trended rates of identification errors were lower for punctuation (27%), auxiliary verbs (22%), conjunctions (16%), prepositions and infinitives (14%), and lowest for modal verbs (.05%; Table 4.6). Because the

data represent a small sample group of seven, the data were not analyzed for statistical significance.

Table 4.6

Independent Sentence Practice Sentence Element Identification Errors (Sample of Seven)

Independent Sentence Practice Number	N	Subject	Modal Verb	Auxiliary Verb	Lexical Verb	Conjunction	Punctuation	Prepositions/ Infinitives
2	5	3	0	2	5	1	1	0
3	3	3	0	0	0	0	0	0
4	6	5	0	1	7	1	2	0
5	4	6	0	0	3	0	1	0
6	2	0	2	0	3	0	0	0
7	2	3	0	0	4	0	3	0
8	5	1	0	1	3	0	1	0
9	5	2	0	0	4	1	0	3
10	5	6	0	4	4	3	2	2
Total	37	29	2	8	33	6	10	5
Percentage of Total Sentences with Identification Errors		.78	.05	.22	.89	.16	.27	.14

Table 4.7 shows identification errors for the cognition lab and shows some of the same trends as in the independent sentence practices. Students were still challenged in identifying subjects and verbs. The lexical verb identification error rate was lower (49%), but auxiliary verb misidentification (92%) and modal verb (4%) misidentification rose. Students were able to identify subjects (4%) and lexical verbs (49%) at a higher rate in the cognition lab than in independent practices. Students’

trended rates of prepositional phrase and infinitive verb misidentification (43%) rose. Punctuation (29%) and conjunction (.04%) misidentification rates trended low (Table 4.7). Because the data represent a small sample group of eight, the data were not analyzed for statistical significance.

Table 4.7

Cognition Lab Sentence Element Identification Errors (Sample of Eight)

Identification Error Type	Percentage of Sentences with Identification Errors*
Subject	.4
Modal Verb	.4
Auxiliary Verb	.92
Lexical Verb	.49
Conjunction	.04
Punctuation	.29
Prepositional Phrases and Infinitive Verbs	.43
All identification correct	.12

*The total number of identification errors divided by the total number of potential answers for that sentence element.

Another common interview theme in the interviews about parts of the curriculum that students found challenging was that they had trouble with the directions. One student thought the labeling of sentence elements was confusing – what got underlined and what got highlighted while other students had trouble with independent practices because they didn't know what they needed to look for in the sentences. One student said the independent sentence practices were difficult. (She was not following the directions. The student thought that the directions asked a

student write an incorrect sentence and then fix it, but the directions ask a student to add to, correct, or write a new sentence to match the criteria of the exercise.) Student feedback about directions was reinforced by data from the cognition lab. Every student had procedural questions in the beginning of the cognition lab. Three students needed clarification of the directions three or more times and one student had to be redirected to follow the instructions throughout the first segment of the cognition lab (questions 1-15).

One challenge that students had was they did not have an accurate self-perception when it came to their performance on grammar tasks. One student said it taught her how to pick out the subjects and verbs; she identified picking out verbs specifically as her greatest area of growth. While the student misidentified numerous verbs in the majority of her independent sentence practices and her cognition lab questions, she still correctly combined all of the sampled independent practice sentences as well as all of the sentences in the cognition lab.

One student picked use of commas as his greatest area of growth. He used commas correctly on all his sampled independent practice sentences, but did not use commas correctly in 17 (out of 20) cognition lab sentences. This student also thought that identifying subjects and verbs was the easiest part of the curriculum, but he misidentified subjects and verbs on all of his sampled independent practice sentences and cognition lab sentences.

Other students who discussed their own growth included five who identified being more thoughtful about their sentences or examining their own sentences closely

for errors. In one instance, a student's self-perception was correct. One student thought "...at first when I saw it I'm like…this is pretty much for little kids, but once you really start doing it…okay, it's not as easy as you think, so I'm glad that I learned it." She had not been taught specifically about subjects and verbs earlier in her education, and she wished that she had. She liked learning about the sentence elements in this class and also liked that the sentences got more challenging; she still felt highly challenged by infinitive verb and preposition phrase identification. Her self-assessment was accurate as she made numerous identification errors on both sentence elements in independent sentence practices samples and the cognition lab answers. She asked for more education in MUGs.

A theme that emerged in the interviews is what students thought the curriculum should offer; the student answers were varied. One student asked for drill sheets because she did not like having to come up with her own sentences. One student expressed a wish to make up all of her own sentences rather than being offered sentences to combine. Two students also thought the sentence combining was overly simple as was the revision; they considered the problems easy to spot in sentences. Both students thought the curriculum was repetitive, especially towards the end. However, these were the students whose independent sentence practices were marked by repetition.

Research Question 6: Helpfulness of SASS

The next research question asked if students found the SASS helpful in improving their writing. Of the students who were interviewed, six did not use the SASS outside of class. One student used it outside of class for her MUGs independent sentence practices, and one student used it for both her MUGs lessons and her essays. Two students who interviewed together described their use of the SASS as, "Yeah. I…We never use it. Sorry."

Two of the students in the cognition lab referenced using a strategy (a tag question) from the SASS for the insertion of "not" before words to determine if they were verbs; they did not directly reference the SASS besides this strategy. Most students also did not look at the tag questions on the SASS, seen in the Appendix N Heat Maps. The other five students in the cognition lab who sounded out their sentences never referenced the SASS directly. The third student who discussed the "not" strategy was the person who used the SASS at home for all class activities.

Instructor Use of the Curriculum

Research Question 7: Aspects of the Curriculum That Were Easy to Use and Challenging to Use

The next research question asked instructors which aspects of curriculum were easy to use and which were challenging to use. Both instructors, like the students, liked the use of BYOD and Google Docs. One instructor remarked that "Google Docs

is really easy to use once you get going with it," and also said "[BYOD] sets a comfort level for [the students] so [the exercises] feel more approachable, more accessible, and no issues." The other instructor remarked that "[BYOD] gets them excited in a way, I think, still. The idea of making your changes on the document where it's showing up on the screen up front of the class? Even in this technological age, even though the stereotype of Millennials is that they're bathed in technology all the time, I still think [BYOD/Google Docs] adds a little bit of cool factor…it makes it easier for [the students] to buy into it and do it."

Both instructors appreciated the gradual release model because it echoed the structure of the *Supporting Strategic Writers* curriculum (MacArthur & Philippakos, 2016). The second instructor enjoyed this aspect of the curriculum because she thought it deepened the student understanding of the grammar. She also enjoyed seeing students of different abilities collaborate over the course of the semester. The instructor who did more modeling felt more positively about the modeling than the instructor who limited his modeling.

While they had these perceptions in common, the instructors were different in their professional development and class experiences which may have colored their perceptions. I did not offer the first instructor professional development because he had seen the curriculum under two previous stages of development, and he indicated he did not want professional development. I offered the second instructor professional development because she had watched the curriculum through only one development cycle, and she indicated that she wanted professional development. In the professional

development with the second instructor, I discussed the gradual release modeling with the SASS specifically, and as an echo of the design of *Supporting Strategic Writers* curriculum (MacArthur & Philippakos, 2016). Both instructors got one version of the SASS in the beginning of the semester (Appendix B) and an updated SASS week 3 (Appendix C). (The graphic designer returned the second version of the SASS that week; page three was added, color changes were made, ID letters were added to areas of interest [AOIs], and typos were corrected.) The first instructor did not incorporate the SASS into his Effective MUGs lessons until he had the second version of the SASS while the second instructor used the SASS from the beginning of the semester. The second instructor gave her class both versions of the SASS. I did not observe either instructor until the beginning of October; I was unsure about insulting either instructor's professionalism by observing them. However, one of my advisors discussed with me how to frame the conversation with the instructors, and that enabled me to begin observations.

The first instructor was initially observed on October 10, 2017, and he didn't have the MUGs curriculum ready to use electronically because he hadn't put the link for that day's lessons in Google Docs into the LMS; he got that day's lesson online when students were working together. After he introduced the lesson (without modeling), the instructor started the discussion with parts of speech which is in opposition to the Effective MUGs approach (which is to discuss words' functions in sentences). He used the SASS to help students correct their own work (pointing out common errors on the SASS), but he didn't use the tag questions (using "not" to find

verbs) to help students identify parts of their sentences or show students the sentence questions (Concise? Clear? [Appendices B, C, F, and G]) to help students assess their combined sentences. At first, the instructor discussed there being only one right answer when combining sentences (in opposition to the Effective MUGs approach). However, by the end of the lesson, he did talk about students having linguistic choice. ("There is more than one right answer with sentences sometimes.") In the second class observation (October 23, 2017), the first instructor again did not model using the SASS for any of the in-class activities except when going over the answers to the in-class practice. This lesson also had pacing problems and homework/ independent sentence practices were not explicitly mentioned by the instructor.

After both of these lessons, the instructor and I discussed at more length how to approach the lessons based on the observations, and, by the third class observation (November 28, 2017), the first instructor was modeling using the SASS with high fidelity throughout the lesson as well as explaining the in-class exercises and the independent sentence practices thoroughly. The pacing of the lesson was good, only slowed down by late arrivals to class. The students punctuated their combined sentences well but did not find the subjects and verbs well. The instructor was still very pleased with their progress and told them so. This instructor's class progressed to lesson 12.

The first instructor's students did not understand how to use the sentence questions, and he did not instruct his students on how to define or spot concision or clarity (that I observed in his class). The instructor identified grading the homework as

one of the biggest challenges and asked for a code for correcting the homework. He also noted that he fell behind on grading homework/independent sentence practices and didn't notice when students would recycle sentences from previous homework/independent sentence practices,"...until it was too late." He noticed that the pacing was much faster during this treatment phase than in previous iterations of the curriculum, but he didn't notice the changes to the treatment lessons to enhance the pacing, "I was pretty pleasantly surprised this terms that it seemed to work. We didn't waste an hour of a day trying to get everybody logged in and access. I don't know what changed. I don't know what was different."

What the first instructor learned from the curriculum was that people found subject-verb identification difficult and commented, "It's so many writing grammar errors that stem from those issues. That's really where they struggle the most is identifying those things and telling the difference between one unit of thought and another unit of thought…It's a much more basic issue than what I thought it was…I think I take it for granted."

The first instructor learned more about student difficulties over the semester, but the second instructor already was aware of her students' difficulties. The second instructor's initial preparation was more thorough. As a result, the second instructor's perceptions and my class observations were different. In the first observed lesson (October 9, 2017), the second instructor modeled using the SASS for every part of the lesson. She used metalanguage from the SASS, but not parts of speech. She drew students' attention to the directions, and she also discussed the directions for the

independent sentence practices. In the second observation (October 23, 2017), she started by discussing the sentence construction (complex sentences) that students would be working with and asked that they focus on complex sentences in their revisions and sentences for their independent sentence practice for the week. She modeled finding subjects and verbs by using the tag questions and also modeled finding punctuation using the complex sentence area of the SASS. On November 6, the second instructor was still modeling using the SASS, going over the directions for the independent sentence practices, and the pacing of her lesson was good. In the last observation (November 27, 2017), most students had disengaged. They were not using their SASS in class, they were challenged by prepositional phrase and infinitive verb identification, and the pacing was slower. This class progressed to lesson ten.

The second instructor was aware of the difficult areas in the curriculum, but thought that some of the challenges rested in her rather than the curriculum. She found the sentence questions to be really helpful; she used them frequently through the semester. However, in spite of her more-extensive modeling for the students, she thought that she had not done a good job giving directions even though she was more thorough than the first instructor: "[Next time] I'm going to do a better job maybe showing [students] how to pick good sentences…[and spend] a little more time talking about the directions." She was concerned that because she had not shown students what kinds of sentences to look for in their own essays for the independent student practices, students would unsuccessfully retrofit sentences to fit the prompts in the independent sentence practices, "…some of the students try to make it like square

peg/round hole and they are like I am going to pick this sentence whether or not it is the right sentence in this exercise."

This instructor felt rewarded by the community building with the student collaboration in the curriculum, but she noticed the student disengagement, and asked for revision to the curriculum to address this. The students had communicated to her that they thought the exercises were repetitive: "I think they were just done with it…which I think is maybe a fault of not making sure that they understand what the lesson is instead of like we are just…doing sentences again….[the students] could not see that there were distinct lessons." One of the second instructor's biggest concerns was the clarity of the directions because of the feeling of repetition. One issue was that the objects of the individual lessons were not clearly identified, so the tasks in independent sentence practices were also not visually differentiated, "I found that a lot of people, even the good students, were missing [directions]…[the question] had two clear bullet points that would be like one sentence should have a comma/FANBOYS and the others should use semicolons. And they would do all four with FANBOYS. I gave that feedback multiple times so I don't know whether that's just people not able to follow multiple-part directions or whether the corrections could be tweaked to make that more clear."

Research Question 8: Helpfulness of SASS

The next research question asked if instructors found the SASS to be helpful. The first instructor had constructive criticism that was centered in the curriculum as well as him not spending enough time familiarizing himself with the tools in the Effective MUGs curriculum. He said that it took some time for him to be comfortable with the SASS because he didn't start introducing it in class until weeks four-five and he did not use it regularly until week seven of the semester. He remarked that, "…the latest version [of the SASS] is a lot easier to follow. Ever since the beginning of the first time I saw it, it felt overwhelming because there's just a ton of stuff – a ton of balloons, a ton of words. But I feel like with the latest one with all of the colors and arrows – it does make it a little bit easier to follow." Where the first instructor found the SASS overwhelming, the second instructor found the SASS to be a good tool, "I find it incredible that you packed so much information into such a short space. I think it is a good layout and good graphically. It is easy for your brain to organize."

A theme that emerged in instructor comments was that they wished they had spent more time studying the SASS. The first instructor said, "I think if I spent more time studying the SASS, I would have been a little bit more prepared for those first handful of weeks. I don't necessarily think that it's an issue with the curriculum, I think I just wasn't quite…I didn't have a full handle [on it]…a hard thing to implement." The second instructor said, "…the more comfortable I get with it too, the

more practice I get knowing how to make that [using the SASS as a tool] happen for them…I want to work with it again to get better at using it."

Research Question 9: Timing of Lessons

The last research question about instruction was about the pacing: did the lesson take an appropriate amount of time? This question was answered by instructor interviews as well as class observations. The lessons took on average 30 minutes or 40 minutes if the task was difficult (the later lessons where student revise unknown peers' sentences) or if the technology was challenging. Both instructors expressed that 14 lessons were too much for the 14 week semester as some lessons in the *Supporting Strategic Writers* (MacArthur & Phillipakos, 2016) take all of the class time. The first instructor completed twelve lessons and the second instructor completed ten. The second instructor remarked that ten lessons were ideal for the semester.

Chapter 5

DISCUSSION

This study offered the opportunity to examine many different kinds of results, both quantitative and qualitative; all of the results, even without statistical significance, offered clear feedback on steps to take in revision of the Effective MUGs curriculum. There was only one quantitative result that showed a significant difference (pretest to posttest for proportion of correct t-units), and it is a result that has to be questioned because of the dissimilarity in the writing contexts. The pretest was written by hand without a spellchecker and was low-stakes; the posttest was timed, word-processed (submitted through the Blackboard LMS), and high-stakes. (Both were written in class.) For the difference between the cause-effect essay and the posttest, the proportion of correct t-units was not significant (p = .08). However, the moderate effect size of .40 is promising. These two writing situations were more similar. The cause-effect essay and posttest were both composed electronically and submitted through Blackboard. The posttest was worth more points, but both essays were also first drafts.

The descriptive data in Table 4.2 shows that the student sample of seven showed positive trends in the proportion of correct t-units per essay and in reduction of errors per t-unit/sentence with every essay that they wrote for the class. For this small sample, their first drafts showed a positive trend with every first draft and only the last revised draft did not show this positive trend over the previous revised draft.

The posttest, a timed writing situation that was also a first draft, showed a negative trend from the previous essay (a revised draft). However, the posttest still showed a positive trend in both reduction in errors per t-unit and proportion of correct t-units per essay from the pretest to the cause-effect essay first draft.

One of the research questions asked what kinds of errors were reduced. The errors were divided into mechanics (punctuation and capitalization), usage (homophones, missing words, and extra words), and syntax (fragments and subject-verb agreement). When the various errors for the larger (yet not statistically valid) samples of 12 and 13 students were compared from the pretest to the posttest, all three categories showed positive trends in the reduction of errors per t-unit with usage errors seeing the largest positive trend in reduction in errors per t-unit. However, the more similar writing situations of cause-effect essay first draft to posttest showed negative trends in both usage and syntax. The negative trend in the number of usage errors on the posttest is due to error #35 (a switch in voice); this is the error code that was used to note when students switched from first or third person (I or she) to second person (you). In the posttest, a timed writing situation, students were much less mindful of this convention than they had been on earlier papers; some students made this mistake 11-12 times in their essay for the posttest (Table 4.3).

In the descriptive grammatical error data from the cognition lab (eight students participated), students were combining sentences correctly at a rate of 63.8% (Table 4.3). More descriptive data (sample of seven students from Table 4.2) from the independent sentence practices showed students combining sentences correctly at

64.9% (Table 4.5). The students could recognize the patterns and combine the sentences correctly, but it is clear that these skills did not completely transfer to students' essay writing. The students' highest level of correct t-units per essay was 42% in the first draft of the Argument with Sources essay (Table 4.1).

Necessity for Further Research

The fact that most of the data in this study are not statistically significant does not indicate that this not a good area for research. There are indicators that more research needs to be done. One possible reason for the lack of statistically significant data that would have shown student gains was that the sample size was too small. Out of two classes and twenty-three students who initially signed up, only thirteen finished the semester and only seven completed every assignment. Another possible reason the data did not show gains was that students were writing more sentences and more complex sentences. In the pretest, students wrote an average of 12 t-units (not including fragments). In the posttest, students wrote an average of 35.71 sentences (not including fragments). The complexity of the writing task increased for students when they started working with outside sources, necessitating use of the *Publication Manual of the American Psychological Association, Sixth Edition* (2009). Students were incorporating new types of constructions in their sentences like signal phrases, quote marks, and parentheses for use in APA citations (Table 4.2). The increase in syntactic errors per sentence may be due to this increased complexity.

Results from the essays, the cognition labs, and from the independent sentence practices showed one trend clearly. These small samples of students, to some extent, understood the patterns that they were looking for. Of the sentences in the cognition labs, 63.8% were combined correctly; 64.9% of independent sentence practices were combined correctly (Tables 4.6 and 4.7). However, how to get these skills to transfer into student essay writing needs further research. Students need to show a higher proportion than 42% of correct t-units per essay (Table 4.2).

Another possible reason that the data did not demonstrate statistical significance is that is the students (except for one) mostly did not use the SASS outside of class for writing essays. Only two students used the SASS to complete their independent sentence practices. Another descriptive finding is that students make fewer mistakes when they are thoughtful about individual sentences. There is an implication is that students are better at being thoughtful about their sentences when they use a SASS. The best result in student sentences was the one time when it was guaranteed that students were using the SASS; the sentences that had the most errors came from students own' writing when they wrote essays at home and did not use a SASS (except for the one student interviewed who did use a SASS). While in the independent sentence practice sentences also had a high percentage of being right, there were sentences that were repeated, artificially inflating the number of correct sentences. Students have the potential to make fewer errors yet in their essays when they slow down and examine the elements in their sentences like they do in sentence-combining, especially if they used a SASS. Still, students showed positive trends over

the course of the semester from the cause-effect essay to the posttest despite the timed writing situation when they did not have time to consider their sentences carefully, and this is another reason to consider further research.

Improvement of Curriculum

It may be that the curriculum needs substantial revision. Although the curriculum shows some promise, improvements are clearly needed to improve student performance on sentence combining and especially transfer to essays. One idea to improve the Effective MUGs curriculum's effectiveness could be that more work needs to be done in professional development to train instructors to remind students to use the SASS with their essays and writing for other classes. Discussing using the SASS in other classes in order to help with MUGs errors across domains would hopefully transfer into students' writing more successfully.

Another area to help the curriculum to be successful would be to revise the directions. Student interview and instructor interview data showed that the directions need to be revised for clarity. One student remarked that the independent sentence practices were hard to complete and then she showed in her comments that she wasn't following the directions for the exercises. One instructor reflected that some students did not follow the directions despite them being on every page.

One factor that may be impacting student gains in reducing errors in their own writing is that they still, at the end of the class, experienced difficulty identifying

subjects and verbs in sentences. If students understood where their subjects and verbs were, they would be able to analyze how many clauses they had. If students could identify clauses, they could look for the tag words (conjunctions) that signal how to punctuate. If students could identify clauses, then they could begin to analyze phrases that might need setting off with a comma. However, students in this study misidentified their subjects and verbs in their independent sentence practices (Table 4.5) and cognition labs (Table 4.6). The lessons they were learning from sentence combining in the Effective MUGs curriculum also did not make a complete transfer into students own writing. To address this, the SASS needs to be revised to feature subject-verb identification more (especially parts of the verb phrase to look out for) clearly before another intervention is run. There is currently more than one area of interest that addresses subjects and verbs; they need to be put in closer in proximity to each other. Most students didn't even look at the tag questions on the SASS (Appendices N, O, and P) for subject and verb identification. In addition, once the revisions have been made to the SASS, the updates need to be added to professional development and any visual cues that are added to the SASS need to also be added to the in-class exercises and the independent sentence practices.

One area of revision that is related to the difficulties with subject-verb identification that could help the Effective MUGs curriculum to be more successful would be to discuss with students and instructors the reason for using metalanguage, yet keeping it limited. Researchers have offered reasons to use metalanguage that need to be more widely shared with stakeholders. Myhill (2010) argued for use of

limited terminology. Fogel & Ehri (2000) call for explicit grammar instruction, and this is very difficult if grammar terminology is not a tool available for use. Both Hudson (2016) and Jones et al. (2012) cited a study from Finland that showed that students could improve their punctuation by studying their clause structure; again, how can instructors communicate clause structure without grammar metalanguage? Even though Willis and Willis (1996), argued against metalanguage, they also asked that students identify subjects and verbs in their sentences as a part of the revision process. People need at least "subject" and "verb" to be able to accomplish that task. Pascarella et al. (2008) asserted that feeling more competent helped students persist; how do students develop competency in sentence awareness without the words to describe sentences?

Another area to help the curriculum to be successful would be to help students differentiate lessons. Two students also thought the sentence combining was overly simple as was the revision; they considered the problems easy to spot in sentences. Both students thought the curriculum was repetitive, especially towards the end. However, these students' independent sentence practices were marked by repeated sentences and simplicity from week to week. These students did not experiment with language and sentence structures, but they were not cognizant that they were creating the limits of the exercises themselves. Both the in-class exercises and the independent sentence practices need to be revised to include directions about not repeating sentences and the exercises being limited by the students' imagination as well as augmented directions added to professional development materials.

The data that the students provided in their interviews and cognition labs were helpful in understanding where the strong parts of the curriculum were and what needs revision. BYOD and gradual release were really popular with both students and instructors, so more aspects of the lessons should be modeled by the instructors. To revise the directions to the homework in order to make them clearer could include highlighting the target lesson more specifically or visually, trying a different explanation for students writing their own sentences, and highlighting the sentence questions (Is the sentence concise? etc.) more clearly. Any changes to instructional materials would need to be added to professional development as well as the reason for the curriculum design choices. The first instructor remarked that the lessons had really good pacing during this treatment compared to previous semesters, and he wasn't sure what the difference was. The difference was the addition of putting students in pairs instead of them doing sentence individually during in-class exercises; think-pair-share sped up the pacing, offered more correct student answers, and reduced student anxiety in a high student-involvement learning situation. Instructors knowing these choices of the curriculum could help them to feature them more in lessons.

The Effective MUGs curriculum showed limited effects in improving students' ability to identify and correct errors in their own writing. However, the study was rich in data about ways to revise the curriculum and the professional development around the curriculum. The numerous data sources offered in this study, although they were not statistically significant, ended being very productive in offering clear paths forward for the Effective MUGs curriculum.

Chapter 6

FUTURE PLANS

The very clear paths forward provided by all of the results are easy enough to define, but they will be challenging to enact; these include revision of the curriculum (including the SASS), professional development for instructors, and another study with more participants. The revisions should help students to use the tools of the Effective MUGs curriculum more fully and allow them to transfer the lessons that they learn in sentence combining and from the SASS to their own essay writing and revision. The most difficult path forward will most likely be the professional development because this curriculum asks instructors to think and talk about grammar differently than they have previously. However, the most difficult path may be finding enough participants in order to obtain enough results to demonstrate statistical significance.

The first clear path forward is to revise parts of the Effective MUGs curriculum. The classwork and independent sentence practices need to be revised to make the directions more clear as per the feedback from both the instructors and the students. One change to the curriculum is that the object of the lesson will be added to the both the directions and the titles of the in-class exercises and the independent sentence practices, so students understand more clearly what the object of the lesson is. Another change is that assignment requirements in the directions will be more visually distinct (bolded, highlighted, or some other cue). Whatever visual cue is adopted on the independent sentence practices will be adopted throughout the curriculum (in-class exercises and the SASS).

Another change will be to revise the order of lessons and change the focus of the first two lessons. For this treatment, prepositional phrases and infinitive verbs were the last two lessons before students moved into analyzing unknown peers' sentences, and these were the only lessons that had allowed time for subject-verb identification (because, for students, prepositional phrases and infinitive verbs are subject and verb red herrings). However, this was out of sequence because it moved the subject and verb identification lessons to the end and didn't give students the tools for eliminating prepositional phrases and infinitive verbs when searching for the subjects and verbs. The emphasis of the lessons was wrong also as they should have focused more on subject-verb identification. Seeing student difficulty with subject-verb identification means that these lessons should be featured first and reinforced throughout the Effective MUGs curriculum.

Another revision to the curriculum is to add a statement to the independent sentence practice directions that states that students cannot repeat sentences within the practice itself or from one practice to another. Students should be urged against repeating sentences because it does not maximize students learning how to control elements of their sentences. A final change to the directions is that students will be reminded that it is only their imagination that limits or expands the exercise. Independent sentence practices can be repetitive or students can experiment with language in a low-stakes environment. The success or failure of the language choices that students make can improve their communication skills not just in English class, but across the curriculum.

Another planned change to the curriculum to help instructors is to add an index of lessons so instructors know which sentence elements to feature from lesson to

lesson. It would also be useful for instructors for me to map areas of interest from the SASS to the index of lessons so instructors know which parts of the SASS to model in that week's lesson.

Another set of changes that needs to occur to the Effective MUGs curriculum is revision of the SASS. Information needs to be moved and grouped differently, and some areas need more information. While there are multiple areas of interest on the SASS that address subject-verb identification, students are still having trouble identifying subjects and verbs. I would like to add a fourth page and make the new first page subject-verb identification. All of the different pieces of information about subjects and verbs already on the SASS would be put on the first page as well as more information about verbs (words that are used in verb phrases and passive/active voice). The subject-verb identification section would go on the left top on the front page, read down, and then students would go back up to the right because that is where people's eyes are drawn to naturally. I'd also like to add a short section on apostrophes because that is often a concern for instructors and also put the most important helpful hints on the first page (no "you" in academic writing). This error (using you) is one that is especially important to tell students to be mindful of because in the local context, this is an error that instructors note quite frequently.

In addition, by moving the subject-verb identification on pages two-three (Appendix C) to page one, room will be opened up on pages two-four in order to give existing areas of interest a little more room or to add new information. Ideally, after revising the content, I'd like to work with a graphic designer who has experience in designing for learning environments and would know what kinds of designs take advantage of syntactic structures in order to maximize student learning. Low-

achieving students need to be served better by this curriculum. Ways to better help the low-achieving students is also a research goal in the future, including methods to achieve universal access and how to cue materials better for literacy.

Another change in the curriculum is the pacing. Each lesson should take about 20 minutes and the lessons took about a half hour. I do not know where else time can be cut except as instructors' expertise with the curriculum increases, it may take less time. It could also be that a half hour is not too long for this activity. The pacing issue may also help the disengagement issue later in the semester, but this is a problem that needs further consideration and research into student engagement.

The next set of changes to the Effective MUGs curriculum are in the professional development in order to help instructors use the curriculum more fully. This curriculum asks instructors not to talk about standard/non-standard when describing various Englishes, and also not to talk about parts of speech. Both of these curricular choices are in opposition to how most English instructors are taught. While these choices are featured in professional development, they also need to be a part of follow-ups while instructors are observed learning how to teach the curriculum.

The next change in professional development is asking instructors to model not just the in-class exercises but the independent sentence practices so students can more easily follow the directions and find sentences in their own writing that are appropriate for the lesson. One of the concerns that both instructors and students had was that students had trouble understanding procedures – what to underline and what to highlight. So, in the professional development, instructors will be asked to emphasize the formatting notations and the sentence questions for modeling both the in-class exercises as well as the independent sentence practices. Instructors will be asked to

feature the objects of the lessons in their modeling and explanation of homework so that students understand the progression of the lessons and hopefully feel that there is less repetition.

Another change to professional development is that the lesson for instructors about avoiding parts of speech and centering the conversation around what a word is doing in the sentence (its function) will be reinforced. In order to discuss function more fully, instructors need more professional development with the SASS. There were aspects of the SASS that instructors didn't notice or use. For instance, the patterns of underlining, bolding, and highlighting that are on the SASS are the same formatting that students are asked to employ on the in-class exercises and the independent sentence practices, but the instructors haven't been specifically asked to point this out previously. Instructors will, in the future, be asked to model the formatting features on the SASS to reinforce the formatting directions on classwork and independent sentence practices. Instructors will be asked to feature the tip about use of you. While this is a reminder on the SASS, the location of it should be a part of the professional development because of the importance of that error. Reminding students more frequently to use the SASS to edit essays (across the curriculum) will also built into professional development to improve the transfer of the lessons in the lessons to student essay writing.

Another change to professional development will be that instructors will be asked to discuss the sentence questions on the classwork, the independent sentence practices, and the SASS; instructors will be asked to define what concise is for students as well as clarity, sentences that sound good, and how students can observe the conventions of professional academic English. In general, the professional

development has to be more robust because it's a different way to talk about sentences and the SASS is a very compact resource.

After all of these revisions to the Effective MUGs curriculum and professional development are made, I'd like to run another intervention with the students in basic writing classes at my university. I would like to expand the study to six classes so I can have three treatment groups and three control groups; I would like to follow the same procedures with interviews with students, interviews with instructors, a cognition lab, and the ability to digitally record what the students are looking at (if Dr. Pasquarella is willing to loan me the glasses again). I'd also like to have students complete the cognition lab on a computer so the students don't have to learn new procedures in formatting as they identify sentence elements. The cognition lab would need to be changed if students in the control group were tested; one task would need to be writing to a prompt because sentence-combining would not be a fair test of student ability to find and correct grammatical errors in their own writing. In a future intervention, I will also know more about the research process and be able to minimize time spent erroneously on activities that don't end up producing usable data in the end. I will be able to code fewer papers and pick a sample group much more efficiently.

While the amount of data at the end of this study was slightly overwhelming, it gave me a really clear picture of what was successful and what was not successful in the curriculum. It is a relief to know that some parts of the curriculum perhaps helped (descriptively, not statistically) both students and instructors, and, with further revision, more students may be helped.

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Appendix A

MUGS ERROR CODE

Error	Numerical Code	Category	Notes	Example (with error present)	Example (with no error present)
Spelling	1	Mechanics	incorrect spelling but not an easily confused word	Jenn will go to the stor when Bill gets back	Jenn will go to the store when Bill gets back.
Missing apostrophe (including its/it's)	2	Mechanics	A contraction or possessive with no apostrophe. The possessive form "its" used to signal the contraction of "it is" (it's).	I cant believe it. That car is Joans.	I can't believe it. That car is Joan's.
Unnecessary/ extra apostrophe (including its/it's)	3	Mechanics	An apostrophe used to signal a plural instead of a possessive. "It's" used to signal possession.	The duck's walked across the hotel lobby.	The ducks walked across the lobby.
Unnecessary capitalization	4	Mechanics	Capitalizing something that doesn't need to be capitalized (common nouns presented as proper nouns)	Going to The Pool, Renee saw her teacher in a bikini.	Going to the pool, Renee saw a teacher in a bikini.
Missing capitalization	5	Mechanics	Not capitalizing something like a proper noun, "I," or an acronym.	To create a twitter account, a person needs an email address.	To create a Twitter account, a person needs an email address.
Missing commas to set off nonessential information	6	Mechanics	If you need the information to know what is being discussed, then it's essential and should not be set off with commas. Non-essential may add information, but is not essential to have to understand the sentence.	The Mighty Ducks native to San Jose played their last game for the season.	The Mighty Ducks, native to San Jose, played their last game for the season.
Unnecessary/extra commas to set off essential information	7	Mechanics	Commas in between subjects and verbs, or commas in between compound subjects, objects or verbs. This only applies to compounds of two items.	The ducks, are specially bred, and are trained from an early age. The ducks,	The ducks are specially bred and trained from an early age. The ducks swim in the fountain.

				swim in the fountain.	
Extra commas in the middle of a two-item compound subject, verb, or object	8	Mechanics			
Missing commas in a list	9	Mechanics	Missing a comma in between any items in the list.	The ocean was deep cold and deadly.	The ocean was deep, cold, and deadly.
Hyphen error	10	Mechanics	Missing hyphens, additional hyphens, and errors with hyphens and spacing.	Son in law, aggressive-tiger	Son-in-law, aggressive tiger
Semicolon error	11	Mechanics	using a semicolon to separate a clause and a phrase, to separate items in a series that are NOT internally punctuated, or used as a colon would be (to introduce a list, quote, or definition)	Jose's favorite musicians sing; play guitar; and tambourine. It was true; Area 51, UFOs, and the X-Files.	Jose's favorite musicians sing, play guitar, and tambourine. It was all true: Area 51, UFOs and The X-Files.
Colon error	12	Mechanics	Using a colon directly after a verb or preposition. "A colon should not separate a noun from its verb, a verb from its object or subject complement, a preposition from its object, nor a subject from its predicate" (Grammarly, 2013, http://www.grammarly.com/handbook/punctuation/colon/5/misuse-of-colon/)	The best things in life are: music, food, and love.	The best things in life are music, food and love.
Missing end punctuation	13	Mechanics	Missing end punctuation where the next sentence starts with a capital letter	Kate is listening to the radio She prefers WXPN.	Kate is listening to the radio. She prefers WXPN.
End punctuation mistake	14	Mechanics	Putting a period where a question mark goes.	Is it OK to put a period here.	Is it OK to put a period here?
Unnecessary comma separating clauses in a complex sentence	15	Mechanics	comma separating two clauses, right before a subordinate conjunction	Jenn will go to the store, when Bill gets back.	Jenn will go to the store when Bill gets back.
Fused sentence	16	Mechanics	Two clauses not joined with a conjunction or punctuation	The FIOS truck is across the street the wind brought wires down.	The FIOS truck is across the street. The wind brought wires down.

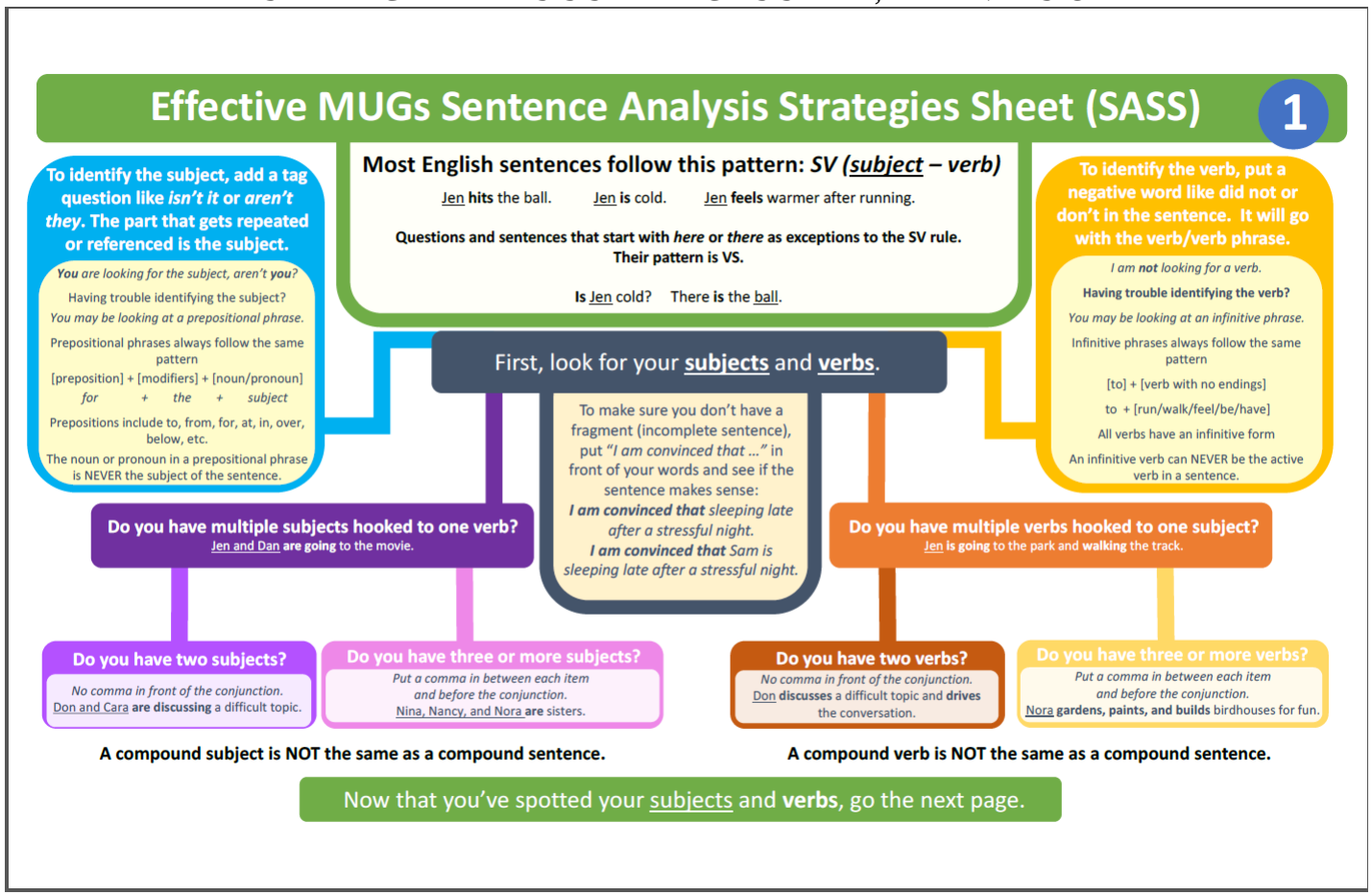
Run-on compound sentence	17	Mechanics	a sentence joined with a FANBOYS, but no punctuation	The bathroom is at the back of the house but the kitchen is in the front.	The bathroom is at the back of the house, but the kitchen is in the front.
Run-on complex sentence	18	Mechanics	Marked by a subordinate conjunction or relative pronoun, but no punctuation (if needed)	Because the sky is blue nobody thinks of severe weather.	Because the sky is blue, nobody thinks of severe weather.
Comma splice	19	Mechanics	Two clauses joined only with a comma, missing a conjunction	The desk had many items on it, a typewriter sat in the middle of it.	The desk had many items on it: a typewriter sat in the middle of it.
Fragments	20	Syntax	A clause missing a subject, verb or complete thought or a clause that starts with a subordinate conjunction	When spring arrives with birdsong and flowers	When spring arrives with birdsong and flowers, many people experience allergies.
Confusing sentence	21	Syntax	This is only to be used when the coder cannot ascertain meaning or author's intended meaning in a sentence. This may because there are multiple errors.	Rowing was learning a tooth boil.	
Nonstandard Word Form	22	Usage	Making a verb out of a noun or vice versa or colloquial language	Rhys is gonna be so upset when he sees his Easter candy gone.	Rhys is going to be so upset when he sees his Easter candy gone.
Wrong word	23	Usage	Using a word incorrectly or using a more formal homonym that doesn't mean the exact same thing	The pinnacle of his tooth was cracked. Bad example	The crown of his tooth was cracked. Bad example
Extra Word	24	Usage	An out of place word or repeats one directly after it.	The bike was big large.	The bike was big and heavy.
Missing word	25	Usage	Not for articles, determiners, or verbs	The Jefferson Memorial is in our capitol, D.C.	The Jefferson Memorial is in our capitol, Washington, D.C.

Word Form	26	Usage/ Wrong part of speech under syntactic errors	This is not for verbs. This is for abstract nouns are being used instead of concrete or the adjective form is being used as a verb (or vice versa). When participles are used as modifiers (not as a part of a verb), this could be using present participle when past participle is better or vice versa.	The adolescence were walking through the mall. Come up with a better example The chair was light covered with a blanket.	The adolescents were walking though the mall. The chair was lightly covered with a blanket.
Homophones/Easily confused words	27	Usage	includes affect/effect than/then too/two/to they're/there/their you're/your	The storm effected them when their roof flew off.	The storm affected them when their roof flew off.
Wrong Verb Tense	28	Usage	Using the present tense to discuss something that happened in the past or vice versa. Using simple past to signal a perfect or progressive form, of perfect to signal simple or progressive, or progressive to signal simple or perfect.	When the Stock Market crashes in 1929, the effects are far-reaching.	When the Stock Market crashed in 1929, the effects were far-reaching.
Unnecessary Shift in Verb Tense	29	Usage	Shifting from one verb tense to another in the same sentence or same paragraph.	I lost my keys that day. I lose my fortune as well.	I lost my keys that day. I lost my fortune as well.
Subject-Verb agreement	30	Syntax	The subject is singular while the verb is plural or vice versa	The children runs to the other end of the park. Damon say he not a poet; he likes "scientist."	The children run to the other end of the park. Damon says he's not a poet; he likes "scientist."
Verb - missing auxiliary or modal verb	31	Syntax	auxiliary verbs (to have, to be) used to form perfect or progressive verbs	Don running to the bus.	Don is running to the bus.
Verb Form	32	Usage	As a part of a verb, this could be a past participle used instead of a present participle (or vice versa).	Yolande has been brushing the dog yesterday. Tami be playing in the ball pit.	Yolande had brushed the dog yesterday. Yolande has been brushing the dog every

					day. Tami is playing in the ball pit.
Vague pronoun reference	33	Usage	The pronoun does not have a clear antecedent or referent	Theresa, Emily, and Jasmine all are signing in the in ASL class. She just signed, "Where is the grocery?"	Theresa, Emily, and Jasmine all are signing in the ASL class. Jasmine just signed, "Where is the grocery?"
Lack of pronoun - antecedent agreement	34	Usage	Pronouns don't agree with each other. Can be a singular pronoun referring to a plural antecedent or vice versa. Singular they is not viewed as an error.	Marie and Ireland as well as the boys in the choir sang; he sang well.	Marie and Ireland as well as boys in the choir sang; they sang well.
Switch in Voice	35	Usage	Switch in voice signals switch to use of "you"	I just went to a car show: you had no trouble finding it.	I just went a car show: I had no trouble finding it.
Informal Language	36	Usage	anything considered informal language. Some people include contractions and ending sentences in prepositions, but others don't.	Her eyebrows are completely on fleek.	Her eyebrows are well-shaped.
Singular/Plural Noun Error	37	Syntax	Could also be subject-verb agreement (23); any noun that is singular where is should also be plural; or vice versa	Garrett and Tim wore their ring.	Garrett and Tim wore their rings.
Missing Articles or Determiners*	38	Syntax	missing an a, an or the	Matt and Matt eat at corner restaurant.	Matt and Matt eat at the corner restaurant.
T-unit with no Errors	39				

Appendix B

SENTENCE ANALYSIS STRATEGIES SHEET, BETA VERSION



Effective MUGs Sentence Analysis Strategies Sheet (SASS) 2

REMEMBER!

- English is slippery. We verb nouns all of the time.
- Don't look at parts of speech. Look at what the word is doing in the sentence and what other words it's grouped with (phrases and clauses).
- A complete verb can have up to four words.
- For the most part, don't use "you" in professional academic English

Most English sentences follow this pattern: *SV (subject – verb)*

Sean **patches** the pants. Sean **is** relaxed. Sean **feels** confident in his ironing.

Questions and sentences that start with *here* or *there* as exceptions to the SV rule. Their pattern is VS.

Did Sean patch the pants? Here **are** the pants.

How many complete subject – verb combinations do you have?

Look at the clauses and at the conjunctions

If you have one subject verb combination, you have one clause (also called a simple sentence).

No comma needed.
Omar **has been taking** French.

Do you have two (or more) clauses and you can tell they can stand on their own?
You have a compound sentence

Look for a coordinating conjunction
These include and, but, or, and so

Make sure you have both a comma and a FANBOYS between the clauses

Mateo **was training** for a marathon**, and** he **ate** more carbs the whole time.

Are you missing a conjunction?

Do you have two clauses that can stand on their own and are joined with a semicolon?
You have a compound sentence

If you use a semicolon between the two clauses, don't use a FANBOYS, too.

Omar **is hoping** to travel to Haiti **;** he **would like** to do volunteer work.

If you use a connector like however or in fact, follow it with a comma

Omar **has signed up** with the Red Cross **; in fact,** he **will be going** soon.

Do you have more than one clause and you can tell only one clause can stand on its own?
You have a complex sentence.

Look for a subordinating conjunction
These include when, if, because, although, when, while, until, after, etc.

Do you have a complex sentence with the subordinating conjunction up front?

Put a comma between the two clauses.

If the plane **does**n't land on time**,** Sofia **will miss** her connecting flight.

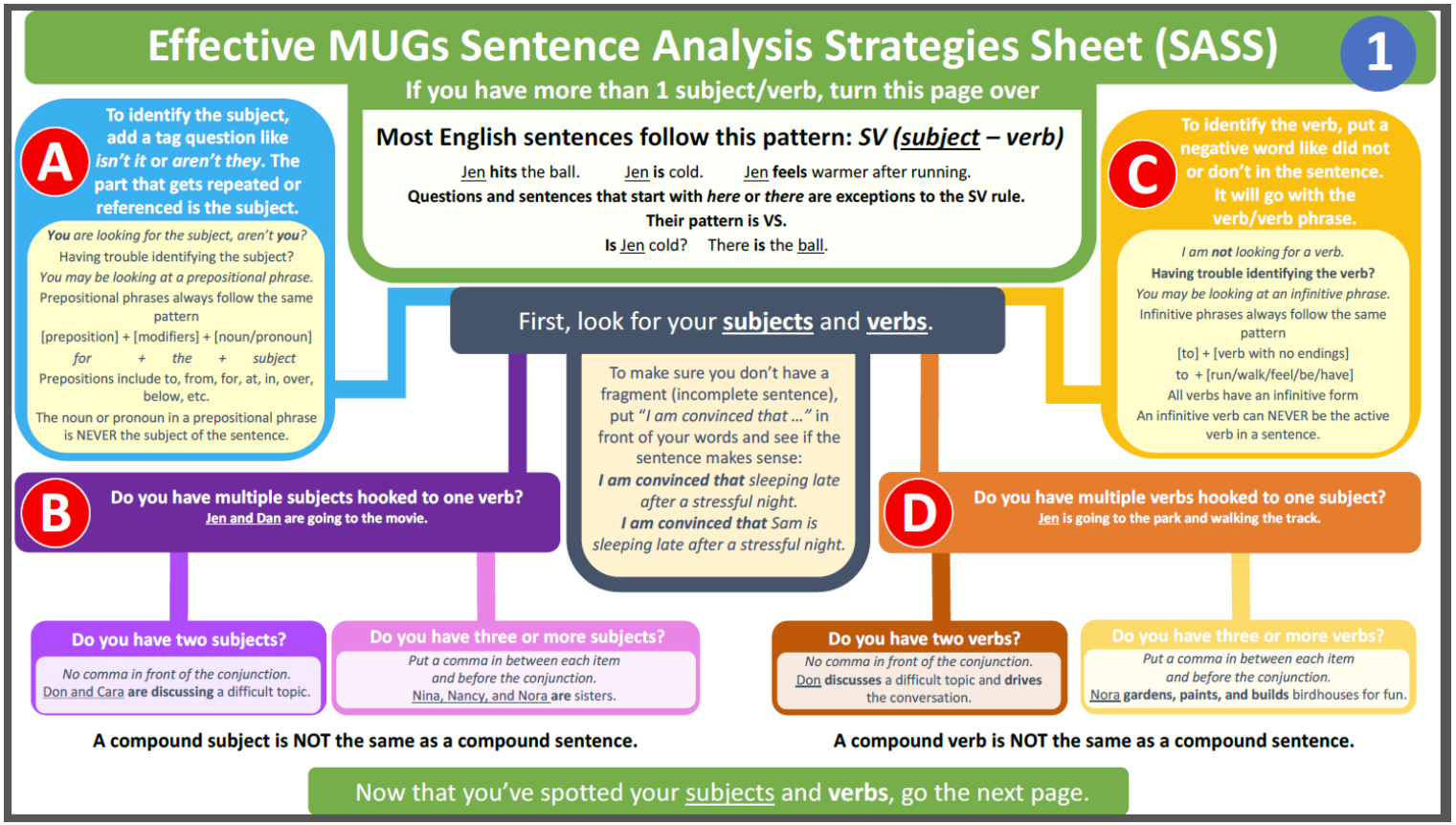
Do you have a complex sentence with the subordinating conjunction in the middle?

No comma required.

Lukas **promised** his sister a call **when** he **got** home from school.

Appendix C

SENTENCE ANALYSIS STRATEGIES SHEET, GAMMA VERSION



Effective MUGs Sentence Analysis Strategies Sheet (SASS) 2

If you have only 1 subject/verb, turn this page over

Most English sentences follow this pattern: *SV (subject – verb)*

Sean **patches** the pants. Sean **is** relaxed. Sean **feels** confident in his ironing.

Questions and sentences that start with *here* or *there* are exceptions to the SV rule.

Their pattern is VS.

Did Sean patch the pants? Here **are** the pants.

How many complete subject – verb combinations do you have?

Look at the clauses and at the conjunctions

E — **If you have one subject verb combination, you have one clause (also called a simple sentence).**

No comma needed.
Omar **has been taking** French.

F — **Do you have two (or more) clauses and you can tell they can stand on their own?**
You have a compound sentence

Look for a coordinating conjunction
These include and, but, or, and so ABSO

Make sure you have both a comma and a ABSO between the clauses

Mateo **was training** for a marathon**, and** he **ate** more carbs the whole time.

G — **Do you have more than one clause and you can tell only one clause can stand on its own?**
You have a complex sentence

Look for a subordinating conjunction
These include when, if, because, although, when, while, until, after, etc.

Do you have a complex sentence with the subordinating conjunction up front?

Put a comma between the two clauses.
If the plane **does**n't land on time**,** Sofia **will miss** her connecting flight.

Do you have a complex sentence with the subordinating conjunction in the middle?

No comma required.
Lukas **promised** his sister a call **when** he **got** home from school.

Are you missing a conjunction?

Do you have two clauses that can stand on their own and are joined with a semicolon?
You have a compound sentence

If you use a semicolon between the two clauses, don't use a FANBOYS, too.
Omar **is hoping** to travel to Haiti **;** he **would like** to do volunteer work.
If you use a connector like however or in fact, follow it with a comma
Omar **has signed up** with the Red Cross **; in fact,** he **will be going** soon.

Effective MUGs Sentence Analysis Strategies Sheet (SASS) 3

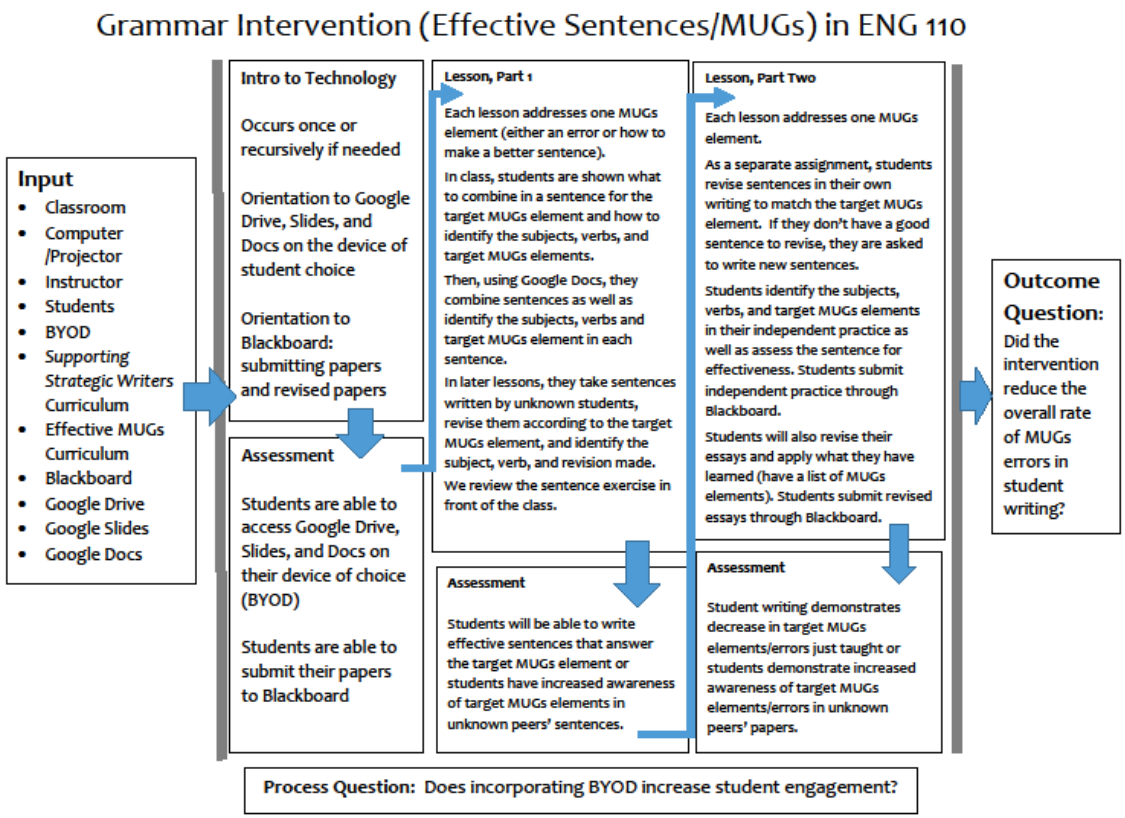
REMEMBER!

- English is slippery. We verb nouns all of the time.
- Don't look at parts of speech. Look at what the word is doing in the sentence and what other words it's grouped with (phrases and clauses).
- A complete verb can have up to four words.
- For the most part, don't use "you" in professional academic English
- Formal language: If you wouldn't say it to your principal, it's probably not right for academic writing.
- Always ask these questions of you each sentences: Is it concise? Does it sound good? Have I observed the conventions of PAE?

Example Error	What Your Instructor Calls It	Look here on the SASS
Janae, and Krystin love Harry Potter movies.	Comma error Erroneous commas Unnecessary comma	A
Janae has read all of the books, and seen all of the Harry Potter movies.	Comma error Erroneous commas Unnecessary comma	C
Jamal and the team ran to the top of the hill and they all took a break up there.	Missing punctuation Missing comma in the compound sentence Run-on	G
Jamal and the team ran to the top of the hill they all took a break up there.	Run-on Run-on sentence	F or G
Jamal and the team ran to the top of the hill, they all took a break up there.	Comma splice Run-on	F or G
Jamal and the team ran to the top of the hill; and they all took a break up there.	Incorrect punctuation Misuse of semi colon Delete conjunction - and	F
When Reese saw the wrecked car she stopped to help.	Missing punctuation Comma missing after subordinate clause Comma needed after dependent clause	H
Reese stopped to help, when she saw the wrecked car.	Comma error Unnecessary comma	H
To run a marathon, is Merry's goal.	Comma error Unnecessary comma	I

Appendix D

LOGIC MODEL FOR THE EFFECTIVE MUGs INTERVENTION



Appendix E

EFFECTIVE MUGS LESSON ONE

Appendix F

IN-CLASS EXERCISE

ENG 110 Effective MUGs Classroom Practice Two

- *Find a partner.*
- *Combine the sentence that was assigned to you and your partner using the word in the parentheses.*
  - *Try to eliminate all parts of the sentence that repeat.*
  - *You may make changes to the sentence to make them correct, but you cannot change the meaning of the sentence.*
- *In every sentence, please underline the subject(s), make the* ***verb(s)*** *bold, and* italicize *or highlight where you joined words.*
- *After you have labeled all of the sentence elements, evaluate your sentence for effectiveness:*
  - *Is my sentence clear?*
  - *Is my sentence concise?*
  - *Does the sentence sound good?*
  - *Am I observing the conventions of professional academic English?*

Number	Sentences to Combine	Your combined sentence
1	He wanted to name the dog Rex. He wanted to name the dog Cody. (or)	
2	The warm pretzel was delicious. The tangy cheese dip was delicious. (and)	
3	Madison got called into the office. Madison talked to the principal. (and)	
4	Charlie made a list of activities for the group. Lauren made a list of activities for the group. (and)	
5	It was a painful decision. It was a good decision. (but)	
6	Jon became Susana's roommate.	

Appendix G

INDEPENDENT SENTENCE PRACTICE

Independent Sentence Practice Two

- *Look through your paper for sentences that you can revise according to the lesson for the week. This week, it's making subjects and verbs compound.*
  - *If you don't have a sentence you can use, you can add to a sentence that you have or start a new sentence.*
  - *Two of your sentences should have compound subjects.*
  - *Two of your sentences should have compound verbs.*
- *After you've rewritten your sentence, remember to label elements in the sentence: underline all of the subjects, **bold** the verbs (all parts of the verb), and highlight any conjunctions you used to join subjects or verbs.*
  - *You only have to label the sentence elements in your revised sentence*
- *After each sentence, use the parentheses to label what you made compound.*
- *After you have labeled all of the sentence elements, evaluate your sentence for effectiveness:*
  - *Is my sentence clear?*
  - *Is my sentence concise?*
  - *Does the sentence sound good?*
  - *Am I observing the conventions of professional/academic English?*
- *Save your document and then upload it into Blackboard or bring it to class..*

Example Sentence Stephanie ate an omelette for breakfast.
Example Rewritten Sentence Stephanie and Lena **ate** omelettes for breakfast. (compound subject)
Example Evaluation It's effective - I remembered to change the number of omelettes in the sentence, so it sounds good.

Original Sentence #1
Rewritten Sentence #1

Appendix H

SEQUENCE OF EFFECTIVE MUGS LESSONS

- Effective MUGs Lesson One
    - Introduction of Project/Study
    - Introduction to BYOD
        - Entering data into a test form
    - Introduction to the Effective MUGs curriculum and the Sentence Analysis Strategies Sheet (SASS)
- Effective MUGs Lessons Two-Three
    - Compounding subjects and verbs
        - Kernel sentences cued with conjunctions
    - Use of SASS as an instructional tool while students are working
- Effective MUGs Lessons Four-Five
    - Compound sentences (Comma/FANBOYS and semicolon)
        - Kernel sentences cued with coordinating conjunctions
    - Use of SASS as an instructional tool while students are working
- Effective MUGs Lesson Six-Seven
    - Complex sentences (Punctuation dependent on which clause leads)
    - Kernel sentences cued with subordinate conjunctions
    - Use of SASS as an instructional tool while students are working
- Effective MUGs Lesson Eight-Nine
    - Prepositional Phrases and Infinitive Phrases
        - Identification of sentence elements to avoid confusion with subject and verb

        - Adding prepositional phrases and infinitive phrases
        - Students cued to highlight prepositional phrases and infinitive phrases
    - Use of SASS as an instructional tool while students are working
- Effective MUGs Lesson Ten-Fourteen
    - Revision of Unknown Peers' Sentences
    - Review of Previous Strategies (SASS)
    - Content will depend on grouped student errors
        - Often mechanical errors and register issues
    - Identification of all previous sentence elements covered in order to employ strategies (subjects, verbs, and conjunction/punctuation)
    - Use of SASS as an instructional tool while students are working

Appendix I

SEQUENCE OF INDEPENDENT SENTENCE PRACTICES

- Independent Sentence Practice Two and Three
    - Students take four sentences from their work for that week and place them in a new document (a graphic organizer supplied by the instructor).
        - They will be asked to write new sentences if they don't have sentences that are appropriate for the exercise.
    - After each example sentence from their work, students are asked to revise their sentences (if they started with a pre-existing sentence) according to the target MUGs element or they write directly to the target MUGs element.
        - Two sentences are revised to include a compound subject.
        - Two sentences are revised to include a compound verb.
    - Students underline subjects, bold verbs, and highlight/italicize conjunctions/punctuation in the revised/new sentences.
    - They are also asked to analyze their revised/new sentences for effectiveness by responding to questions on the graphic organizer.
- Independent Sentence Practice Four and Five
    - Students take four sentences from their work for that week and place them in a new document (a graphic organizer supplied by the instructor).
        - They will be asked to write new sentences if they don't have enough sentences that are appropriate for the exercise.

    - After each example sentence from their work, students are asked to revise their sentences (if they started with a pre-existing sentence) according to the target MUGs element or they write directly to the target MUGs element.
        - Two sentences are revised to be compound using comma/FANBOYS.
        - One sentence are revised to be compound using semicolon.
    - Students underline subjects, bold verbs, and italicize/highlight punctuation and conjunctions in the revised/new sentences.
    - They are also asked to analyze their revised/new sentences for effectiveness by responding to questions on the graphic organizer.
- Independent Sentence Practice Six and Seven
    - Students take four sentences from their work from that week and place them in a new document (a graphic organizer supplied by the instructor).
        - They will be asked to write new sentences if they don't have enough sentences that are appropriate for the exercise.
    - After each example sentence from their work, students are asked to revise their sentences (if they started with a pre-existing sentence) according to the target MUGs element or they write directly to the target MUGs element.
        - Two sentences are revised to be complex sentences with the independent clause first.
        - Two sentences are revised to be complex sentences with the dependent clause first.

    - Students underline subjects, bold verbs, and italicize/highlight punctuation and conjunctions in the revised/new sentences.
    - They are also asked to analyze their revised/new sentences for effectiveness by responding to questions on the graphic organizer.
- Independent Sentence Practice Eight and Nine
    - Students take four sentences from their work from that week and place them in a new document (a graphic organizer supplied by the instructor).
        - They will be asked to write new sentences if they don't have enough sentences that are appropriate for the exercise.
    - After each example sentence from their work, students are asked to revise their sentences (if they started with a pre-existing sentence) according to the target MUGs element or they write directly to the target MUGs element.
        - Two sentences are revised to include prepositional phrases.
        - Two sentences are revised to include infinitive verbs and phrases.
    - Students underline subjects, bold verbs, and highlight/italicize prepositional phrases and infinitive phrases in the revised/new sentences.
    - They are also asked to analyze their revised/new sentences for effectiveness by responding to questions on the graphic organizer.
- Independent Sentence Practice Nine-Fourteen
    - Students take four sentences that had errors from their work from that week and place them in a new document (a graphic organizer supplied by the instructor).

- After each sentence, students are asked to revise the previous sentence according to the error in the sentence and target MUGs elements learned earlier in the semester.
- Students underline subjects, bold verbs, and highlight/italicize error corrections in the revised sentences used for the independent sentence practice.
- They are also asked to analyze their revised sentences for effectiveness by responding to questions on the graphic organizer.

Appendix J

FOCUS GROUP PROTOCOL: PERCEPTION OF EFFECTIVE MUGS INSTRUCTIONAL STRATEGIES OPENING WORDS

We're here today to discuss what you think of the grammar curriculum you have been using to study how to identify and correct errors in professional academic English. We used numerous activities designing this curriculum and I want to know which activities you think really helped you.

In responding these questions, I would also like you to always think about your own learning and growth as a writer. You are the expert in your own preferences and achievement in your learning; I am only recording your observations.

We need to set up some ground rules. (These are adapted from Richard Krueger and Eliot and Associates.)

There are no right or wrong answers, only different points of view and all respondents are equally deserving of respect and attention.

Negative responses or opinions (respectfully stated) are as valuable as positive responses.

Because we are tape recording, only one person should speak at a time.

Please turn off your cell phones or mute them while the discussion is being taped.

I will facilitate the conversation, but the majority of time spent should be you all talking.

You may be called upon if you are not providing answers.

Anything that is stated in this room should stay in this room. Please respect the other respondents' right to privacy and confidentiality.

Please no side conversations. It distracts participants and makes it hard to hear the recording.

Are there any ground rules that you would like to add?

Focus Group Questions

- Do you have any questions before we start?
- Let's go round and have everyone tell us your name.
- So now we're going to talk to each to each other. I may ask you to speak if you aren't answering questions and I may ask for clarification, but I am hoping for a conversation.
- Tell me about your greatest growth this semester, in any area of writing.
- Tell me about what you wish you had learned more about, in any area of writing.
- What are your overall impressions of the grammar curriculum?
- (A list of the activities used in the classroom will be given to students to look at while answering the following three questions.)
- What aspects of the grammar curriculum were helpful?
- What aspects of the grammar curriculum were easy?
- Which aspects of the grammar curriculum were challenging?
- What did you learn from the grammar curriculum?
- Did you have any technical issues related to use of Google Slides, Google Docs or Blackboard on the device you used? (Bring Your Own Device/BYOD)
- What were your impressions of BYOD use in the class?
- Were the exercises outside of class easy to follow and complete? What would have made them easier to complete?
- Tell me about your use of the Sentence Analysis Strategies Sheet when you completed your independent practice sentences.

- Tell me about your use of the Sentence Analysis Strategies Sheet when you revised your essays.
- Anything other questions or comments?

Thank you for your time and your answers to these questions. Your expert opinion as a student learner is very helpful as we teachers figure out how best to help people not make MUGs errors.

Appendix K

STUDENT INTERVIEW PROTOCOL: PERCEPTION OF EFFECTIVE MUGS INSTRUCTIONAL STRATEGIES

THE INTERVIEW – OPENING WORDS

We're here today to discuss what you think of the grammar curriculum you have been using to study how to identify and correct errors in professional academic English. We used numerous activities designing this curriculum and I want to know which activities you think really helped you.

In responding these questions, I would also like you to always think about your own learning and growth as a writer. You are the expert in your own preferences and achievement in your learning; I am only recording your observations. I may ask you for clarification, but your thoughts are the important part of this interview.

- Do you have any questions before we start?
- Tell me about your greatest growth this semester, in any area of writing.
- Tell me about what you wish you had learned more about, in any area of writing.
- What are your overall impressions of the grammar curriculum?
- (A list of the activities used in the classroom will be given to students to look at while answering the following three questions.)
- What aspects of the grammar curriculum were helpful?
- What aspects of the grammar curriculum were easy?
- Which aspects of the grammar curriculum were challenging?
- What did you learn from the grammar curriculum?
- Did you have any technical issues related to use of Google Slides, Google Docs or Blackboard on the device you used? (Bring Your Own Device/BYOD)
- What were your impressions of BYOD use in the class?

- Were the exercises outside of class easy to follow and complete? What would have made them easier to complete?
- Tell me about your use of the Sentence Analysis Strategies Sheet when you completed your independent practice sentences.
- Tell me about your use of the Strategies Table when you revised your essays.
- Anything else you would like to add?

Thank you for your time and your answers to these questions. Your expert opinion as a student learner is very helpful as we teachers figure out how best to help people not make MUGs errors.

Appendix L

INSTRUCTOR INTERVIEW PROTOCOL: PERCEPTION OF EFFECTIVE MUGS INSTRUCTIONAL STRATEGIES

THE INTERVIEW – OPENING WORDS

We're here today to discuss what you think of the grammar curriculum you have been using to teach how to identify and correct errors in professional academic English. We used numerous activities designing this curriculum and I want to know which activities you think really helped your students.

In responding these questions, I would also like you to always think how easy or difficult these strategies were to employ. You are the expert in your own preferences in teaching; I am only recording your observations. I may ask you for clarification, but your thoughts are the important part of this interview.

- Do you have any questions before we start?
- What are your overall impressions of the grammar curriculum?
- (A list of the activities used in the classroom will be given to instructors to look at while answering the following three questions.)
- What aspects of the grammar curriculum were the most helpful for your students?
- What aspects of the grammar curriculum were the least helpful for your students?
- What aspects of the grammar curriculum were easy to work with?
- Which aspects of the grammar curriculum were challenging to work with? What would have made them easier to work with?
- What did you learn from the grammar curriculum?
- Did you have any technical issues related to use of Google Slides, Google Docs or Blackboard on the device you used? (Bring Your Own Device/BYOD)
- What were your impressions of BYOD use in the class?

- Tell me about your use of the Sentence Analysis Strategies Sheet (SASS) in your class.
- Anything else you would like to add?

Thank you for your time and your answers to these questions. Your expert opinion as a student learner is very helpful as we teachers figure out how best to help people not make MUGs errors.

Appendix M

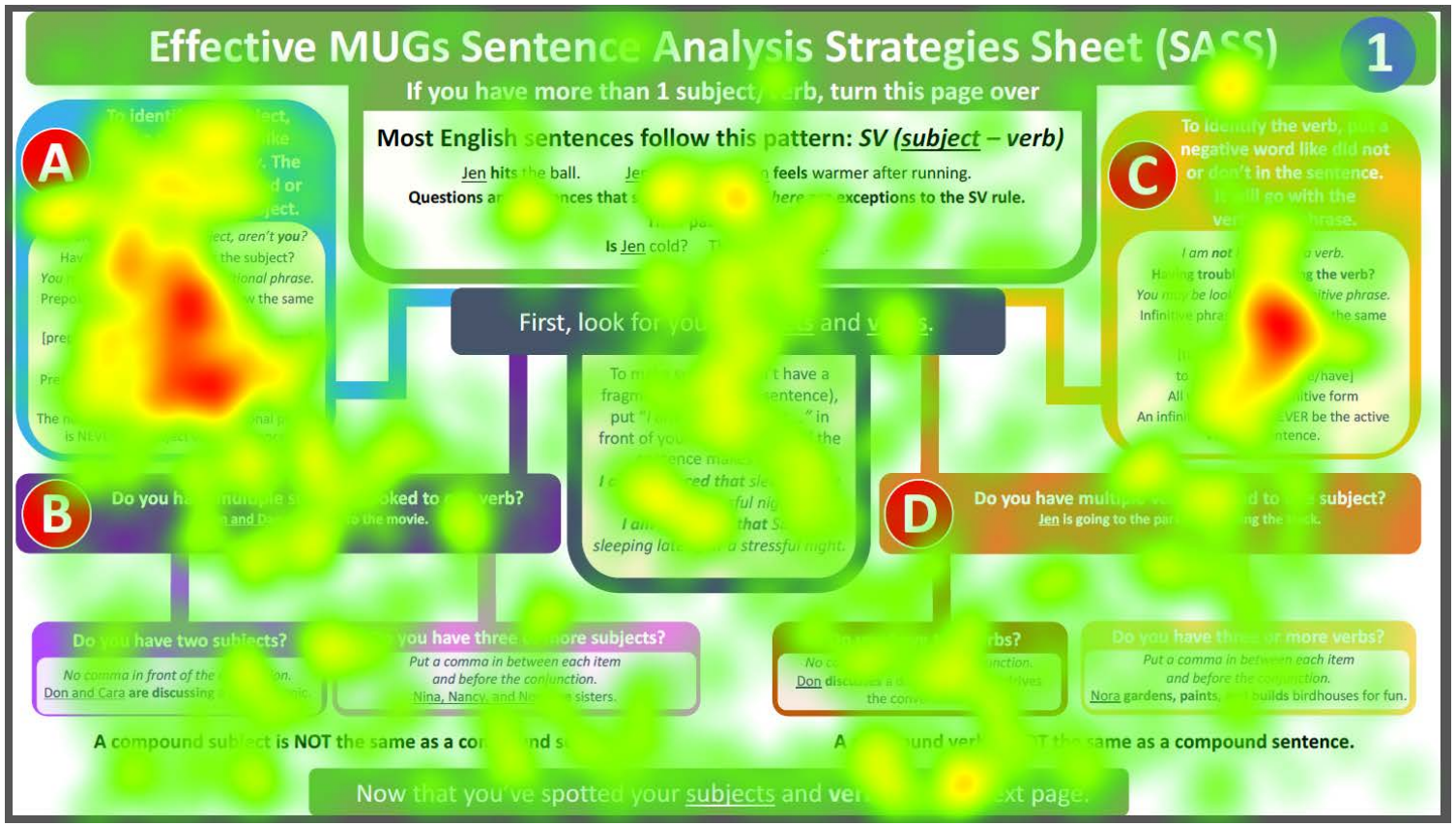
PROTOCOL FOR THE COGNITION LAB (STUDENT PROMPTED THINK-ALOUD)

- The think-aloud protocol – Opening words
  - We're here today for me to observe you combining some sentences while you're using the Sentence Analysis Strategies Sheet (SASS).
  - While you're combining the sentences, I'm going to ask you to think out loud as you do it. I am really interested in what you're thinking as you move through the various steps of sentence combining.
  - If you forget to think out loud, I will ask you questions about what you're thinking. I'm trying not to direct you to any way of thinking; rather, it's more important for me to hear about your processes.
  - You will be invited to wear a pair of Tobii Pro glasses 2 as you are combining the sentences using the SASS. These glasses will track your eye movements while you are participating in the prompted think-aloud. You can replay the prompted think-aloud immediately after to see how your eyes moved during the activity.
  - Do you have any questions before we start?
  - I do an example of combining two sentences using the SASS and doing the think-aloud at the same time for the student.
  - Then I ask the student to complete the task, combining two sentences using the SASS and thinking aloud.

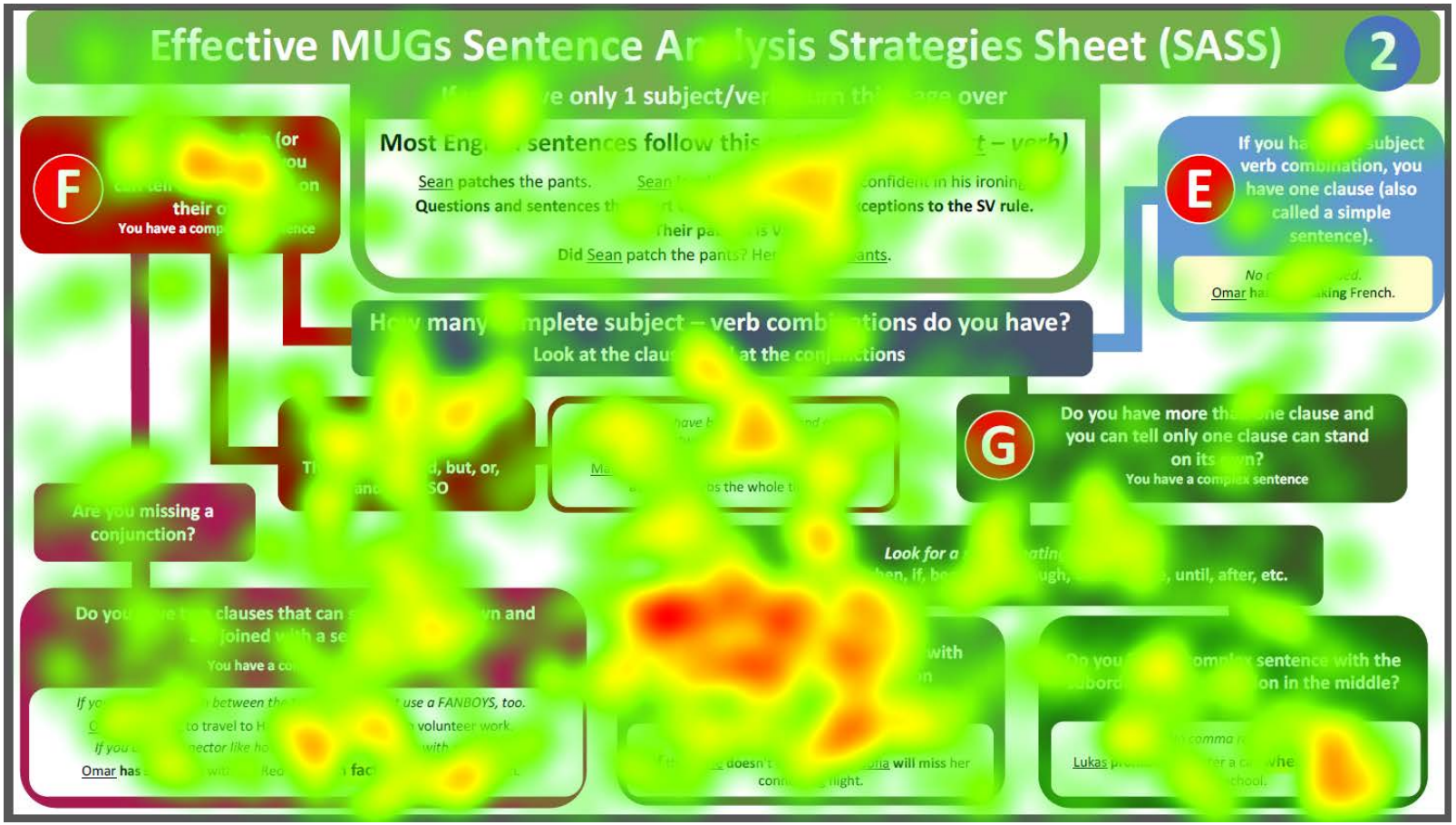
- Please combine these two sentences using the word in parentheses that follows them. While you're working on making them one sentence, please remember to use your Sentence Analysis Strategies Sheet.
- When students stop thinking aloud, they will be prompted using the following non-directive questions only:
    - What are you thinking now?
    - What were you thinking when you did this?
    - During the exercise, I noticed that you stopped. What were you thinking about?
    - Why did you do that?
        - Was the problem solved?
        - Would you have done anything differently if you weren't being observed?
- Thank you for your time and your patience with this process. Your willingness to show me and tell me about your process is very helpful as we continue to make revisions to the Effective MUGs grammar curriculum.

Appendix N

SENTENCE ANALYSIS STRATEGIES SHEET: OVERALL HEAT MAP, PAGE 1



SENTENCE ANALYSIS STRATEGIES SHEET: OVERALL HEAT MAP, PAGE 2



SENTENCE ANALYSIS STRATEGIES SHEET: OVERALL HEAT MAP, PAGE 3

Effective MUGs Sentence Analysis Strategies Sheet (SASS) 3

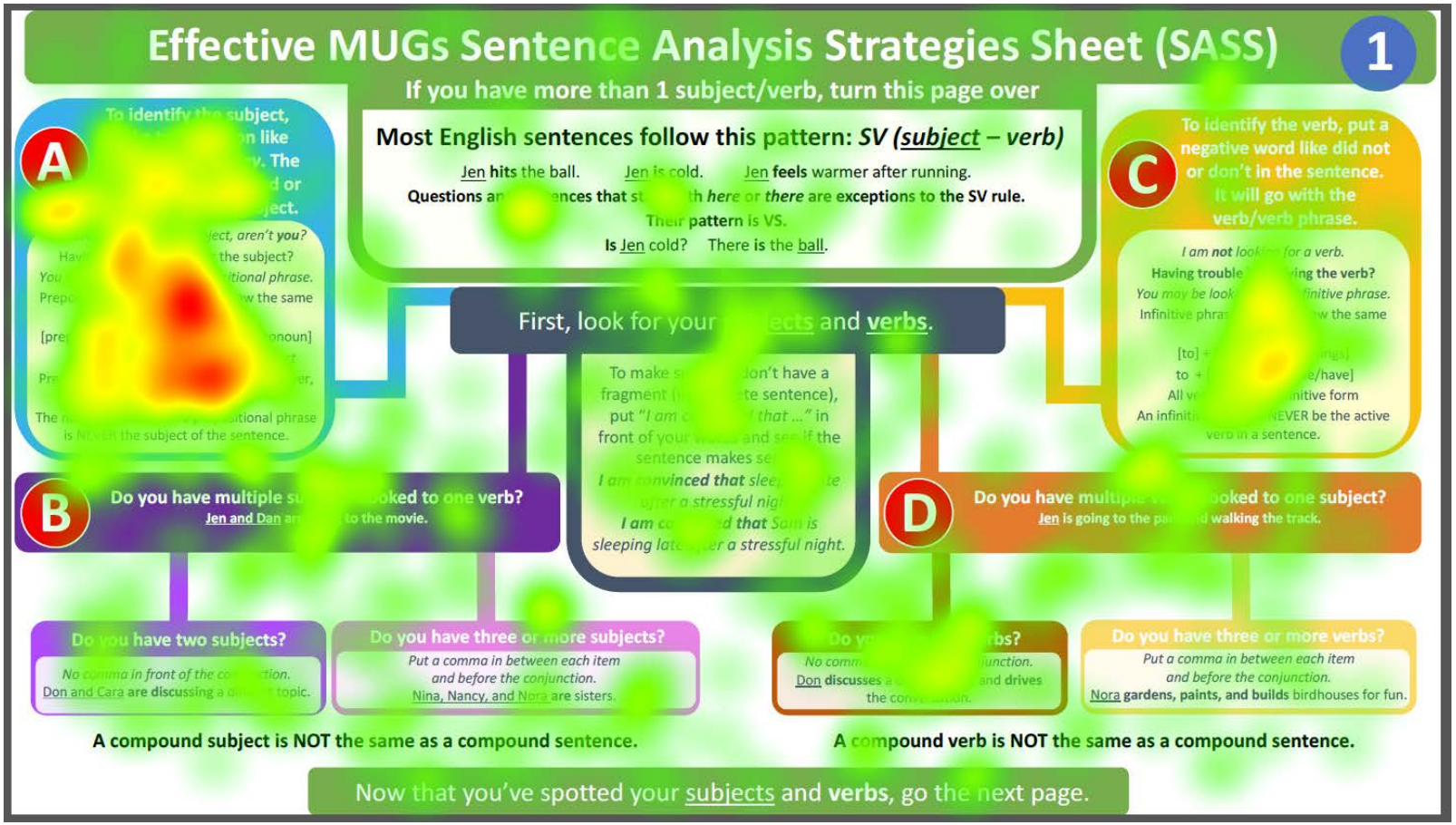
REMEMBER!

- English We verb nouns all of the tim
- Don't look at par ech. Look at what the word is doing in the sentence and what other words it's grouped with (phrases and clauses).
- A comp can have up to four wo
- For the most part, don't use "you" in professional academic English
- Formal language: If you wouldn't say it to your principal, it's probably not right for academic writing.
- Always ask these questions of you each sentences: Is it concise? Does it sound good? Have I observed the conventions of PAE?

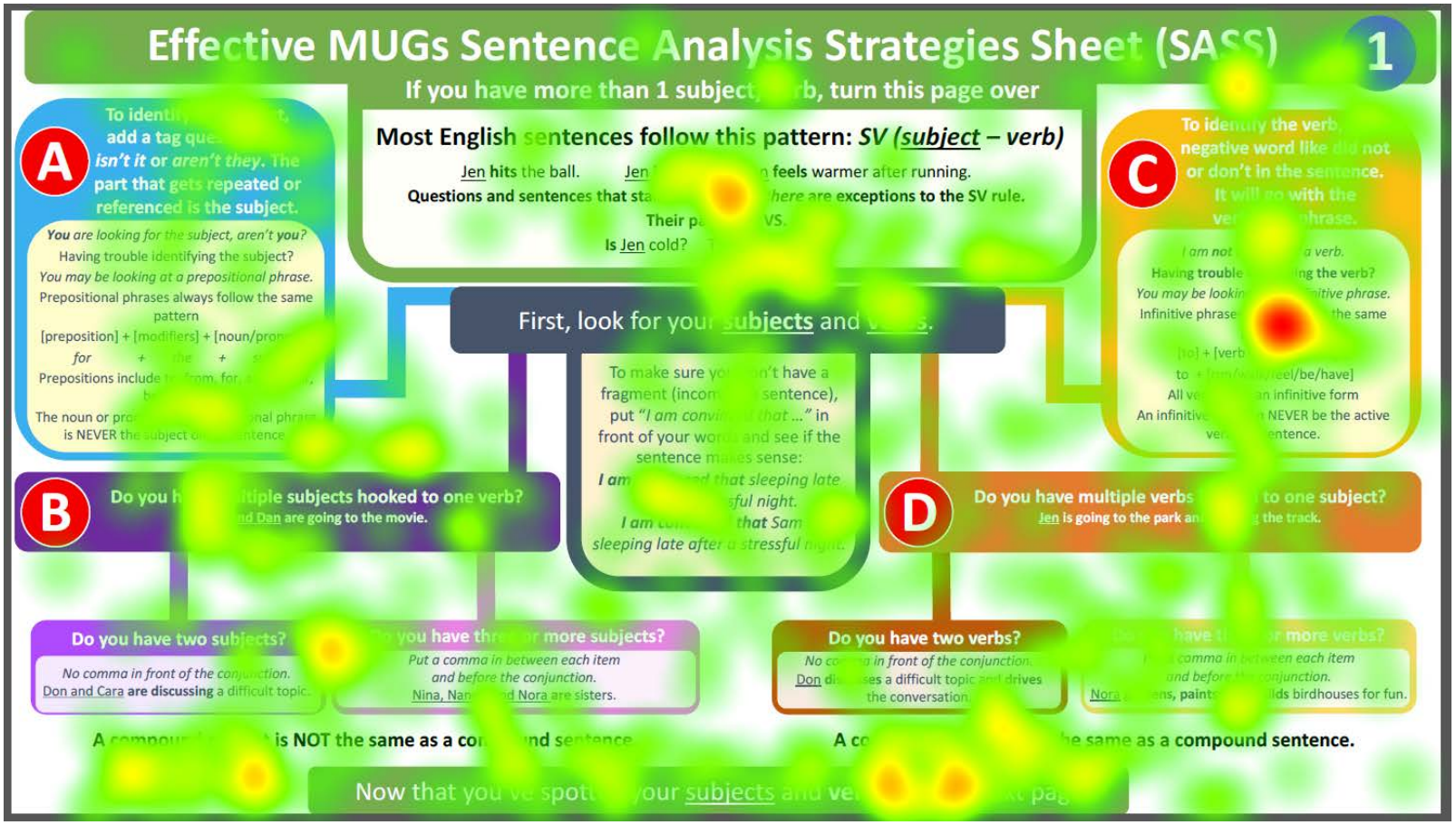
Example Error	What Your Instructor Calls It	Look here on the SASS
Janae, ove Harry Potter movies.	Comma e eous co essary comma	A
Ja ad all s, and seen all of the Har movies.	omma Erroneous s Unnecessary ma	C
Jamal and the team ran to the top of the hill and ll took a break up there.	Missing punctuation Missing comma in the compound sentence Run-on	G
Jamal and the team ran to the top of the hill they all took a break up there.	Run-on Run-on sentence	F or G
Jamal and the team ran to the top of the hill, they all took a break up there.	Comma splice Run-on	F or G
Jamal and the team ran to the top of the hill; and they all took a break up there.	Incorrect punctuation Misuse of semi colon Delete conjunction - and	F
When Reese saw the wrecked car she stopped to help.	Missing punctuation Comma missing after subordinate clause Comma needed after dependent clause	H
Reese stopped to help, when she saw the wrecked car.	Comma error Unnecessary comma	H
To run a marathon, is Merry's goal.	Comma error Unnecessary comma	I

Appendix O

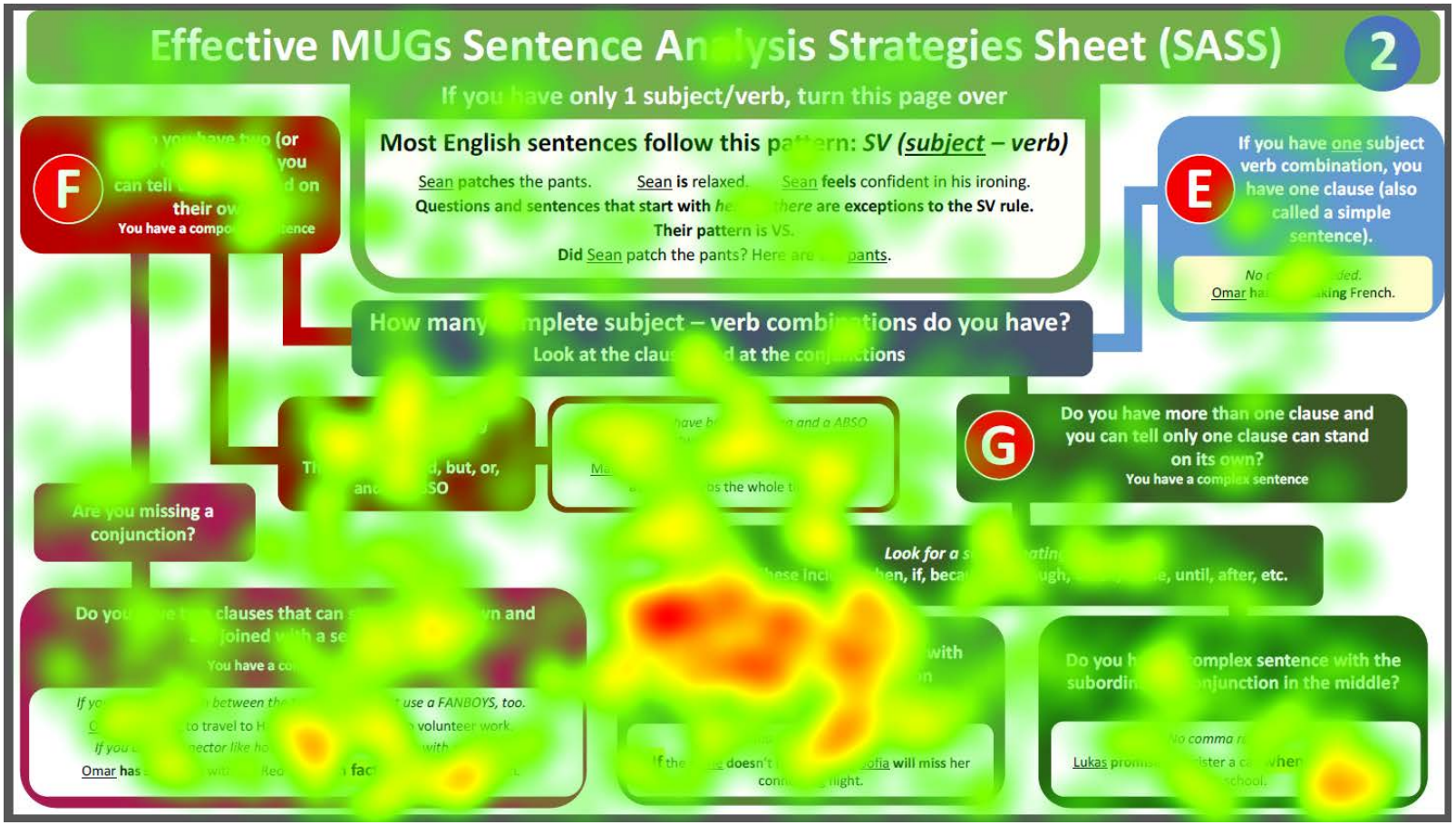
SENTENCE ANALYSIS STRATEGIES SHEET: CLASS 1 HEAT MAP, PAGE 1



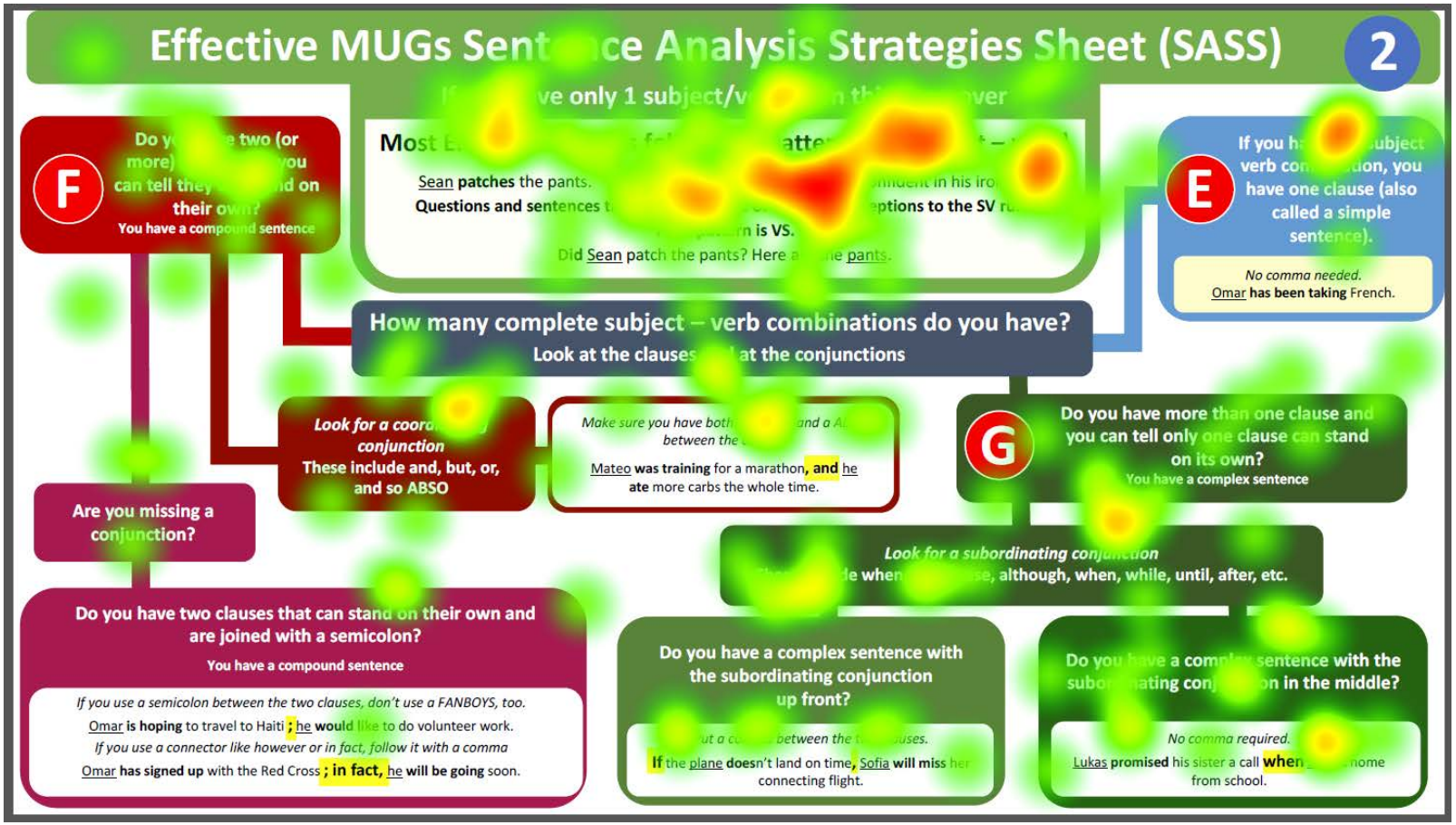
SENTENCE ANALYSIS STRATEGIES SHEET: CLASS 2 HEAT MAP, PAGE 1



SENTENCE ANALYSIS STRATEGIES SHEET: CLASS 1 HEAT MAP, PAGE 2

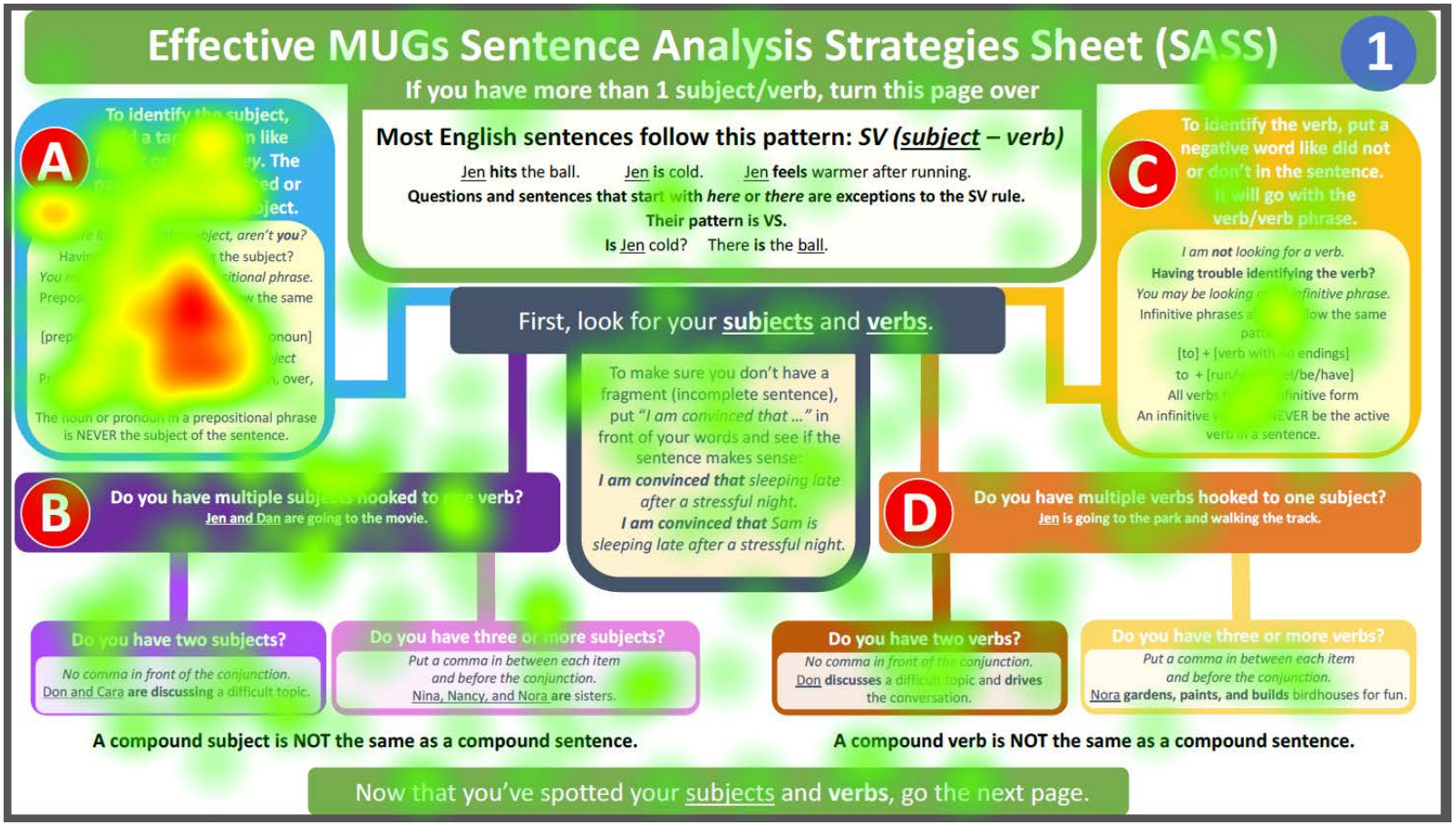


SENTENCE ANALYSIS STRATEGIES SHEET: CLASS 2 HEAT MAP, PAGE 2

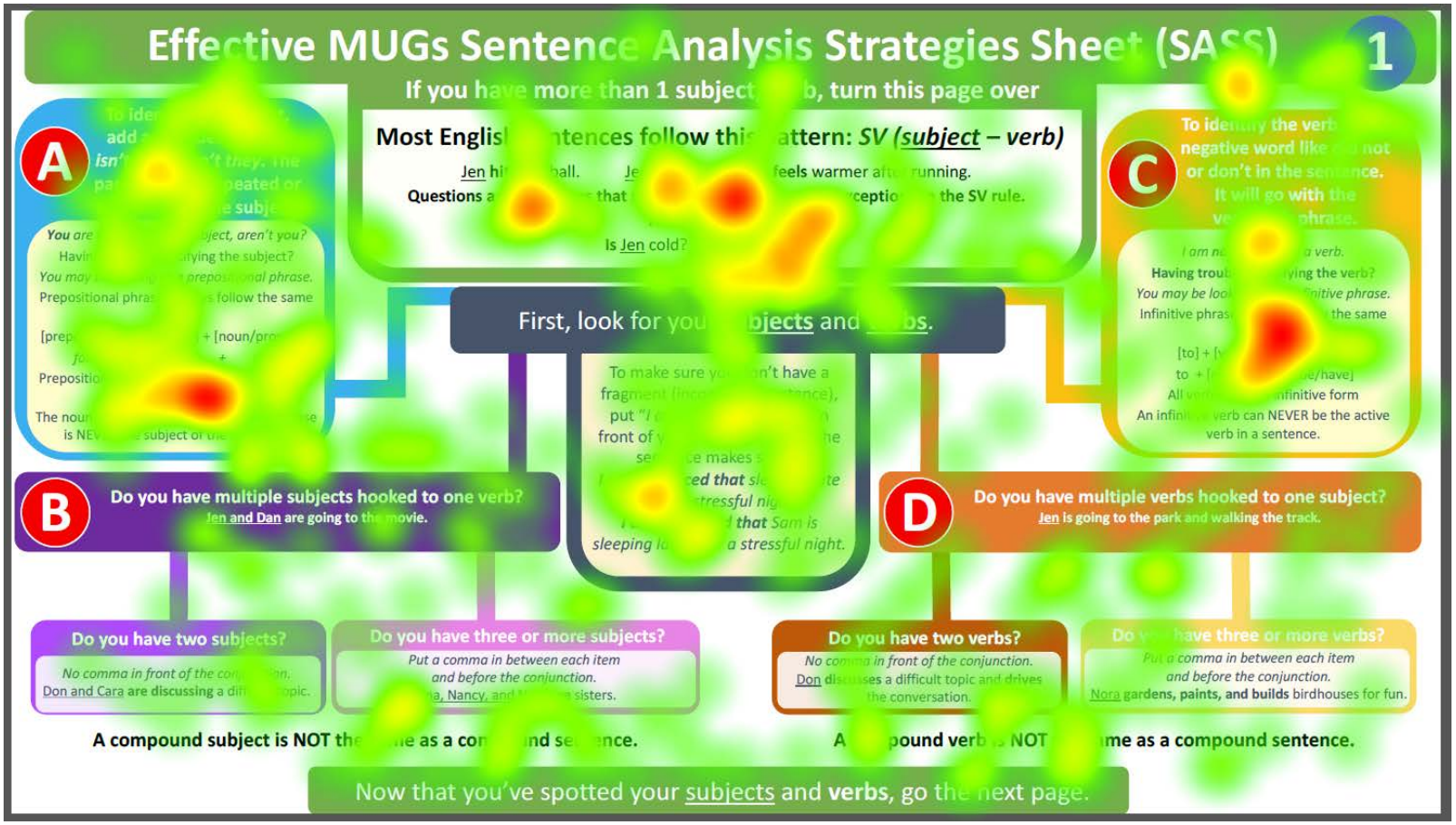


Appendix P

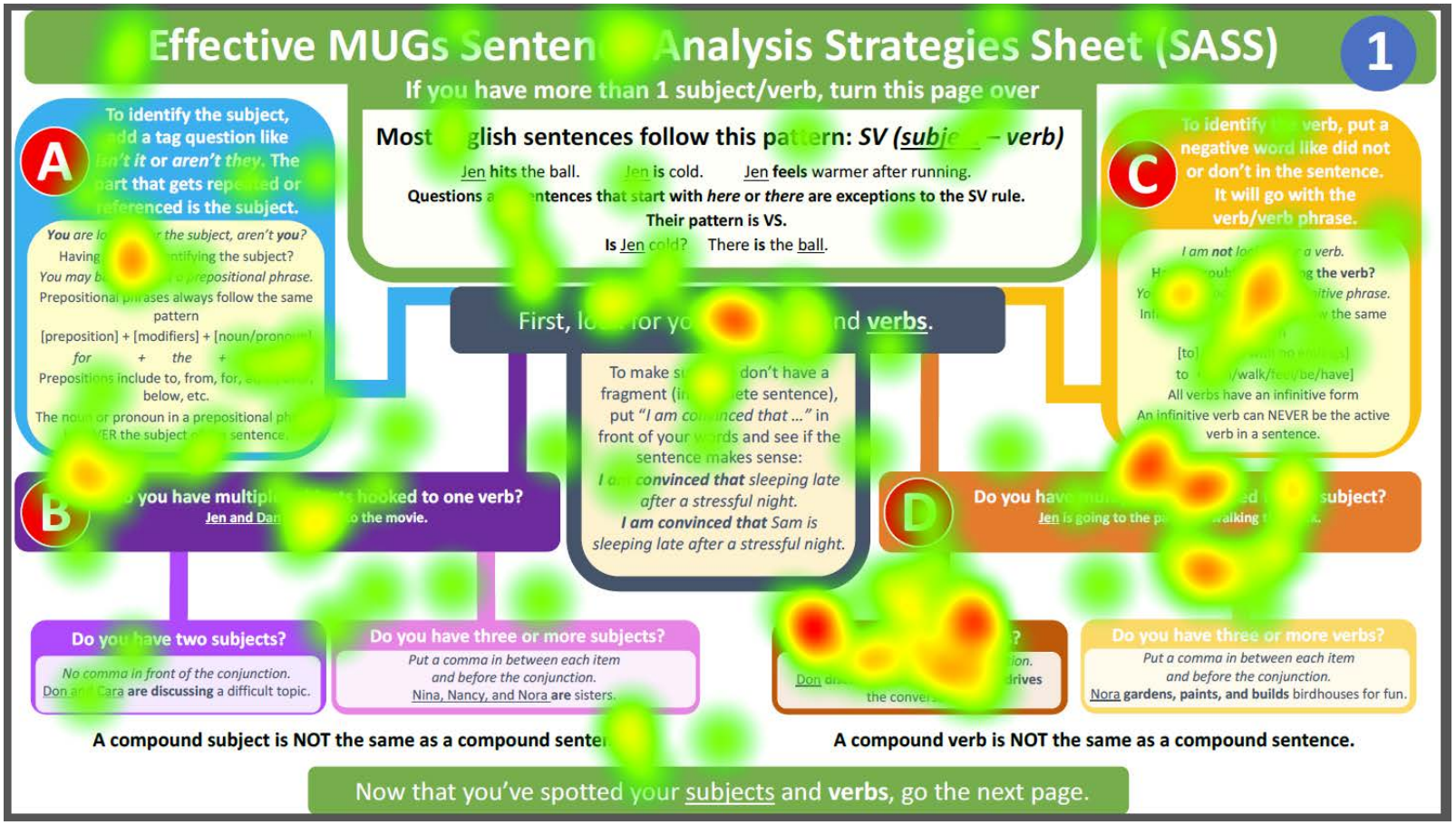
SENTENCE ANALYSIS STRATEGIES SHEET: HIGH-ACHIEVING STUDENTS HEAT MAP, PAGE 1



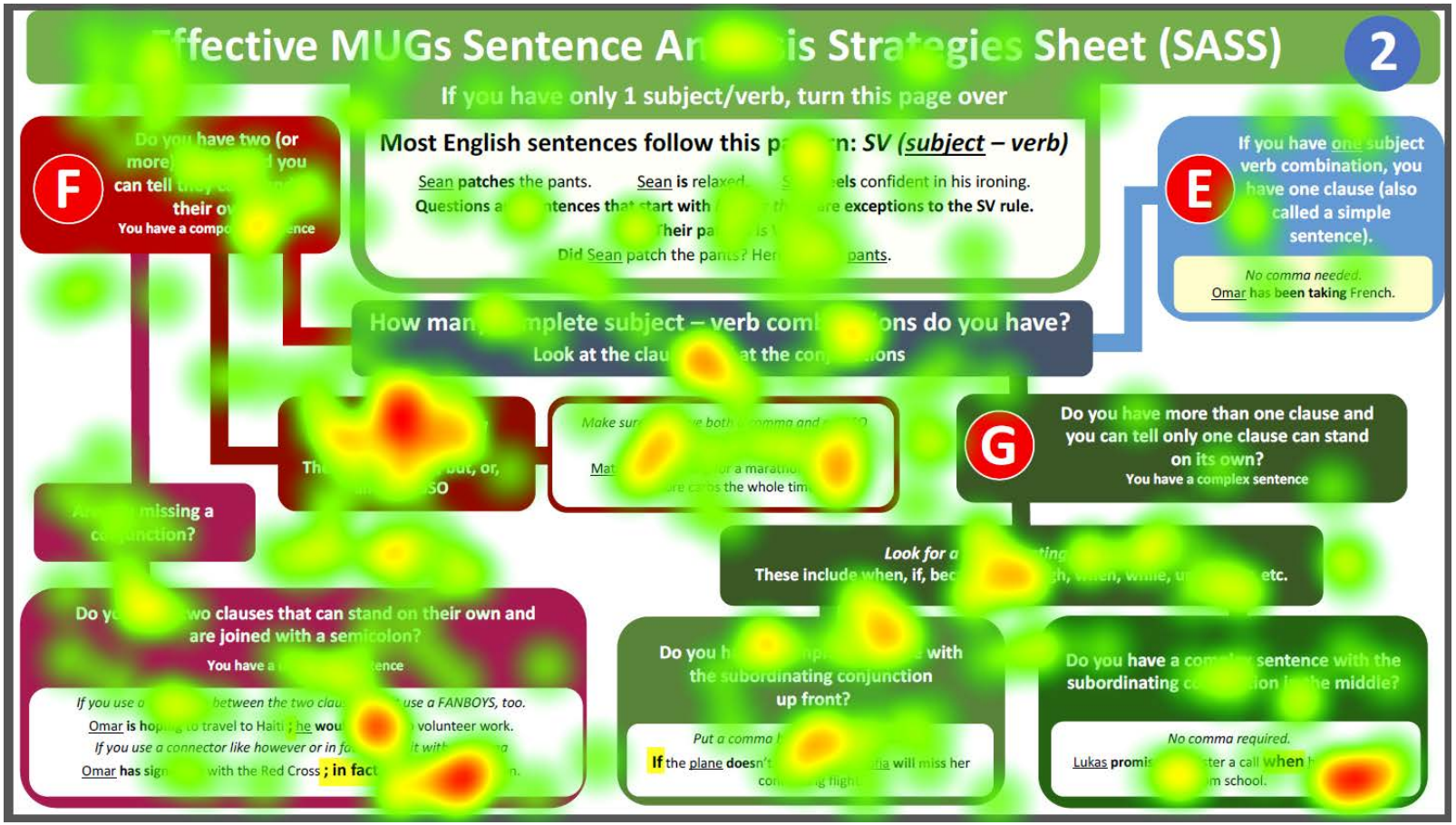
SENTENCE ANALYSIS STRATEGIES SHEET: MIDDLE-ACHIEVING STUDENTS HEAT MAP, PAGE 1



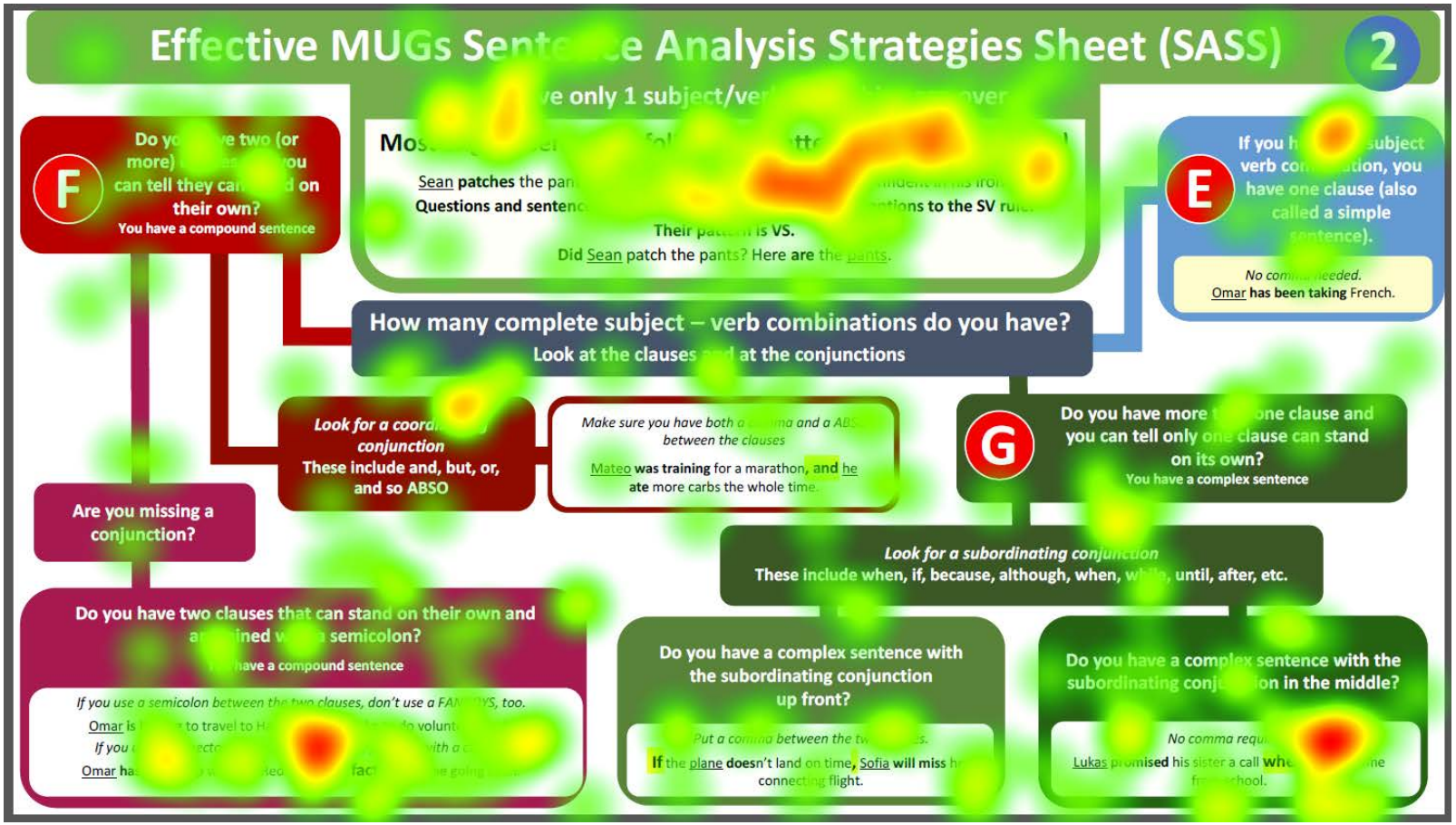
SENTENCE ANALYSIS STRATEGIES SHEET: LOW-ACHIEVING STUDENTS HEAT MAP, PAGE 1



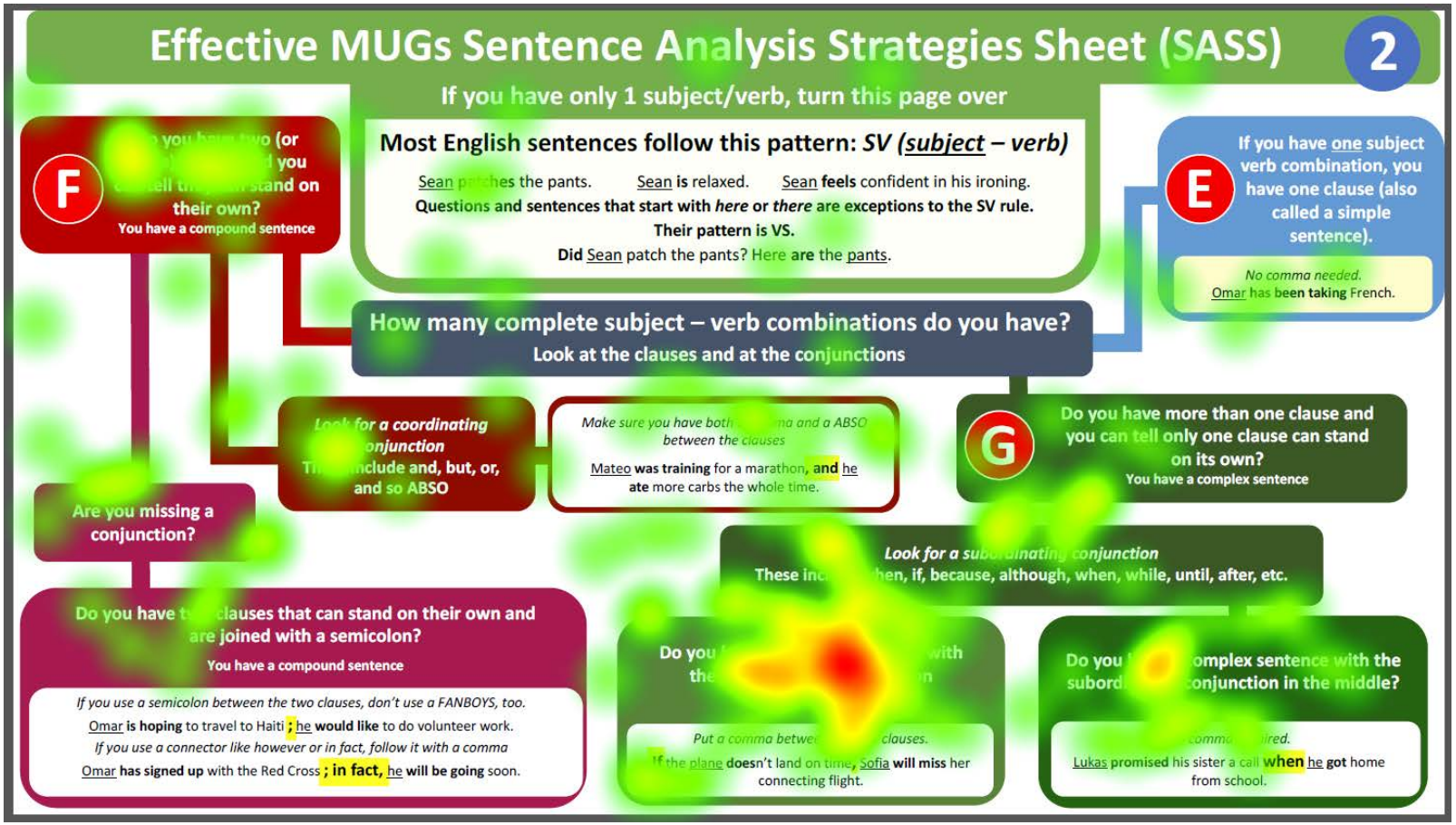
SENTENCE ANALYSIS STRATEGIES SHEET: HIGH-ACHIEVING STUDENTS HEAT MAP, PAGE 2



SENTENCE ANALYSIS STRATEGIES SHEET: MIDDLE-ACHIEVING STUDENTS HEAT MAP, PAGE 2



SENTENCE ANALYSIS STRATEGIES SHEET: LOW-ACHIEVING STUDENTS HEAT MAP, PAGE 2



APPENDIX Q

IRB/HUMAN SUBJECTS REVIEW DOCUMENTATION

HUMAN SUBJECTS

WILMINGTON UNIVERSITY

REVIEW COMMITTEE (HSRC)

PROTOCOL FORM

Table of Contents

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HSRC Protocol Form Completion Overview

The information and question responses provided by the person or persons submitting this form must be accurate and complete. Be sure to review the Protection of Human Subjects Policies and Procedures document on the University's webpage for additional information (prior to submitting this document.

This HSRC Protocol form must be used when the research does not conform to one of the U.S Department of Human Services, Office for Human Research Protections (OHRP) Exempt Categories in 45 CFR 46.101(B) - (HRP-312) (see for the categories).

Information added to this form must be typed, with the exception of signatures. Typed signatures are not acceptable. In addition, the information should be thoroughly reviewed for correct grammar, spelling, and punctuation prior to submitting the document to the Human Subjects Review Committee.

Academic Level

1. Doctoral Dissertation/Capstone
2. Master's Thesis/Capstone
3. ☐ Undergraduate
4. Faculty
5. ☐ Other

Forms Check List

Assemble materials in the order shown below

1. Human Subjects Protocol
2. ☒ Human Subject Certificate
3. Consent Forms
4. Instruments
5. Other

HUMAN SUBJECTS REVIEW COMMITTEE (HSRC)

HSRC-6

RECORD AND REVIEW OF RESEARCH PROTOCOL

Contact Information (Type or print the information into the appropriate areas)

Principal Investigator: Cottle (Last) Katherine (First) Book (Middle)

Student ID: W

Project Status (Click in a box to indicate the research status - select only one)

New ☒ Renewal ☐ Re-evaluation ☐

Instructor or assigned faculty sponsor: Dr. Doreen Turnbo

Project Information (Type or print information in the following sections)

Title of study (12 to 15 words max):

Effective MUGs: Grammar Instruction for Basic Writers

Research purpose or issue:

The purpose of this study is to learn more about effective grammar instruction. Grammar is taught to improve student writing and yet very little grammar instruction transfers into student writing. Some writing researchers believe the problem has been how grammar has been taught. This study seeks to combine best practices in general classroom instruction with best practices in grammar instruction. During and after instruction, student writing will be assessed to see if students are making fewer grammatical errors. Students and instructors will also be interviewed about their perceptions of the grammar curriculum.

External Research

If the research will involve other organizations, it is necessary to obtain permission from these organizations prior to collecting data. Some organizations have Institutional Review Boards (IRBs), and it may be necessary to obtain formal approvals from these IRBs. In other cases, a document from an appropriate organizational executive specifically approving the research would be sufficient. The researcher is responsible for determining what type of approval is required and obtaining the approval.

In cases where approval from Wilmington University's HSRC is required as a precondition to obtaining approval from another organization, the HRSC's approval will be provisional, requiring the additional step of obtaining research approval documents from other organizations before receiving full approval from Wilmington University's HSRC.

If the research involves other organizations, please fill out this section.

YES	NO	
☒	☐	Do these organizations require approval by their IRBs?
☐	☒	Has IRB approval been obtained? If YES, please attach the approval to this submission
☐	☒	Have other permission documents been obtained? If YES, please attach the approvals to this submission.

Other relevant information or comments:

The University of Delaware accepts the home institution's IRB approval once it has been granted.

Population Information

Population to be studied: Gender _____ Age _____ Race/ethnicity _____

Number of groups and number of participants in each group:

Two sections of ENG 110 (English Review) class in Fall 2017, taught by Will Horner and Caitlin Gallagher. There are 17 seats in each section.

How participants will be selected:

Students in those two sections will be asked to participate; they will be selected by agreeing to participate. If they do not agree to participate, their work will not be collected.

What qualification criteria will be used to include participants in the sample?

That they are in the sections taught by Will Horner and Caitlin Gallagher who are delivering the Effective MUGs grammar curriculum.

What criteria will be used to exclude potential participants in the sample?

Any students who are under the age of 18 will be excluded from the study.

How subjects will be recruited?

I will go to their class, talk to them about the project, explain the informed consent document, and ask for their participation.

Describe the procedures that the participants will undergo in the proposed research project including the physical location and duration of subject participation. Attach a copy of all research instruments, e.g., surveys, questionnaires, interview questions, etc.:

Students will attend and participate in grammar class work and homework as well as write essays, both first drafts and revised drafts. Students will hand work in when in class or submit work through Blackboard. All students will be asked to participate in a focus group (1.5 hours) or interview (.5 hours) outside of class for extra credit. Some students (six in each section) will be asked to participate in a prompted think-aloud using tools from the grammar curriculum (1.5 hours). Students, ONLY while in the prompted think-aloud, will

also wear digital visual-tracking glasses to see where they look while using the instructional tools.

Please see the following link for the attached materials:

Consent Letter
Focus Group Protocol
Student Interview Protocol
Teacher Interview Protocol
Prompted Think-Aloud Protocol
Sentence Analysis Strategies Sheet (SASS)
Lessons from Effective MUGs Grammar Curriculum
Letter from UD indicating reciprocity for IRB/Human Subject Review
MUGs Error Code

Confidentiality and Security *Please answer yes or no to the following questions:* (Click in a box to indicate your answer to each question-select one answer per question)

YES	NO	
☒	☐	Procedures have been taken to ensure that individuals cannot be identified via names, digital identifiers (e.g., email address, IP address), images or detailed demographic information.
☒	☐	Code to name association data/information is securely and separately stored. (Participants are given codes and the codes are securely stored separately from their answers.)
☒	☐	All data is maintained in encrypted and/or password protected digital/electronic files.
☒	☐	Individually identifiable information will be securely maintained for three years past the completion of the research, and then destroyed rendering the data unusable and unrecoverable.

Please provide further information concerning any "**NO**" answers given above (including cases where a procedure is not applicable). Describe any other procedures you are taking to maintain anonymity, confidentiality, or information security.

Research Protocol *Please answer yes or no to all questions below.*

Does this research involve: (Click in a box to indicate your answer to each question-select one answer per question)

YES	NO	
☐	☒	prisoners, probationers, pregnant women (if there is a medical procedure or special risk relating to pregnancy), fetuses, the seriously ill or mentally or cognitively compromised adults, or minors (under 18 yrs) as participants
☐	☒	the collection of information regarding sensitive aspects of the participants behavior (e.g., drug, or alcohol use, illegal conduct, sexual behavior)
☐	☒	the collection or recording of behavior which, if known outside the research, could place the participants at risk of criminal or civil liability or could be damaging to the participant's financial standing, employability, insurability, or reputation
☐	☒	procedures to be employed that present more than minimal risk[1] to participants
☐	☒	deception or coercion
☐	☒	benefits or compensation to participants (beyond the general benefits of the knowledge to be gained or small gifts/lottery prizes)
☐	☒	a conflict of interest (e.g., teacher/student, employer/employee; could there be perceived coercion to participate; is there any financial interest in this research)

If you answered **"NO"** to all of the questions please proceed to the next page.

<u>If you answered **"YES"** to any of the questions</u> your proposal must clearly indicate why the use of participants in any of these categories is scientifically necessary and what safeguards will be employed to preserve the participants' anonymity/confidentiality. The proposal must identify all risks (physical, psychological, financial, social, other) connected to the proposed procedures, indicate clearly how such risks to participants are reasonable in relation to anticipated benefits, describe methods to protect or minimize such risks[1], and access their likely effectiveness. Consent/assent forms must be included for research involving minors.

[1] Minimal risk means that the probability and magnitude of harm or discomfort anticipated in the proposed research are not greater than those ordinarily encountered in everyday life or during the performance of routine physical or psychological examinations or tests

Consent Forms (Click in a box to indicate your answer to each question-select one answer per question)

YES ☒ NO ☐ Is a consent form included with this study? If so, attach a copy.

YES ☐ NO ☒ Are child assent forms included with this study? If so, attach a copy.

Minors must provide an affirmative consent to participate by signing a simplified form, unless the principal investigator can provide evidence that the minors are not capable of assenting because of age, maturity, psychological state, or other factors.

Please refer to the informed consent outline and checklist and the assent outline, which can be found in the Human Subjects Review Committee section of the Wilmington University website.

Implied consent – For some exempt or expedited research, it is not necessary to have a signed consent form. For example, a relatively short survey of competent adults which is anonymous and deals with noncontroversial topics could use a less formal means of providing information. In such cases, the person's voluntary participation indicates implied consent. Typically, the invitation to participate would be less legal in tone than a consent form but would provide information about the principle investigator, study purpose, voluntary participation, nature/duration of participation, and anonymity/confidentiality.

If implied consent is being used, attach a copy of the invitation

Who is obtaining consent? *Check all that apply:*

Principal Investigator ☒ Research Assistant ☐ Other ☐ (specify) _____

How is consent being obtained?

Consent letter and signature

What steps are being taken to determine that potential subjects are competent to participate in the decision-making process?

They are adult students who have been presented with information about the study and have signed a form signaling their consent. They are invited to ask questions throughout the process.

Obligations of Principal Investigator:

The HSRC meets on the second Thursday of each month September to May and as needed during the summer months. Protocol must be received two weeks before that date.

Any substantive changes made to the research protocol must be reported to college representatives of the HSRC for review prior to implementation of such change. Any complications, adverse reactions, or changes in the original estimates of risks must be reported at once to the HRSC chairperson before continuing the project.

According to federal regulation all data, including signed consent form documents must be retained for a minimum of three years past the completion of the research.

I have read and understand my obligations as an investigator. I certify that the research proposal is accurate and complete.

Print name: Katherine Cottle Click on the drop down

Signature: Katherine Cottle Date: 8/21/17

Instructor or Assigned Faculty Sponsor:

Print name: Mother Whelihan Click on the drop down

Signature: [illegible] Date: 8/21/17

If this research involves collecting information or perceptions from Wilmington University students/employees or access to Wilmington University data, this form must be signed by an appropriate director or executive. The executive signing this form is responsible for conferring with institutional research or other parts of the university which would need to support the research.

(If needed) Director or Executive:

Print name: Doreen Turnbo Click on the drop down menu to see a calendar

Signature: Doreen Turnbo Date: 8/21/17

HUMAN SUBJECTS REVIEW COMMITTEE (HSRC)

HSRC-14

PROTOCOL REVIEW

This section is to be completed by the HSR Committee Person.

Principal Investigator: Katherine Cottle
(Type or print information on this line)

Date Submitted: 8/17/17 Click on the drop down menu to see a calendar

The protocol and attachments were reviewed:

The proposed research is approved as: (Click in a box to indicate the appropriate selection - select only one)

- [x] Expedited
- [ ] Full Committee
- [ ] Provisional (see External Research section)

The proposed research was approved pending the following changes:

- [ ] See attached letter
- [ ] Resubmit changes to the HSRC chairperson

The proposed research was disapproved:

- [ ] See attached letter for more information.

HSRC Chair or Representative Ruth T. Norman
Printed Name

Ruth T. Norman
Signature

Date 8/21/17

HSRC Chair or Representative Milton Muldrow Jr.
Printed Name

Signature

Date 8/21/17

UNIVERSITY OF DELAWARE

RESEARCH OFFICE

210 Hullihen Hall
University of Delaware
Newark, Delaware 19716-1551
Ph: 302/831-2136
Fax: 302/831-2828

DATE:	December 18, 2017
TO:	Katherine Cottle, EdD
FROM:	University of Delaware IRB
STUDY TITLE:	[1117301-1] Effective MUGs: Grammar Instruction for Basic Writers
SUBMISSION TYPE:	New Project
ACTION:	ACKNOWLEDGED
EFFECTIVE DATE:	December 18, 2017

Thank you for submitting the New Project materials for the above research study. The University of Delaware IRB (HUMANS) has ACKNOWLEDGED your submission.

Wilmington University IRB will remain the IRB of Record on this project. Wilimington Universtiy IRB review and approval documents have been uploaded for our records.

The following items are acknowledged in this submission:

- Amendment/Modification - protocol_amendment_form_Cottle November 2017.doc (UPDATED: 11/20/2017)
- Application Form - new_project_protocol_form Cottle EPP.doc (UPDATED: 10/24/2017)
- Application Form - Cottle HSRC Full Fill In Paperwork with signatures.pdf (UPDATED: 08/21/2017)
- Consent Form - WilmU_Consent_Cottle_2016.docx (UPDATED: 08/21/2017)
- Other - Effective MUGs Lessons-20170821T191828Z-001.zip (UPDATED: 08/21/2017)
- Other - NIH Completion Document (1).pdf (UPDATED: 08/21/2017)
- Other - MUGs Error Codes Summer 2017.xlsx (UPDATED: 08/21/2017)
- Protocol - new_project_protocol_form Cottle EPP.doc (UPDATED: 11/20/2017)
- Protocol - Cottle Prompted Think-Aloud Protocol EPP.docx (UPDATED: 08/21/2017)
- Protocol - Cottle Instructor Interview Protocol EPP.docx (UPDATED: 08/21/2017)
- Protocol - Cottle Student Interview Protocol EPP.docx (UPDATED: 08/21/2017)
- Protocol - Cottle Focus Group Protocol EPP.docx (UPDATED: 08/21/2017)

If you have any questions, please contact Nicole Farnese-McFarlane at (302) 831-1119 or nicolefm@udel.edu. Please include your study title and reference number in all correspondence with this office.

Generated on IRBNet