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“Sitcoms as a resource for acquiring lexicon and developing strategies for understanding vocabulary in context”

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RESUMEN

Diferentes estudios afirman que el vocabulario está directamente relacionado con la habilidad para la lectura comprensiva, sin embargo su aprendizaje es un proceso difícil.

El objetivo de este trabajo de investigación es medir el grado de utilidad de los “sitcoms” (comedias situacionales) como un recurso para el aprendizaje de vocabulario y para la adquisición de estrategias para entender vocabulario en contexto y el impacto de estos en la lectura comprensiva.

El tratamiento consistió en mostrar a los participantes un grupo de video clips cuidadosamente seleccionados junto con sus guiones y actividades para realizar antes y después de mirar el video, con el objetivo de promover el aprendizaje de vocabulario y el desarrollo de estrategias para entender vocabulario en contexto.

El impacto del tratamiento fue medido mediante exámenes previos y posteriores a su aplicación, los resultados obtenidos fueron analizados utilizando análisis estadísticos multivariados y tests T; se realizaron entrevistas luego de la aplicación del tratamiento para recolectar las percepciones de los estudiantes sobre el tratamiento, además se mantuvo un diario para registrar aspectos relacionados con la actitud de los participantes y el tratamiento.

Los resultados muestran que este tratamiento es efectivo para la adquisición de vocabulario y el desarrollo de estrategias para entender vocabulario en contexto, sin embargo no tiene un impacto significativo en la lectura comprensiva.

Palabras clave: Vocabulario, sitcoms, video clips, vocabulario en contexto, lectura comprensiva.

ABSTRACT

According to different studies, vocabulary is directly related to the reading comprehension ability but its learning is a difficult process.

This research aimed to measure the degree of usefulness of sitcoms as a teaching resource for the acquisition of lexicon as well as the acquisition of strategies for understanding vocabulary in context and their impact on reading comprehension.

The treatment consisted of showing participants selected video clips of sitcoms along with transcripts and pre and post viewing activities in order to promote vocabulary acquisition and develop strategies for understanding vocabulary in context.

The impact of the treatment was measured through pre and post-tests and the data collected was analysed using multivariate statistical analyses and t-tests; interviews were held in order to collect information about participants' perceptions of the treatment and a journal was kept during the administration of the same to record perceptions of the participants and the details of the process.

The results show that this treatment is effective for the acquisition of lexicon and strategies for understanding vocabulary in context but it does not have a significant impact on reading comprehension.

Key words: Vocabulary, sitcoms, video clips, vocabulary in context, reading comprehension**.**

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To Julian: The sunshine who makes true happiness.

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INTRODUCTION

Reading comprehension is an important second or foreign language skill to be acquired by learners. Harmer states that there are many reasons why students should read; for example, they need to read for their careers, for study purposes, or simply for pleasure (68). He also states that reading helps in the acquisition of the language because it provides opportunities to study vocabulary, grammar, punctuation, sentence construction, paragraphs and texts. Furthermore “good reading texts can introduce interesting topics, stimulate discussion, excite imaginative responses and be the springboard for well-rounded, fascinating lessons” (Harmer 68).

Vocabulary and reading seem to have a close relationship; for example, Laufer affirms that without vocabulary it is not possible to understand a text in either one’s native language or in a foreign language and Chall affirms that reading can contribute to vocabulary growth which in turn helps reading (qtd. in Mehrpour and Rahimi, 293). Furthermore, according to Yorio, learners themselves affirm that the main problem when reading L2 authentic texts is their limited vocabulary (qtd. in Mehrpour and Rahimi, 293). Additionally, Nation, Quian and Read affirm that studies in first and second language have shown that the reading ability and the capacity to obtain details from texts is related to vocabulary knowledge (qtd. in Soodeh, Zainalb, and Ghaderpour, 555)

One of the main problems students at Universidad del Azuay face when reading is understanding unknown vocabulary; as Lehr, Osborn, and Hiebert affirm, in order to “get meaning from what they read, students need both a great many words in their vocabularies and the ability to use various strategies to establish the meanings of new words when they encounter them” (35). For this reason, the acquisition of a larger lexicon and strategies for understanding new words may greatly help students when reading.

A textbook is generally the main material used in a traditional language classroom, but with the invention of computers, media-based materials such as videos have been broadly introduced into the language classrooms with the objective

of promoting traditional language learning to a holistic and multi-sensory level. Harji, Woods and Alabi maintain sustain that multimedia technology aims to integrate real-life situations with the target language into the classroom; in this atmosphere students are exposed to an authentic environment of the target language which helps them to expand their language acquisition (37). For example, Bilsborough affirms that “sitcoms are funny and everybody enjoys laughing.” She goes on to state that “watching a humorous video clip in class can be rewarding for students and helps to create a positive classroom atmosphere.” This aspect should be taken into account when deciding teaching methodologies and materials;

> “Video materials provide a unique opportunity to present, teach, and internalize authentic information—linguistic, cultural, and visual. Because these materials can be edited for presentation, they are also excellent venues for focusing our students' attention on specific details, and for creating exercise materials based on the video itself. In short, judicious use of this material can substantially increase the quantity and quality of time spent on tasks with the language and culture” (Foreign Language Teaching Methods 3).

In the particular case of *sitcoms*, they are authentic material as they approach real English, in real situations with real English speakers and are produced for the enjoyment of real native speakers. Thus they can be used as a resource for acquiring lexicon and developing strategies for understanding vocabulary in context.

PROBLEM STATEMENT

The main learning objective of the University of Azuay is the development of reading strategies in order to help students acquire reading competence to provide them with tools that they will use not only when reading academic information or studying postgraduate courses, but in their professional lives when interacting with other professionals in this globalized world. The current material includes a text book (UPSTREAM series) which focuses on developing the four competences of the language (listening, reading, writing and speaking), the complementary series of academic videos which present situations related to the course content (focused exclusively on reinforcement of either vocabulary or grammar structures), and a booklet with a compilation of readings and related activities.

There seems to be a strong relationship between vocabulary and reading, thus it is extremely important to use non-traditional resources such as videos in order to facilitate vocabulary acquisition.

Carefully selected videos of sitcoms may motivate students to learn, but especially help those with different learning styles to acquire a larger lexicon or achieve specific learning objectives such as developing strategies for understanding vocabulary in context.

OBJECTIVES

- To collect data, using questionnaires, from students in order to determine which sitcoms are appealing to them.
- To compile a selection of level appropriate subtitled sitcom video clips with transcripts and subtitles to be used in class for developing strategies for understanding vocabulary in context and teaching vocabulary (lexicon acquisition).
- To determine the effectiveness of this approach through pre-test and post-test.
- To collect information from the students through interviews in order to determine the positive or negative attitudes towards this approach.

RESEARCH QUESTION:

- To what extent the use of selected sitcom video clips and supporting material promote the development of lexicon and strategies for understanding vocabulary in context which will lead to the improvement of students' reading competence?

HYPOTHESIS

The selected use of sitcom videos (audio visual inputs) will promote the acquisition of lexicon as well as the development of strategies for understanding vocabulary in context which in turn will positively affect the reading comprehension competence.

SCOPE OF THE RESEARCH

The research was carried out in the University of Azuay, a private institution with upper middle class students, in Cuenca, Ecuador. The research was applied to 22 18- to 20-year-old first level students at the university whose initial English level is expected to be A1 according to the Common European Framework. By the end of the semester, they should have acquired an A2 level. The study was developed over one semester (80 hours of classes). While sitcoms provide sociolinguistic and pragmatic language elements, this research aimed exclusively to measure the effectiveness of using sitcom video clips as a teaching resource to acquire lexicon and develop strategies for understanding vocabulary in context and its consequent effect on the students' reading competence.

OPERATIONALIZATION OF THE RESEARCH

The first two dependent variables of the research, acquisition of lexicon and strategies for understanding vocabulary in context, were operationalized through pre- and post-testing the number of words students knew and also how many previously unseen words students could understand from using their context. The reading comprehension skill was operationalized through pre- and post-testing the ability to understand a short text framed within the A2 level of the Common European Framework.

The independent variable, or the treatment, consisted of the use of a selection of level appropriate subtitled sitcom video clips which were selected based on the students' preferences collected through a questionnaire.

CHAPTER I THEORETICAL FRAMEWORK

Nowadays, most people consider it important to learn a second language in order to be able to communicate in a global world. Vocabulary is considered a fundamental part of the second or foreign language learning process (qtd. in Fazeli 177) as it enables the learner to understand the language and communicate in different situations; therefore teachers need to promote the acquisition of vocabulary. However, learning vocabulary is a difficult process that involves different dimensions of lexical knowledge.

Lai states that contemporary vocabulary instruction is based on learners' different needs, goals and learning styles. Furthermore teachers are aware that vocabulary has to be learned outside of the classroom, so their objectives are to encourage students not only to learn the different levels of knowing a lexical item but also to teach the different vocabulary learning strategies (9). In turn, the level to which these objectives are achieved will determine the amount of words a student knows - directly influencing his or her capacity to understand oral and written language as well as the ability for speaking and communicating.

As teachers are aware of the importance of vocabulary instruction, they are constantly looking for novel strategies and methodologies to help students in this process; for example, Tschirner believes that resources such as internet and videos should be used to provide students with rich real language inputs which may help vocabulary learning (25) and the use of video as integral parts of classroom based instruction is being put forward by some for learning vocabulary and developing comprehension (Hall and Dougherty Stahl 403; Lin 199).

1.1. VOCABULARY: KNOWLEDGE AND ACQUISITION

N. Ellis affirms that the richness of the learner's vocabulary is a major determinant of both their communicative efficiency and understanding of their second language (3).

Vocabulary can have different definitions, for example, as "the body words used in particular language or in a particular sphere of activity", or "all the words

used by a particular person or all the words which exist in a particular language or subject" (qtd. in Fazeli 175). According to Ma (29), when defining actual knowledge of vocabulary authors seem to consider three aspects:

1. Knowledge of various features of vocabulary based on the first language (L1) knowledge.

2. Vocabulary knowledge is described by stages.

3. Vocabulary knowledge is defined as a dynamic learning process and development.

While native speakers define vocabulary knowledge as “knowing the meaning of a word and how to use it appropriately in different contexts” (Ma 27), Richards suggests that for second language learners seven aspects should be taken into account when defining vocabulary knowledge: frequency, register, syntax, derivation, association, semantic values, and polysemy, and Quian added three more aspects: pronunciation, spelling and collocation (qtd. in Ma 27, 28).

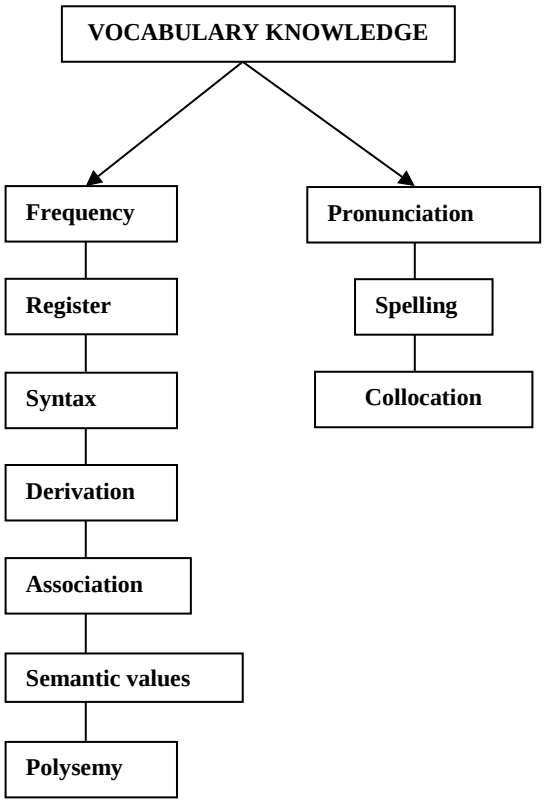


Fig. 1 Richards and Quian’s considered aspects when defining vocabulary knowledge

Meara’s global approach proposes three dimensions of a learner’s lexical knowledge: “a size dimension, a lexical structure dimension, and a lexical access

dimension" (qtd. in Ma 28). Chapelle proposes similar aspects for defining vocabulary knowledge which include size of vocabulary, word characteristic knowledge, organization of lexicon and lexical access (qtd. in Ma 28), while Thornbury says that knowing a word on the most basic level involves knowing its form and its meaning (qtd. in Kersten 52), which is possibly the simplest concept that fulfills the requirements needed in order to understand written and spoken language, although Lai (6) maintains that the knowledge of the different levels in which a lexical item is involved is needed in order to understand the target language when listening or reading and to use it appropriately when producing written or spoken ideas.

The semantics of what vocabulary is and how to describe a learner's knowledge of second language (L2) vocabulary might eventually be down to personal taste or beliefs, but how is vocabulary knowledge acquired, utilized and practiced? Learning a word implies logical, psychological, and pedagogical processes, which are complex and vary according to lexicons specialized for different channels of Input/Output: an individual is able to understand a spoken word if the auditory process recognizes a sound pattern which may differ across speakers and dialects; an individual is able to read a word when the visual input lexicon recognizes an orthographic pattern; and when a speaker says a word the speech output lexicon must tune a motor program for its pronunciation (N. Ellis 2, 3).

Nation and Gu (qtd. in Kersten 63) affirm that acquiring vocabulary is a process that consists of five stages, with the first stage simply being finding the new words. The second and third stages follow Thornbury; getting word form and getting word meaning, while the fourth is the consolidation of latter two stages into the memory with the final stage being the actual using of the word.

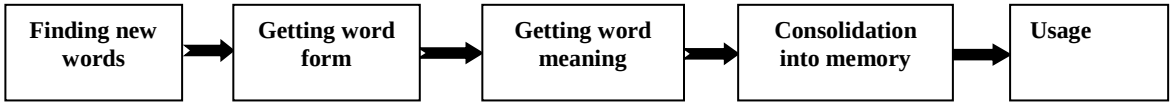


Fig. 2 Thornbury's stages of vocabulary acquisition.

These stages may be conscious or unconscious; Nick Ellis suggests that people are naturally active processors of information, and there are two compatible hypotheses of how vocabulary is acquired: an implicit vocabulary learning hypothesis which holds that "the meaning of a new word is acquired totally unconsciously as a result of abstraction from repeated exposures in a range of contexts", and an explicit vocabulary learning hypothesis that holds that vocabulary acquisition can be facilitated by the use of metacognitive strategies such as "(i) noticing that the word is unfamiliar, (ii) making attempts to infer the word from context (or acquiring the definition from consulting others or dictionaries or vocabularies), (iii) making attempts to consolidate this new understanding by repetition and associational learning strategies such as semantic or imagery mediation techniques" (5).

The two dissociable learning abilities used when learning vocabulary: the natural, simple, unconscious process of implicit learning and the conscious, controlled operation of explicit learning in which individuals look for structures that allow them to test hypotheses should be both taken into account when teaching vocabulary "…however vocabulary acquisition may be achieved, it can only enhance the natural acquisition of language competence" (N. Ellis 10). Consequently when teaching-learning vocabulary a variety of strategies such as inference from context, use of dictionaries, collocations, guessing skills, etc. should be employed (N. Ellis 5, 6, 10). Coady (qtd. in Kersten 64) simplifies these ideas into three principles to be taken into account when teaching vocabulary:

1. It is essential to provide definitional and contextual information about words.

2. Motivate learners to process information about words at a deeper level.

3. Learners should have multiple exposures to a word.

These three principles are supported by many authors although Carter affirms that the first vocabulary that a language learner acquires needs to be explicitly taught because acquiring words incidentally (implicit learning) will only happen when the learners have a certain repertoire of words at their disposal (qtd. in Kersten 68). Schmitt reiterates this point by stating that vocabulary acquisition involves different aspects of word knowledge which will be mastered at different stages of learning and at different rates (qtd. in Ma 29).

Vocabulary acquisition, be it implicit or explicit, requires time and practice, thus it is an ongoing process which needs discipline, students need to work each day in learning vocabulary in order to put new words in their long term memory (Mehering 3). Nation and Waring stated that “learners need to encounter the word multiple times in authentic speaking, reading, and writing context and the student’s appropriate level” (qtd. in Mehering 3).

According to Mehering vocabulary needs to be learned through context in order to make students understand the correct usage of a word avoiding misusing it which usually happens when based exclusively on its dictionary meaning. To make students learn vocabulary better it is important that they find the new words useful as well as being able to use these new words more often when they are studying (4), which seems to be one important reason to expose students to videos that contain authentic language such as *sitcoms*.

R. Ellis affirms that vocabulary acquisition has two dimensions: quantitative, that refers to the number of words a learner knows, and qualitative that refers to the knowledge of a word (to recognize a word in different contexts and use it accurately in production), thus two kinds of vocabulary are defined: receptive, which refers to those words that a learner can recognize but may or may not be able to use and productive which is made up of well-known and frequently used words that are used by a learner in speech or writing (38). Hiebert and Kamil assure receptive or recognition vocabulary is larger than productive vocabulary (3).

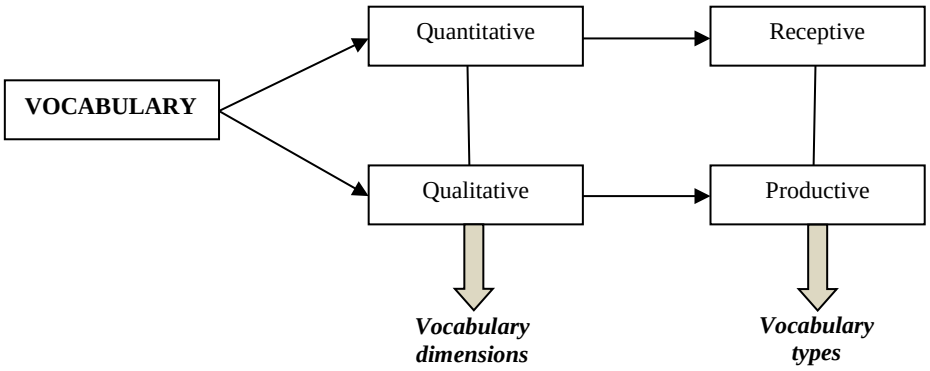


Fig. 3 Diagram of vocabulary dimensions and types.

1.1. VOCABULARY TEACHING

Vocabulary is a main part of language teaching, which unfortunately in the teaching and learning process has usually been undervalued. For example, Howatt and Rivers state that during the Grammar Translation Method (the first method to be used in teaching a second language), students were given bilingual vocabulary lists to learn in order to support them being able to translate long classical passages and literary language samples with obsolete vocabulary were used, thus realistic vocabulary was not taught (qtd. in Boyd 5-7). During the Reform Movement, which started in the 1920s and emphasized the importance of oral communication and phonetic training, vocabulary words taught in classes were associated with reality. Furthermore, they were selected according to their simplicity and usefulness (Boyd 8).

Boyd mentions that the Direct Method brought interaction as the foundation for natural language acquisition thus encouraging the use of the target language without translations. For this reason, everyday vocabulary and sentences were used, thus vocabulary was simple and familiar. It was explained through labeled pictures and demonstrations for concrete vocabulary and the association of ideas were used for abstract vocabulary. Charts, pictures and objects were also used to explain meaning of words and the term realia or realien was adopted at this time (9).

During the 1920s and 1930s, the Reading Method began in the United States and Situational Language Teaching in Great Britain, which aimed to develop reading skills. For the first time it was considered that vocabulary was one of the most important aspects of second language learning thus emphasis was placed on “developing a scientific and rational basis for selecting the vocabulary content of language courses” (Boyd 10).

The Audio Lingual Method considered language learning as a process of habit formation, it paid systematic attention to pronunciation and intensive oral drilling of basic sentence patterns, as a result vocabulary items were selected according to their simplicity and familiarity and drills were used to introduce new words. Unfortunately, language learners used to overvalue word knowledge equating it with language knowledge (Boyd 11, 12).

Boyd assures that the publication of Syntactic Structures by Noam Chomsky, in 1957 was “a revolutionary reminder of the creativity of language and a challenge to the behaviorist view of language as a set of habits”. Chomsky proposed an autonomous linguistic competence in which the sociolinguistic and pragmatic factors were the basis for effective language use (12). On the other hand, Dell Hymes introduced the concept of communicative competence which was defined as the “internalized knowledge of the situational appropriateness of language” (qtd. in Boyd 12).

As a result of Chomsky’s and Hymes’ models, language teaching changed from focusing on command of structures to communicative proficiency, thus Communicative Language teaching was established. According to Stern, the latter had the objective of making language learners be in closer contact with the target language encouraging fluency over accuracy (qtd. in Boyd 13). Although vocabulary was extremely important to the point that Widdowson claimed that native speakers are able to understand grammatically incorrect utterances if they have accurate vocabulary rather than those ones with correct grammar and inaccurate vocabulary, it was not the focus of the method itself or research (qtd. in Boyd 13). Larsen-Freeman mentions that vocabulary teaching used real situations, contextualized activities, which focused on the discourse; these aiming to give students the opportunities to develop strategies for interpreting and using the language as it is actually used by native speakers (qtd. in Boyd 14). Furthermore, Boyd sustains that “since vocabulary development occurs naturally in L1 through contextualized, natural sequenced language, it will develop with natural communicative exposure in L2” (14).

Schmitt points out that during the late 70’s and early 80’s second language acquisition research turned attention to how the learner’s actions may affect their language acquisition. As a consequence, language teachers were motivated to analyse successful language learners and their learning strategies, thus changing from a teacher-centred to a student-centred methodology (qtd. in Lai 2).

Krashen and Terrel described the Natural Approach as a method designed mainly with the objective of making a beginner student able to reach appropriate levels of oral communicative ability in the language classroom. Thus it “emphasizes

comprehensible and meaningful input rather than grammatically correct production". For the Natural Approach methodology, the acquisition of a new language happens through the comprehension of vocabulary. Consequently the teaching of vocabulary focuses on the use of important and relevant input in order to achieve true vocabulary acquisition. The method also recommends reading as a means to acquire new vocabulary (131-156).

Lai notes that traditional approaches of teaching a foreign language focused on teaching vocabulary unsystematically in class leave students to learn the lexicon on their own without much instruction; on the other hand current vocabulary instruction is based on different learners´ needs, goals and learning styles, thus words that students are expected to meet frequently are presented systematically. Furthermore teachers are aware that vocabulary needs to be learned outside of the classroom, thus encouraging students to know the different levels of knowing a lexical item as well as teaching the different vocabulary learning strategies are the teachers' objectives. From the different vocabulary learning strategies, guessing from context is considered to be the most useful. In this approach teachers use partially or fully contextualized activities such as reading, listening, speaking and writing in authentic communication activities (9).

Vocabulary teaching has changed from the direct teaching of vocabulary during the grammar translation method to incidental vocabulary teaching in the communicative approach, and currently to implicit and explicit learning. Teaching independent learning strategies in order to make students learn vocabulary on their own is essential for vocabulary teaching (qtd. in Lai 9, 10).

Nowadays vocabulary is considered as fundamental part of the second or foreign language acquisition process (qtd. in Fazeli 177), it enables the learner to communicate and understand the language in real situations.

Teaching vocabulary is essential in the learning process but a difficult task as it requires students' time, motivation and self-learning strategies. It seems to be that this process becomes easier when the words taught are useful for the learner and he/she can find them in use outside of the classroom. Thus, students may be able to find words used in real contexts and situations when watching sitcoms; T.V.

programs that, according to interviews with learners, they like and watch outside the classroom.

1.2. VOCABULARY LEARNING STRATEGIES (VLS)

Rahimy and Kiana mention that students find it difficult to learn vocabulary as they always forget whatever words they have memorized. In order to provide a solution for this issue, research has been made in the field of Vocabulary Learning (VL) with the objective of defining and analyzing different strategies used by students to learn vocabulary (142). Thus, Siriwan affirms that language students will benefit and become independent language learners if teachers introduce a great number of VLS [Vocabulary Learning Strategies] to them because they will be able to select the strategies that best suit their different learning needs (qtd. in Rahimy and Kiana 142).

Intaraprasert defines Vocabulary Learning Strategies (VLS) as "any set of techniques or learning behaviors which language learners use to understand the meaning of a new word, to restore the knowledge of newly-learned words, and to expand one's knowledge of vocabulary" (qtd. in Rahimy and Kiana 141). Cameron simply defines VLSs as "the actions that learners take to help themselves understand and remember vocabulary items", while Catalan expands on it to include the different aims of vocabulary acquisition; "knowledge about the mechanisms (processes, strategies) used in order to learn vocabulary as well as steps or actions taken by students (a) to find out the meaning of unknown words, (b) to retain them in long-term memory,(c) to recall them at will, and (d) to use them in oral or written mode" (qtd. in Rahimy and Kiana 142).

The acquisition of lexical items is extremely important for L2 learners, thus a considerable body of literature about VLSs has been developed by various authors. For example, Schmitt classifies strategies into two groups; those used to define the word's meaning, known as discovery strategies, which include determination and social strategies, and the consolidation strategies which are social and memory strategies used to store the meaning of a word into the memory. Schmitt also affirms that "using a bilingual dictionary, guessing from context, and asking classmates for help were the most common discovery strategies, while verbal repetition, written

repetition, and studying the spelling of the word were the most frequent consolidation strategies" (qtd. in Winke and Abbuhl 698).

Alternatively, Cohen proposes strategies that deal with remembering words, semantic strategies, and vocabulary learning and practicing strategies. Lawson and Hoben propose individual vocabulary learning strategies which are: repetition, word feature analysis, simple elaboration and complex elaboration (qtd. in Rahimy and Kiana 143-145).

Winke and Abbuhl affirm that different authors and researchers mention Input-Based strategies which are based on "listening to native speakers of the target language, asking for a translation into the first language (L1), consulting reference works in the L2, listening to various media (e.g., TV, radio), and reading as steps L2 learners take to learn more about target vocabulary", this means that the learner is looking for oral or written input in the target language in order to learn or remember vocabulary (700).

Taking into account Winke and Abbuhl's affirmation and the fact that learners are usually in close contact with TV, it is possible to believe that TV programs can help students to learn vocabulary.

Some authors also mention Output-based strategies which refer to "taking notes, speaking with native speakers, engaging in oral or written rehearsal/repetition, creating and maintaining a vocabulary notebook, and attaching English labels to objects", in these strategies, the learner is engaged in the use of L2 in written or oral forms (Winke and Abbuhl 700). Furthermore, analyzing word meanings, using association to remember words (such as associating an image with the new word), guessing from context or common sense, planning one's course of study, monitoring one's progress, and testing oneself are defined as cognition-based strategies (Winke and Abbuhl 700).

1.3. VOCABULARY LEARNING

Do we need to learn vocabulary? The intuitive answer is, of course, yes. How can we communicate or understand anything in a second or foreign language without having the tools to do it? Schmitt suggests that the only way to truly communicate is to have the appropriate lexicon to do so; between 8000 and 9000

word families for written English, and 5000 to 7000 for spoken communication and that the only true way to achieve this is to develop long-term programs which engage learners with the lexical items to be learned (329).

What is understood by vocabulary learning? Siriwan defines vocabulary learning as the process of learning a “collection or the total stock of words in a language that are used in particular contexts" or “learning a package of sub-sets of words as well as learning how to use strategies to cope with unknown or unfamiliar words” (qtd. in Rahimy and Kiana 141).

There are many theories as to how students manage to learn vocabulary and what actually the best method is. Many teachers, and textbooks are dedicated to the idea that vocabulary should be learned in context (Prince 478) and we should move away from the translation method. Prince himself questioned the validity of the idea, above all because it had not been empirically proven (479). His research pointed to several important factors, the most important being that learning strategies employed by students of different levels differs considerably. Weaker students tended to rely more heavily on direct translation, and when asked to perform such a task, were able to outperform against more advanced students (485). However, Prince found that while weaker students could remember this vocabulary, it remained isolated and could not be transferred to other situations – when asked to provide the same words in context, whereas students who were stronger could more easily adapt and use new words (486). Prince suggests that one of the reasons for the disparity is the sheer “cost” weaker students face when learning and using vocabulary in context – it requires not only recall, but also syntactic elements (487). The overall effect of this learning through translation, according to Prince is that when it comes to the transfer of knowledge of the lexicon to productive situations, students are unable to do so (489).

When it comes to vocabulary in context, there has been a lot of research; Nation looked at the ability of students to guess vocabulary in context by replacing real words with nonsense words, and found that on average, higher proficiency students performed substantially better than low proficiency students and that the number of unknown words in a text also affects students’ ability to guess vocabulary in context (33). More recently, Nation looked at what vocabulary actually is; he broke

vocabulary down into categories: High-frequency vocabulary, academic vocabulary, technical vocabulary, and low frequency vocabulary (11-12). Almost 80% of academic texts are made up of high frequency words of which around 77% are found as the most common 1000 words in any corpus (16). Nation also suggests that on average a good technical dictionary will contain 1000 specific words (12). In the end, in order to be able to read with minimal disturbance a reader requires a vocabulary of 15,000 to 20,000 words and so teachers should focus on teaching strategies for learning and remembering vocabulary (20).

"Guessing from context is probably one of the most useful skills learners can acquire and apply both inside and outside the classroom. What's more, it seems to be one that can be taught and implemented relatively easily. It is also one that we all already use – perhaps unconsciously – when reading and listening in our mother tongue" (Harmer 148).

Learning vocabulary in context is defined as "…the active, deliberate acquisition of a meaning for a word in a text by reasoning from context, without external sources of help such as dictionaries or people."(Rapaport 1). That having been said, Rapaport goes on to argue that the "context" itself has to be much more broadly defined to include a network of factors including background knowledge, the situation (written or visual), and internalization of the situation (perhaps incorrectly) (12-15). As Clarke and Silberstein said in Birch, it is extremely important that students are aware of the different clues available to them when they cannot recognize a word. They should realize they can continue reading the text and understand the unfamiliar word; above all students need to be taught situations in which the meaning of a particular word or phrase is not essential to understand a passage (129).

The question still remains as to how we can teach, or at least use, specific methodologies in the classroom. The most important step is to choose what vocabulary has to be learned, how it should be learned and how we are going to assess it. Nation and Chung believe teachers need to concentrate on the high frequency words – again suggesting that the first 1000 high frequency words are the most important, followed by academic and technical words, suggesting that technical

words have been underestimated in their importance, between 30 and 20% of running text may be technical words in a technical text (543-546).

Sonbul and Schmir found that direct teaching of vocabulary to be more effective in helping students learn and assimilate vocabulary than reading alone (253), but can other media, such as video help students learn vocabulary? Tschirner believes that with the advent of broadband internet and sites such as Youtube, it is inevitable that these resources should be used to provide students with rich language inputs (25) and suggests some practical criteria to use when choosing the videos you wish to use: Short enough that they can be seen several times, yet long enough to engage the students and be selected for relevance, validity, and the quantity and quality of linguistic input.(34-35). Other studies developed by White, Easton and Anderson of the use of video have found that students, when left to choose when to watch a video related to a lesson will choose it first to help them become acquainted with the context of the new lesson (167). Furthermore, the use of video as integral parts of classroom based instruction is being put forward by some for learning vocabulary and developing comprehension and has been found to help learners of all levels (Hall and Dougherty Stahl 403; Lin 199)

1.4. VOCABULARY ASSESSMENT

Read affirms that vocabulary assessment can be a simple activity that consists of selecting a suitable number of target words and assessing if they are known by the use of established test formats such as multiple choice, gap filling, matching or some form of translation; these tests are widely used in second language teaching for different purposes, and if they are correctly designed, they can be an important and efficient tool to measure learners' competence (106).

One area of vocabulary assessment is the measurement of vocabulary size, which is known as breadth of vocabulary knowledge and it aims to determine the number of words known by the use of word frequency lists. A second area that is generally used to assess is the depth of vocabulary knowledge which focuses on assessing how well a particular word is known by the use of word associates formats with the Vocabulary Knowledge Scale (Read 106). Lessard-Clouston (186) mention that depth of vocabulary includes a person's knowledge about the quality of a word

including a word's sound pattern, referential meanings, affixes, function in the grammar, collocational restrictions, register, dialectical restrictions, idiomatic uses, metaphorical extensions, synonyms, anonyms, and hyponyms, and graphic forms. Depth of a lexical item in the mental lexicon not only specifies the word's meaning but also refers to the "morphology, phonology, syntax, sociolinguistic aspects, differences between written and spoken uses, and strategies for approaching unknown words" (Bromley 529).

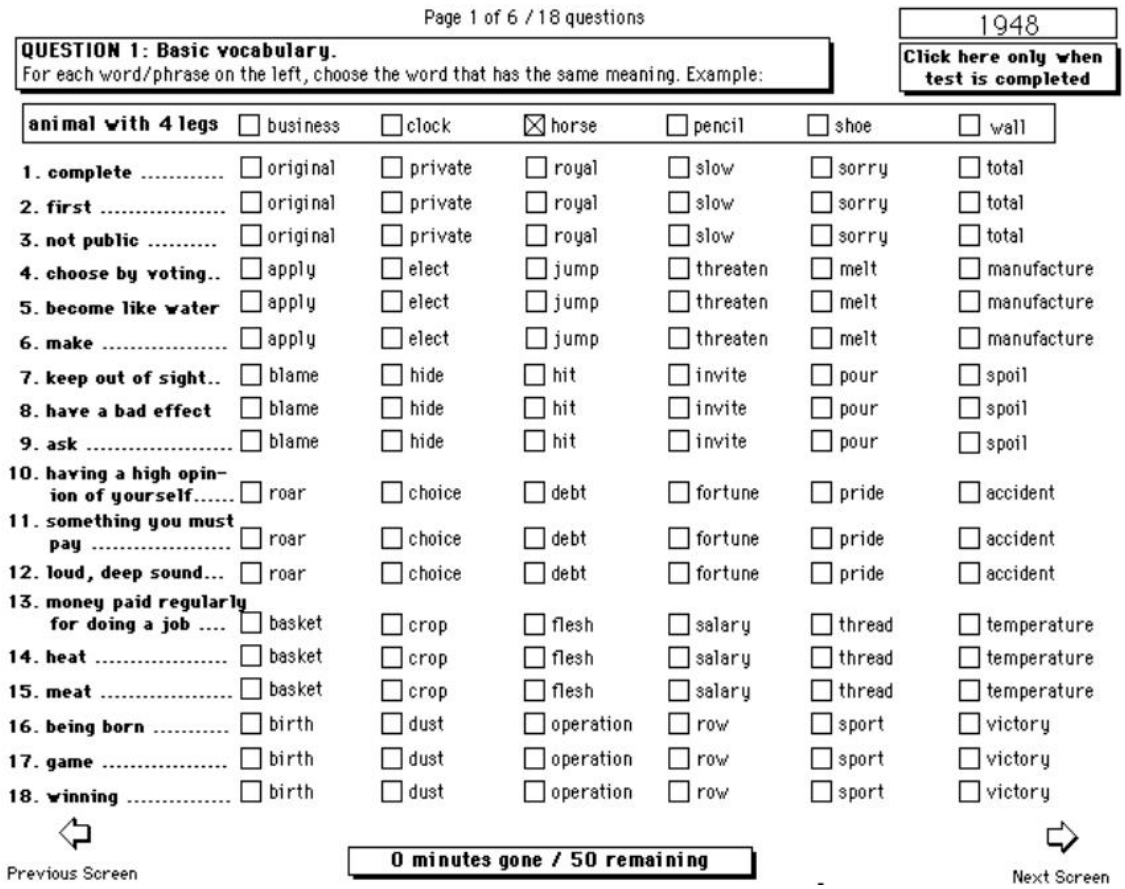
The assessing of vocabulary breadth has been a longstanding area of research because the size of vocabulary knowledge has closely been associated with the reading comprehension ability, and for L2 learners this type of assessment “can reveal the extent of the lexical gap they face in coping with authentic reading materials and undertaking other communicative tasks in the target language” (Read 107).

“Vocabulary size measures typically require a relatively large sample of words that represent a defined frequency range, together with a sample response tasks to indicate whether each word is known or not” (Read 107).

Read states that there are different vocabulary size tests such as the General Service List (GSL) developed by West in 1953, which contains a selection of 2000 high frequency word families that can be found in any written or spoken English text but it has been criticized as contains outmoded entries and the lack of modern terms. The Academic Word List (AWL) developed by Coxhead in 2000 combine criteria of frequency, range, familiarity and pedagogy, it contains 570 word families which can frequently be found in written texts across a range of university disciplines, thus it has been widely used in teaching and testing English for academic purposes (108). Read also affirms that more work is still needed in order to develop a well-formulated word list that can be used to measure the vocabulary size, therefore an alternative approach is to rely on the judgment of a language teachers or other linguistic experts (109, 110).

Nation’s Vocabulary Level tests and Vocabulary Size Test are the most widely used measure of English vocabulary size for second language learners. The tests contain two types of questions: matching words with their synonyms or short definitions, or a multiple choice format that presents each target word in a short non-

defining sentence followed by four definitions as options. These kinds of questions provide evidence that the target words are actually known (Read 110).



Page 1 of 6 / 18 questions

1948

QUESTION 1: Basic vocabulary.
For each word/phrase on the left, choose the word that has the same meaning. Example:

Click here only when test is completed

animal with 4 legs	☐ business	☐ clock	☒ horse	☐ pencil	☐ shoe	☐ wall
1. complete	☐ original	☐ private	☐ royal	☐ slow	☐ sorry	☐ total
2. first	☐ original	☐ private	☐ royal	☐ slow	☐ sorry	☐ total
3. not public	☐ original	☐ private	☐ royal	☐ slow	☐ sorry	☐ total
4. choose by voting..	☐ apply	☐ elect	☐ jump	☐ threaten	☐ melt	☐ manufacture
5. become like water	☐ apply	☐ elect	☐ jump	☐ threaten	☐ melt	☐ manufacture
6. make	☐ apply	☐ elect	☐ jump	☐ threaten	☐ melt	☐ manufacture
7. keep out of sight..	☐ blame	☐ hide	☐ hit	☐ invite	☐ pour	☐ spoil
8. have a bad effect	☐ blame	☐ hide	☐ hit	☐ invite	☐ pour	☐ spoil
9. ask	☐ blame	☐ hide	☐ hit	☐ invite	☐ pour	☐ spoil
10. having a high opinion of yourself.....	☐ roar	☐ choice	☐ debt	☐ fortune	☐ pride	☐ accident
11. something you must pay	☐ roar	☐ choice	☐ debt	☐ fortune	☐ pride	☐ accident
12. loud, deep sound...	☐ roar	☐ choice	☐ debt	☐ fortune	☐ pride	☐ accident
13. money paid regularly for doing a job	☐ basket	☐ crop	☐ flesh	☐ salary	☐ thread	☐ temperature
14. heat	☐ basket	☐ crop	☐ flesh	☐ salary	☐ thread	☐ temperature
15. meat	☐ basket	☐ crop	☐ flesh	☐ salary	☐ thread	☐ temperature
16. being born	☐ birth	☐ dust	☐ operation	☐ row	☐ sport	☐ victory
17. game	☐ birth	☐ dust	☐ operation	☐ row	☐ sport	☐ victory
18. winning	☐ birth	☐ dust	☐ operation	☐ row	☐ sport	☐ victory

Previous Screen

0 minutes gone / 50 remaining

Next Screen

Fig. 4 Example of Vocabulary level test proposed by Nation.

Other vocabulary size tests are those that use the Yes/No format (checklist). A series of words are presented and the test taker needs to indicate whether he/she knows each word or not, thus the honesty of the test taker is extremely important. These kinds of tests are usually used as placement tests or as a general measurement of breadth in vocabulary or competence in the language. The Yes/No format has been proved to be effective for assessing the state of learner's vocabulary knowledge (Read 110-113).

RATINGS MEASURE

Instructions: Circle YES if you are sure you know the meaning of the word. Circle NS if you have an idea about the meaning but you are not sure. Circle NO if you do not know the word. Don't worry if you don't know some of the words. Just answer as honestly as possible.

Example: room (YES) NS NO

1. replenish	YES NS NO
2. thrive	YES NS NO
3. credibility	YES NS NO
4. reefs	YES NS NO
5. vanish	YES NS NO
6. equator	YES NS NO

Fig. 5 Example from the Vocabulary Level Test proposed by Nation.

The measurement of vocabulary quality or depth focuses on analyzing the knowledge of words as functional units in the learner's L2 lexicon; pronunciation and spelling of a word, its morphological forms, syntactic functions, frequency, and its correct use from a sociolinguistic perspective and so on. It is generally agreed that assessing all that learners may know about a particular set of words is not necessary; on the contrary measures that focus on selective key aspects of word knowledge are widely used. Furthermore, there is no consensus of what aspects of word knowledge are the most important and which of them should be assessed in standardized tests (Read 113, 114).

The vocabulary tests that have been mentioned, present the target words as isolated lexical units with no reference to context. Hyland and Tse affirm that "learners should engage with the actual use of lexical items in specific contexts if they are to be successful language users in the academic environment or elsewhere" (qtd. in Read 115).

Read's word association format has been extensively adopted in order to test deep word knowledge in a meaningful way. The test is built on the concept of word association assessing key elements of the core meaning of the target word, or alternatively more than one meaning of the word (Read 113).

The Vocabulary Knowledge Scale (VKS) was developed by Paribakht and Wesche who were “interested in the incidental acquisition of word meaning through intensive reading activities”. They developed a scale that “combines self-report with some verifiable evidence of word knowledge in the form of a synonym, L1 translation or sentence” (Read 114).

Circle each word below with the number that best corresponds to ONE of the following

1	I do NOT understand this word				
2	I understand this word quite well				
3	I understand this word well				
4	I understand this word very well				
	Swallow	0	1	2	3
	Instinct	0	1	2	3
	Vary	0	1	2	3
	Affluent	0	1	2	3
	. . . .				

Fig. 6 Example from the Vocabulary Knowledge Test.

1.5. VOCABULARY AND READING

Vocabulary and reading seem to have a close relationship; for example, Laufer maintains that without vocabulary is not possible to understand a text in either one’s native language or in a foreign language, and Chall affirms that reading can contribute to vocabulary growth which in turn helps reading (qtd. in Mehrpour and Rahimi, 293). Furthermore, according to Yorio, learners themselves affirm that the main problem when reading L2 authentic texts is their limited vocabulary (qtd. in Mehrpour and Rahimi, 293).

Nation , Quian and Read affirm that studies in first and second language have shown that the reading ability and the capacity to obtain details from texts is related to the vocabulary knowledge (qtd. in Soodeh, Zainalb, and Ghaderpour, 555); for example, Zhang and Anual studied the role of vocabulary in reading comprehension with 37 secondary students learning English in Singapore and found a close relationship between vocabulary knowledge and English reading comprehension (qtd. in Soodeh, Zainalb, and Ghaderpour, 559). Furthermore, “Garcia found that lack of vocabulary knowledge in the test passages followed by questions is a strong

element influencing fifth and sixth grade of Latino bilingual learners on a test of reading comprehension" (qtd. in Soodeh, Zainalb, and Ghaderpour, 559). Nagy affirms that "vocabulary knowledge positively affects reading comprehension, and instruction needs to be multifaceted" (qtd. in Mehrpour and Rahimi, 294).

It seems then that vocabulary size and knowledge of meanings have a direct influence in the reading comprehension ability; thus when the main teaching objective is making students into proficient readers, vocabulary teaching should be a priority.

1.6. TEACHING VOCABULARY WITH VIDEOS

A textbook is generally the main material used in a traditional language classroom but with the invention of computers media-based materials, such as videos, have been broadly introduced into the language classrooms with the objective of promoting traditional language learning to a holistic and multi-sensory level. Researchers have suggested that learning was facilitated when visual and audio representations co-occurred in a person's working memory. Mayer and Moreno maintain that "in order to meaningfully comprehend a text in a multimedia format, learners select relevant pictorial and linguistic information, organize the input into coherent visual and verbal mental representations, and construct referential connections between the two" (qtd. in Wang 218). Wang affirms that empirical studies have shown that language learning is enhanced by the use of pictures and translations. As well as the effects of visual and audio aids on L2 vocabulary learning, the studies also manifested "the capacity theory that could be explained as pictures and sounds bridging the gap of unconnected themes, saving spaces for learners' working memory and eventually speeding up the process of comprehension" (218). Furthermore, Brett, Egbert &Jessup, and Khalid have demonstrated strong evidence that multimedia has rich and authentic comprehensible input which positively affects language learning (qtd. in Harji, Woods and Alabi 38).

Harji, Woods and Alabi sustain that multimedia technology aims to integrate real-life situations with the target language into the classroom; in this atmosphere

students are exposed to authentic environment of the target language which helps them to expand their language acquisition (37).

Video is a multimedia tool that is widely used in language classes since it seems to be more convenient, entertaining, and generally very handy. Furthermore, empirical studies have confirmed the positive effect of visual and audio aids on L2 vocabulary learning as well as the use of pictures and translations (Wang 217, 218). Canning-Wilson found that lexical learning which provided the learners with immediate meaning in terms of vocabulary recognition can be reinforced through images contextualized in video. Likewise, Hoogeveen proposes that the use of videos might help learners to interact with the information with more personal feelings instead of just receiving it and turning learning into a more fun and happier process (qtd. in Wang 217).

Wang performed a study with twenty-eight Taiwanese EFL adult learners in the process of implementing American TV drama in L2 vocabulary learning from learners' perspectives. The results show that TV drama has a facilitative role in learning new vocabulary; additionally learners confirm that the interest level and the content's familiarity play an important role in the process of learning as well as the images, subtitles and repetition helped participants to "remember" the target words. Other factors which contribute to the learning of the L2 vocabulary are the authenticity of the language, the contextual meaning of the words, and dramatic performances (217).

But what is it understood by "video"? Sherman defines video as the selection and sequence of messages in an audio-visual context which contextualized the learning process because teachers are able to introduce any aspects of real life into the classroom (qtd. in Wang 219). On the other hand, Wang defines video as a multimedia tool that helps to display content as well as to enhance lexical and grammatical learning through the combination of sounds, images, and sometimes texts, together with the socio-cultural information about human acts, traditions, living styles, and their thinking patterns. Videos can be instructional, specifically created with teaching purposes, or authentic, such as films, TV series, or commercials which are created for native speakers of the target language. Through the use of videos, which have a combination of visual and audio aids, messages are clarified and

language points enhanced, they provide more rooms for learners' working memory capacity and lead to more successful retention of new information. Additionally, videos have social cultural messages that allow learners to experience the real use of the target language (219).

Videos can be used with subtitles. In fact, different studies affirm "the aspect that the use of subtitles causes multisensory processing, interacting with audio, video and print mechanisms. These information input foundations make the process of language learning enhanced, improve the comprehension of the content, and increase vocabulary by looking at the subtitled words in meaningful and stimulating circumstances"(qtd. in Harji, Woods and Alabi 38). The findings of a study conducted by Neuman support the impact of the use of subtitles on bilingual students' acquisition of language, literacy, and conceptual knowledge. Neuman and Koskinen also sustain that the use of subtitles influences ESL students' acquisition of vocabulary and reading development because they provide powerful comprehensible input. Bean and Wilson reported that students who viewed L2 subtitled materials showed significant improvement in reading comprehension, listening comprehension, vocabulary acquisition, and word recognition (qtd. in Harji, Woods and Alabi 39).

Harji, Woods and Alabi performed a study on the effectiveness on English subtitles on the EFL learner's vocabulary learning with 92 Iranian participants randomly assigned to control and treatment groups; "the findings show that participants viewing the videos with subtitles could obtain a significantly higher mean score of the CST vocabulary tests than those who viewed the videos without subtitles" (37).

The authors mentioned in this theoretical framework agree that vocabulary learning is a complex interplay of different factors which means that the teaching process needs to be carefully analyzed, thought out and planned in order to achieve objectives which in turn must be defined according to students' needs. This review has also established a strong link between vocabulary knowledge and reading comprehension, as well as the usefulness of videos for vocabulary learning. Research into amalgamating the aforementioned areas is therefore justified.

CHAPTER II RESEARCH METHODOLOGY

In order to carry out this dissertation within a theoretical-applied research approach, pre-tests and post-tests were applied without a control group. Quantitative and qualitative methods were used for the research; instruments such as questionnaires, pre-test, post-test, interviews, teacher's journal were used for data gathering.

2.1. PARTICIPANTS

A sample of 22 students from the first level of the school of Early Stimulation, which is part of the Faculty of Philosophy of the private University of Azuay, participated in this research. The group was made up of 20 female and 2 male students. Most of them consider it important to learn English as they believe they will have better professional opportunities; others learn English because it is mandatory for graduation in University of Azuay. The age of the students varies from 18 to 24 years old and most of them consider themselves having an English level of beginners. The majority of participants affirmed that they were in contact with English outside the classroom for one hour a week. They affirmed being in contact with the language mainly by watching TV series or movies, listening to music, attending private lessons and using the internet (chat and mail) but they do not use the languge with friends or family.

2.2. DATA COLLECTION INSTRUMENTS

Five different instruments were designed and used to collect quantitative and qualitative data.

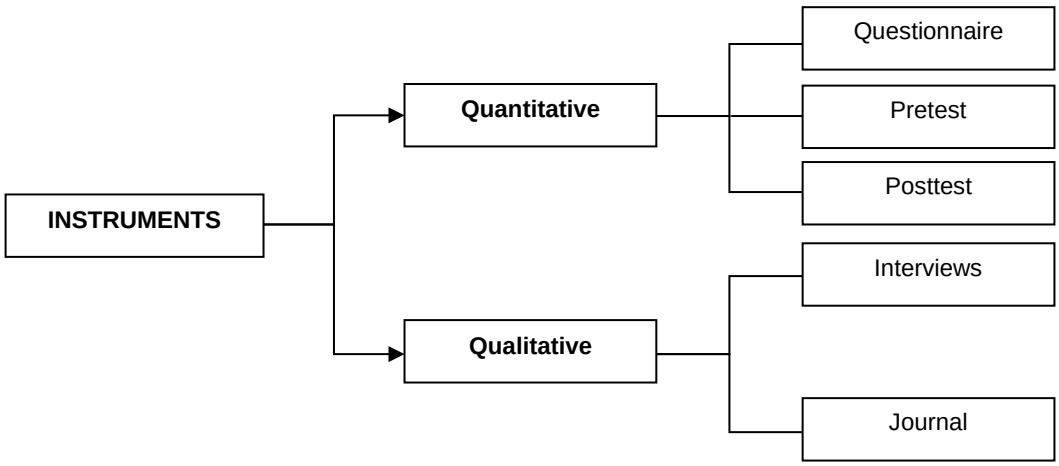


Fig. 7 Instruments used in the study.

Pre and post-tests, a journal and interviews were used to assure triangulation which is defined by Mackey and Gass as "the use of multiple, independent methods of obtaining data in a single investigation in order to arrive at the same research findings" (181).

2.2.1 QUESTIONNAIRES

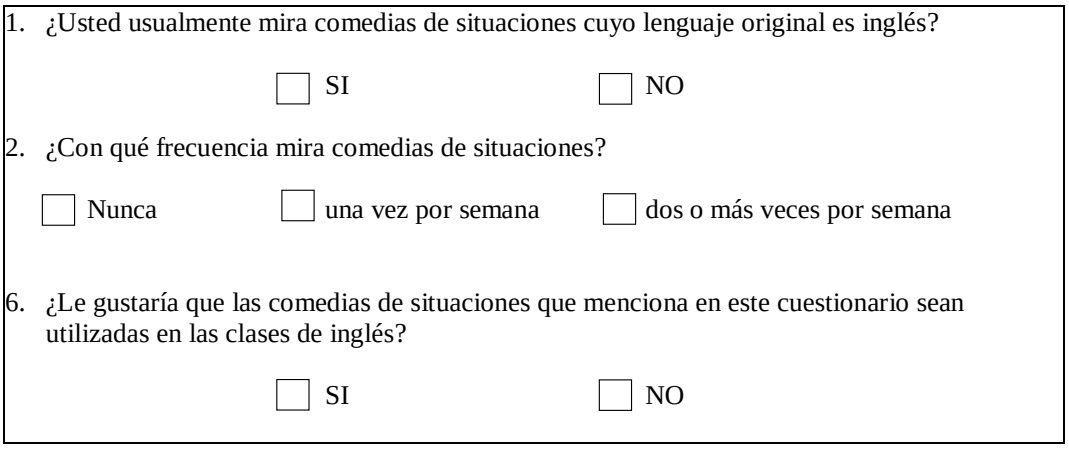
The first part of the research focused on collecting data in order to determine the characteristics of the sample as well as preferences in watching TV series known as sitcoms. Questionnaires were chosen as a data gathering instruments as they allow "collecting data on attitudes and opinions from a large group of participants" (Mackey and Gass 92).

A pilot study was done in order to assess the feasibility and usefulness of the data collection methods, and to allow making revisions and changes before they were used with the research participants (Mackey and Gass 43).

A pilot questionnaire (Appendix 1) was designed to obtain information about students' preferences when watching sitcoms: What sitcoms they watch, why they watch them and with what frequency. This was administered to a sample of 27

students who were taking a first English level summer course at the University of Azuay. The sample included male and female students whose ages range of between 18 to 22 years old. The main objective of the questionnaire was “to gather information that learners are able to report about themselves” (Mackey and Gass 92). Furthermore, the pilot questionnaire was used in order to test the questions, language construction and its layout.

The questionnaire was administered in the L1 (Spanish) in order to minimize any bias that may arise from misunderstandings or difficulty in answering questions and obtain accurate information while avoiding participant boredom. Questions 1, 2 and 3 were closed-item (table 1) and there were four open-ended questions (3, 4, 5 and 7), as shown in table 2, which were used in order to guide hypothesis formation. Question number two was used as a filter in order to determine whether or not the participants were qualified to continue answering.


1. ¿Usted usualmente mira comedias de situaciones cuyo lenguaje original es inglés?

☐ SI ☐ NO

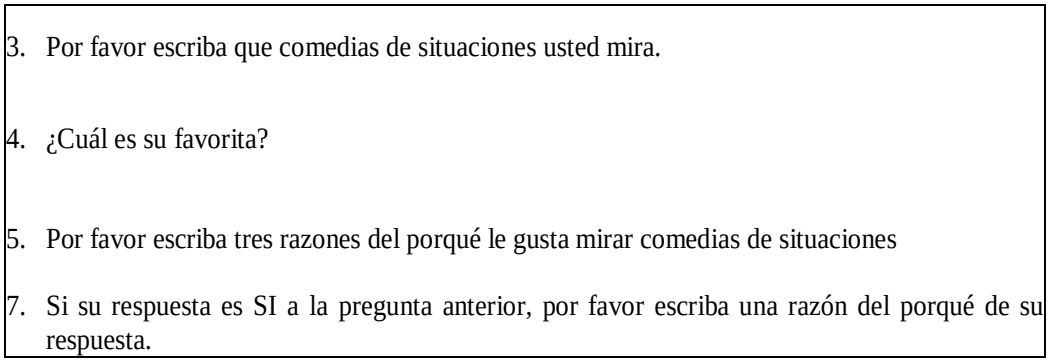
2. ¿Con qué frecuencia mira comedias de situaciones?

☐ Nunca ☐ una vez por semana ☐ dos o más veces por semana

6. ¿Le gustaría que las comedias de situaciones que menciona en este cuestionario sean utilizadas en las clases de inglés?

☐ SI ☐ NO

Fig. 8 Examples of closed-item questions used in the pilot questionnaire.


3. Por favor escriba que comedias de situaciones usted mira.

4. ¿Cuál es su favorita?

5. Por favor escriba tres razones del porqué le gusta mirar comedias de situaciones

7. Si su respuesta es SI a la pregunta anterior, por favor escriba una razón del porqué de su respuesta.

Fig. 9 Examples of open-ended questions used in the pilot questionnaire.

The pilot questionnaire allowed determining the following information:

- The most frequently watched sitcoms
- Frequency of watching
- Reasons for watching
- How sitcoms may help to develop specific skills of English

With the information described above, it was possible to design a new questionnaire (Appendix 2) which had ten close-item questions – close-item questions were chosen to be used as "they typically involve a greater uniformity of measurement and therefore greater reliability. They also lead to answers that can be easily quantified and analyzed" (Mackey and Gass 93).

The final questionnaire included three extra questions at the beginning (Fig. 10) in order to collect demographic information of the sample.

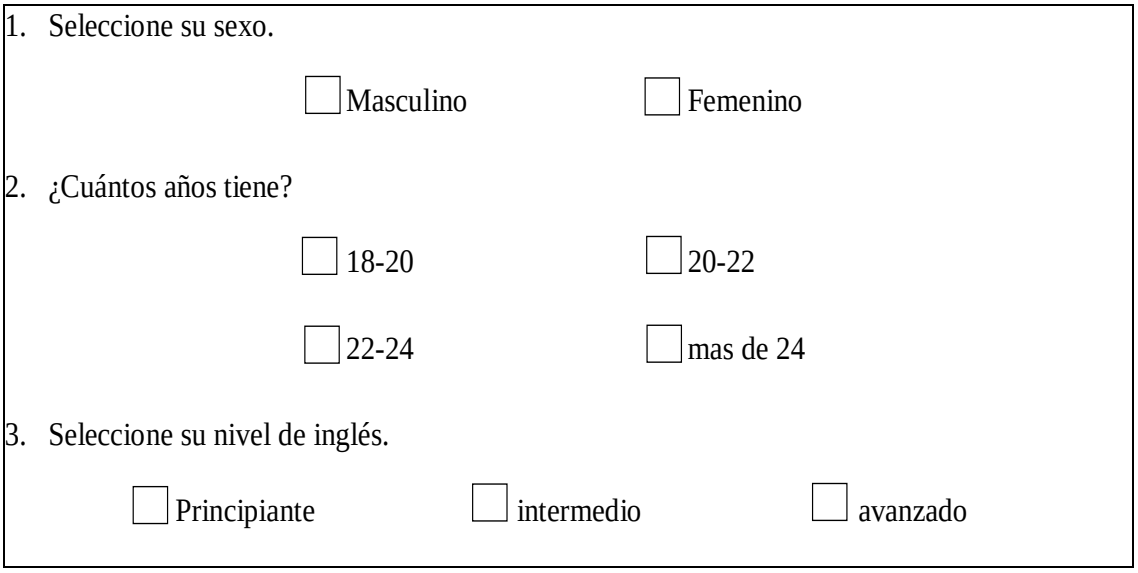


Fig. 10 Questions used in the final questionnaire to get data about the characteristics of the sample.

The other questions aimed to gather information related to sitcoms; which ones students watch, the frequency and reasons for watching them, whether they use subtitles or not, which areas of English learning they feel are related to watching sitcoms. Question four was a filter question designed to assess if the student was qualified to continue answering the questionnaire; if the participant answered negatively, he or she shouldn't continue answering the questionnaire.

This first questionnaire was used to gather information about sitcoms, which was later used in the treatment.

	PILOT QUESTIONNAIRE	FINAL QUESTIONNAIRE
Number of questions	7	10
Closed-item questions	3	10
Open-ended questions	4	0
Questions related to characteristics of the sample	0	3
Questions related to frequency of watching sitcoms	1	2
Questions related to sitcoms and their influence in learning English	1	2
Questions related to the use of subtitles	0	1

Fig. 11 Differences between the pilot and final questionnaires

A second demographics questionnaire (Appendix 3) was designed and administered in order to gather more specific information about the characteristics of the sample: reasons for learning English, frequency of contact with the language outside the classroom as well as time dedicated to learn or practice English outside the classroom. It was important to collect this data as it could affect the results of the treatment.

This questionnaire included seven questions, five of them closed-item and two opened-ended.

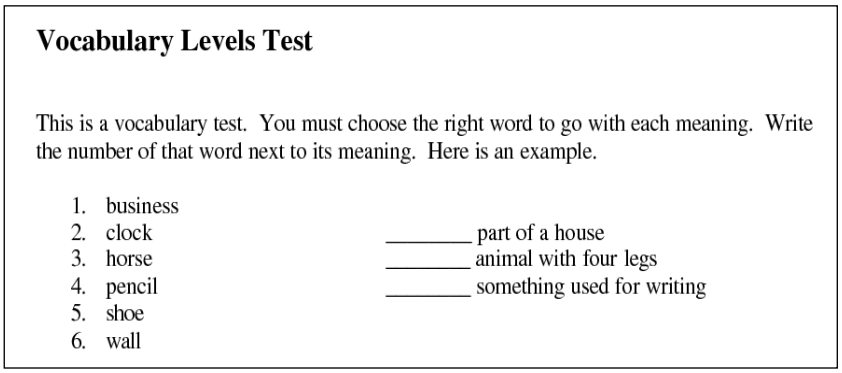
2.2.2 PRE AND POST TESTS

Mackey and Gass affirm that pre and post tests are used to measure the immediate effect of the treatment and to what extent a treatment truly resulted in learning (149).

The tests (Appendix 4) were designed in order to measure two aspects that involve receptive vocabulary which are closely related to reading comprehension ability: size (breadth) of vocabulary and meaning in context. Furthermore, the tests also measured reading comprehension ability as it involves vocabulary recognition and comprehension; as Read affirms this type of assessment “can reveal the extent

of the lexical gap they face in coping with authentic reading materials and undertaking other communicative tasks in the target language" (107).

A multiple choice question (MCQ) format was selected to be used in the tests because this format is practical, versatile and most students are familiar with it and also if well written very reliable (Coombe 116); Coombe also mentions that this format is also one of the most common in professionally-developed language tests (116). MCQ is the most common format used in international exams such as TOEFL, Cambridge English Language Assessment, and IELTS, as well as in Nation's Vocabulary Level tests and Vocabulary Size Test that are the most widely used measure of English vocabulary size for second language learners. Furthermore, Read also states that these kinds of questions provide evidence that the target words are actually known (110).



Vocabulary Levels Test

This is a vocabulary test. You must choose the right word to go with each meaning. Write the number of that word next to its meaning. Here is an example.

1. business
2. clock
3. horse
4. pencil
5. shoe
6. wall

_____ part of a house
_____ animal with four legs
_____ something used for writing

Fig. 12 Example of a question in a Vocabulary Levels Test

Pre test and post test were designed considering the hypothesis of the research which intends to measure the impact of video clips in the acquisition of lexicon, development of strategies for understanding vocabulary in context and their influence in the reading comprehension ability, thus, tests were divided in three sections: vocabulary knowledge, vocabulary in context and reading comprehension. The first section was designed with one type of question: matching words given in non-defining sentences with their synonyms or short definitions, and aimed to measure breadth of vocabulary. It included 10 context-independent questions.

9. REMEDY: We found a good **remedy**.

a. way to improve health
b. way to prepare food
c. rule about numbers
d. place to eat in public

10. UPSET: I am **upset**.

a. Unhappy
b. Rich
c. Famous
d. Tired

Fig. 13 Examples of questions used in the first section of pre and post-tests.

The second section included ten content dependent questions which were used to measure the ability of using context clues to match a word given in a sentence with its correct meaning.

1. Jennifer ***implied*** that she wanted to be Jim's girlfriend, but she didn't say so directly.

a. inferred
b. declared
c. refused
d. questioned

2. The principal is extremely popular with the students because he is a strong ***advocate*** of students' rights.

a. opponent
b. enemy
c. member
d. supporter

Fig. 14 Examples of questions used in the second section of pre and post-tests.

The first and second sections of the tests cover vocabulary appropriate to A1 and A2 level on the Common European Framework of Reference (CEFR), which was selected from international vocabulary lists and include exclusively receptive vocabulary (words that the student is expected to understand but which are not the focus of a question) and productive vocabulary (words that the student needs to

know in order to answer a question). The vocabulary students learn according to the level's syllabus was not used to avoid bias in the research and prevent external input influencing the results.

The third section aimed to measure the reading comprehension competence, it was designed based on the Diagnostic Assessment of Reading Comprehension (DARC) Test structure, which "is an experimental test that involves reading passages of three sentences, but it is specifically designed to control for the level of decoding that is required" (Fletcher 326).

The different questions and reading were chosen from exercises used for preparation for the Key English Test (KET), which is a basic level qualification that shows people can use English to communicate in simple situations and belongs to A2 level of the Common European Framework.

Fig. 15 Common European Framework Levels and their corresponding international tests.

The posttest included the same sections and questions, the latter were arranged in different order to guarantee the comparability of results.

2.2.3 STRUCTURED INTERVIEWS

Structured interviews were used to collect data of students' perceptions and feelings about the treatment; they allowed collecting data that was not directly observable. Seidman states that these types of interviews aim to understand the experience of other people and the meaning they make of that experience (qtd. in Sahragard 263).

Interviews were held in L1 (Spanish) in order to avoid concerns about the impact that the participant's English level may have in the quality and quantity of the data given (Mackey and Gass 174).

The interviews consisted of four open-ended questions that were asked in the same order and manner to all respondents.

ENTREVISTAS

1. ¿Cómo se sintió al mirar "sitcoms" en la clase de inglés?
   (How do you feel about watching "Sitcoms" in English Class?)
2. ¿Fue fácil o difícil entender lo que miró?
   (Was it easy or difficult to understand what you saw?)
3. ¿Cómo cree que el mirar "sitcoms" en la clase le ayudó a aprender inglés?
   (How do you think that watching Sitcoms in class has helped you learn English?)
4. ¿Recomendaría el uso de "sitcoms" en clase? ¿Por qué?
   (Would you recommend using Sitcoms in class? Why?)

Fig. 16 Questions used in the structured interviews

2.2.4 JOURNAL

Although journals or diaries are characterized by the highly subjective nature of the data, they can record useful information of different aspects of the second language process such as attitudes towards the teaching-learning process (Mackey and Gass 203, 204). As well as being a useful record of what happened during classes and being a source of reflection for teachers and learners, Brock, Yu and Wong state that journals also allow generating questions and hypotheses about teaching and learning processes (qtd. in Wallace 63).

The journal (Appendix 5) was specifically designed in order to collect two types of information: impressions or perceptions of students during the administration of the treatment, and also to record data of the teaching process. This journal also included a self-assessment.

The design of the journal took into account data accessibility and so was structured in two sections: The first section related to the teacher and was dedicated to recording positive and negative aspects of the teaching process; the second

section was used to record information about the students while they were watching the video and after they watched the video. Again any positive and negative aspects and reactions were recorded.

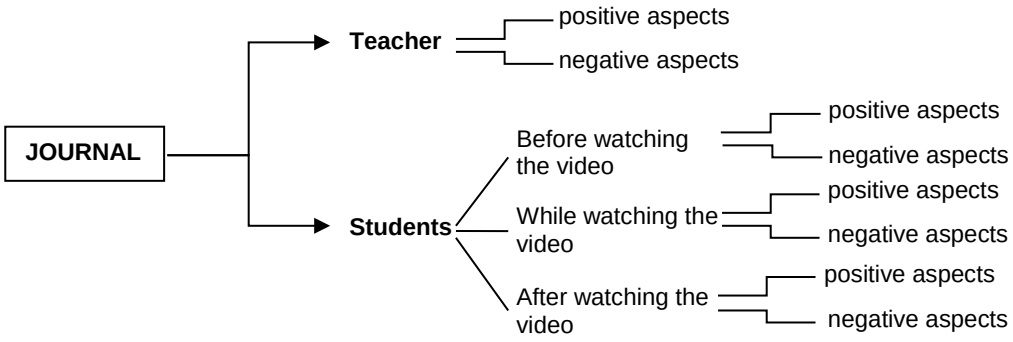


Fig. 17 Structure of the journal.

2.3. TREATMENT

The Input Hypothesis, stated by Krashen, affirms that language acquisition is facilitated when learners are exposed to the target language in real communicative environments with a rich comprehensible input. Thus, many researchers such as Brett, Egbert, Jessup and Khalid "have presented strong evidence that multimedia have useful effects on language learning because of rich and authentic comprehensible input" (Harji, Woods and Alabi 37). White, for example, affirms that video has multiple instructional advantages "such as rich visual support, audio component, enhanced contextualization, and better control over the medium (slow motion play or possibility to record student voice)" and the fact that "language learners, are exposed to video content on a daily basis in their life environment." Furthermore, Swaffar and Vlatten argue that video significantly contributes to the overall student involvement in the learning process as it is a multi-sensory medium (qtd. in McNulty and Lazarevic 51, 52).

Harji, Woods and Alabi sustain that multimedia technology aims to integrate real-life situations with the target language into the classroom; in this atmosphere students are exposed to authentic environment of the target language which helps them to expand their language acquisition (37). Additionally, Wang sustains that the contribution of videos – specifically TV drama - to the learning process is based on the authenticity of the language, the contextual meaning of the words, and dramatic

performances (217). For this reason, “media based materials such as videos have been broadly introduced into language classrooms as they have changed the traditional language learning to a holistic and multi-sensory level” (Wang 1).

As sitcoms show real-life situations (including drama), video-clips of them were used in the treatment; the sitcoms were selected based on student’s preferences (Drake and Josh, Malcom and Friends) - information determined according to the data collected in a questionnaire. The video clips were selected taking into account the vocabulary level they had, which needed to belong to an A2 level of the Common European Framework.

McNulty and Lazarevic affirm that at a basic level, video materials can be used to make students perform a passive viewing as they are offered the opportunity to hear native English speakers using words and sentences with accurate pronunciation as well as new vocabulary that students can learn and discover its meanings by using images, gestures and sounds presented in videos (53). Masats also supports that videos provide “rich and authentic input environments as they offer learners the opportunity of observing the dynamics of interaction (discourse modes, gazes, gestures, registers, paralinguistic cues, etc.) in context” (qtd. in McNulty and Lazarevic 52, 53).

Based on McNulty, Lazarevic and Masats’s ideas mentioned above, the treatment was designed considering the student as a passive viewer, thus it included pre-viewing and post-viewing activities designed to promote vocabulary acquisition and the definition of meanings by using context.

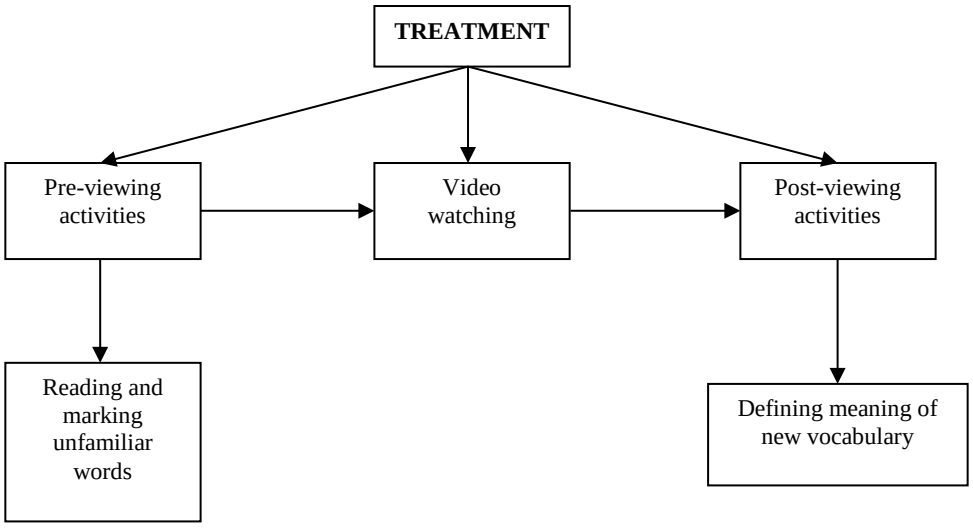


Fig. 18 Stages of the treatment.

In the pre-viewing activity students had to read a transcript of the video clip they were going to watch and mark unfamiliar words, after this, a five minute video was shown to the class, then as a post viewing activity, students worked in pairs in order to determine the meaning of unfamiliar words they marked by using context clues which were explained and practiced before the administration of the treatment as part of the syllabus of the first level of English at Universidad del Azuay. The next stage consisted of showing the video clip again to the class in order to make students confirm the meanings they guessed using images, sounds and context. Finally students shared their vocabulary and meanings to the class; if there were any misunderstandings, these were clarified by the teacher.

The One With The Thanksgiving Flashbacks

[Scene: Monica and Rachel's, everyone has just finished Thanksgiving dinner and are groaning over their fullness.]

Rachel: Oh Monica that was the best Thanksgiving dinner ever! I think you killed us.

Ross: I couldn't possibly eat another bite.

Joey: I need something sweet.

Phoebe: Does anyone wanna watch TV?

All: Yeah, sure.

(She starts pushing the power button on the remote, but it's not facing the TV so it doesn't work.)

Phoebe: Monica your remote doesn't work.

Monica: Phoebe, you have to lift it and point.

Phoebe: Oh. Aw, forget it.

Rachel: Yeah, you know what we should all do? We should play that game where everyone says one thing that they're thankful for.

Joey: Ooh-ooh, I! I am thankful for this beautiful fall we've been having.

Fig. 19 Example of transcript used during the previewing activities.

2.4. PROCEDURE

The research took place during the March-July 2013 semester, although the pilot questionnaire was administered in the previous semester in February.

The research consisted in six stages:

1. Pilot questionnaire administration
2. Data gathering collection about demographics of the sample and sitcoms students watch through the administration of two questionnaires.
3. Pre-test administration
4. Treatment application
5. Post-test administration
6. Interviews

The pilot questionnaire was administered in February 2013 on a sample of 23 students of the first level who were taking the summer course; the sample was formed by 21 female and 2 male students aged between 18 and 24 years old. Participants were given around 20 minutes to answer seven questions in a written format. The data gathered in this questionnaire was quantified and allowed determining specific information about what sitcoms students watch, subsequently used in a new questionnaire that included ten questions answered in around thirty minutes which was administered to the research group at the beginning of the 2013 March-July semester.

A second questionnaire was administered three weeks later in order to gather more specific demographic information about the sample as well as finding out their reasons for learning English, what frequency of contact with the language outside the classroom the students had, as well as the time students dedicated to learning or practicing English outside the classroom.

The next stage consisted of the administration of the pre-test in which students answered a series of multiple-choice questions with a time limit of one hour. After this, the treatment was applied for a period of a month with a total of twenty hours in one-hour sessions five days a week. During the treatment, a teacher's self-assessment (Appendix 6) was done in order to control teaching methodologies and how they may or may not have affected the research. The teacher also kept a journal

during the treatment application, noting perceptions and impressions of the treatment. As soon as the treatment application concluded, students were given the post-test. One week later, structured interviews in Spanish were held; due to time constrains, students were grouped together into fives – this allowed a structured discussion which lasted for approximately twenty minutes and the information was recorded in written notes.

CHAPTER III DATA ANALYSIS

3.1. ANALYSIS OF QUESTIONNAIRES

3.1.1 CHARACTERIZATION OF THE GROUP

The sample group was not chosen randomly as it was assigned to the investigator. In one sense this meant that the researcher had no influence on who was part of the trial, it also meant that several possibly important variables were not controlled. The group, made up of 22 participants, turned out to be heterogeneous in several aspects. One aspect dealt with was the characterization of the group.

The group was comprised of mainly female participants (Fig. 20). The ages of the participants were also found to vary, although the majority of participants being in the age range of 18-20, as would be expected for first level participants at University (Fig. 21).

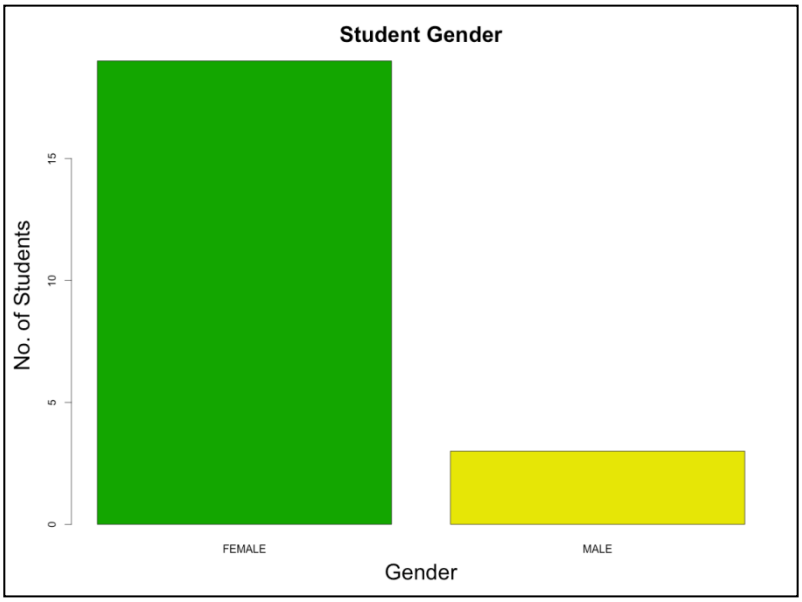


Fig. 20 Gender of the Sample Group.

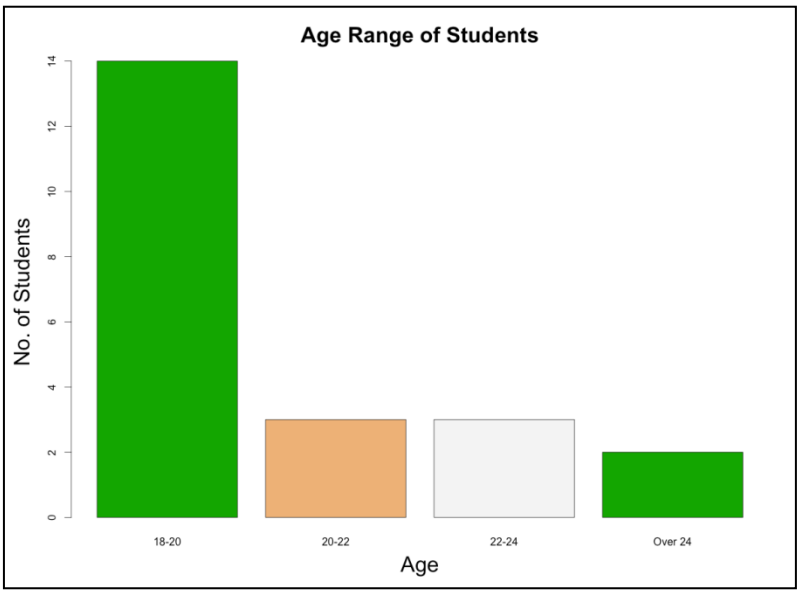


Fig. 21 Age Range of Participants.

The participants were also asked what they perceived their level of English to be (Fig. 22) and the majority classed themselves as “Beginners”, which again would be expected from a first level group of English participants.

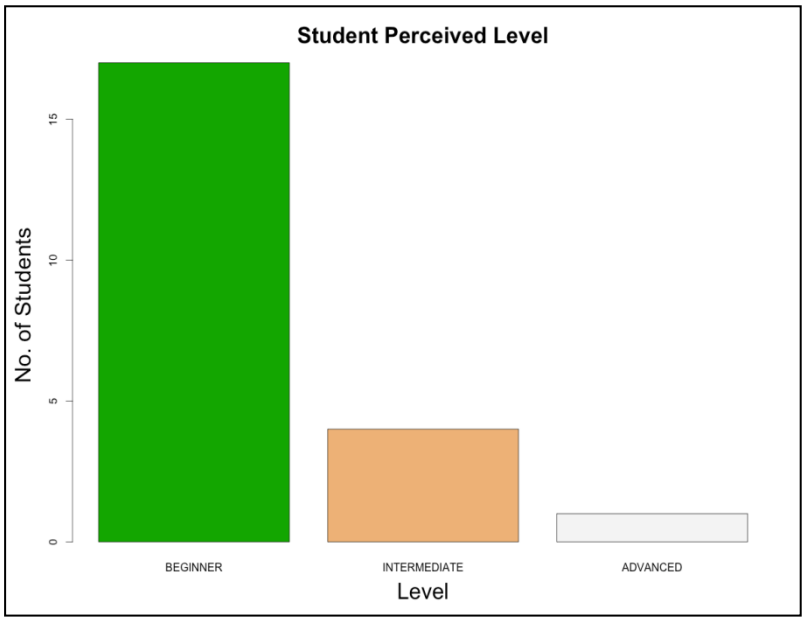


Fig. 22 Participant Perceived Level of English.

The participants themselves identified through this questionnaire that the group was not homogenous and that there would not be an equal level across the

whole group, which would make the analysis of the results of the treatment more complicated.

3.1.2 PARTICIPANT HABITS

Another aspect which was important to determine about the sample before the treatment was to assess the habits of the participants – mostly with respect to the use of sitcoms – to establish any links between their performance in the pre-test and habits they may have with regard to English and its use.

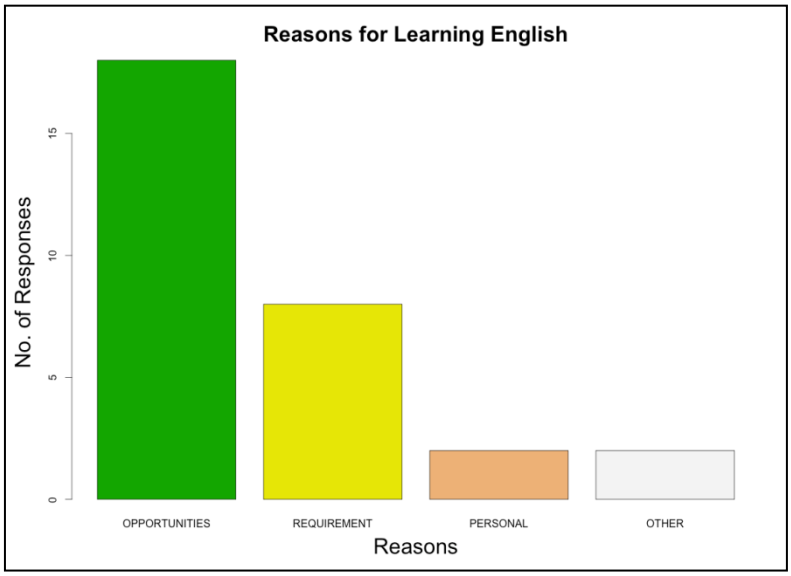


Fig. 23 Participants' opinions of why it is important to learn English.

The first question asked participants why they thought that it was important to learn English in the first place (Fig. 23). The participants were able to give more than one answer, and all but one identified opportunities as a key reason to learn the language. Eight participants also cited that it was a requirement for graduation. Other reasons participants cited included the fact that English is a language used worldwide and for personal reasons.

The next series of questions asked participants about the frequency with which they were in contact with the English language and in what way (Fig. 24 & Fig. 25).

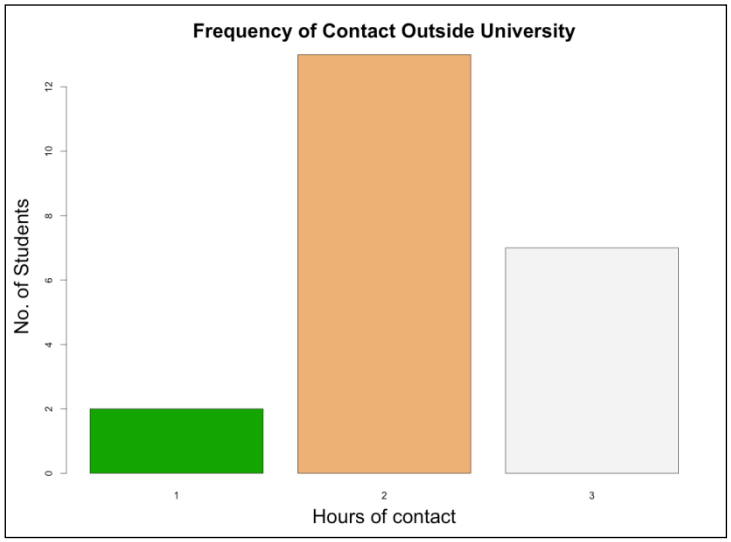


Fig. 24 Histogram of Frequency of Student Contact with English.

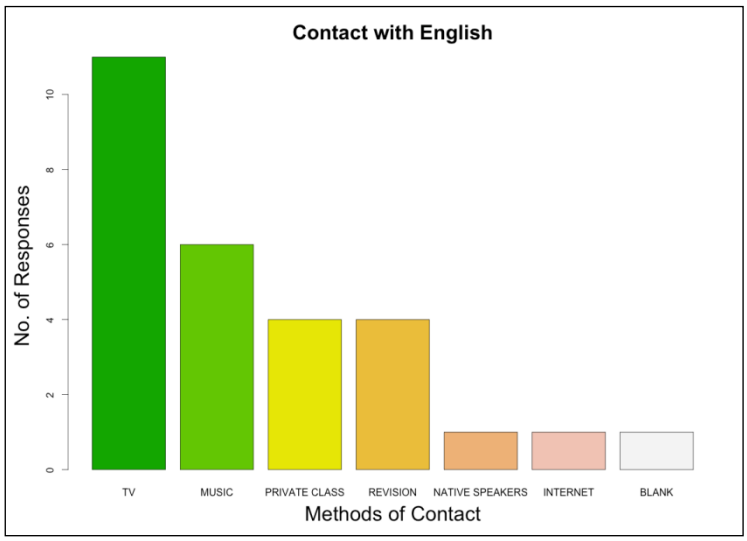


Fig. 25 Histogram of how students are in contact with English.

The majority of participants had between one and two hours of contact with English, the majority through TV or music. These particular activities are more passive reception of the language.

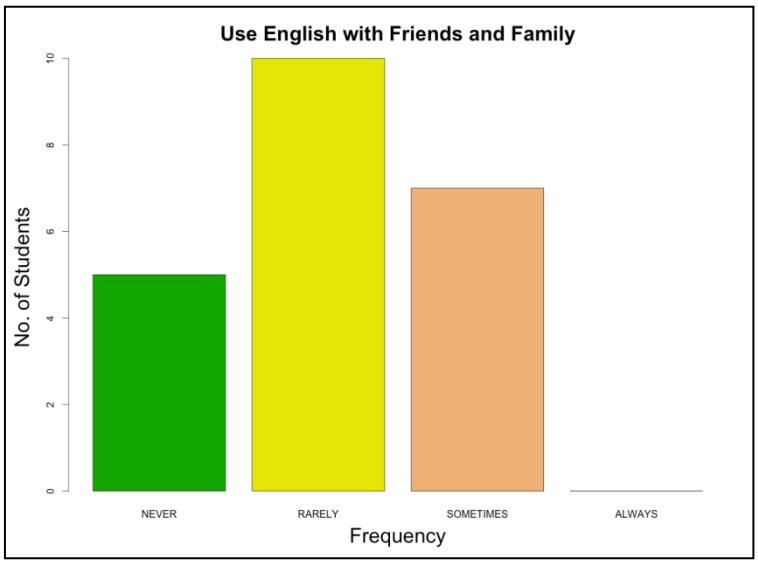


Fig. 26 Frequency participants use English with Friends and Family

To further understand the participants' habits, they were also asked how frequently they used English outside the classroom with friends and family; the majority of participants did not use English with friends and family outside of the classroom (Fig. 26), suggesting that participants were more likely to be passive receptors rather than active producers of the language.

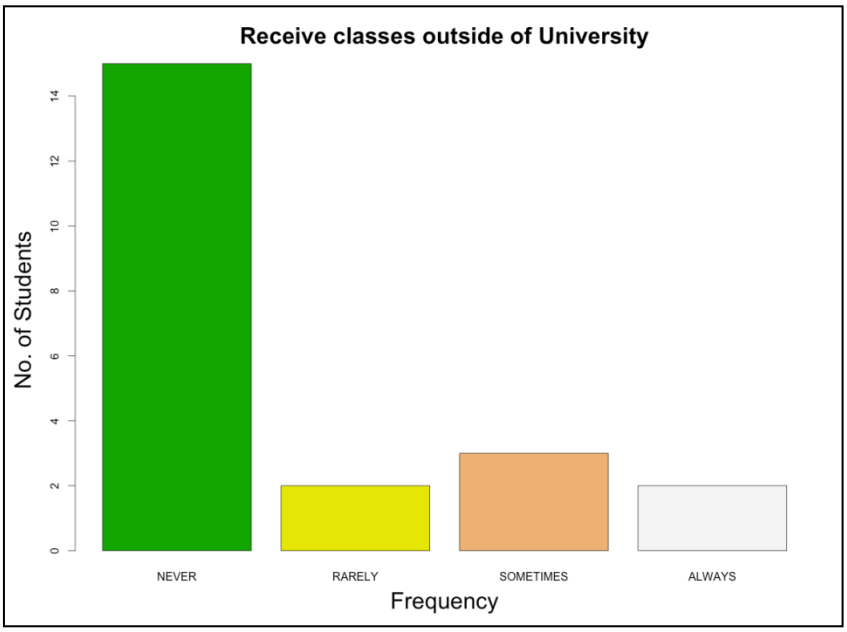


Fig. 27 Frequency participants have English classes outside of University.

The question relating to the frequency with which participants had classes outside of the university (Fig. 27) was important to establish if they regularly had

classes, which could affect the results of the treatment. As no participants regularly took classes, it was possible to assume that this is a variable which wouldn't affect the results of the treatment.

The participants' study habits were also an important factor to take into consideration when analyzing the results – a participant who spent more time studying should logically learn more than one who didn't study at all.

The histogram (Fig. 28) revealed that generally participants did not dedicate much time to studying English, and a smooth kernel plot of the same data showed the average study time along a gradient - this type of graph avoids problems with the size of the bins used in a histogram of continuous values and thus a clearer picture can be seen (Fig. 29).

Each plot clearly showed that the majority of participants dedicate little time to study with the majority studying less than an hour a week. If this variable stayed constant throughout the treatment, any change in participant performance would be attributable to the treatment and not to participant self-study.

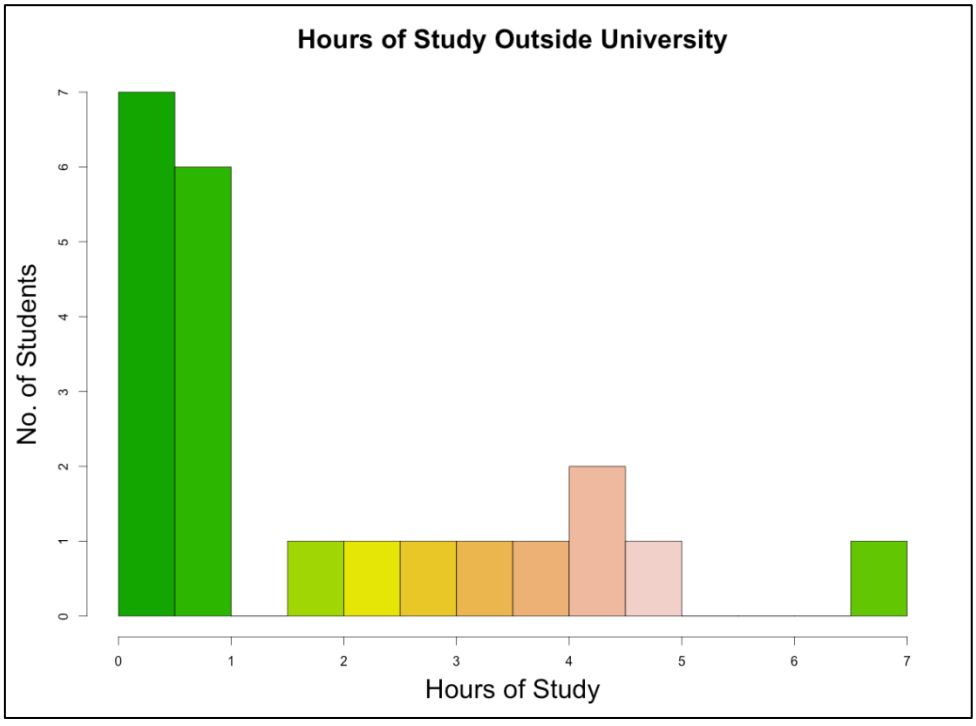


Fig. 28 Histogram of hours students state they study English outside of the University.

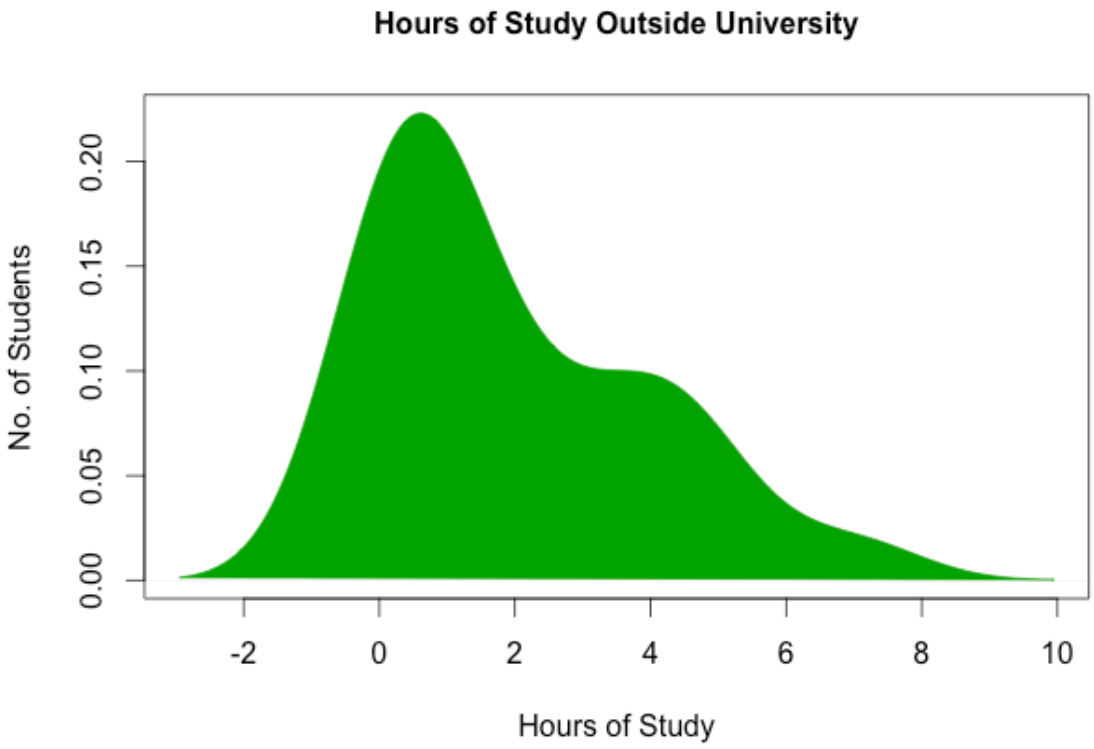


Fig. 29 Kernal Density Estimate of Hours students state they study English outside the University.

3.1.3 PARTICIPANTS AND SITCOMS

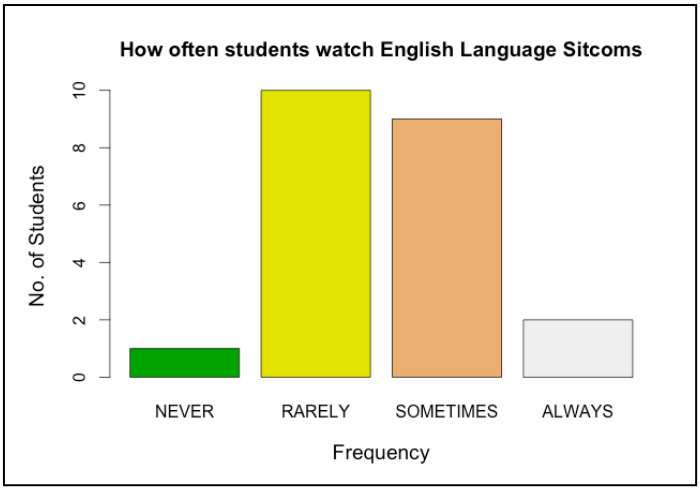


Fig. 30 Frequency participants watch English language sitcoms.

As this investigation sought to establish the value of using sitcoms to improve participants' vocabulary in context abilities, it was important to establish a baseline of

participants' experience with sitcoms and how they felt about and related to them. The first question in this category sought to establish how many of the participants had had previous experience with English language sitcoms. The data (Fig. 30) showed that almost all participants had had experience with these types of sitcoms and about half of them said they watched them more than just occasionally.

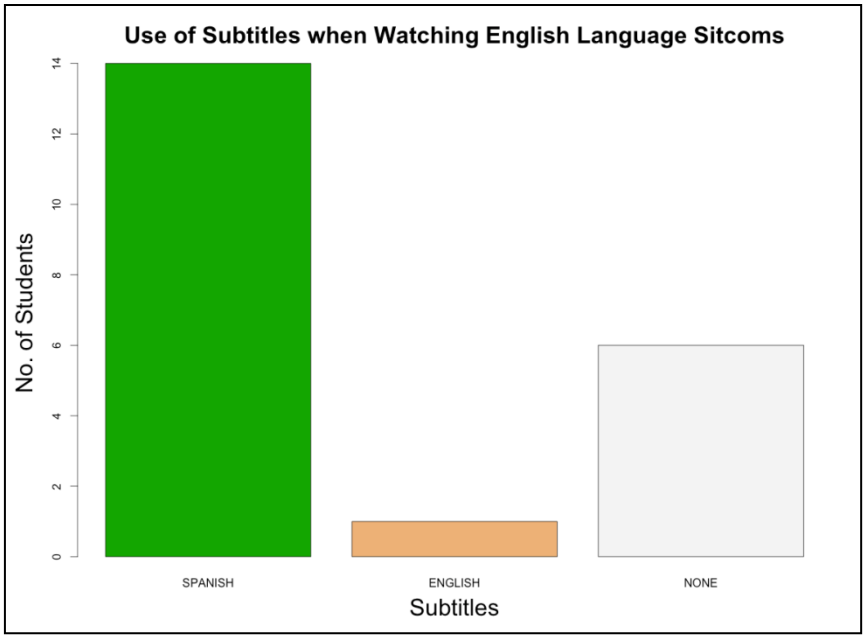


Fig. 31 Participants' use of subtitles when watching sitcoms.

Another interesting question, that might or might not influence the ability of participants to understand vocabulary in context is whether or not they watched the English language sitcoms with subtitles – the participants who said they never watched them obviously left this response blank which is not tabulated (Fig. 31).

The majority of participants used Spanish subtitles, while a minority used no subtitles, and one participant admitted to using English subtitles.

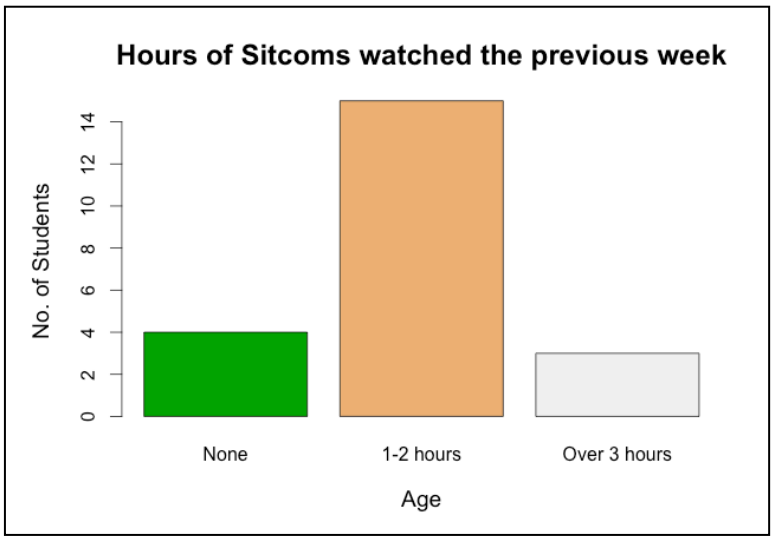


Fig. 32 Number of hours participants had spent watching sitcoms the previous week.

When asked how many times the participants watched sitcoms the previous week, the majority claimed to have watched between one and two hours of sitcoms (Fig. 32). This tied in with the response to the question with what frequency participants watch sitcoms. This suggests that participants were aware of how much TV they watch.

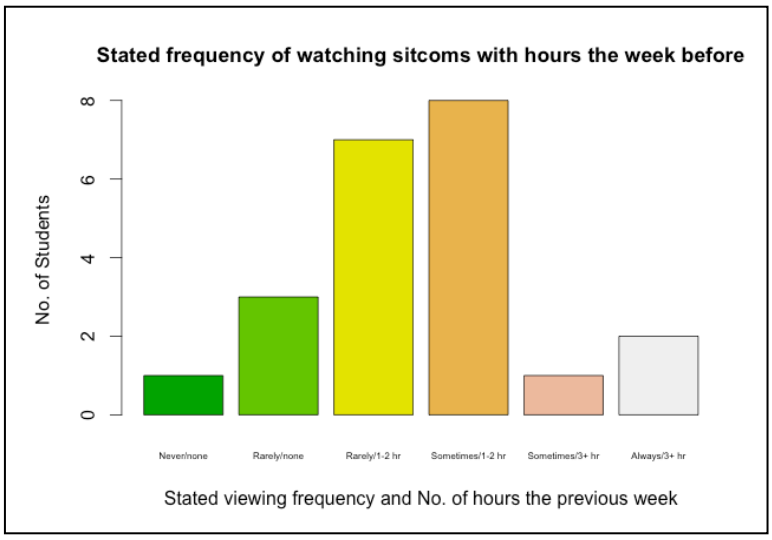


Fig. 33 Relationship between stated frequency of viewing sitcoms and number of hours spent watching sitcoms the previous week

A significant relationship was found between the amount of sitcoms the participants watched the previous week and the frequency that participants claimed to watch sitcoms in general (Pearson's Chi-squared test (X^2 = 21.55, df = 6, p-value

= 0.001462)) (Fig. 33). This supported confidence that the participants were consistent in their viewing habits.

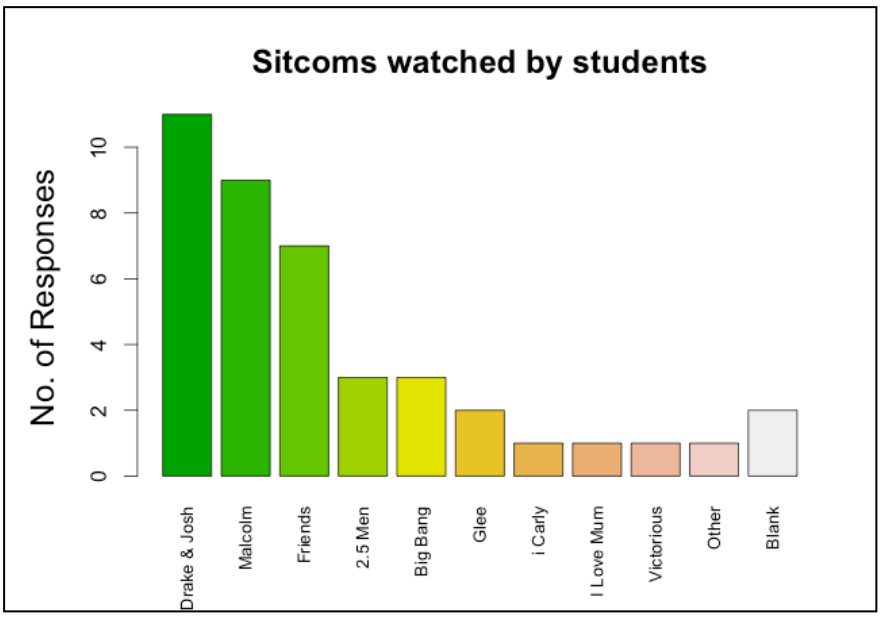


Fig. 34 The Sitcoms participants watch in order of preference.

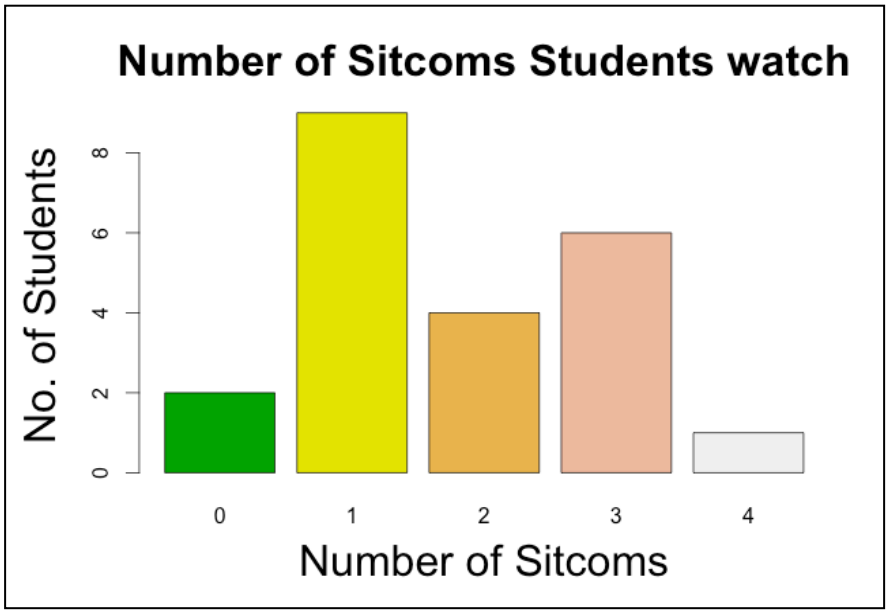


Fig. 35 Calculated number of different sitcoms viewed by participants.

As in the pilot questionnaire, participants were asked about which sitcoms they preferred to watch. There was a general preference for Drake and Josh, Malcolm and Friends (Fig. 34). While this graph shows preferences, the aim of this

question was also to gauge the number of sitcoms that participants watched. The results are shown in Fig. 35.

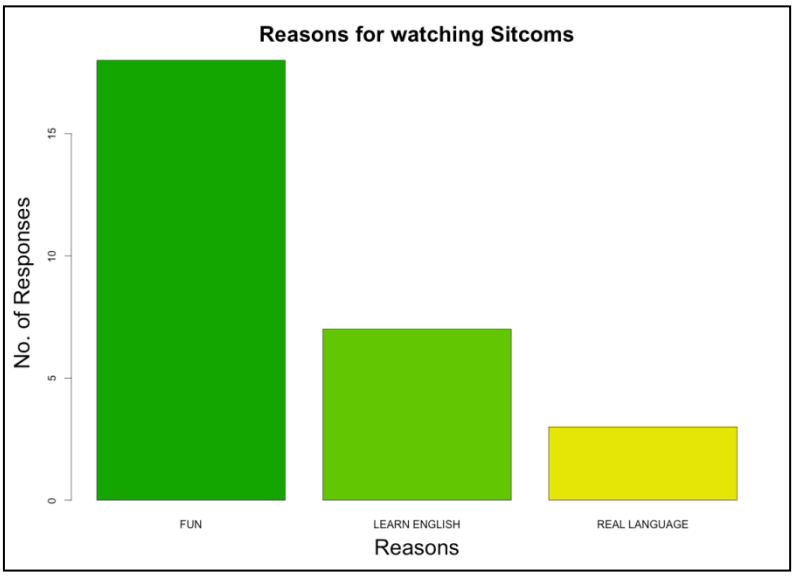


Fig. 36 Reasons participants gave for watching sitcoms.

The last part of the questionnaire asked participants about their opinions and thoughts about sitcoms. The first question asked participants the reason why they watched sitcoms in the first place. Participants could give multiple responses to this question and almost all of them stated that it was because they were fun to watch and a large minority stated that they watched them to learn English and some included the reason that sitcoms contained real language (Fig. 36).

The last two questions asked participants how they considered that the use of sitcoms had helped them learn English, the first on a personal level and the second question in a group environment. The overwhelming response to both questions was pronunciation and vocabulary although pronunciation was greater on a personal level, and vocabulary in a group setting.

The data of these two questions were compared statistically using Pearson's Chi-squared test, and the results show that there was no significant difference between the two answers (X^2 = 78.83, df = 24, p-value = 9.324e-08), despite some participants adding grammar as something they learned in a group setting (Fig. 37 and Fig. 38).

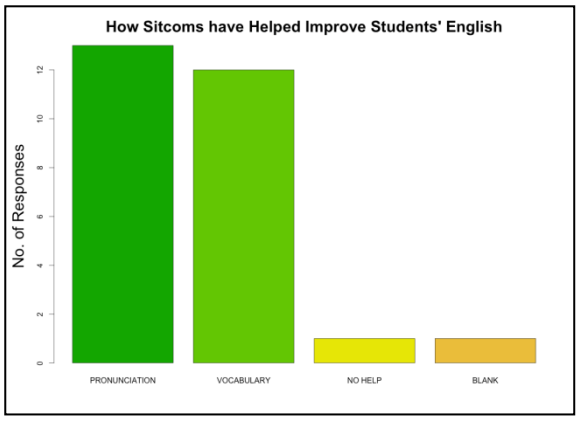


Fig. 37 How participants believe sitcoms have helped them in their English learning.

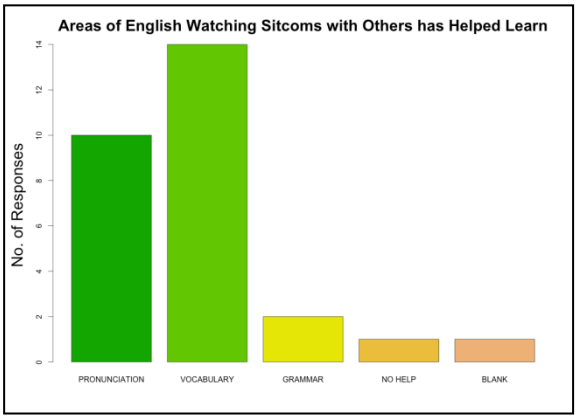


Fig. 38 How participants feel the watching of sitcoms in a group environment has helped them learn.

3.2. PRE-TEST ANALYSIS

The pre-test was one of the most important instruments in this investigation as it not only identified the participants' level prior to the treatment, but also permitted investigation into which habits or previous experience may affect participant's abilities in the various aspects of English encountered in the test. As the test was made up of three distinct aspects of vocabulary learning and testing, the results were analysed on four levels: Vocabulary: Raw knowledge of words; Vocabulary in Context: Using context clues to help understand the meaning of words; Reading: Finding the correct word to match the meaning given; and finally the overall grade for the test was also analysed.

3.2.1 OVERALL PRE-TEST RESULTS

The histogram of participants' scores showed very skewed scores. Rather than the bell-shaped curve that would be expected when graphing test scores, there were two distinct peaks and one datum much further away (Fig. 39). The highest possible score was twenty-seven, and only one participant came close to the maximum score while four others managed to score over 50%.

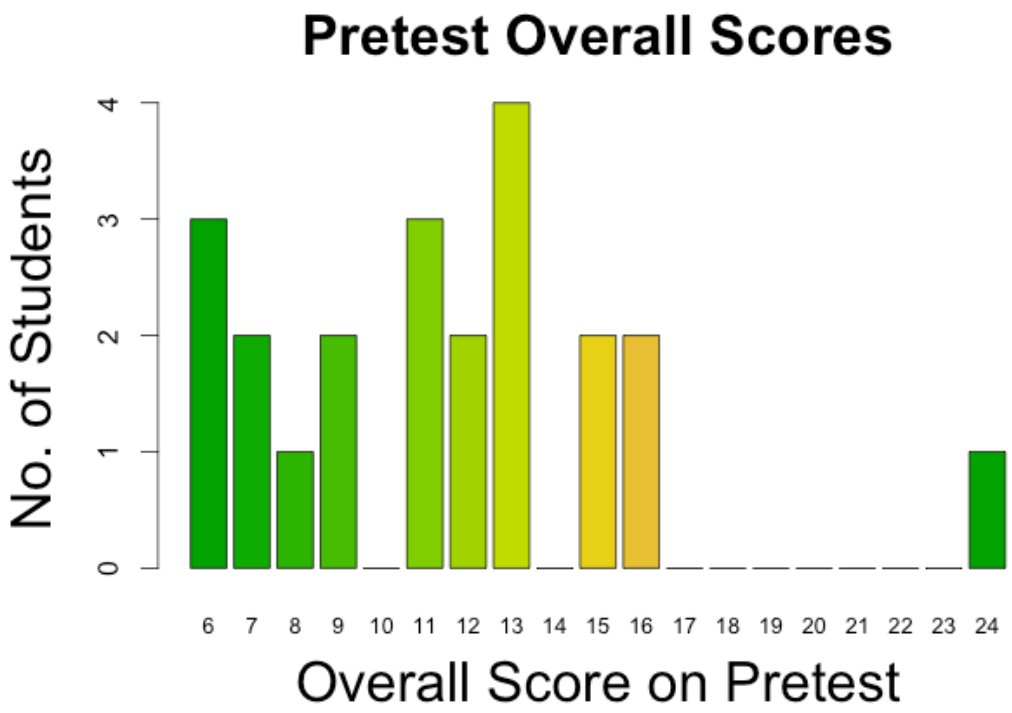


Fig. 39 Histogram of the overall scores achieved by sample group on the Pre-test.

3.2.2 RESULTS BROKEN DOWN BY SECTIONS OF THE PRE-TEST

3.2.2.1. VOCABULARY SECTION OF THE PRE-TEST

This part of the test showed results similar to what would be expected when plotting test results with a distribution of grades similar to a bell-shaped curve, although skewed to the left (Fig. 40). Almost half the participants, ten of twenty-two participants, scored more than 50% and one managed to get a perfect score.

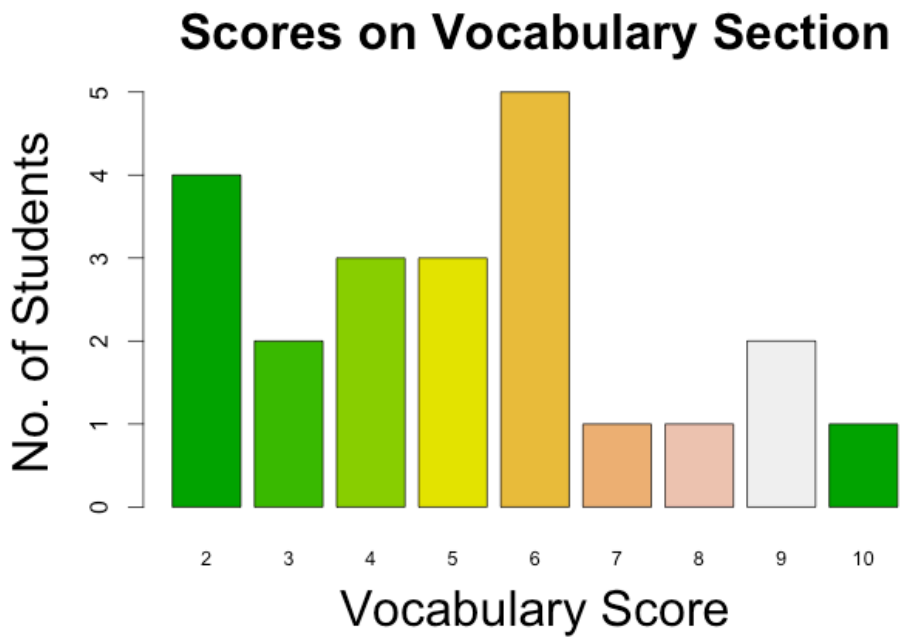


Fig. 40 Histogram of scores on the vocabulary section of the Pre-test.

3.2.2.2. VOCABULARY IN CONTEXT SECTION OF THE PRE-TEST

The results of this section also had a good approximation to a bell-curve albeit with a long tail (Fig. 41). The data from this section showed that the whole group appeared to be normally distributed with respect to this ability. Although there was a very good curve, it was toward the lower score range; this section had a possible ten points and the majority of participants got less than 50% right in this section – only two participants managed to score higher.

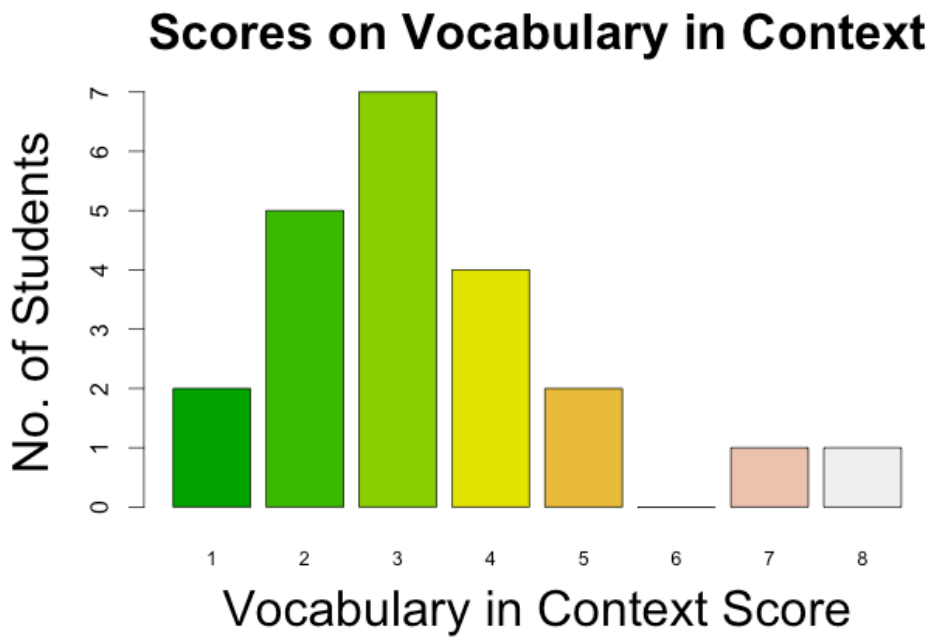


Fig. 41 Histogram of scores on the vocabulary in context section of the Pre-test.

3.2.2.3. READING SECTION OF PRE-TEST

The data from this section also showed a good approximation to a bell curve, although as above, it was skewed toward the lower end of the possible scores with 7 being the highest score possible (Fig. 42). Seven participants managed to score higher than 50%.

Fig. 42 Histogram of scores on the reading section of the Pre-test.

3.3. ANALYSIS OF PRE-TEST RESULTS AGAINST VARIABLES FROM QUESTIONNAIRES

The results of the pre-test required greater analysis as the results were not normally distributed in the main. A series of analyses sought to uncover the reasons for the differences in the participants' scores. In these analyses the participant who identified him/herself as "Advanced" was removed as he/she represented a single data point and it was not possible to compare this with the other data. Additionally, this participant did much better than the other participants. The first tests were to check that demographics did not affect the scores of participants.

3.3.1 EFFECT OF SEX AND AGE ON PRE-TEST SCORES

A Manova test was performed using the categorical variables of sex and age on the three sections of the test and an Anova was performed on the same variables for the overall scores to determine if either of these two factors affected the scores on the pre-test. Neither variable was found to have a significant effect on the pre-test scores:

Manova for Age

```
          Df Pillai approx F num Df den Df Pr(>F)
age        3  0.215    0.439      9     51   0.91
Residuals 17
```

Manova for Gender

```
         Df Pillai approx F num Df den Df Pr(>F)
sex        1  0.181     1.25      3     17   0.32
Residuals 19
```

Anova for Age

```
           Df Sum Sq Mean Sq F value Pr(>F)
age         3  10.78   3.595   0.287  0.834
Residuals   17 213.03  12.531
```

Anova for Gender

```
            Df Sum Sq Mean Sq F value Pr(>F)
age          3  10.78   3.595   0.287  0.834
Residuals   17 213.03  12.531
```

These data suggested that as there was no significant difference in the results based on these two variables the whole group should be treated as one.

3.3.2 TEST SCORES AGAINST PARTICIPANT-PERCEIVED LEVELS

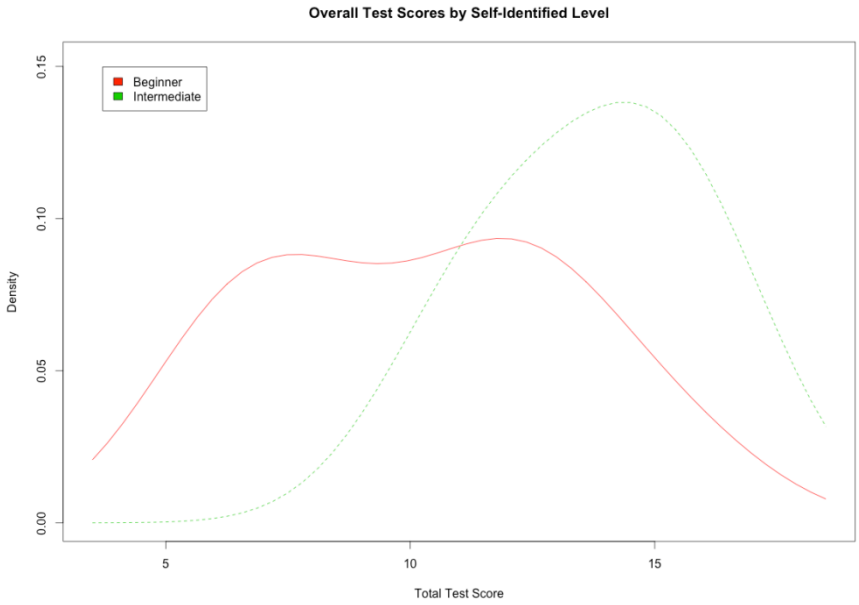


Fig. 43 Kernel Density Estimate of participant scores separated by participant-perceived level.

The Kernel Density Estimate (KDE)(Fig. 43) showing overall scores separated by participants' levels was created to allow better visual comparison of the data as it produces smooth curves rather than data in discrete bins. The mean of the beginner's score was 10.24 and the mean of the intermediate group was 13.75. An unpaired t-test showed that the means of the two groups were significantly different from each other (t = -2.584, df = 6.49, p = 0.03876). This suggests that the two groups should be dealt with separately in further analyses. Two distinct peaks were notable on the beginner's curve.

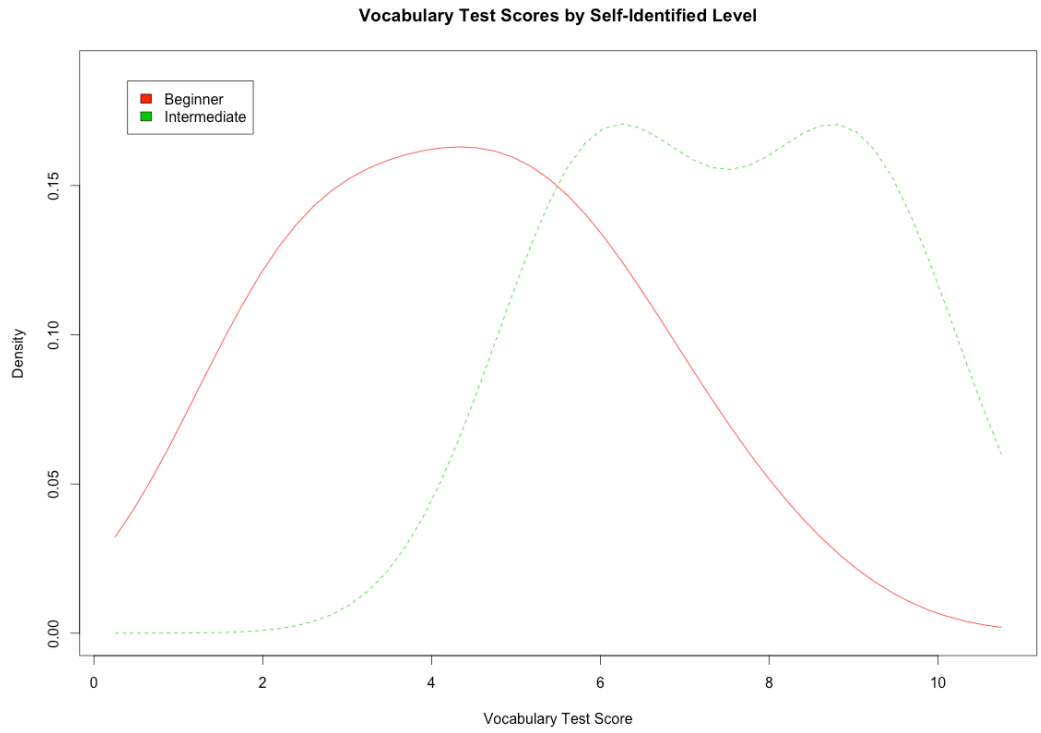


Fig. 44 Kernel Density Estimate of vocabulary scores separated by participant-perceived level.

Fig. 44, the KDE of vocabulary score by self-identified level, showed a similar pattern to the overall scores, and again two distinct peaks were notable, although this time in the Intermediate results. The means of the vocabulary scores of two groups were: Beginners = 4.35 and Intermediates = 7.50. An unpaired t-test confirmed what could be seen visually that there was a significant difference between the means of the two groups (t = -3.22, df = 4.801, p = 0.02487). This again suggests that the two groups should be treated separately in further analyses.

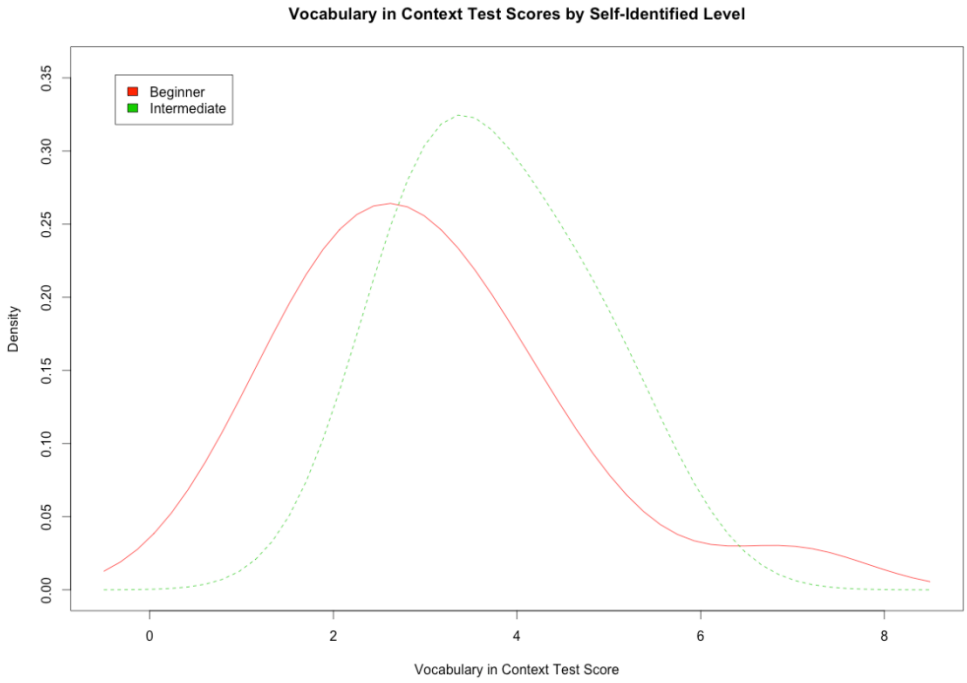


Fig. 45 Kernal Density Estimate of vocabulary in context scores separated by participant-perceived level.

The means of the two groups in the vocabulary in context section of the test were very similar (Beginners = 3, Intermediates = 3.75) (Fig. 45) and an unpaired t-test confirmed that there was no significant difference between the two means (t = -1.247, df = 7.026, p = 0.2522). This result would suggest that the two groups should be analysed together.

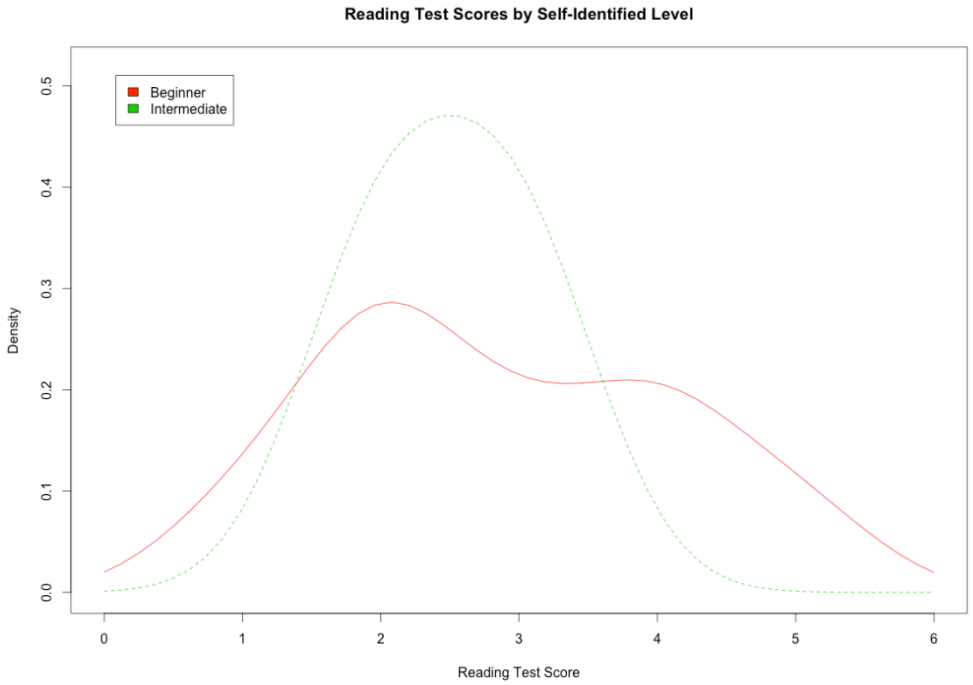


Fig. 46 Kernal Density Estimate of vocabulary in context scores separated by participant-perceived level.

The KDE of reading scores by self-identified level (Fig. 46) clearly showed that there is little difference in the means of the two groups in this section of the test. The beginners had a mean of 2.88, while the Intermediates has a mean of only 2.5; while a t-test was not really required, it confirmed that there was no statistical difference in the means (t = 0.9061, df = 11.03, p-value = 0.3842). This again suggests that the two groups should be treated together in further analyses.

3.3.3 TEST SCORES AGAINST TEACHER-ASSIGNED LEVELS

The previous results were significant, but the overlap between beginners and intermediates was notable especially for the vocabulary in context and reading sections – there was no significant difference in the means. Analysing the overall scores of the participants against their levels suggested that several participants underestimated their levels (Table 1), and the data were reanalysed using levels assigned with respect to their overall scores. A score of 0 to 10 was classified as a beginner level, a score of 11 to 20 was classified as an intermediate level and a score of 20+ was classified as an advanced level.

Table showing Changes to levels assigned by the Researcher

PARTICIPANT	**Participant-identified level**	**Overall Pre-test Score**	**Teacher-assigned Level**
Participant 1	ADVANCED	24	ADVANCED
Participant 2	INTERMEDIATE	16	INTERMEDIATE
Participant 3	BEGINNER	16	INTERMEDIATE
Participant 4	BEGINNER	15	INTERMEDIATE
Participant 5	INTERMEDIATE	15	INTERMEDIATE
Participant 6	BEGINNER	13	INTERMEDIATE
Participant 7	BEGINNER	13	INTERMEDIATE
Participant 8	INTERMEDIATE	13	INTERMEDIATE
Participant 9	BEGINNER	13	INTERMEDIATE
Participant 10	BEGINNER	12	INTERMEDIATE
Participant 11	BEGINNER	12	INTERMEDIATE
Participant 12	BEGINNER	11	INTERMEDIATE
Participant 13	INTERMEDIATE	11	INTERMEDIATE
Participant 14	BEGINNER	11	INTERMEDIATE
Participant 15	BEGINNER	9	BEGINNER
Participant 16	BEGINNER	9	BEGINNER
Participant 17	BEGINNER	8	BEGINNER
Participant 18	BEGINNER	7	BEGINNER
Participant 19	BEGINNER	7	BEGINNER
Participant 20	BEGINNER	6	BEGINNER
Participant 21	BEGINNER	6	BEGINNER
Participant 22	BEGINNER	6	BEGINNER

Table 1 Changes made to participant levels using overall Pre-test score as a measure.

This would obviously affect the means of the overall score for beginners and intermediates as they have been artificially separated, but of greater interest is the effect it may have on the distinct sections of the test.

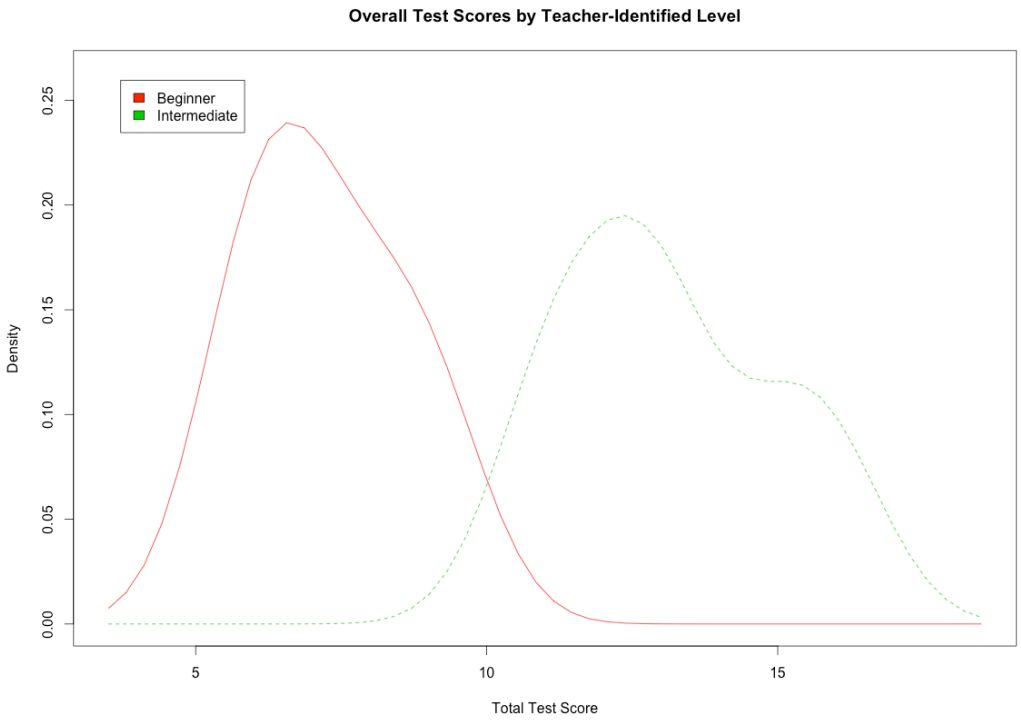


Fig. 47 Kernel Density Estimate of Overall test scores separated by Teacher-assigned Levels.

The graph of overall test scores by teacher-assigned level unsurprisingly had a greater separation between the two means (Beginners = 7.25, Intermediates = 13.15) (Fig. 47), and the differences were highly significant when the unpaired t-test was applied (t = -8.707, df = 18.51, p = 5.744e-08) - the p value is much lower than the original (p = 0.03876).

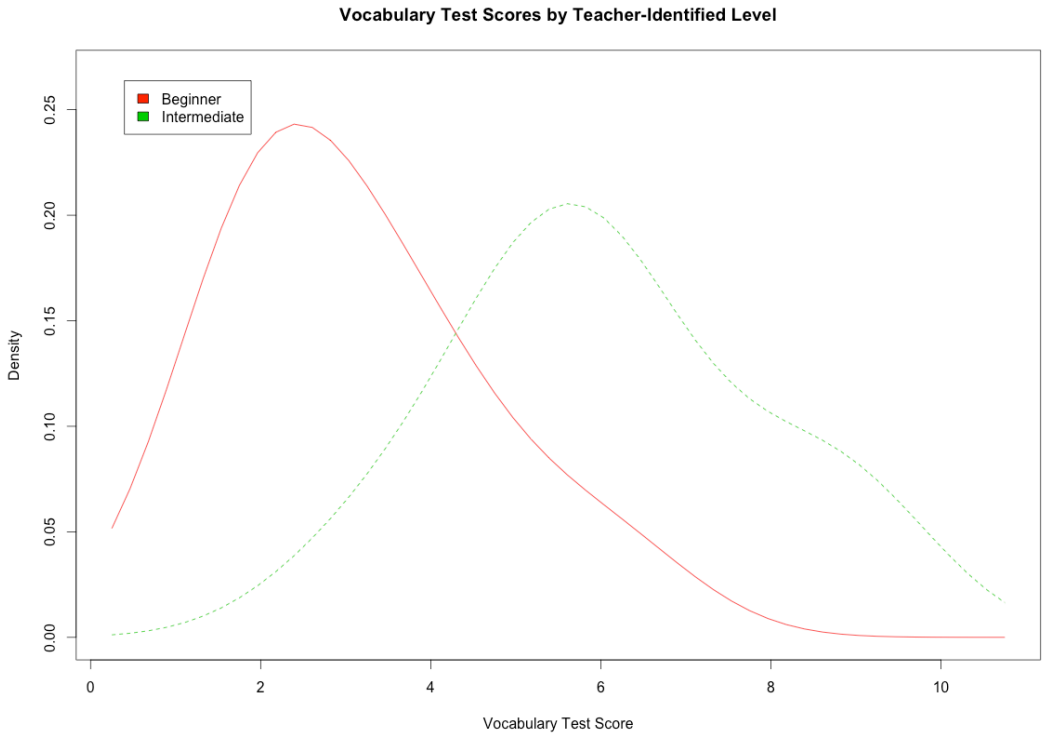


Fig. 48 Kernal Density Estimate of Vocabulary Scores separated by Teacher-assigned levels.

The KDE for Vocabulary when using the teacher-assigned levels (Fig. 48) showed a greater separation of the means (Beginners = 3.125, Intermediates = 6.077), and again the unpaired t-test had a much higher significance value (t = -4.113, df = 17.38, p = 0.0006968). This data suggests that the new definition of the participants' levels was a better fit for the data.

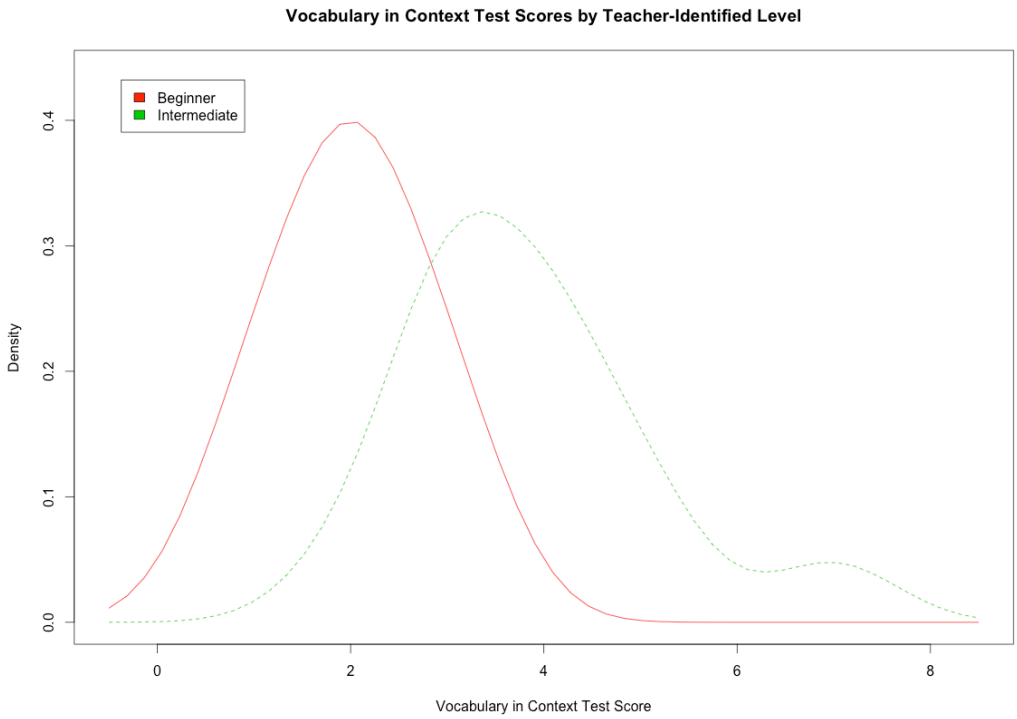


Fig. 49 Kernal Density Estimate of Vocabulary Scores separated by Teacher-assigned levels.

The teacher-assigned levels, when compared against the vocabulary in context scores (Fig. 49) showed a much clearer separation of the two groups; while the means of the two groups were still fairly similar (Beginners = 2.00, Intermediates = 3.846) the unpaired t-test confirmed that there was now a significant difference between them (t = -4.152, df = 19, p = 0.0005411).

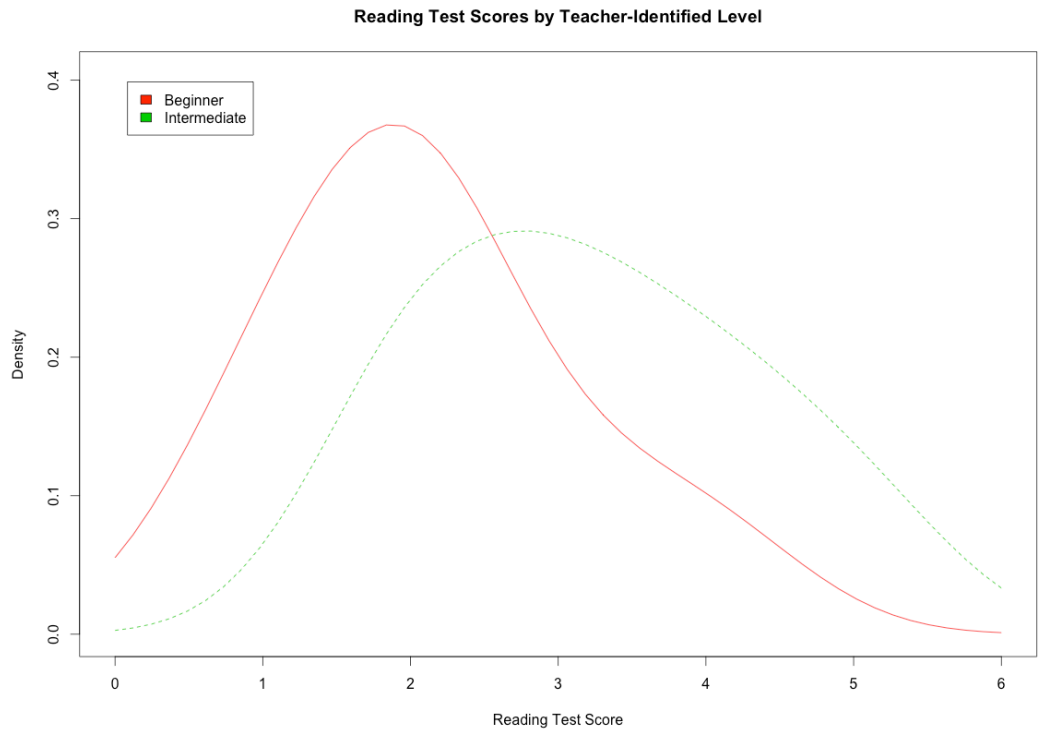


Fig. 50 Kernel Density Estimate of Reading Scores separated by Teacher-assigned levels.

The levels assigned by the researcher when applied to the reading section scores (Fig. 50) also clearly separated the means of the two groups (Beginners = 2.125, Intermediates = 3.231) and the unpaired t-test also showed a significant difference between these means (t = -2.388, df = 16.12, p = 0.02954).

These tests clearly showed that the group was highly heterogeneous with respect to ability. There were clearly three levels of ability in the classroom with eight participants classed as beginners, 13 participants classed as intermediates, and one participant classed as advanced. The consequence of these findings was that as there was a marked difference in the group, these categories had to be treated separately in the analyses to find relationships between their habits and their abilities in the various types of vocabulary knowledge. A negative aspect of this was that the tests would have to be performed on smaller groups and the advanced participant could not be included in these tests as n=1 which was not enough for any of the statistical tests.

3.3.4 MANOVA AND ANOVA TESTS

MANOVA tests were chosen to analyse the data as it is a Multivariate Analysis of Variance that allowed us to test multiple dependent variables, in this case the results of the three sections of the Pre-test, against multiple independent variables, which were the responses to the questionnaire. By using MANOVA, it was possible to go beyond looking at the effect of one independent variable and look for patterns or interactions between independent variables (Scheiner, 99-102). A simple calculation within the statistics program (RStudio, Version 0.98.501) illustrates the ANOVA responses of each individual variable. Significance was measured at 95%.

3.3.4.1. EFFECTS OF BEGINNER LEVEL PARTICIPANT HABITS ON PRE-TEST SCORES

Due to the small number of participants within this group (n=8), no more than two independent variables could be used at the same time to test for correlations between habits.

At first sight, the results looked very promising with several of the MANOVAs showing significant effects (Appendix 7). However, on closer inspection of the results, it was found that one of the data points was seriously skewing the results. The participant in question got one of the higher scores in the vocabulary section, yet claimed to never watch sitcoms. This result was causing many of the ANOVAs of individual parts of the test – particularly the vocabulary section – to show significant links when there were none obvious to see.

As a result of this – given that one of the aims of this analysis was to seek patterns of habits that may influence participant ability in vocabulary – this participant was removed from the matrix and the tests were rerun (Appendix 8). The results of the new set of tests were much less significant and only one slightly significant correlation was found related with how often the participants had watched sitcoms the previous week.

```
Response PRT3 :
            Df Sum Sq Mean Sq F value Pr(>F)
howoften     2   5.36   2.679    7.14  0.048 *
Residuals    4   1.50   0.375
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

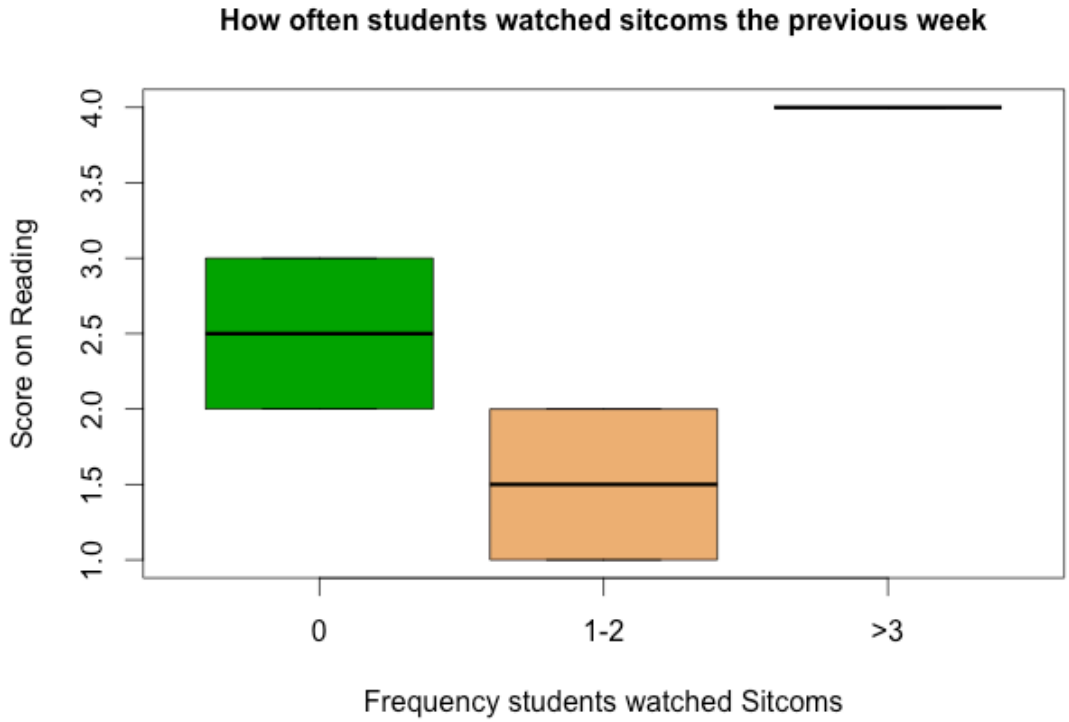


Fig. 51 Boxplot showing the results of Reading score against Frequency participants watched Sitcoms the previous week.

As the graph in Fig. 51 showed, there was a clear distinction between the frequency participants watch sitcoms and their score on reading; however, the distinction did not take into account the fact that participants who did not watch any sitcoms at all did better than those who watched 1-2 hours of sitcoms. A logical reading of this graph was that although statistically it was significant, it essentially meant little.

3.3.4.2. EFFECTS OF INTERMEDIATE LEVEL PARTICIPANT HABITS ON PRE-TEST SCORES

The same tests were performed on the intermediate participants. In this case, no significant effect of habits was found for the results of the pre-test (Appendix 9). An intermediate participant also claimed to never watch sitcoms and so to be fair, the tests were also run with the participant who never watched sitcoms removed from the sample (Appendix 10), but again no significant correlations were found.

3.3.4.3. EFFECTS OF PARTICIPANT HABITS AT ALL LEVELS ON PRE-TEST SCORES

As no significant effects were found for level of participants, the data were pooled and the tests were rerun (Appendix 11). The first set of tests included all participants except the advanced participant. A fairly significant relationship was found between their vocabulary in context score and the frequency with which participants watched sitcoms combined with the number of sitcoms they watched:

```
Response PRT2 :
                 Df Sum Sq Mean Sq F value Pr(>F)
watch:No.Sitcoms 10   33.8    3.38    5.01 0.0089 **
Residuals        10    6.8    0.68
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

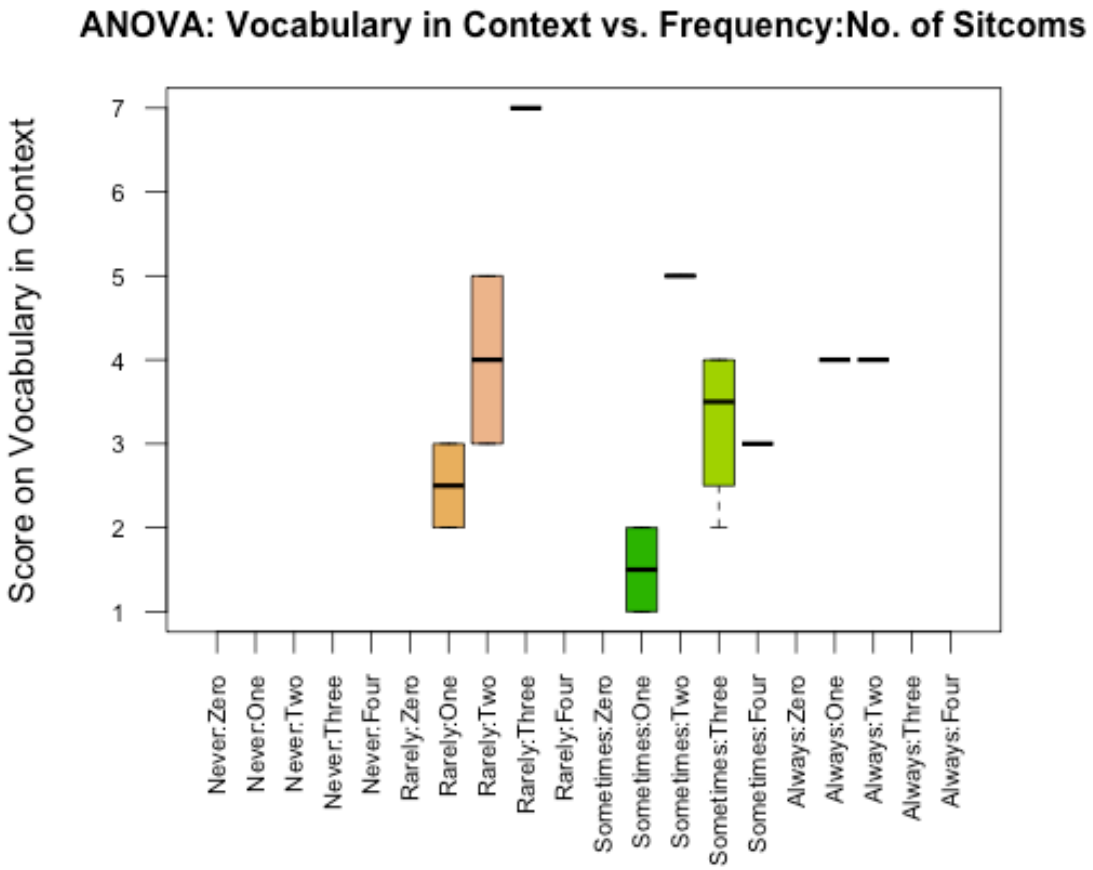


Fig. 52 Boxplot showing the scores on the Vocabulary in Context section of the pre-test against Frequency with which participants watch sitcoms combined with the number of Sitcoms they watch.

As can be seen by the plot (Fig. 52), as with the response of beginners reading scores to the frequency with which they watch sitcoms (Fig. 51), it was difficult to understand the significant relationship until the boxplot was read looking at the first combined variable separately; once done it was possible to see that there was a trend towards improving grades relative to the number of sitcoms a participant watched. A similar, yet slightly more significant, result was found for the frequency with which participants watched sitcoms combined with the frequency with which they used English outside of the classroom against their vocabulary in context score (Fig. 53):

```
Response PRT2 :
            Df Sum Sq Mean Sq F value Pr(>F)
use:watch    8   31.1    3.88    4.91 0.0071 **
Residuals   12    9.5    0.79
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

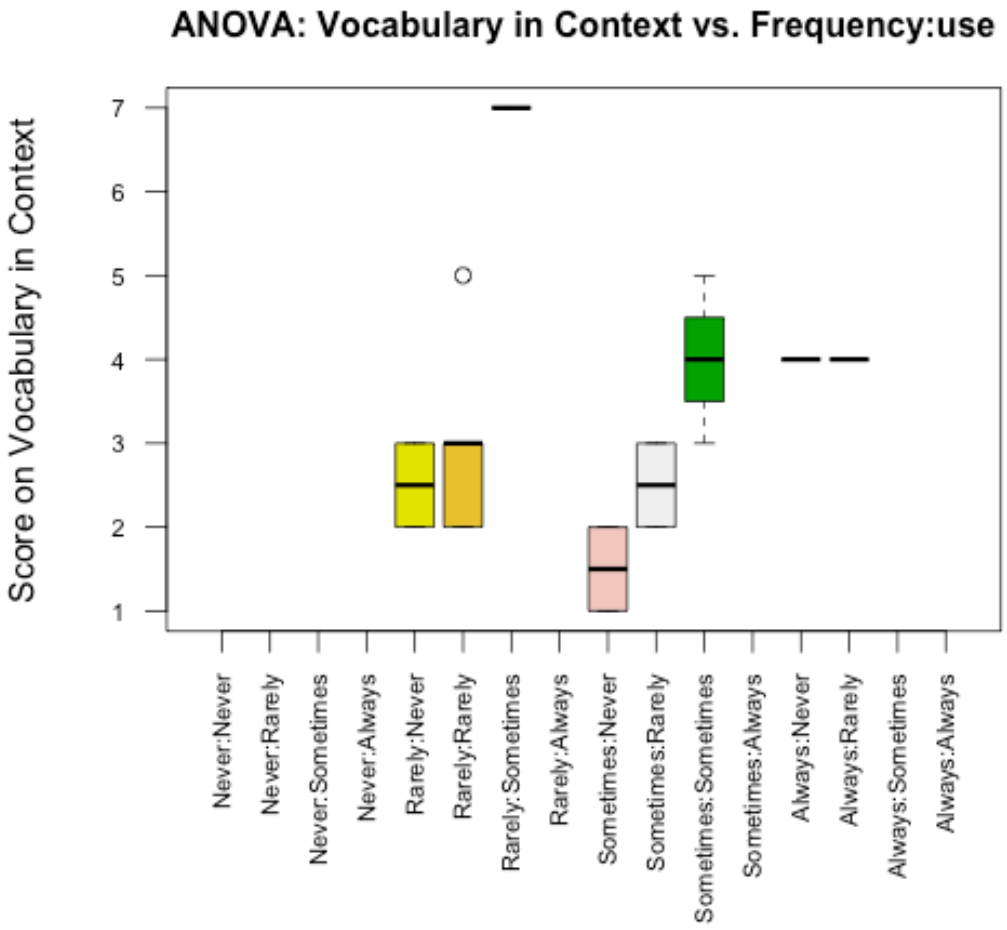


Fig. 53 Boxplot showing the scores on the Vocabulary in Context section of the pre-test against Frequency with which participants watch sitcoms combined with the frequency with which they use English outside the classroom.

This plot had a better correlation, especially in the “sometimes watch sitcoms” category, and a general trend towards higher ability with increased frequency of use of English outside the classroom (note again the trends within the categories; those who rarely watch sitcoms generally did better as they increase their use of English outside of the classroom, as did those who sometimes watch sitcoms).

These results would suggest that there was no one specific category that affected the participants' vocabulary in context ability but a combination of categories may exert influence.

The tests were rerun removing the two participants that were also removed from the beginner and intermediate categories due to having nothing within the sitcom categories and the results were very similar (Appendix 12); however in this case one individual factor did stand out – the use of English outside of the classroom:

```
Response PRT2 :
            Df Sum Sq Mean Sq F value Pr(>F)
use          2   13.3    6.64    4.74  0.024 *
Residuals   16   22.4    1.40
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

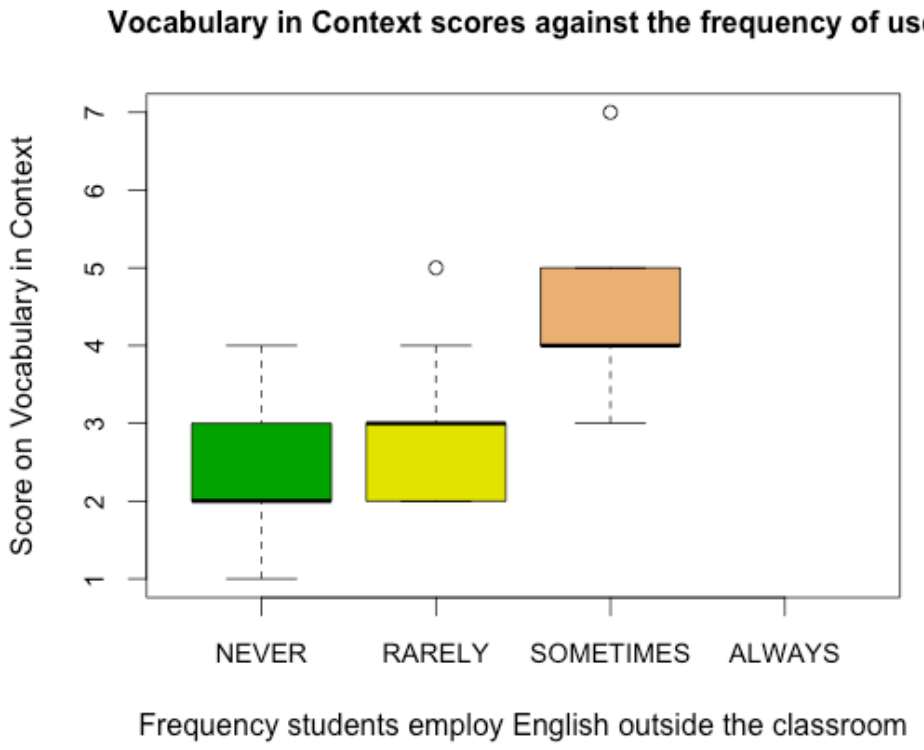


Fig. 54 Boxplot showing the relationship between Vocabulary in Context Scores and the frequency with which participants use English outside of the classroom.

Fig. 54 was the first to really show any kind of consistent relationship between scores on the pre-test and habits. There was a clear positive relationship between the frequency with which participants used English outside the classroom and their scores in the vocabulary in context section of the pre-test. The results that were significant in the previous tests with the whole group remained significant in this round of tests; the relationship between their vocabulary in context score and the frequency with which participants watched sitcoms combined with the number of sitcoms they watched became more significant ($p = 0.081$), while for the frequency with which participants watched sitcoms combined with the frequency with which they used English outside of the classroom against their vocabulary in context score the relationship became less significant ($p = 0.015$).

3.3.4.4. DISCUSSIONS AND CONCLUSIONS ABOUT THE RELATIONSHIPS BETWEEN PRE-TEST SCORES AND PARTICIPANT CHARACTERISTICS AND HABITS

There were essentially no relationships between participant habits and their scores on the pre-test. The few relationships that could be considered as significant relate to the use of the language outside the classroom, and a relationship between the frequency participants watch sitcoms combined with either the use of the language outside of the classroom or with the number of different sitcoms participants watch.

Over all, there were not enough samples to truly explore the relationships between the categories satisfactorily as to do these tests effectively several data values have to fall into the majority of categories, and when data such as use of English and frequency with watching sitcoms is combined, there were many blank categories and several data points that had only one data value.

Analysing the results as they stand, it suggested that the need to use the language (frequency of use outside the classroom) compelled participants to absorb more vocabulary and use vocabulary in context tools to communicate. In other words, this conditioning – added to the greater practice from watching more English language sitcoms with greater frequency – improved participants' abilities in this area of language competence. By the same token, there was no discernible effect of habits in the areas of raw vocabulary knowledge or reading vocabulary ability.

3.4. EFFECT OF USING SITCOMS AS A TOOL FOR VOCABULARY LEARNING IN THE CLASSROOM

As the effects of participants' habits on abilities in vocabulary tests were minimal, it was possible to suggest that any effects seen on the post-test were largely due to the treatment itself. The first set of statistical tests investigated if the treatment had had any significant effect on the participants' scores on the test in general and on each of the distinct parts of the test. The groups identified by the teacher as being beginners or intermediates were again used and the advanced participant as a singleton was omitted as being impossible to compare.

3.4.1 COMPARISON OF FINAL RESULTS BETWEEN BEGINNERS AND INTERMEDIATES

The results of a series of unpaired t-tests showed that overall the participants retained the differences between the groups with the means being significantly different in all but the raw vocabulary section of the test suggesting a great improvement in raw vocabulary by the beginner group (Table 2); however, of greater interest in this study is how the groups had improved.

	Mean Beginners	Mean Intermediates	t	Df	p-value
Overall	11.00	14.77	-3.851	13.33	0.0072
Vocabulary	5.75	6.54	-1.212	11.95	0.2488
Vocabulary in Context	3.5	5.08	-2.469	18.13	0.0237
Reading	1.75	3.15	-3.171	13.33	0.0072

Table 2 Unpaired t-test results for posttest comparing beginners and intermediates.

3.4.2 COMPARISON OF BEGINNERS' PRE-TEST AND POST-TEST RESULTS

3.4.2.1. OVERALL PRE-TEST AND POST-TEST RESULTS FOR BEGINNERS

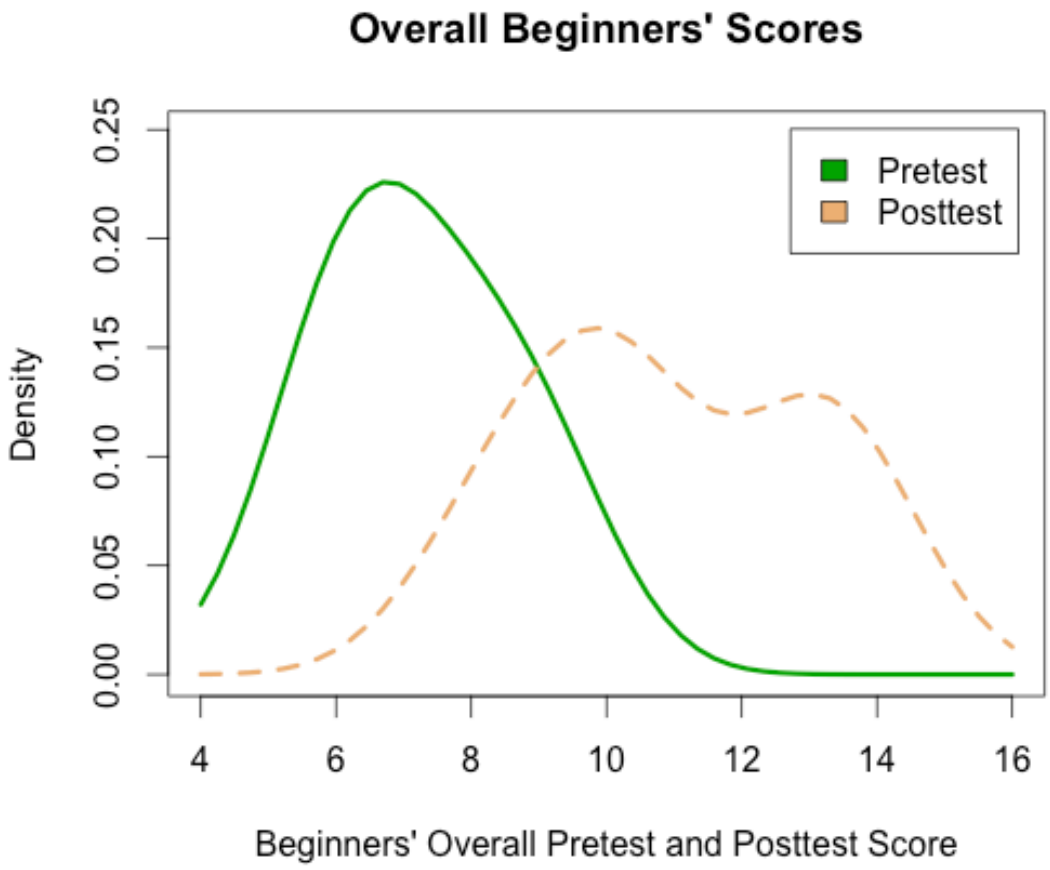


Fig. 55 Kernel Density Estimate for Beginners' Overall Pre-test and Post-test Scores.

Fig. 55 demonstrated a clear shift in the overall test scores for beginners. A paired t-test showed that this shift was significant (t = -6.355, df = 7, p-value = 0.0003834) with a mean improvement of 3.75 points. There was a marked improvement in overall participant performance.

3.4.2.2. PRE-TEST AND POST-TEST RESULTS BROKEN DOWN BY AREAS

While the overall performance on the test was of interest, the distinct areas of vocabulary ability were of greater importance in the context of the study and thus had to be examined separately.

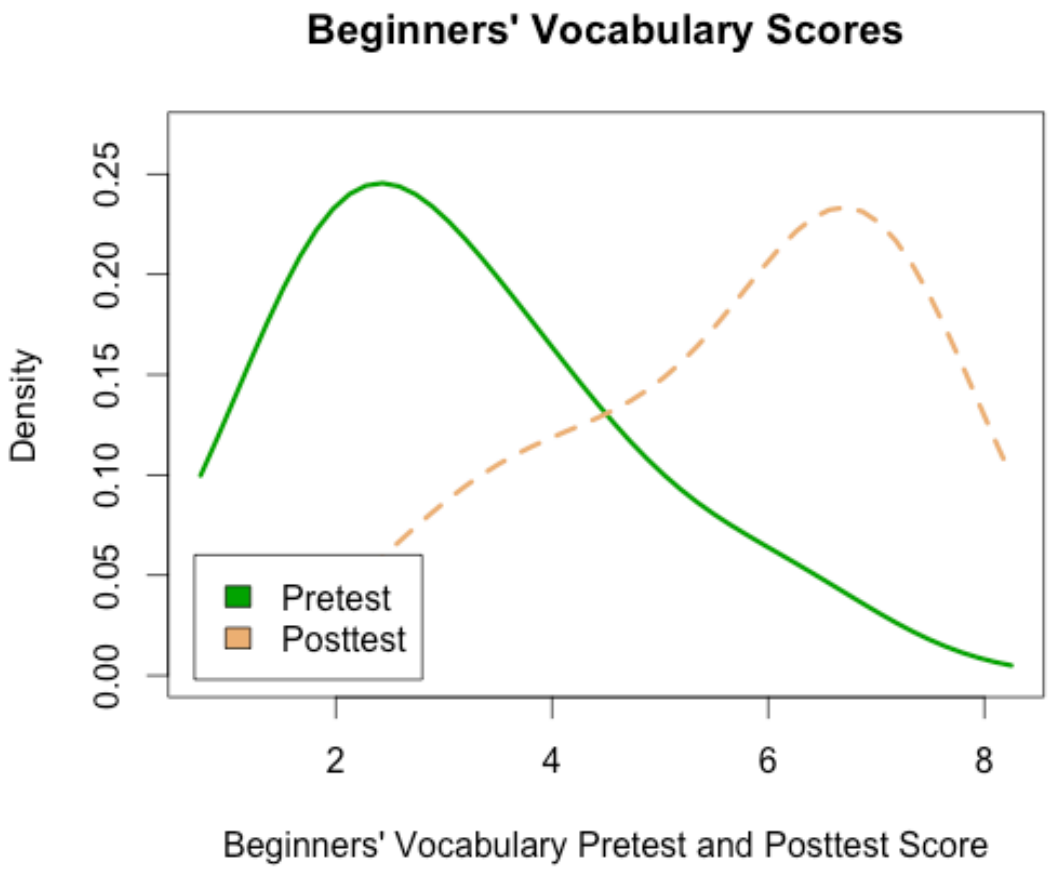


Fig. 56 Kernel Density Estimate of Beginners' pre-test and post-test scores in the vocabulary section.

The shift of the mean in the raw vocabulary section was very notable (Fig. 56), and the paired t-test confirmed that the difference in these means was highly significant (t = -5.274, df = 7, p-value = 0.001156) with a shift of the mean score of 2.65 points.

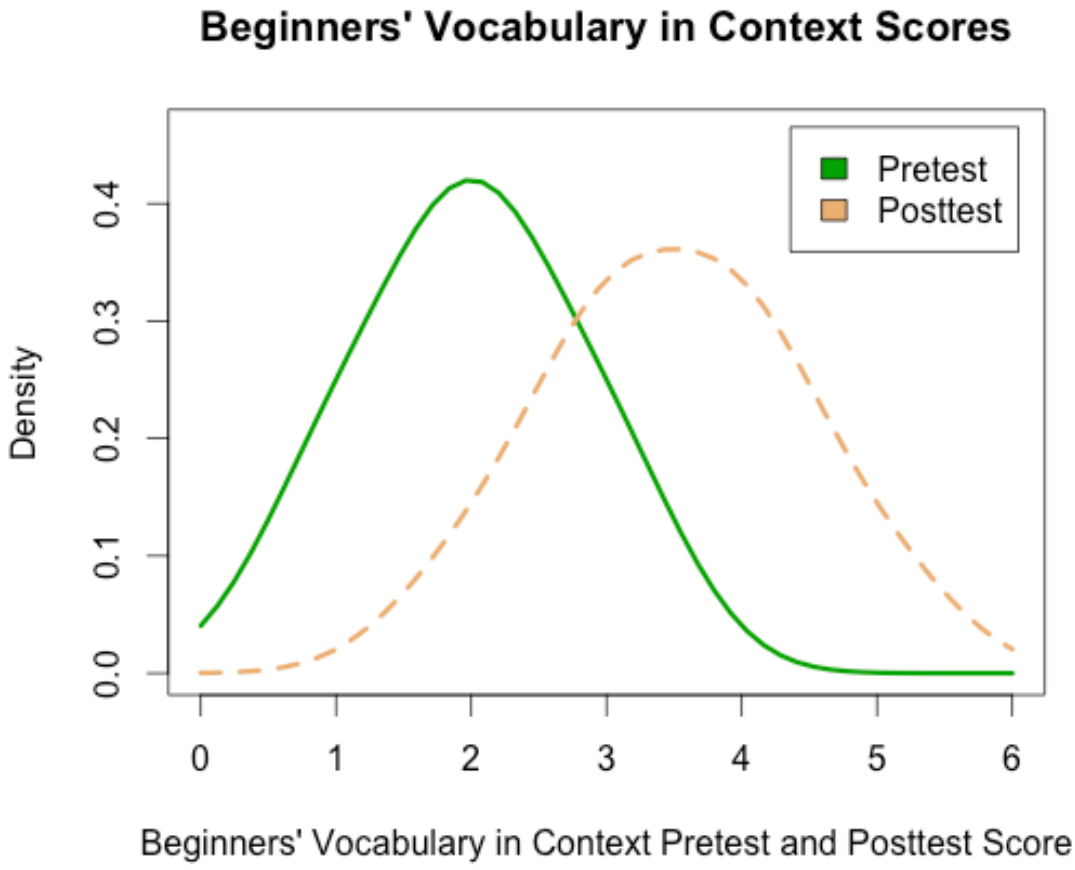


Fig. 57 Kernel Density Estimate for Beginners' pre-test and posttest scores on the vocabulary in context section.

The results for the vocabulary in context section shown in Fig. 57 again showed a clear difference in the means, and although the difference was smaller than the previous vocabulary section (mean difference = 1.5), it was still statistically significant according to the paired t-test (t = -2.806, df = 7, p-value = 0.02629).

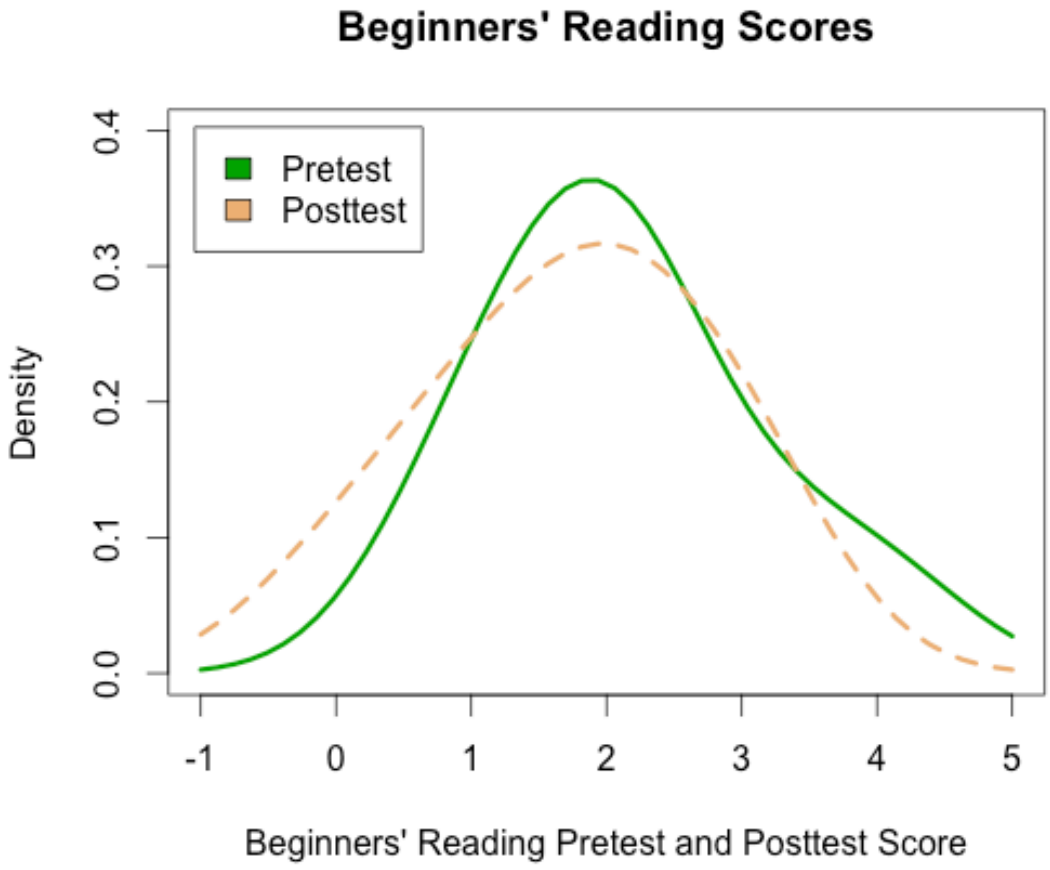


Fig. 58 Kernel Density Estimate of Beginners' pre-test and post-test scores on the reading section.

Fig. 58 clearly showed that there had been no improvement in the reading section of the test by beginner participants (t = 1.158, df = 7, p-value = 0.2849) with an actual lowering of mean performance with the mean score dropping 0.38 points.

These results showed that the treatment had a positive effect on participants' abilities in raw vocabulary and vocabulary in context, while having no effect on their reading abilities.

3.4.3 OVERALL PRE-TEST AND POST-TEST RESULTS FOR INTERMEDIATES

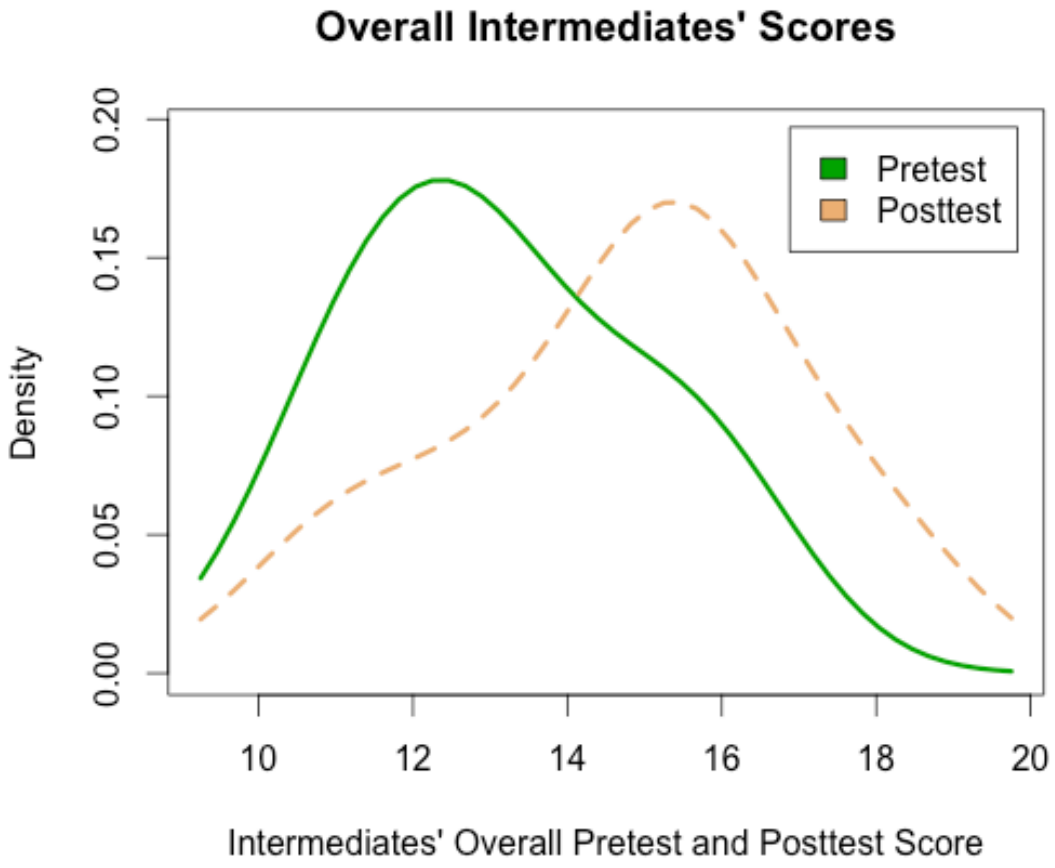


Fig. 59 Kernel Density Estimate for Intermediates' overall performance on the pre-tests and post-tests.

Intermediates did show an overall improvement of 1.62 points (Fig. 59), which was significant (paired t-test: t = -2.941, df = 12, p-value = 0.01236) although this improvement was much less than the beginners.

3.4.3.1. PRE-TEST AND POST-TEST RESULTS BROKEN DOWN BY AREAS

Again it is important to assess where the intermediate participants had improved within the test to understand where and how the treatment had helped the participants.

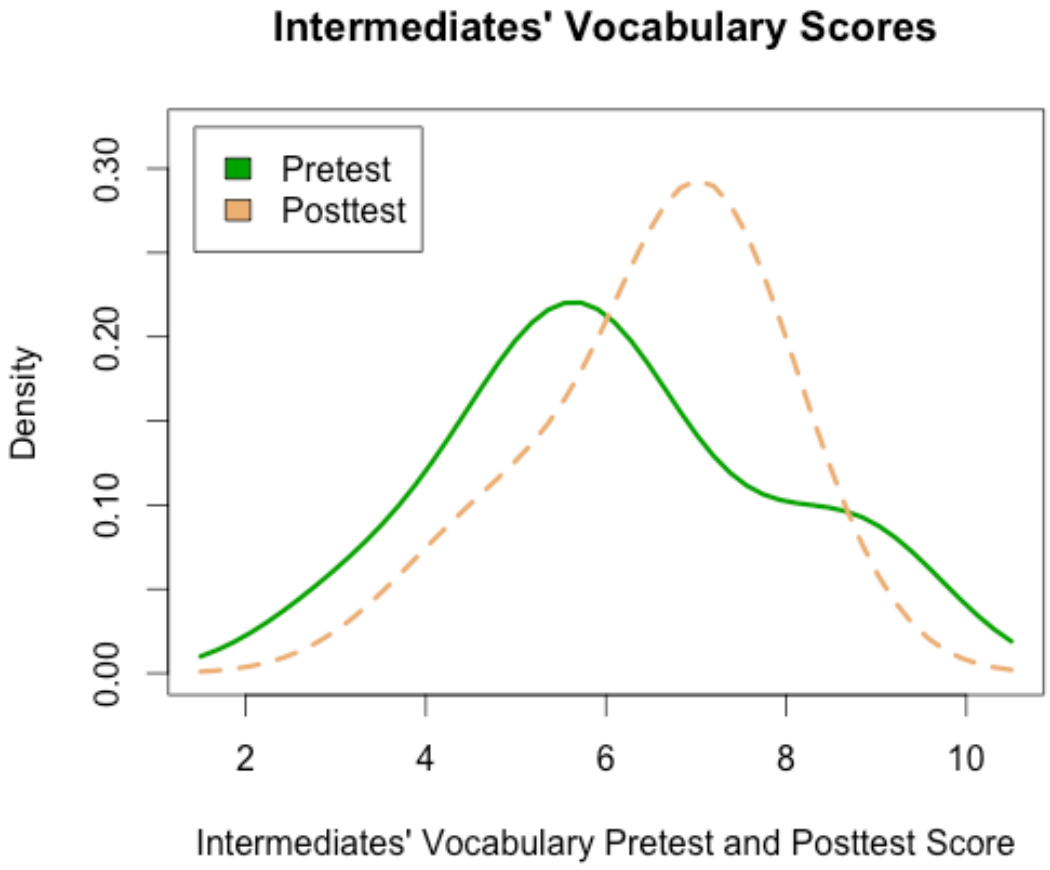


Fig. 60 Kernel Density Estimate of Intermediates pre-test and post-test scores on the Vocabulary section.

While there appeared to be an improvement in the mean in Fig. 60, what could be seen is more similar scores of the participants with an improvement in the mean of only 0.46 points, the paired t-test confirmed that this result was not significant (t = -0.9448, df = 12, p-value = 0.3634).

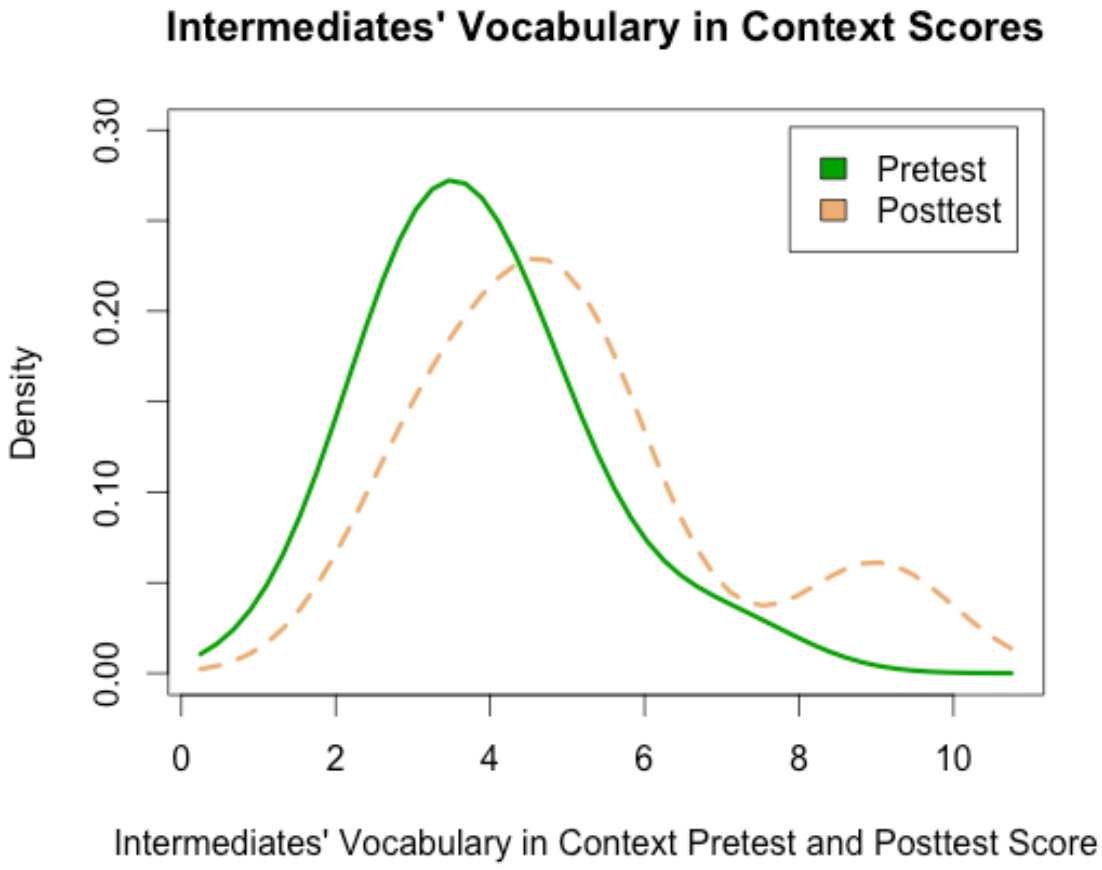


Fig. 61 Kernel Density Estimate of intermediates pre-test and post-test scores on the vocabulary in context section.

The curves shown in Fig. 61 showed very little change in the scores for the majority of the participants although two participants who did exceptionally well (as seen in the second hump of the Post-test) elevated the mean difference 1.23 points. This difference was still not significantly different (t = -2.049, df = 12, p-value = 0.06303).

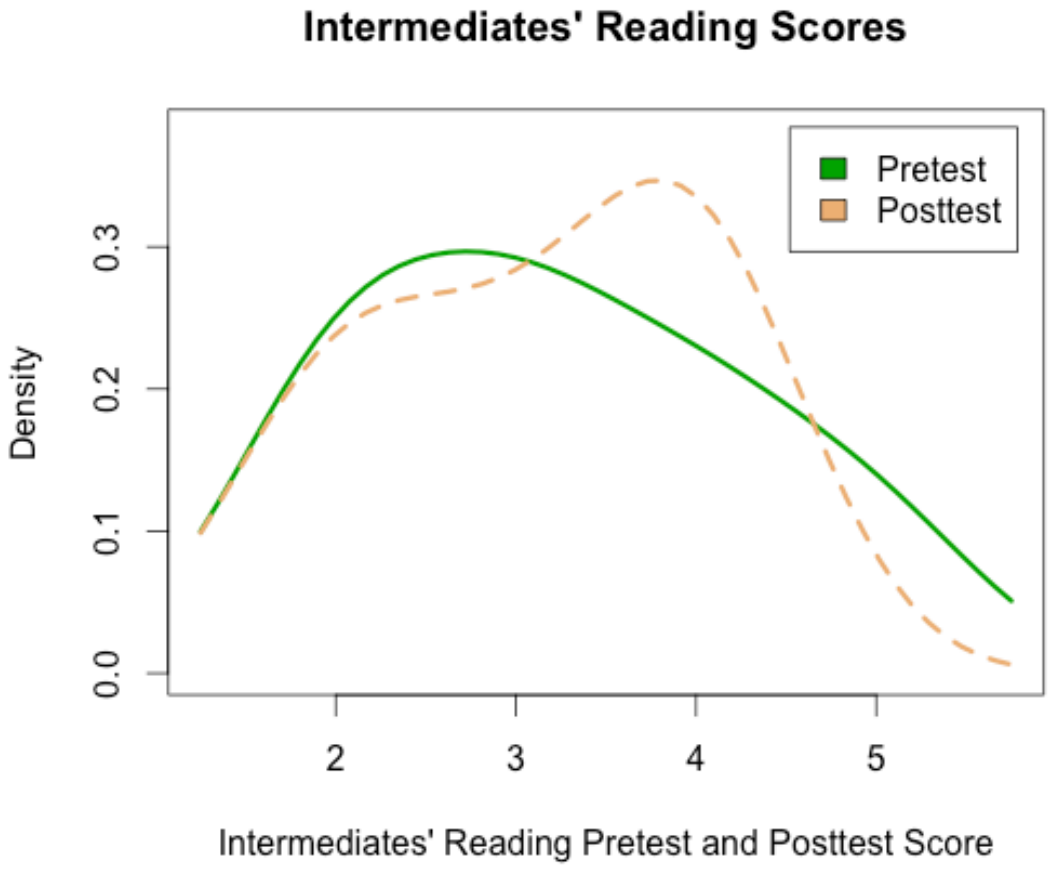


Fig. 62 Kernel Density Estimate for Intermediates' pre-test and posttest scores in the reading section.

Fig. 62 showed the results for the reading section and it was obvious that there has been little change about the mean. In fact there had been an overall drop in mean score by 0.08 points, although this was not significant (t = 0.21, df = 12, p-value = 0.8372). The change in shape to the curve was due to more participants getting 4 out of seven, but many participants actually did worse on the second test and so the overall mean is the same.

These tests showed that while the intermediate participants did make significant improvement to their overall score, it could not be attributed to any particular section of the test.

3.5. EFFECT OF TREATMENT ON THE TWO LEVELS

3.5.1 OVERALL IMPROVEMENT OF THE TWO LEVELS

The previous section showed that the treatment did not affect the two levels equally, so an exploration of the differences between the improvements was merited.

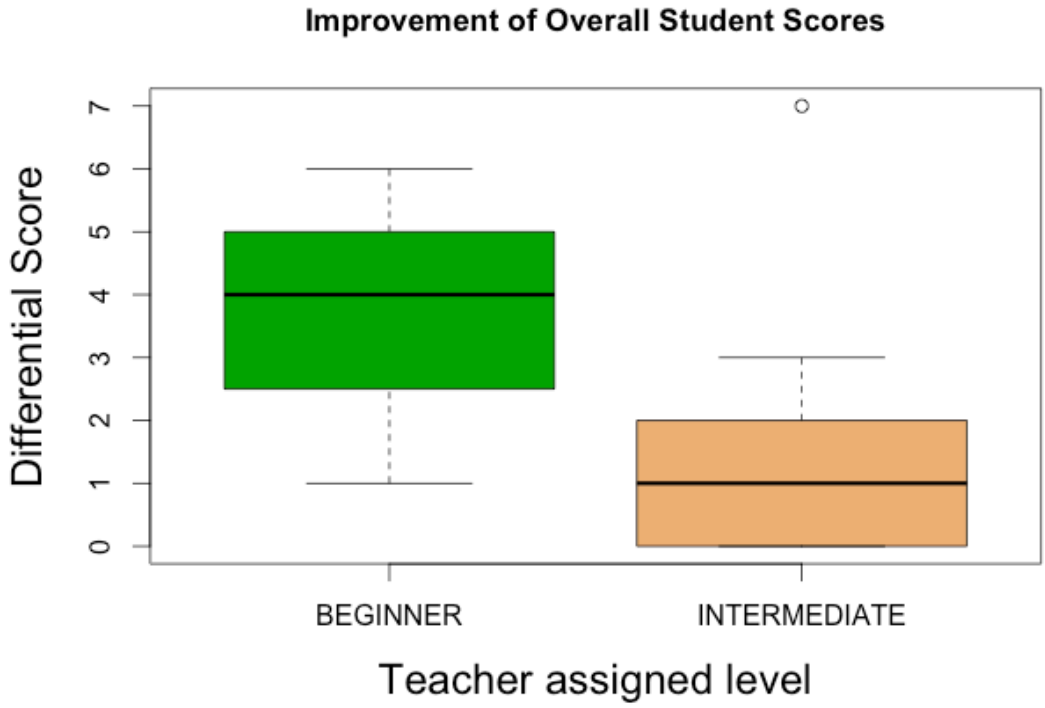


Fig. 63 Boxplot showing the overall improvement of participants separated by teacher-assigned level.

Fig. 63 clearly showed that the beginners improved their scores in general a lot more than the intermediate participants (Mean beginners = 3.75, mean intermediates = 1.62). An unpaired t-test confirmed that the difference was significant (t = 2.648, df = 16.96, p-value = 0.01695).

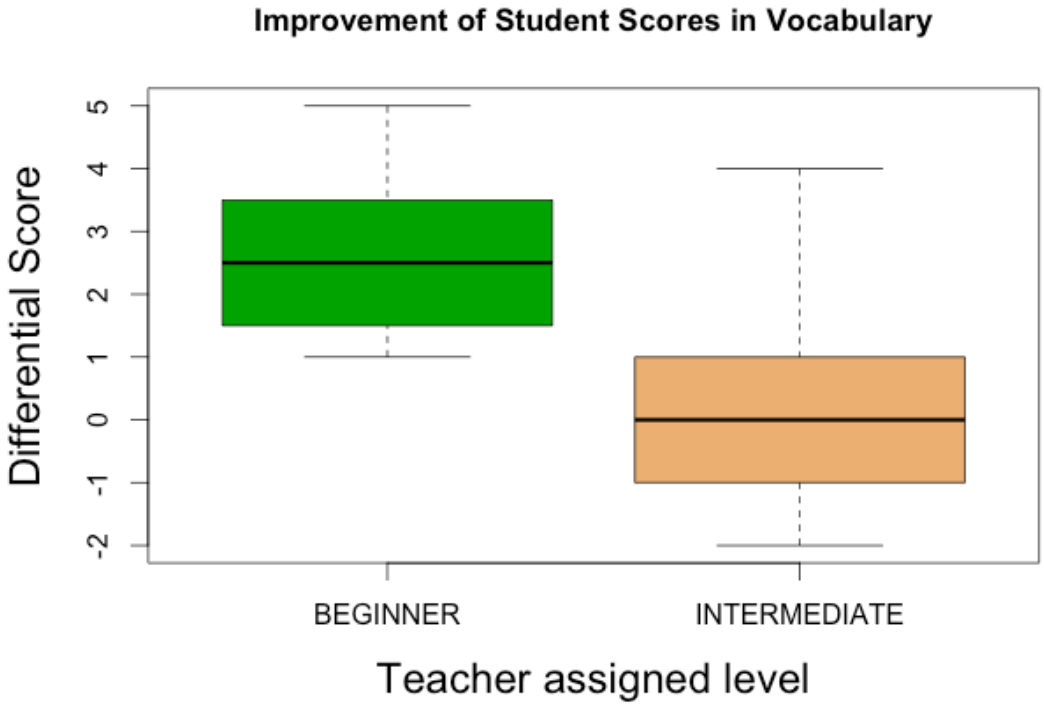


Fig. 64 Boxplot showing the improvement of participants on the vocabulary section of the test separated by Teacher-assigned level.

Again the boxplot (Fig. 64) showed a much better improvement of scores by the beginners (mean beginners = 2.63, mean intermediates = 0.46). An unpaired t-test confirms the significant difference between the two groups (t = 3.102, df = 17.51, p-value = 0.006307). Looking at the graph carefully, it could be noted that many of the intermediates actually have a negative difference in score – they did worse on the post-test when compared to the pre-test.

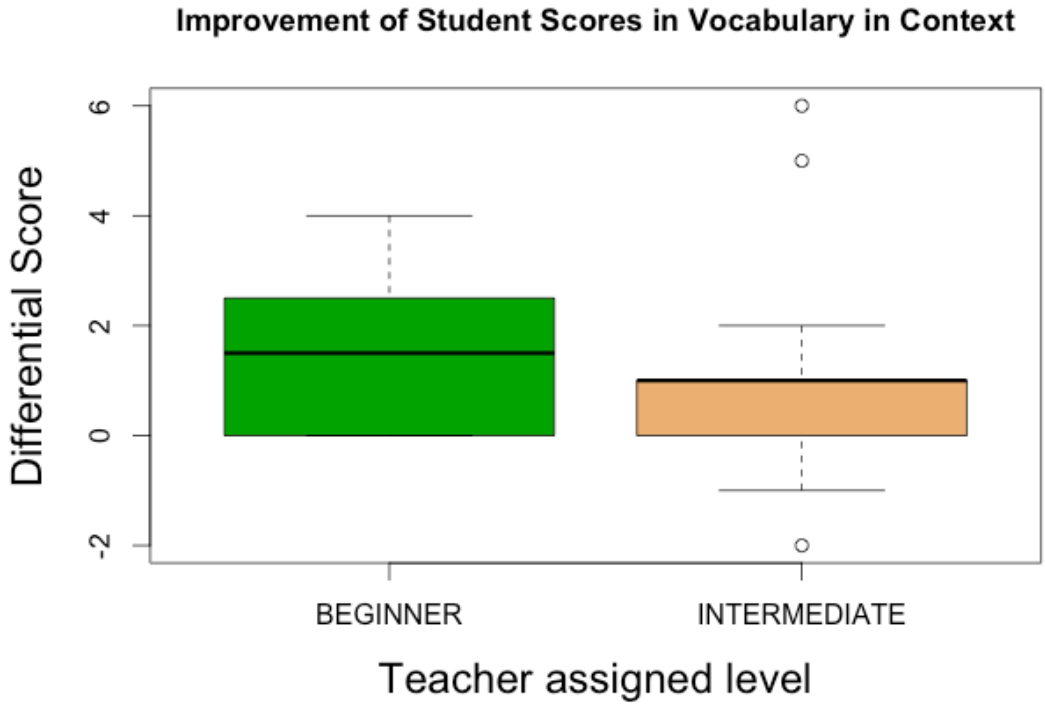


Fig. 65 Boxplot showing the difference in the pre-test and post-test scores on the vocabulary in context section of the test separated by teacher-assigned level.

Fig. 65 showed mixed results; while there was generally a small improvement of the beginner participants (mean = 1.5) the mean performance of the intermediate group was lower (mean = 1.23). The circles on the graph are outliers, data points that are far away from the mean, and in the intermediate group we can see that some participants did improve substantially, although others did less well than in the pre-test. A t-test confirmed that these results were not significantly different (t = 0.3348, df = 18.57, p-value = 0.7415).

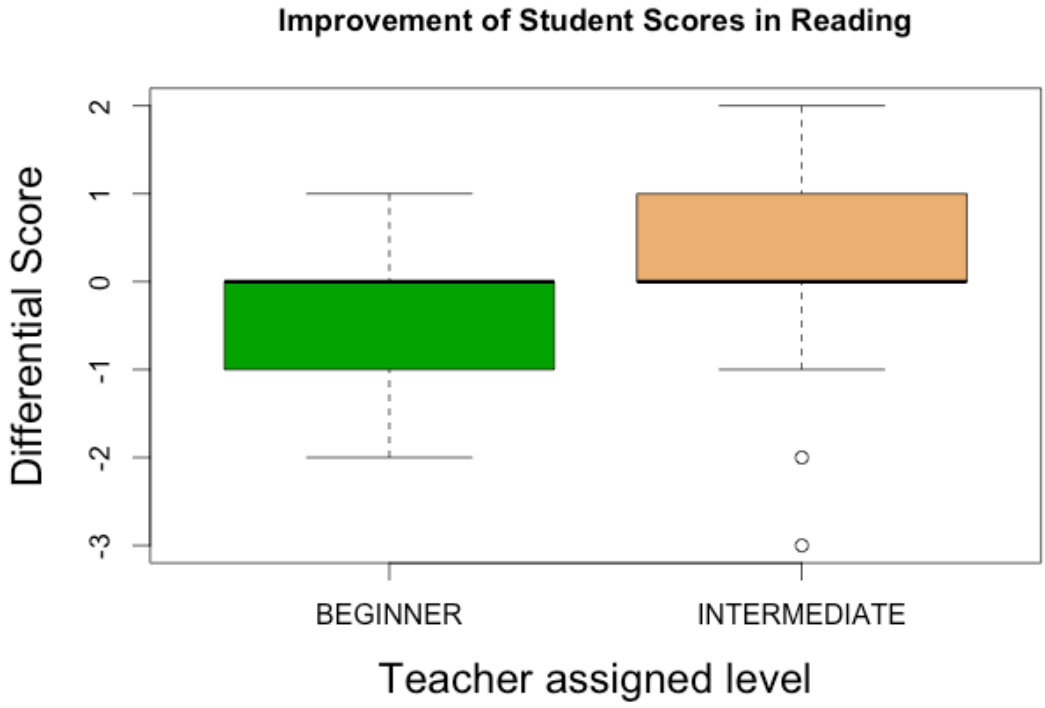


Fig. 66 Boxplot showing the differences in score on the pre-test and post-test on the reading section separated by Teacher-assigned level.

There was very little improvement of participants in this section in either group (Fig. 66). Mean differences were negative in both groups (beginners = - 0.38, intermediates = - 0.08) and an unpaired t-test confirmed no significant difference between the groups (t = -0.6097, df = 18.6, p-value = 0.5495). However, within the intermediate group several negative outliers could be seen which brought the overall improvement into negative numbers – one participant, for example, scored 5 in the pre-test and only 2 in the post-test.

3.6. INTERVIEWS

Post treatment interviews were done with the participants to find out their reactions to the treatment and find out how they felt the treatment had helped them learn English. The participants were interviewed in small groups due to time constraints.

The results of the interviews were tabulated and separated according to the teacher assigned level to better understand how these two groups felt as they were

of different levels.

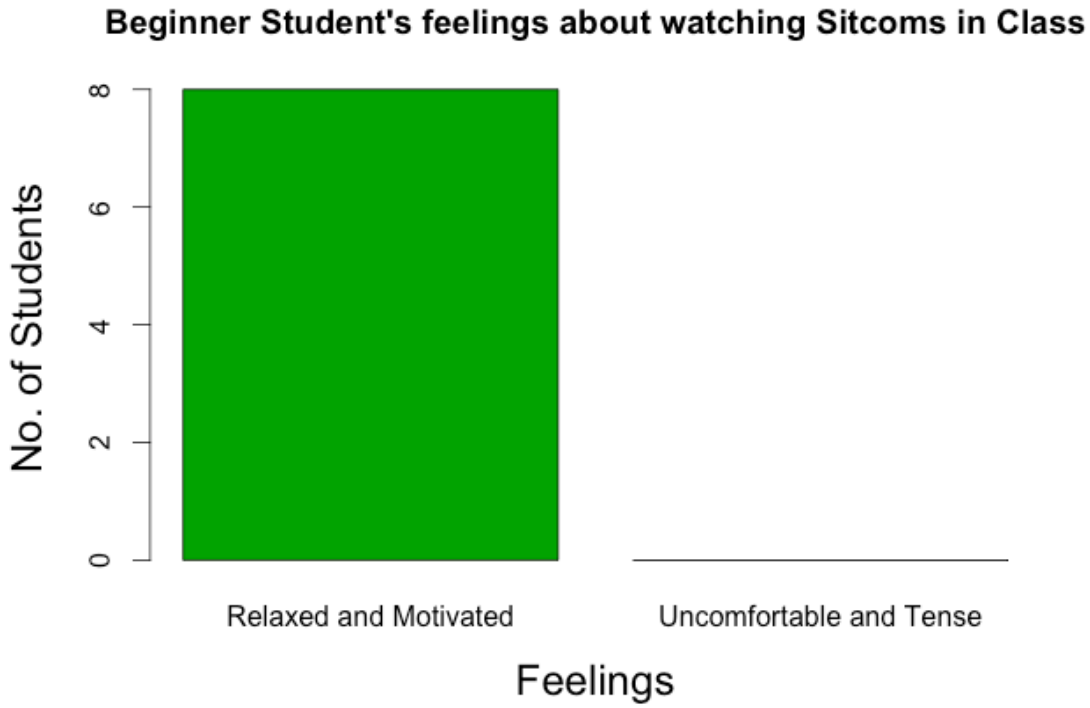


Fig. 67 Histogram of beginners participants' feelings during the treatment.

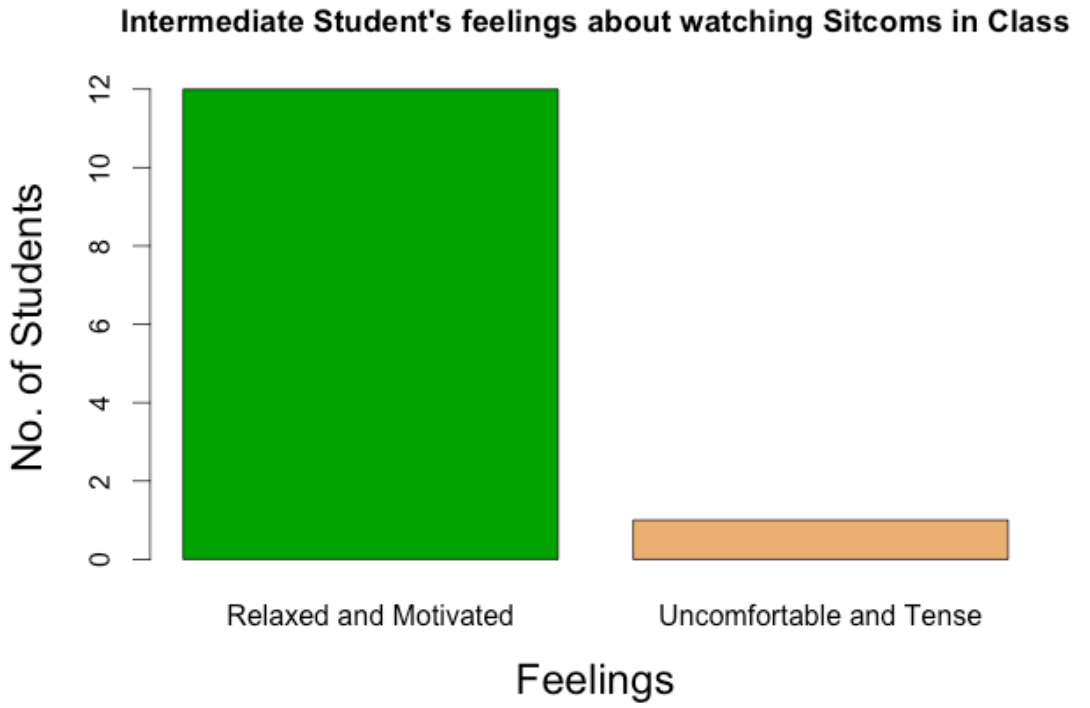


Fig. 68 Histogram of intermediate participants' feelings during the treatment.

Whether the treatment was successful or not, it was important to gauge how the participants reacted during and after the treatment and in general the two levels both felt comfortable during the treatment, although one participant did not (Fig. 67 and Fig. 68). As a classroom activity, the treatment was successful in the sense that the participants did not have problems with the treatment itself, although as previously noted the differing levels finished the set tasks at different times, which must be addressed in future treatments.

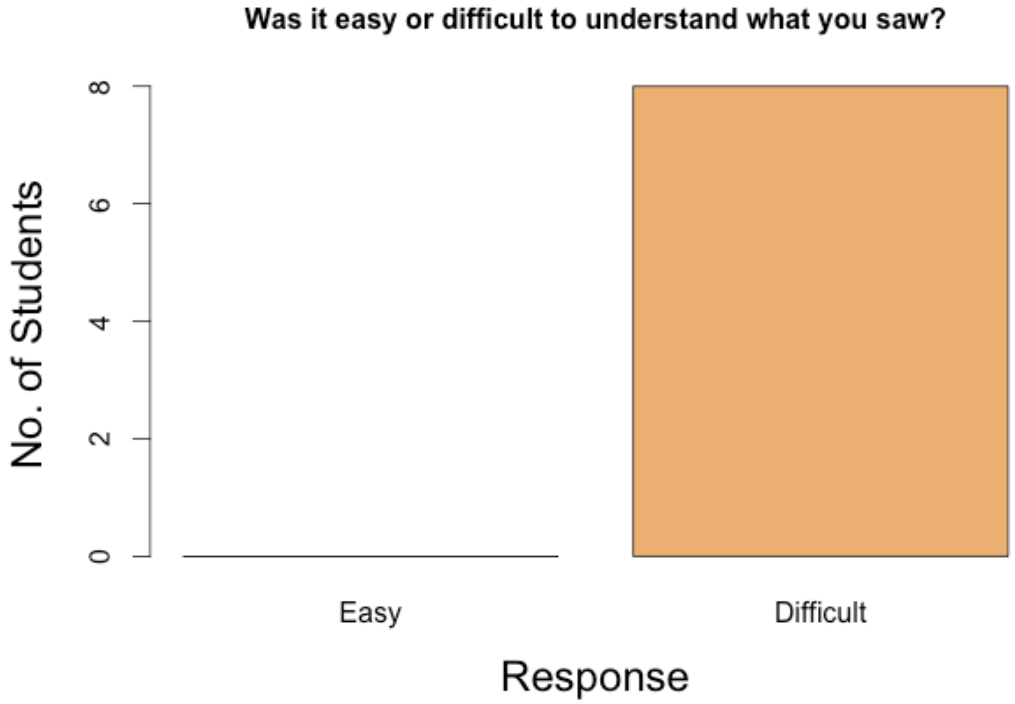


Fig. 69 Histogram of intermediate participants' feelings during the treatment.

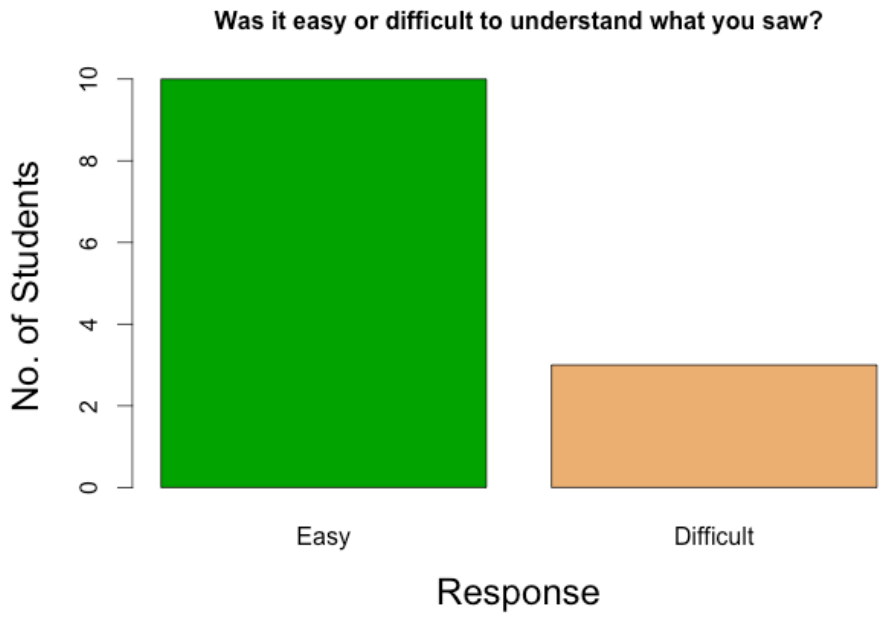


Fig. 70 Histogram of how difficult intermediate participants felt understanding what they were watching.

The second question asked the participants how easy it had been to understand what they were watching (Fig. 69 and Fig. 70). Here the levels distinguished themselves in how they felt the watching of sitcoms only in English was; all of the beginners felt this part of the treatment was difficult while only two of the twelve intermediate participants thought that this part of the treatment was difficult.

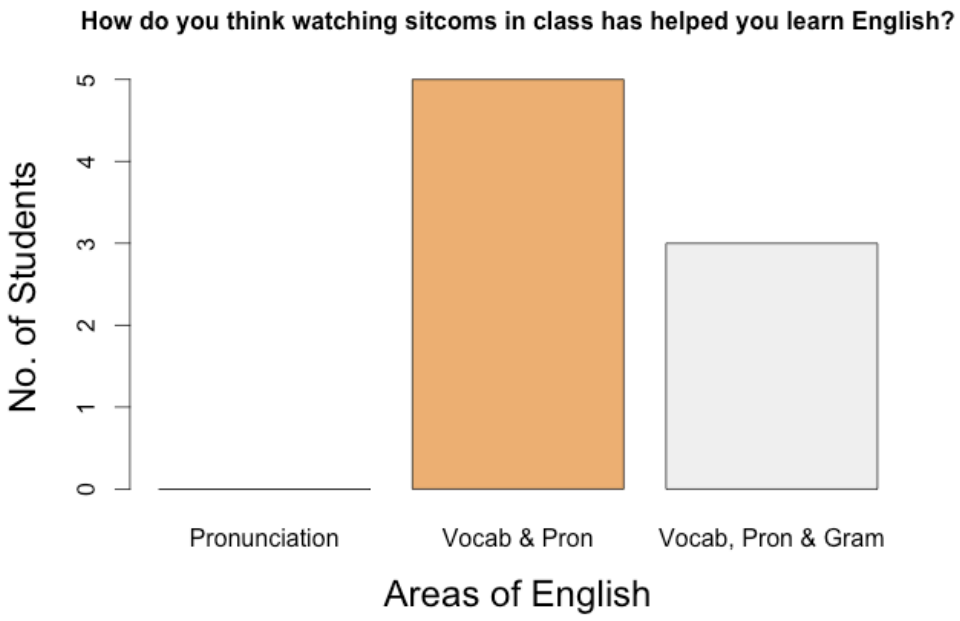


Fig. 71 Histogram of how beginner participants felt that watching sitcoms in class had helped them in English.

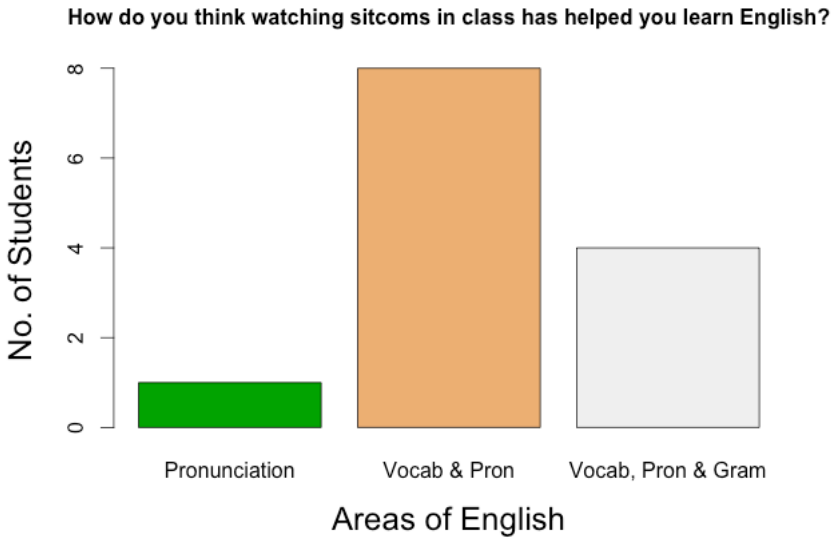


Fig. 72 Histogram of how intermediate participants felt that watching sitcoms in class had helped them.

Figures 71 and 72 showed similar patterns with both beginner and intermediate participants identifying the main improvement they felt came into the areas of vocabulary and pronunciation, although some also felt it had a positive effect on their grammar.

All bar one of the participants said that they would recommend using sitcoms in the classroom as it had been a fun activity. The participant who differed cited the difficulty in understanding as the reason that he/she wouldn't recommend this treatment in the classroom.

3.7. TEACHER'S JOURNAL

During the treatment, the researcher noted the attitudes of the participants during the activities, as well as her personal perceptions. The first major observation was that the group appeared to be heterogeneous – there were obvious true beginners mixed in with participants of a much higher level, and one participant who stood out as being of a very high level while introducing themselves to the class. The immediate concern was that the treatment was not designed for a group made up of different levels. The pre-test confirmed the researcher's initial observation.

The researcher thus took care to make sure that the treatment was administered in each session using exactly the same methodology to assure that the administration of the treatment itself was not a variable. This was achieved by self-evaluations; noting what was done, in what order, and the time taken in each part of the treatment and assuring there was no deviation from the previous session.

As it was possible to collect observations of the participants' attitudes during the treatment, important trends were detected. For example, during the pre-viewing activities it was noted during most of the sessions that due to the differences in levels, the higher level participants tended to finish the activities much faster than the beginners and had to wait for the rest of the group - often showing signs of boredom and engaging in other activities such as doodling. On the other hand, the beginners were highly engaged; shown by a marked level of concentration.

Most participants showed a positive attitude while watching the video clips, although a few seemed a little lost; the second viewing often seemed to help them get a more fuller understanding of what they were seeing – it was noted on more than one occasion seeing "the light switch on" in some participants while watching what they had previously not fully understood. The post-treatment interviews confirmed that the majority of beginner level participants found this part of the

treatment difficult to understand, while the intermediate participants claimed to have little problems understanding what they were watching. This phenomenon was noted in the post-viewing activities as beginners were highly motivated to understand the vocabulary that they had seen, and many questions were asked of the researcher regarding the new vocabulary they were finding, while the higher level participants did not seem to be as motivated to continue investigating the vocabulary. Exceptions to the above included two intermediate participants who worked together extremely well during the treatment, and responded the best during the post-test.

One of the things noted by the researcher was a general lax attitude to both the pre-test and the post-test by the participants; their knowledge that the results had no bearing on their final grades seemed to promote this attitude; In general the researcher felt that the participants' motivation during the pre- and post-viewing activities was reflected in the improvements shown in the post-test.

While Mackey and Gass correctly stated that journals and diaries are usually very subjective (203,204) – the researcher noted this style in her own notes – the researcher found that it was extremely helpful in both assessing her teaching and arriving at conclusions relating to the participants during this treatment. It would have been unlikely that the researcher would have remembered which participants had been the most engaged while analyzing the results after the treatment; as the researcher made notes during each session, there was a record of participant involvement as well as of the whole process.

The keeping of a journal during the treatment allowed the triangulation of the data, thus pre-test, post-test, journal and interviews could all be used in conjunction to reach conclusions.

CHAPTER IV
DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

4.1. LEVEL OF ENGLISH WITHIN THE SAMPLE GROUP

Participants were asked what they thought their level of English was before they took the pre-test and the results were initially analysed based on this. The results showed significant differences between the two means in overall scores and in the vocabulary knowledge section although there were unusual shapes in the Kernel Density Estimates. The overall scores of the participants were analysed against their self-identified level and it was found that many participants possibly underestimated their level (Table 1). The participants were placed into categories that were more in line with their overall scores – this was chosen as at the end of the day a participant's overall score would be what they would be judged on. However, only one participant placed in the advanced category – this meant that this participant could not be compared with the others using the statistical tests as a mean was required.

As the levels were artificially chosen, the difference in overall scores should be significantly different, and it was found to be so (Fig. 47); however this readjustment had significant effects on other sections of the test. There was a highly significant separation between the intermediate and beginner groups in the vocabulary knowledge section and vocabulary in context section and a significant difference in the reading comprehension section. This exercise managed to separate the sample into two significantly different groups, which ultimately meant that these two groups should be treated separately with respect to the effect of treatment and compared. The graphs also showed a much better Gaussian distribution (normal distribution), which was important for the statistical tests to be applied.

4.2. RELATIONSHIPS BETWEEN PRE-TEST SCORES AND PARTICIPANT CHARACTERISTICS AND HABITS

Participant characteristics, with the exception of their self-identified level of English dealt with in the previous section, had no effect on their abilities on

the test – gender and age had no effect on their scores. While this was the expected result it is always important to assure that the sample group is as free of bias as possible; a small sample group such as this could have shown significant effects in these characteristics if, for example, both male participants were either exceptionally good or exceptionally bad or those in a particular age group showed these characteristics. To test the effect of these new beginner and intermediate categories all previous tests were rerun, although few significant relationships were found (Appendix 8 & Appendix 9). The significant result of reading comprehension against frequency of watching sitcoms in beginners was found to be an artificial side effect of small sample number (Fig. 51).

Despite rigorous testing of relationships with all the variables from the questionnaires, few significant ones could be found between participants' habits and their scores on the pre-test, whether run as one group or as the two levels of English. The few relationships that could be considered as significant relate to the use of the language outside the classroom, and a relationship between the frequency participants watch sitcoms combined with either the use of the language outside of the classroom or with the number of different sitcoms participants watch with the whole group considered as one.

The vocabulary in context versus the frequency and number of sitcoms had a significant relationship. Participants who never watched sitcoms were removed, which essentially invalidated the results; however this was done in the search for patterns – the participants who never watched sitcoms were not bad participants and their results obscured possible patterns as is discussed here. The boxplot (Fig. 52) showed an interesting pattern where number of sitcoms participants watch positively affected the score of the vocabulary in context section when it was related to the frequency with which participants watch sitcoms. The relationship was unusual as those who rarely watched sitcoms generally did better for a given number of sitcoms than those who claimed to watch sitcoms sometimes.

Use of English outside of the classroom had a significant relationship, although it could be interpreted in one of two ways; it might affect the ability of participants to use and find vocabulary due to greater practice and need, or this

result came from the participants' greater confidence in using vocabulary in context tools allowing them to use it more frequently outside of the classroom.

This result supports Lai's affirmation about the fact that teachers are aware that vocabulary has to be learned outside of the classroom, thus their objectives are to encourage participants not only to learn the different levels of knowing a lexical item but also to teach the different vocabulary learning strategies (9).

It was found that the sample size for this type of analysis was limiting. To truly explore the relationships between the categories satisfactorily and to do these tests effectively several data values have to fall into the majority of categories, and in this case, when such data were combined, e.g. Fig. 52, there were many blank categories and several data points that had only one data value. However, despite this, there are no other statistical ways to explore the data as effectively.

These results suggest that participant habits did have some effect on their ability to use vocabulary in context. The need to use the language (frequency of use outside the classroom) might compel participants to use vocabulary in context tools to communicate. The other notable aspect was that a relationship existed between the number of sitcoms and the frequency with which they watch them and vocabulary in context ability. As this is essentially the hypothesis of this thesis it was heartening to find a relationship in this part of the results.

No significant relationships were found between the other scores on the test, vocabulary knowledge and reading comprehension, and participants' habits. This was not too surprising, as the words in the vocabulary section were very specific, and there was unlikely to be a discernable relationship between watching sitcoms and reading comprehension ability.

The important result of this analysis is the lack of relationships between the variables measured here; the lack of relationships means that any significant changes discerned in the post-test are directly attributable to the treatment rather than being a side effect of participants' habits.

4.3. EFFECT OF TREATMENT ON SAMPLE GROUP

The differences between the two levels with respect to their post-test scores were calculated and the two groups remain separated – while the beginners generally improved so did the intermediates, although there was no significant difference in the vocabulary knowledge section (Table 2). In general the beginners improved more than the intermediates, although in the reading comprehension section the best that can be said is that the intermediates did less badly.

Thus, Wang's (217, 218) affirmation about the positive effect of the use of video in vocabulary learning as it has a facilitative role in learning vocabulary has been supported by this research.

4.4. VOCABULARY LEARNING

Beginners showed greatest overall improvement, significantly improving their scores in this section with an average increase of 2.65 points. The maximum increase was five points and the minimum was one point. This increase showed that the treatment had been effective in building vocabulary knowledge – beginner participants picked up secondary vocabulary from the treatment. Intermediate participants on the other hand, while overall improving their scores, only did so with an average of 0.46 – which was not a significant difference from the pre-test.

These results, at face value, suggest that the treatment was only effective for beginner participants with respect to vocabulary knowledge; however the researcher noted during the treatment that the disparity of levels within the class led to the higher participants "switching off" during the class.

The higher participants had problems maintaining their interest as the treatment classes were designed for beginner level participants in the first place; the high number of intermediate participants possibly meant that the class ran too slowly, and while the beginners benefitted from this extra time the higher level participants were negatively affected by what would be essentially boredom – it was noted in the researchers journal that some participants had

lost interest in the activities – they finished the first one much earlier than some participants and were not able to engage in the subsequent activities.

Another possible reason for the disparity in learning was that the beginners were still learning higher frequency words; the beginners picked up more words than the intermediates simply because they had more words to learn. The words in the vocabulary knowledge section of the test were not specifically taught, but on many occasions beginners picked several of these words out during pre-reading for attention.

The results for this section suggest that the treatment is not adequate for mixed-level groups in its current format. It would be premature to conclude that this treatment does not work for intermediate level participants – rather that the treatment either has to be adapted to accommodate mixed levels with extra activities for the higher level participants to maintain their interest while beginners finish the exercises, or, more simply there has to be a better filtering of participants to make sure that the levels of English within the class are not too different as was found in this group of participants.

4.5. VOCABULARY IN CONTEXT

Both intermediate and beginner participants benefitted from the treatment with respect to the vocabulary in context section of the test; although only the beginners' difference was significant. Beginner participants showed the greater average improvement of 1.5 points with the intermediates close behind at 1.23 points. Closer inspection of the intermediates' scores showed that two of the participants really improved in this area which brought up the average which otherwise would have been an increase of only 0.45 points.

The two intermediate participants actually improved the most compared to the whole group in this area, and the overall positive result of the participants showed that at least some tools to understand vocabulary in context had been acquired. Unfortunately due to the nature of the interviews and time constraints, it was impossible to question more deeply the participants who showed these marked improvements as to why they had benefitted more than the other participants in this aspect. This was definitely a flaw in the design of the

treatment – although imposed by class schedule – that should be rectified in any subsequent treatments; it must be possible to identify participants and inquire why they felt they have benefitted more or less in a particular area. However, the researcher did note that these participants were in general engaged and positive during the treatment.

However, again the beginners showed significant improvement, while the intermediates did not. Again the researcher noted that as the beginners generally took longer and finished the pre-reading just before the watching of the sitcom clip, they remained engaged throughout most of the treatment.

While the overall results were not as hoped, again the overriding factor at play is probably the differences in participant ability across the group, which led to higher participants being less engaged in the activities.

The best solution would be to develop a more rigorous system of selection for participants to create more equal groups where the treatment could be better adapted to levels – although there may be no need to adapt the treatment only with higher groups where the rhythm of the class could be faster relieving the previously noted boredom. If, however, it is not possible to divide groups in such a way, it would be prudent to adapt the teaching techniques and use the pre-test to create pairs of academically dissimilar participants – intermediate with beginner for example – to aid retaining interest in the intermediate participants through their helping their less able partner.

4.6. READING COMPREHENSION

This treatment had no effect on reading comprehension ability in either sub group or the group as a whole. The treatment was not designed to specifically work on these skills and this part of the test was a control to see if participants could transfer what they had learned in the treatment with respect to vocabulary and strategies for guessing vocabulary in context. The result here clearly led to two important conclusions; the first that the transfer of vocabulary learning and strategies for understanding vocabulary in context to reading comprehension is a skill that has to be specifically taught and is unlikely to be “picked up” during other activities, and the other main conclusion is that the

treatment has truly effected that areas of knowledge it had been designed to effect.

Thus, contrary to Nagy's affirmation that "vocabulary knowledge positively affects reading comprehension" (qtd. in Mehrpour and Rahimi, 294), in this research that has not been demonstrated. Furthermore, it is in agreement with Prince's affirmation that when it comes to the transfer of knowledge of the lexicon learned to productive situations, participants are unable to do so (489).

4.7. OVERALL THOUGHTS

One of the limitations of this study was that the participants had little or no pressure to apply themselves to the tasks, as they were completely aware that at the end of the day whatever results they achieved did not affect their grades. It was noted that many of the participants did not fully apply themselves to the tasks or to the exams, especially those who considered themselves to be of a higher level. In the researcher's opinion, while this may have affected the grades, improvements may become more significant as they occurr passively, that is, without active study to learn the vocabulary by rote or to specifically learn strategies taught by a teacher.

4.8. CONCLUSIONS

This investigation was limited to a convenience sample of participants; first year participants in the first level of English. Mackey and Gass suggest that this is a safe enough option, as one would expect a group such as this to have similar proficiency (110). Unfortunately, the levels within the group were not homogeneous; Mackey and Gass maintain that it is important that participants have equal proficiency in the feature being studied (111), in this case vocabulary. This led to an immediate problem, as the treatment was not equally effective for the disparate levels.

Beginner participants benefitted more than intermediate participants in this treatment; although, due to the different levels, the possible benefits for intermediate participants may have been obscured.

Exploration of sample demographics demonstrated that they had little effect on participant proficiency, although a relationship was found between how much participants use English outside of the classroom. Unfortunately, it is open to debate about the nature of the relationship - and if there is a cause-effect relationship, which way it is working? Do vocabulary in context skills give greater confidence to use English outside of the classroom or does having the confidence to use English outside of the classroom lead to better vocabulary in context skills? This research cannot answer these questions.

The treatment did not affect the group equally – there was a significant difference between the levels identified by the pre-test. The treatment was more effective for beginner participants, whose performance came closer to the intermediates' in the vocabulary and vocabulary in context sections of the post-test which supports Wang's affirmation of the positive effect of using video in language learning (217,218). The treatment was possibly less effective for intermediate participants as the majority of the key vocabulary words being focussed on were high frequency ones, which the intermediates generally got right in the pre-test and continued to do so in the post-test. Reading comprehension proficiency was not affected by the treatment.

The treatment effectively responded to one of the research questions proposed: to what degree does the use of selected sitcom video clips and supporting material (transcripts) promote the development of lexicon and strategies for understanding vocabulary in context? The target group was beginners in the first level of English in the University of Azuay, and the treatment was developed to target this specific group. The treatment effectively helped this group to both develop new lexicon and strategies for understanding vocabulary in context; however the group also included many intermediate participants who were not helped as much possibly due to the rhythm with which the class developed. This treatment appears to be most effective when the exercises and group correspond in level.

The second research question asked if participants would then be able to transfer this increased development of lexicon and vocabulary in context strategies to reading competence. Here the treatment was not effective. There seems to be a gap between these basic skills and their application in a whole

text scenario which means that to effectively use sitcoms video clips to improve reading competence, a bridge needs to be found between learning the vocabulary and context strategies and their application in reading comprehension.

4.9. RECOMMENDATIONS

This investigation has found that the use of sitcom video clips is an effective way to develop both lexicon and learn vocabulary in context strategies; however, the researcher has identified several areas where this investigation could be improved or expanded upon.

The first recommendation would be to assure that the participating groups - in research with similar characteristics to this one, or for the application of this treatment in class – are more homogeneous in general English proficiency, but especially in vocabulary.

Another issue found was related to the relatively small sample size. To assure the adequate exploration of the relationships between English proficiency and participant habits, a much larger sample size would be required and a larger sample size would also reduce the effect of exceptional participants.

A further issue related to experimental design and application relates to the post-test interviews. The interviews should be done individually, and with participant's results to hand, so that a deeper exploration of reasons why some participants may have outperformed others, or may have had better motivation can be done. Additionally, it would be extremely important to administer delayed post- tests in order to determine if the results have longer term effects; unfortunately in the present research it was not possible to do because of time constraints.

To use this treatment to effectively address the needs of the University of Azuay, an important step would be to seek the bridge between the acquisition of vocabulary and vocabulary in context strategies and their application to reading comprehension. This would require an amplification of the treatment to include reading comprehension strategies.

Finally, it might be worthwhile either including this treatment within the classroom setting where grades are important to see if this added impetus affects participant performance in the tests and during the treatment itself, or reapplying the treatment and include a control group to better gauge the effects of the treatment.

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APPENDICES

APPENDIX 1 PILOT QUESTIONNAIRE

CUESTIONARIO PILOTO

Este es un cuestionario corto sobre ***sitcoms*****:** abreviatura en inglés de situational comedy, que se refiere a comedias de situaciones, las cuales son un tipo de serie televisiva cuyos episodios se desarrollan regularmente en los mismos lugares y con los mismos personajes.

El objetivo de este cuestionario es recolectar información para desarrollar la tesis de maestría en Lengua Inglesa y Lingüística Aplicada titulada *"Sitcoms as a resource for acquiring lexicon and developing strategies for understanding vocabulary in context".*

Sus opiniones son de gran importancia; por favor lea y responda cuidadosamente.

MUCHAS GRACIAS POR EL TIEMPO ENTREGADO PARA RESPONDER ESTE QUESTIONARIO.

1. ¿Usted usualmente mira comedias de situaciones cuyo lenguaje original es Inglés?

   ☐ SI ☐ NO

2. ¿Con qué frecuencia mira comedias de situaciones?

   ☐ Nunca ☐ una vez por semana ☐ dos o más veces por semana

3. Por favor escriba que comedias de situaciones usted mira.

   _____

4. ¿Cuál es su favorita?

   _____

5. Por favor escriba tres razones del porqué le gusta mirar comedias de situaciones

   a. _____

   b. _____

   c. _____

6. ¿Le gustaría que las comedias de situaciones que menciona en este cuestionario sean utilizadas en las clases de Inglés?

   ☐ SI ☐ NO

7. Si su respuesta es SI a la pregunta anterior, por favor escriba una razón del porqué de su respuesta.

   _____

APPENDIX 2 FINAL QUESTIONNAIRE

CUESTIONARIO

UNIVERSIDAD DE CUENCA

Este es un cuestionario corto sobre ***sitcoms*****:** abreviatura en inglés de situational comedy; se refiere a un tipo de comedias televisivas que muestra los mismos personajes (amigos, familia o compañeros de trabajo) que comparten un lugar en común como por ejemplo, trabajo, hogar, en donde se desarrollan secuencias cómicas y diálogos con bromas.
El objetivo de este cuestionario es recolectar información para desarrollar la tesis de maestría en Lengua Inglesa y Lingüística Aplicada titulada *"Sitcoms as a resource for acquiring lexicon and developing strategies for understanding vocabulary in context".*

Sus opiniones son de gran importancia; por favor lea y responda cuidadosamente.

MUCHAS GRACIAS POR RESPONDER ESTE QUESTIONARIO.

1. Seleccione su sexo.

☐ Masculino ☐ Femenino

2. ¿Cuántos años tiene?

☐ 18-20 ☐ 20-22

☐ 22-24 ☐ mas de 24

3. Seleccione su nivel de inglés.

☐ Principiante ☐ intermedio ☐ avanzado

4. Usa el idioma Inglés con sus amigos o familia.

☐ Siempre ☐ A veces ☐ Rara vez ☐ Nunca

5. Recibe clases de inglés fuera de la Universidad.

☐ Siempre ☐ A veces ☐ Rara vez ☐ Nunca

6. Usted mira comedias de situaciones cuyo lenguaje original es Inglés:

☐ nunca ☐ rara vez

☐ a veces ☐ siempre

7. Cuando usted mira comedias de situaciones, usted usa:

☐ Subtítulos en español ☐ subtítulos en inglés ☐ sin subtítulos

8. ¿Cuántas veces miró comedias de situaciones la semana pasada?

☐ 0 ☐ 1-2 veces ☐ 3 o más

9. Seleccione las comedias que miró la semana pasada.

☐ Malcom men ☐ Big Bang theory ☐ Two and a half men

☐ Friends ☐ Drake and Josh ☐ Otra:_____

10. Seleccione las razones por las cuales le gusta mirar comedias de situaciones.

☐ Diversión/entretenimiento ☐ Usan lenguaje y situaciones de la vida real

☐ Ayudan a aprender inglés ☐ Otra: _____

11. ¿De qué manera las comedias de situaciones le han ayudado a mejora su nivel de inglés?

☐ Tiempos verbales, orden de palabras, adverbios, adjetivos, etc.

☐ Pronunciación

☐ Vocabulario

☐ Otro: _____

12. Si usted mira comedias de situaciones con otras personas, cree que esto le ha ayudado a aprender:

☐ Tiempos verbales, orden de palabras, adverbios, adjetivos, etc.

☐ Pronunciación

☐ Vocabulario

☐ Otro: _____

APPENDIX 3 DEMOGRAPHICS QUESTIONNAIRE

CUESTIONARIO

El objetivo de este cuestionario es recolectar información para desarrollar la tesis de maestría en Lengua Inglesa y Lingüística Aplicada titulada *"Sitcoms as a resource for acquiring lexicon and developing strategies for understanding vocabulary in context".*

Sus opiniones son de gran importancia; por favor lea y responda cuidadosamente.

MUCHAS GRACIAS POR RESPONDER ESTE QUESTIONARIO.

1. ¿Por qué considera importante aprender Inglés?

☐ Mejores oportunidades profesionales ☐ Razones personales
☐ Es un requisito de graduación ☐ No es importante
☐ Otro: _____

2. Seleccione su nivel de inglés.

☐ Principiante ☐ Intermedio ☐ Avanzado

3. ¿Con qué frecuencia está en contacto con el idioma inglés fuera del aula de clase?

☐ Más de 1 hora por día ☐ 1 hora por día ☐ Nunca

4. ¿Cómo está en contacto con el idioma Inglés fuera del aula de clase?

_____

5. ¿Usa el idioma Inglés con sus amigos o familia?

☐ Siempre ☐ A veces ☐ Rara vez ☐ Nunca

6. Recibe clases de inglés fuera de la Universidad.

☐ Siempre ☐ A veces ☐ Rara vez ☐ Nunca

7. Cuantas horas por semana estudia Inglés fuera del aula de clase.

_____

APPENDIX 4 PRE AND POST TEST

PRETEST

NAME: _____

VOCABULARY KNOWLEDGE

A. In each question, you must choose the right meaning to go with the word in CAPITAL letters.

1. MAINTAIN: Can they **maintain** it?

a. keep it as it is
b. get it
c. get a better one than it
d. make it large

2. STANDARD: Her **standards** are very high.

a. the bits at the back under her shoes
b. the marks she gets in school
c. the money she asks for
d. the levels she reaches in everything

3. POOR: We are **poor**.

a. have no money
b. are very interested
c. feel happy
d. do not like to work hard

4. BIRTH: **Birth**, fortunately, is still a natural process.

a. a process to make something
b. a process to produce a result
c. a process to deliver a baby
d. a process to start something

5. BEST: Tom is the **best** student of the class.

a. The opposite of least
b. The opposite of worst
c. The opposite of happiest
d. The opposite of saddest

6. WEATHER: Tomorrow's **weather** can be very cold.

a. Time
b. Food
c. Climate
d. Money

7. TEAM: My favorite soccer **team** is Manchester United.

a. Group of workers
b. Group of players
c. Group of doctors
d. Group of students

8. SICK: Tom is feeling **sick**.

a. Unwell
b. Unhappy
c. Unlucky
d. Uncomfortable

9. REMEDY: We found a good **remedy**.

a. way to improve health
b. way to prepare food
c. rule about numbers
d. place to eat in public

10. UPSET: I am **upset**.

a. Unhappy
b. Rich
c. Famous
d. Tired

VOCABULARY IN CONTEXT

B. Select the option that matches the meaning of the word in bold.

1. Jennifer ***implied*** that she wanted to be Jim's girlfriend, but she didn't say so directly.

inferred
declared
refused
questioned

2. The principal is extremely popular with the students because he is a strong ***advocate*** of students' rights.

opponent
enemy
member
supporter

3. The decision to convert the school year to a ten-month calendar was very ***controversial*** among both students and teachers, some liked the idea while others didn't.

creating popularity
causing excitement
creating profits
causing disagreement

4. Many of us have ***ambivalent*** feelings about our politicians, admiring but also doubting them.

a. mixed
b. critical
c. approving
d. confusing

5. Changes in such abilities as learning, reasoning, thinking, and language are aspects of **cognitive** development.

a. Physical
b. Mental
c. Spiritual
d. Biological

6. Doctors should ***alleviate*** the pain of terminally ill patients so that their final days are as comfortable as possible.

a. diagnose
b. relieve
c. aggravate
d. improve

7. Many ships have ***vanished*** during hurricanes. No survivors from the lost ships have ever been found.

a. arrived
b. departed
c. returned
d. disappeared

8. Almost every Saturday night Jeremy ***implemented*** a plan for leaving the house late at night without his parents ever realizing that he was gone.

a. planned
b. succeeded
c. put into action
d. dreamed up

9. Make sure you give your parents ***explicit*** directions for where to pick you up after soccer practice so they can't get lost.

a. complicated
b. clearly stated
c. in chronological order
d. factual

10. The ***adverse*** effects of the drug, including dizziness, nausea, and headaches, have caused it to be removed from the market.

a. artificial
b. energetic
c. harmful
d. active

READING

C. Read the article about Intelligence pills. Mark the sentences 'Right' or 'Wrong.' If there is not enough information to answer 'Right' or 'Wrong', choose 'Doesn't say'.

Intelligence pills

Some scientists have predicted that healthy adults and children may one day take drugs to improve their intelligence and intellectual performance. A research group has suggested that such drugs might become as common as coffee or tea within the next couple of decades.

To counter this, students taking exams might have to take drugs tests like athletes. There are already drugs that are known to improve mental performance, like Ritalin, which is given to children with problems concentrating. A drug given to people with trouble sleeping also helps people remember numbers.

These drugs raise serious legal and moral questions, but people already take vitamins to help them remember things better, so it will not be a simple problem to solve. It will probably be very difficult to decide at what point a food supplement becomes an unfair drug in an examination.

1. Only children will take pills to improve their intellectual performance.

a. right b. wrong c. doesn't say

2. Intelligence pills are already as common as coffee or tea.

a. right b. wrong c. doesn't say

3. Coffee is as common as tea.

a. right b. wrong c. doesn't say

4. Students could have to take intelligence drugs tests.

a. right b. wrong c. doesn't say

5. A sleeping pill helps people remember numbers.

a. right b. wrong c. doesn't say

6. Vitamins to help people study are illegal.

a. right b. wrong c. doesn't say

7. Food supplements are unfair.

a. right b. wrong c. doesn't say

APPENDIX 5 TEACHER'S JOURNAL

JOURNAL

Date: _____ Video:_____

TEACHING		**STUDENTS**			
Positive Aspects	**Negative aspects**	**While watching the video**		**After watching the video**	
		Positive aspects	Negative aspects	Positive aspects	Negative aspects

Observations:

_____

_____

_____

APPENDIX 6 SELF-EVALUATION FORM

REFLECTIVE TEACHING NOTES

Date: _____
Video clip: _____

TEACHER SELF EVALUATION						GENERAL NOTES ABOUT THE CLASS	
Planning	1	2	3	4	5		
Preparation	1	2	3	4	5		
Methodology	1	2	3	4	5		
Activities	1	2	3	4	5		
Connection	1	2	3	4	5		
Success	1	2	3	4	5		
Teacher enjoyment	1	2	3	4	5		
Students enjoyment	1	2	3	4	5		
Students performance	1	2	3	4	5	**SPECIFIC CONCERNS/PROBLEMS**	**NOTES FOR FOLLOW UP**
Students motivation	1	2	3	4	5		
Rating Key 1 = poor 2 = fair 3 = acceptable 4 = good 5 = excellent							

APPENDIX 7 MULTIVARIATE ANALYSIS OF VARIANCE OF BEGINNERS' RESULTS ACCORDING TO TEACHER-DEFINED LEVEL.

Key:

study = Hours participants study English throughout the week
No.Sitcoms = No. Sitcoms watched by participants (Derived Variable)
use = Frequency participants use English with friends or family
receive = Frequency participants receive private English classes
subtitles = Whether participants use English or Spanish subtitles
watch = Frequency participants watch English language Sitcoms
howoften = how many times participants watched sitcoms the previous week
freq = Frequency with which participants are in contact with English outs
ide the classroom.
PRT1 = Score on the Vocabulary section of the pretest
PRT2 = Score on the Vocabulary in Context section of the pretest
PRT3 = Score on the Reading Comprehension section of the pretest
Y = Table with PRT1, PRT2, and PRT3

```
fit.age=manova(Y~age)
summary(fit.age)
```

```
##           Df Pillai approx F num Df den Df Pr(>F)
## age        3    1.2    0.889      9     12   0.56
## Residuals  4
```

```
summary.aov(fit.age)
```

```
##  Response PRT1 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## age          3   3.68    1.23    0.44   0.74
## Residuals    4  11.20    2.80
##
##  Response PRT2 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## age          3      2   0.667    1.33   0.38
## Residuals    4      2   0.500
##
##  Response PRT3 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## age          3   4.07    1.36    1.94   0.26
## Residuals    4   2.80    0.70
```

```
fit.sex=manova(Y~sex)
summary(fit.sex)
```

```
##           Df Pillai approx F num Df den Df Pr(>F)
## sex        1  0.216    0.367      3      4   0.78
## Residuals  6
```

```
summary.aov(fit.sex)
```

```
##  Response PRT1 :
##              Df Sum Sq Mean Sq F value Pr(>F)
## sex           1   0.04   0.042    0.02    0.9
## Residuals     6  14.83   2.472
##
##  Response PRT2 :
##              Df Sum Sq Mean Sq F value Pr(>F)
## sex           1   0.67   0.667     1.2   0.32
## Residuals     6   3.33   0.556
##
##  Response PRT3 :
##              Df Sum Sq Mean Sq F value Pr(>F)
## sex           1   1.04   1.042    1.07   0.34
## Residuals     6   5.83   0.972
```

```
fit.freq=manova(Y~freq)
summary(fit.freq)
```

```
##           Df Pillai approx F num Df den Df Pr(>F)
## freq       2   1.04     1.43      6      8   0.31
## Residuals  5
```

```
summary.aov(fit.freq)
```

```
##  Response PRT1 :
##              Df Sum Sq Mean Sq F value Pr(>F)
## freq          2   6.13    3.06    1.75   0.27
## Residuals     5   8.75    1.75
##
##  Response PRT2 :
##              Df Sum Sq Mean Sq F value Pr(>F)
## freq          2   1.25   0.625    1.14   0.39
## Residuals     5   2.75   0.550
##
##  Response PRT3 :
##              Df Sum Sq Mean Sq F value  Pr(>F)
## freq          2   4.21   2.104    3.95  0.094 .
## Residuals     5   2.67   0.533
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
fit.use=manova(Y~use)
summary(fit.use)
```

```
##           Df Pillai approx F num Df den Df Pr(>F)
## use        2   1.29     2.43      6      8   0.12
## Residuals  5
```

```
summary.aov(fit.use)
```

```
##  Response PRT1 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## use          2   9.46    4.73    4.37   0.08 .
## Residuals    5   5.42    1.08
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##  Response PRT2 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## use          2   2.33   1.167     3.5   0.11
## Residuals    5   1.67   0.333
##
##  Response PRT3 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## use          2   3.88    1.94    3.23   0.13
## Residuals    5   3.00    0.60
```

```
fit.receive=manova(Y~receive)
summary(fit.receive)
```

```
##           Df Pillai approx F num Df den Df Pr(>F)
## receive    3   1.61     1.55      9     12   0.24
## Residuals  4
```

```
summary.aov(fit.receive)
```

```
##  Response PRT1 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## receive      3   2.12    0.71    0.22   0.88
## Residuals    4  12.75    3.19
##
##  Response PRT2 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## receive      3   1.25   0.417    0.61   0.65
## Residuals    4   2.75   0.687
##
##  Response PRT3 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## receive      3   4.12   1.375       2   0.26
## Residuals    4   2.75   0.687
```

```
fit.study=aov(Y~study)
summary(fit.study)
```

```
##  Response PRT1 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## study        6   14.4     2.4    4.79   0.34
## Residuals    1    0.5     0.5
##
##  Response PRT2 :
##             Df Sum Sq Mean Sq  F value Pr(>F)
```

```
## study        6      4   0.667 8.65e+32 <2e-16 ***
## Residuals    1      0   0.000
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##  Response PRT3 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## study        6   6.37    1.06    2.12   0.48
## Residuals    1   0.50    0.50
```

```
fit.watch=manova(Y~watch)
summary(fit.watch)
```

```
##           Df Pillai approx F num Df den Df Pr(>F)
## watch      2   1.07     1.55      6      8   0.28
## Residuals  5
```

```
summary.aov(fit.watch)
```

```
##  Response PRT1 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## watch        2   9.88    4.94    4.94  0.066 .
## Residuals    5   5.00    1.00
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##  Response PRT2 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## watch        2   2.33   1.167     3.5   0.11
## Residuals    5   1.67   0.333
##
##  Response PRT3 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## watch        2   0.21   0.104    0.08   0.93
## Residuals    5   6.67   1.333
```

```
fit.subtitles=manova(Y~subtitles)
summary(fit.subtitles)
```

```
##           Df Pillai approx F num Df den Df Pr(>F)
## subtitles  2    1.4     3.12      6      8   0.07 .
## Residuals  5
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
summary.aov(fit.subtitles)
```

```
##  Response PRT1 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## subtitles    2   11.4    5.69    8.12  0.027 *
## Residuals    5    3.5    0.70
```

```
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##  Response PRT2 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## subtitles    2      2     1.0     2.5   0.18
## Residuals    5      2     0.4
##
##  Response PRT3 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## subtitles    2   1.54   0.771    0.72   0.53
## Residuals    5   5.33   1.067
```

```
fit.howoften=manova(Y~howoften)
summary(fit.howoften)
```

```
##           Df Pillai approx F num Df den Df Pr(>F)
## howoften   2  0.967     1.25      6      8   0.38
## Residuals  5
```

```
summary.aov(fit.howoften)
```

```
##  Response PRT1 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## howoften     2   1.46   0.729    0.27   0.77
## Residuals    5  13.42   2.683
##
##  Response PRT2 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## howoften     2   2.33   1.167     3.5   0.11
## Residuals    5   1.67   0.333
##
##  Response PRT3 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## howoften     2   5.21   2.604    7.81  0.029 *
## Residuals    5   1.67   0.333
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
fit.sitcoms=manova(Y~No.Sitcoms)
summary(fit.sitcoms)
```

```
##            Df Pillai approx F num Df den Df Pr(>F)
## No.Sitcoms  2   1.16     1.82      6      8   0.21
## Residuals   5
```

```
summary.aov(fit.sitcoms)
```

```
##  Response PRT1 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## No.Sitcoms   2   9.54    4.77    4.47  0.077 .
```

```
## Residuals    5   5.33    1.07
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##  Response PRT2 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## No.Sitcoms   2   1.17   0.583    1.03   0.42
## Residuals    5   2.83   0.567
##
##  Response PRT3 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## No.Sitcoms   2   1.54   0.771    0.72   0.53
## Residuals    5   5.33   1.067
```

```
fit.freq.use=aov(Y~use:freq)
summary(fit.freq.use)
```

```
##  Response PRT1 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## use:freq     5  14.21   2.842    8.53   0.11
## Residuals    2   0.67   0.333
##
##  Response PRT2 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## use:freq     5   3.33   0.667       2   0.37
## Residuals    2   0.67   0.333
##
##  Response PRT3 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## use:freq     5   6.21   1.242    3.72   0.23
## Residuals    2   0.67   0.333
```

```
summary.aov(fit.freq.use)
```

```
##  Response PRT1 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## use:freq     5  14.21   2.842    8.53   0.11
## Residuals    2   0.67   0.333
##
##  Response PRT2 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## use:freq     5   3.33   0.667       2   0.37
## Residuals    2   0.67   0.333
##
##  Response PRT3 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## use:freq     5   6.21   1.242    3.72   0.23
## Residuals    2   0.67   0.333
```

```
fit.receive.study=aov(Y~receive:study)
summary(fit.receive.study)
```

```
##  Response PRT1 :
##               Df Sum Sq Mean Sq F value Pr(>F)
## receive:study  6   14.4     2.4    4.79   0.34
## Residuals      1    0.5     0.5
##
##  Response PRT2 :
##               Df Sum Sq Mean Sq  F value Pr(>F)
## receive:study  6      4   0.667 8.65e+32 <2e-16 ***
## Residuals      1      0   0.000
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##  Response PRT3 :
##               Df Sum Sq Mean Sq F value Pr(>F)
## receive:study  6   6.38    1.06    2.13   0.48
## Residuals      1   0.50    0.50
```

```
summary.aov(fit.receive.study)
```

```
##  Response PRT1 :
##               Df Sum Sq Mean Sq F value Pr(>F)
## receive:study  6   14.4     2.4    4.79   0.34
## Residuals      1    0.5     0.5
##
##  Response PRT2 :
##               Df Sum Sq Mean Sq  F value Pr(>F)
## receive:study  6      4   0.667 8.65e+32 <2e-16 ***
## Residuals      1      0   0.000
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##  Response PRT3 :
##               Df Sum Sq Mean Sq F value Pr(>F)
## receive:study  6   6.38    1.06    2.13   0.48
## Residuals      1   0.50    0.50
```

```
fit.sitcom=manova(Y~howoften:No.Sitcoms)
summary(fit.sitcom)
```

```
##                     Df Pillai approx F num Df den Df Pr(>F)
## howoften:No.Sitcoms  4   2.12     1.82     12      9   0.19
## Residuals            3
```

```
summary.aov(fit.sitcom)
```

```
##  Response PRT1 :
##                     Df Sum Sq Mean Sq F value Pr(>F)
## howoften:No.Sitcoms  4  12.21   3.052    3.43   0.17
```

```
## Residuals             3   2.67   0.889
##
##  Response PRT2 :
##                      Df Sum Sq Mean Sq F value Pr(>F)
## howoften:No.Sitcoms   4   3.33   0.833    3.75   0.15
## Residuals             3   0.67   0.222
##
##  Response PRT3 :
##                      Df Sum Sq Mean Sq F value Pr(>F)
## howoften:No.Sitcoms   4   5.71   1.427    3.67   0.16
## Residuals             3   1.17   0.389
```

```
fit.sitcom1=manova(Y~No.Sitcoms:subtitles)
summary(fit.sitcom1)
```

```
##                       Df Pillai approx F num Df den Df Pr(>F)
## No.Sitcoms:subtitles   3   1.88     2.25      9     12  0.095 .
## Residuals              4
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
summary.aov(fit.sitcom1)
```

```
##  Response PRT1 :
##                       Df Sum Sq Mean Sq F value Pr(>F)
## No.Sitcoms:subtitles   3   11.7    3.89    4.86   0.08 .
## Residuals              4    3.2    0.80
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##  Response PRT2 :
##                       Df Sum Sq Mean Sq F value Pr(>F)
## No.Sitcoms:subtitles   3      2   0.667    1.33   0.38
## Residuals              4      2   0.500
##
##  Response PRT3 :
##                       Df Sum Sq Mean Sq F value Pr(>F)
## No.Sitcoms:subtitles   3   3.68    1.23    1.53   0.34
## Residuals              4   3.20    0.80
```

```
lm(fit.sitcom1)
```

```
##
## Call:
```

```
fit.sitcom2=manova(Y~watch:No.Sitcoms)
summary(fit.sitcom2)
```

```
##                   Df Pillai approx F num Df den Df Pr(>F)
## watch:No.Sitcoms  3   1.52     1.38      9     12    0.3
## Residuals         4
```

```
summary.aov(fit.sitcom2)
```

```
##  Response PRT1 :
##                   Df Sum Sq Mean Sq F value Pr(>F)
## watch:No.Sitcoms  3   9.88    3.29    2.63   0.19
## Residuals         4   5.00    1.25
##
##  Response PRT2 :
##                   Df Sum Sq Mean Sq F value Pr(>F)
## watch:No.Sitcoms  3    2.5   0.833    2.22   0.23
## Residuals         4    1.5   0.375
##
##  Response PRT3 :
##                   Df Sum Sq Mean Sq F value Pr(>F)
## watch:No.Sitcoms  3   2.88   0.958    0.96   0.49
## Residuals         4   4.00   1.000
```

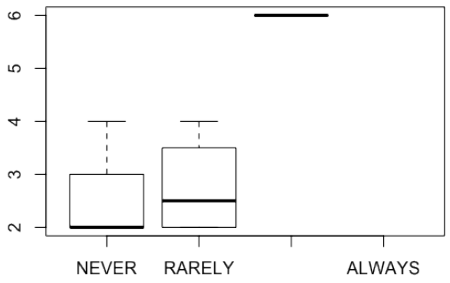
```
fit.sitcom3=manova(Y~use:watch)
summary(fit.sitcom3)
```

```
##           Df Pillai approx F num Df den Df Pr(>F)
## use:watch  4   1.77     1.08     12      9   0.46
## Residuals  3
```

```
summary.aov(fit.sitcom3)
```

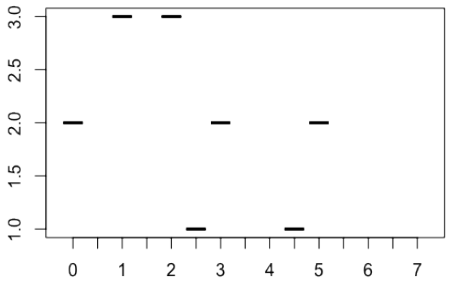
```
##  Response PRT1 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## use:watch    4  10.21    2.55    1.64   0.36
## Residuals    3   4.67    1.56
##
##  Response PRT2 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## use:watch    4   2.83   0.708    1.82   0.32
## Residuals    3   1.17   0.389
##
##  Response PRT3 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## use:watch    4   4.21   1.052    1.18   0.46
## Residuals    3   2.67   0.889
```

```
#significant results plotted:
```

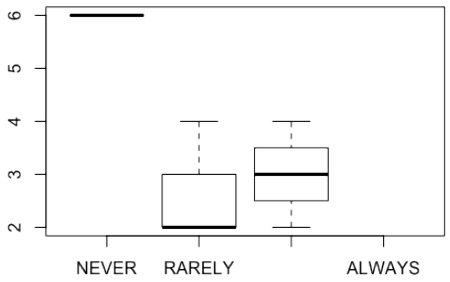



```
plot(use,PRT1)
```

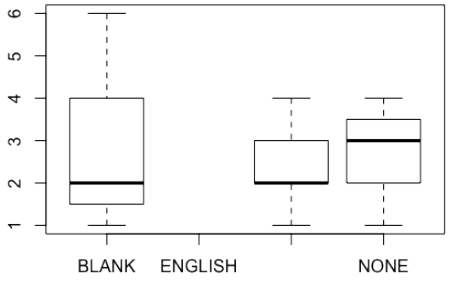
```
plot(study,PRT2)
```



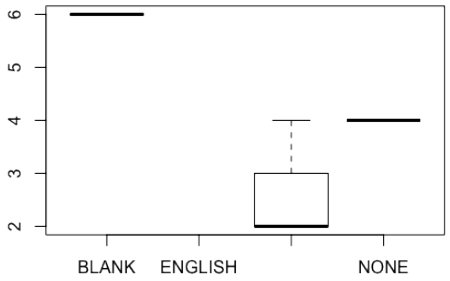

```
plot(watch,PRT1)
```



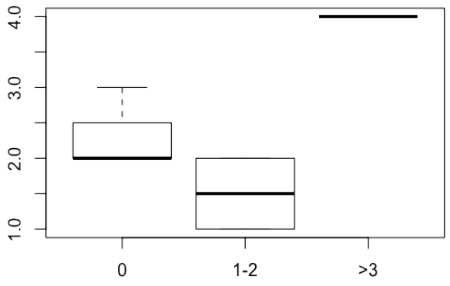

```
plot(subtitles,Y)
```



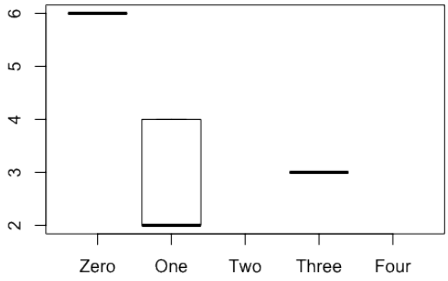

```
plot(subtitles,PRT1)
```




```
plot(howoften,PRT3)
```




```
plot(No.Sitcoms,PRT1)
```


6
5
4
3
2
Zero
One
Two
Three
Four

APPENDIX 8 MULTIVARIATE ANALYSIS OF VARIANCE OF BEGINNERS' RESULTS ACCORDING TO TEACHER-DEFINED LEVEL WITH STUDENT WHO NEVER WATCHED SITCOMS REMOVED.

Key:

study = Hours participants study English throughout the week
No.Sitcoms = No. Sitcoms watched by participants (Derived Variable)
use = Frequency participants use English with friends or family
receive = Frequency participants receive private English classes
subtitles = Whether participants use English or Spanish subtitles
watch = Frequency participants watch English language Sitcoms
howoften = how many times participants watched sitcoms the previous week
freq = Frequency with which participants are in contact with English outs
ide the classroom.
PRT1 = Score on the Vocabulary section of the pretest
PRT2 = Score on the Vocabulary in Context section of the pretest
PRT3 = Score on the Reading Comprehension section of the pretest
Y = Table with PRT1, PRT2, and PRT3

```
fit.age=manova(Y~age)
summary(fit.age)
```

```
##           Df Pillai approx F num Df den Df Pr(>F)
## age        3   1.53     1.04      9      9   0.48
## Residuals  3
```

```
summary.aov(fit.age)
```

```
##  Response PRT1 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## age          3   2.68   0.893    0.97   0.51
## Residuals    3   2.75   0.917
##
##  Response PRT2 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## age          3   2.11   0.702    2.81   0.21
## Residuals    3   0.75   0.250
##
##  Response PRT3 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## age          3   4.11   1.369    1.49   0.37
## Residuals    3   2.75   0.917
```

```
fit.sex=manova(Y~sex)
summary(fit.sex)
```

```
##           Df Pillai approx F num Df den Df Pr(>F)
## sex        1  0.238    0.313      3      3   0.82
## Residuals  5
```

```
summary.aov(fit.sex)
```

```
##  Response PRT1 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## sex          1   0.23   0.229    0.22   0.66
## Residuals    5   5.20   1.040
##
##  Response PRT2 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## sex          1  0.357   0.357    0.71   0.44
## Residuals    5  2.500   0.500
##
##  Response PRT3 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## sex          1   1.16    1.16    1.02   0.36
## Residuals    5   5.70    1.14
```

```
fit.freq=manova(Y~freq)
summary(fit.freq)
```

```
##           Df Pillai approx F num Df den Df Pr(>F)
## freq       2   1.13      1.3      6      6   0.38
## Residuals  4
```

```
summary.aov(fit.freq)
```

```
##  Response PRT1 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## freq         2   2.68   1.339    1.95   0.26
## Residuals    4   2.75   0.688
##
##  Response PRT2 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## freq         2   1.61   0.804    2.57   0.19
## Residuals    4   1.25   0.313
##
##  Response PRT3 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## freq         2   4.36   2.179    3.49   0.13
## Residuals    4   2.50   0.625
```

```
fit.use=manova(Y~use)
summary(fit.use)
```

```
##           Df Pillai approx F num Df den Df Pr(>F)
## use        1  0.602     1.51      3      3   0.37
## Residuals  5
```

```
summary.aov(fit.use)
```

```
##  Response PRT1 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## use          1   0.01   0.012    0.01   0.92
## Residuals    5   5.42   1.083
##
##  Response PRT2 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## use          1   1.19   1.190    3.57   0.12
## Residuals    5   1.67   0.333
##
##  Response PRT3 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## use          1   3.86    3.86    6.43  0.052 .
## Residuals    5   3.00    0.60
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
fit.receive=aov(Y~receive)
summary(fit.receive)
```

```
##  Response PRT1 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## receive      3   2.76   0.921    1.04   0.49
## Residuals    3   2.67   0.889
##
##  Response PRT2 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## receive      3  0.857   0.286    0.43   0.75
## Residuals    3  2.000   0.667
##
##  Response PRT3 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## receive      3   4.19   1.397    1.57   0.36
## Residuals    3   2.67   0.889
```

```
fit.study=aov(Y~study)
summary(fit.study)
```

```
##  Response PRT1 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## study        1   0.15   0.149    0.14   0.72
## Residuals    5   5.28   1.056
##
##  Response PRT2 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## study        1  0.553   0.553     1.2   0.32
## Residuals    5  2.304   0.461
##
```

```
##  Response PRT3 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## study        1   2.43   2.432    2.75   0.16
## Residuals    5   4.43   0.885
```

```
fit.watch=manova(Y~watch)
summary(fit.watch)
```

```
##           Df Pillai approx F num Df den Df Pr(>F)
## watch      1  0.602     1.51      3      3   0.37
## Residuals  5
```

```
summary.aov(fit.watch)
```

```
##  Response PRT1 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## watch        1   0.43   0.429    0.43   0.54
## Residuals    5   5.00   1.000
##
##  Response PRT2 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## watch        1   1.19   1.190    3.57   0.12
## Residuals    5   1.67   0.333
##
##  Response PRT3 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## watch        1   0.19    0.19    0.14   0.72
## Residuals    5   6.67    1.33
```

```
fit.subtitles=manova(Y~subtitles)
summary(fit.subtitles)
```

```
##           Df Pillai approx F num Df den Df Pr(>F)
## subtitles  1  0.801     4.03      3      3   0.14
## Residuals  5
```

```
summary.aov(fit.subtitles)
```

```
##  Response PRT1 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## subtitles    1   1.93    1.93    2.76   0.16
## Residuals    5   3.50    0.70
##
##  Response PRT2 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## subtitles    1  0.857   0.857    2.14    0.2
## Residuals    5  2.000   0.400
##
##  Response PRT3 :
##             Df Sum Sq Mean Sq F value Pr(>F)
```

```
## subtitles    1   1.52    1.52    1.43   0.29
## Residuals    5   5.33    1.07
```

```
fit.howoften=manova(Y~howoften)
summary(fit.howoften)
```

```
##           Df Pillai approx F num Df den Df Pr(>F)
## howoften   2   1.29     1.81      6      6   0.24
## Residuals  4
```

```
summary.aov(fit.howoften)
```

```
##  Response PRT1 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## howoften     2   2.68   1.339    1.95   0.26
## Residuals    4   2.75   0.687
##
##  Response PRT2 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## howoften     2   1.86   0.929    3.71   0.12
## Residuals    4   1.00   0.250
##
##  Response PRT3 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## howoften     2   5.36   2.679    7.14  0.048 *
## Residuals    4   1.50   0.375
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
fit.sitcoms=manova(Y~No.Sitcoms)
summary(fit.sitcoms)
```

```
##            Df Pillai approx F num Df den Df Pr(>F)
## No.Sitcoms  1  0.589     1.43      3      3   0.39
## Residuals   5
```

```
summary.aov(fit.sitcoms)
```

```
##  Response PRT1 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## No.Sitcoms   1   0.10   0.095    0.09   0.78
## Residuals    5   5.33   1.067
##
##  Response PRT2 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## No.Sitcoms   1  0.024   0.024    0.04   0.85
## Residuals    5  2.833   0.567
##
##  Response PRT3 :
##             Df Sum Sq Mean Sq F value Pr(>F)
```

```
## No.Sitcoms   1   1.52    1.52    1.43   0.29
## Residuals    5   5.33    1.07
```

```
fit.freq.use=aov(Y~use:freq)
summary(fit.freq.use)
```

```
##  Response PRT1 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## use:freq     4   4.76   1.190    3.57   0.23
## Residuals    2   0.67   0.333
##
##  Response PRT2 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## use:freq     4  2.190   0.548    1.64   0.41
## Residuals    2  0.667   0.333
##
##  Response PRT3 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## use:freq     4   6.19   1.548    4.64   0.18
## Residuals    2   0.67   0.333
```

```
summary.aov(fit.freq.use)
```

```
##  Response PRT1 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## use:freq     4   4.76   1.190    3.57   0.23
## Residuals    2   0.67   0.333
##
##  Response PRT2 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## use:freq     4  2.190   0.548    1.64   0.41
## Residuals    2  0.667   0.333
##
##  Response PRT3 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## use:freq     4   6.19   1.548    4.64   0.18
## Residuals    2   0.67   0.333
```

```
fit.receive.study=aov(Y~receive:study)
summary(fit.receive.study)
```

```
##  Response PRT1 :
##               Df Sum Sq Mean Sq F value Pr(>F)
## receive:study  4   4.41   1.104    2.18   0.34
## Residuals      2   1.01   0.507
##
##  Response PRT2 :
##               Df Sum Sq Mean Sq F value Pr(>F)
## receive:study  4   1.75   0.438    0.79   0.62
## Residuals      2   1.10   0.553
##
```

```
##  Response PRT3 :
##               Df Sum Sq Mean Sq F value Pr(>F)
## receive:study  4   6.35   1.589    6.33   0.14
## Residuals      2   0.50   0.251
```

```
summary.aov(fit.receive.study)
```

```
##  Response PRT1 :
##               Df Sum Sq Mean Sq F value Pr(>F)
## receive:study  4   4.41   1.104    2.18   0.34
## Residuals      2   1.01   0.507
##
##  Response PRT2 :
##               Df Sum Sq Mean Sq F value Pr(>F)
## receive:study  4   1.75   0.438    0.79   0.62
## Residuals      2   1.10   0.553
##
##  Response PRT3 :
##               Df Sum Sq Mean Sq F value Pr(>F)
## receive:study  4   6.35   1.589    6.33   0.14
## Residuals      2   0.50   0.251
```

```
fit.sitcom=manova(Y~howoften:No.Sitcoms)
summary(fit.sitcom)
```

```
##                      Df Pillai approx F num Df den Df Pr(>F)
## howoften:No.Sitcoms  3   1.84     1.58      9      9   0.25
## Residuals            3
```

```
summary.aov(fit.sitcom)
```

```
##  Response PRT1 :
##                      Df Sum Sq Mean Sq F value Pr(>F)
## howoften:No.Sitcoms  3   2.76   0.921    1.04   0.49
## Residuals            3   2.67   0.889
##
##  Response PRT2 :
##                      Df Sum Sq Mean Sq F value Pr(>F)
## howoften:No.Sitcoms  3  2.190   0.730    3.29   0.18
## Residuals            3  0.667   0.222
##
##  Response PRT3 :
##                      Df Sum Sq Mean Sq F value Pr(>F)
## howoften:No.Sitcoms  3   5.69   1.897    4.88   0.11
## Residuals            3   1.17   0.389
```

```
fit.sitcom1=manova(Y~No.Sitcoms:subtitles)
summary(fit.sitcom1)
```

```
##                       Df Pillai approx F num Df den Df Pr(>F)
## No.Sitcoms:subtitles  2   1.45     2.64      6      6   0.13
## Residuals             4
```

```
summary.aov(fit.sitcom1)
```

```
##  Response PRT1 :
##                       Df Sum Sq Mean Sq F value Pr(>F)
## No.Sitcoms:subtitles  2   2.23    1.11    1.39   0.35
## Residuals             4   3.20    0.80
##
##  Response PRT2 :
##                       Df Sum Sq Mean Sq F value Pr(>F)
## No.Sitcoms:subtitles  2  0.857   0.429    0.86   0.49
## Residuals             4  2.000   0.500
##
##  Response PRT3 :
##                       Df Sum Sq Mean Sq F value Pr(>F)
## No.Sitcoms:subtitles  2   3.66    1.83    2.29   0.22
## Residuals             4   3.20    0.80
```

```
fit.sitcom2=manova(Y~watch:No.Sitcoms)
summary(fit.sitcom2)
```

```
##                   Df Pillai approx F num Df den Df Pr(>F)
## watch:No.Sitcoms  2   1.07     1.16      6      6   0.43
## Residuals         4
```

```
summary.aov(fit.sitcom2)
```

```
##  Response PRT1 :
##                   Df Sum Sq Mean Sq F value Pr(>F)
## watch:No.Sitcoms  2   0.43   0.214    0.17   0.85
## Residuals         4   5.00   1.250
##
##  Response PRT2 :
##                   Df Sum Sq Mean Sq F value Pr(>F)
## watch:No.Sitcoms  2   1.36   0.679    1.81   0.28
## Residuals         4   1.50   0.375
##
##  Response PRT3 :
##                   Df Sum Sq Mean Sq F value Pr(>F)
## watch:No.Sitcoms  2   2.86    1.43    1.43   0.34
## Residuals         4   4.00    1.00
```

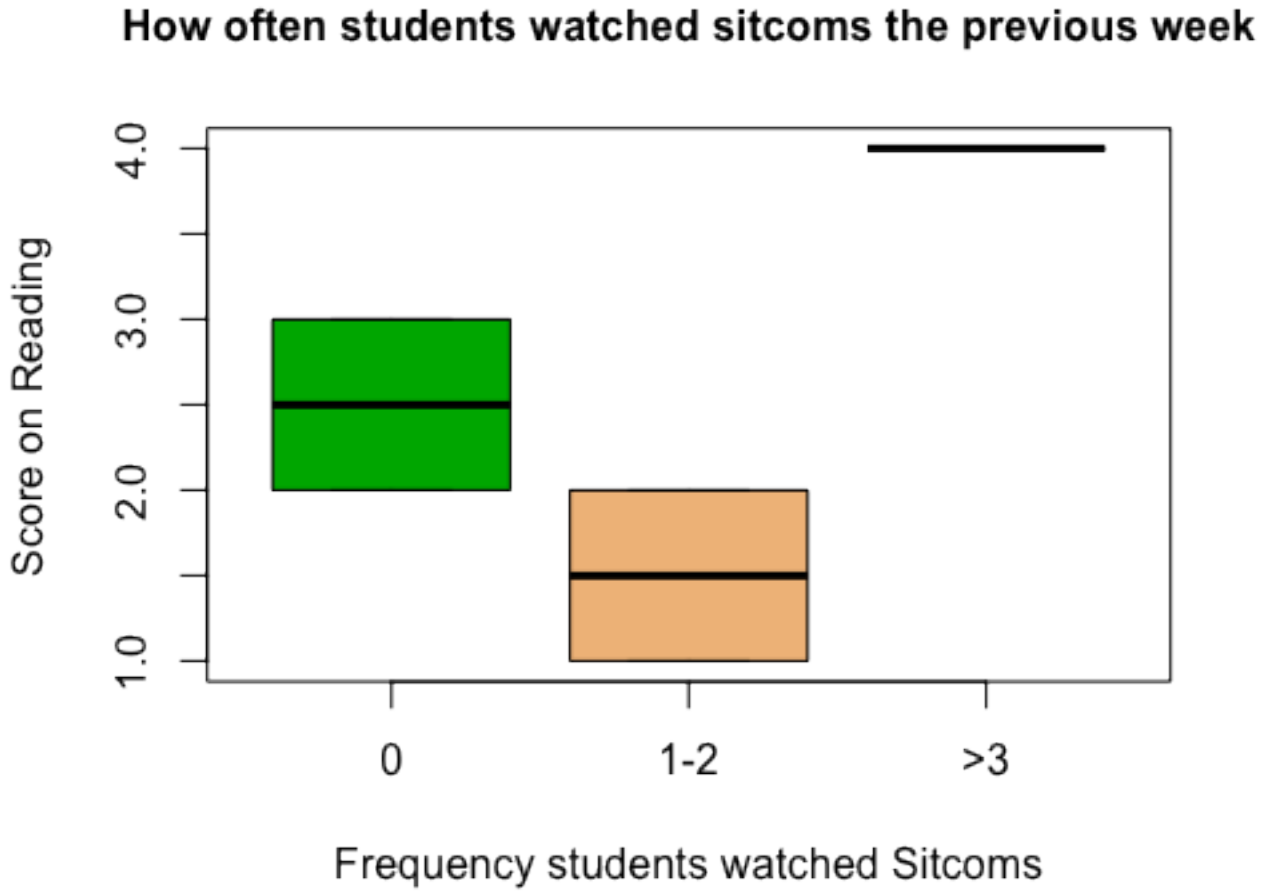
```
fit.sitcom3=manova(Y~use:watch)
summary(fit.sitcom3)
```

```
##           Df Pillai approx F num Df den Df Pr(>F)
## use:watch  3   1.35    0.819      9      9   0.61
## Residuals  3
```

```
summary.aov(fit.sitcom3)
```

```
##  Response PRT1 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## use:watch    3   0.76   0.254    0.16   0.91
## Residuals    3   4.67   1.556
##
##  Response PRT2 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## use:watch    3   1.69   0.563    1.45   0.38
## Residuals    3   1.17   0.389
##
##  Response PRT3 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## use:watch    3   4.19   1.397    1.57   0.36
## Residuals    3   2.67   0.889
```

```
#significant results plotted:
```



APPENDIX 9 MULTIVARIATE ANALYSIS OF VARIANCE OF INTERMEDIATES' RESULTS ACCORDING TO TEACHER-DEFINED LEVEL.

Key:

study = Hours participants study English throughout the week
No.Sitcoms = No. Sitcoms watched by participants (Derived Variable)
use = Frequency participants use English with friends or family
receive = Frequency participants receive private English classes
subtitles = Whether participants use English or Spanish subtitles
watch = Frequency participants watch English language Sitcoms
howoften = how many times participants watched sitcoms the previous week
freq = Frequency with which participants are in contact with English outside the classroom.
PRT1 = Score on the Vocabulary section of the pretest
PRT2 = Score on the Vocabulary in Context section of the pretest
PRT3 = Score on the Reading Comprehension section of the pretest
Y = Table with PRT1, PRT2, and PRT3

```
fit.age=manova(Y~age)
summary(fit.age)
```

```
##           Df Pillai approx F num Df den Df Pr(>F)
## age        3  0.339    0.382      9     27   0.93
## Residuals  9
```

```
summary.aov(fit.age)
```

```
##  Response PRT1 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## age          3    4.5    1.52     0.4   0.76
## Residuals    9   34.4    3.82
##
##  Response PRT2 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## age          3   1.19   0.397    0.19    0.9
## Residuals    9  18.50   2.056
##
##  Response PRT3 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## age          3   1.81   0.603    0.43   0.73
## Residuals    9  12.50   1.389
```

```
fit.sex=manova(Y~sex)
summary(fit.sex)
```

```
##           Df Pillai approx F num Df den Df Pr(>F)
## sex        1  0.209    0.791      3      9   0.53
## Residuals 11
```

```
summary.aov(fit.sex)
```

```
##  Response PRT1 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## sex          1    0.9    0.92    0.27   0.62
## Residuals   11   38.0    3.45
##
##  Response PRT2 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## sex          1   0.78   0.776    0.45   0.52
## Residuals   11  18.92   1.720
##
##  Response PRT3 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## sex          1   1.64    1.64    1.43   0.26
## Residuals   11  12.67    1.15
```

```
fit.freq=manova(Y~freq)
summary(fit.freq)
```

```
##           Df Pillai approx F num Df den Df Pr(>F)
## freq       1  0.127    0.438      3      9   0.73
## Residuals 11
```

```
summary.aov(fit.freq)
```

```
##  Response PRT1 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## freq         1    4.9    4.92    1.59   0.23
## Residuals   11   34.0    3.09
##
##  Response PRT2 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## freq         1   0.05   0.053    0.03   0.87
## Residuals   11  19.64   1.785
##
##  Response PRT3 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## freq         1   0.31   0.308    0.24   0.63
## Residuals   11  14.00   1.273
```

```
fit.use=manova(Y~use)
summary(fit.use)
```

```
##           Df Pillai approx F num Df den Df Pr(>F)
## use        2  0.813     2.05      6     18   0.11
## Residuals 10
```

```
summary.aov(fit.use)
```

```
##  Response PRT1 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## use          2   14.1    7.06    2.85   0.11
## Residuals   10   24.8    2.48
##
##  Response PRT2 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## use          2   4.66    2.33    1.55   0.26
## Residuals   10  15.03    1.50
##
##  Response PRT3 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## use          2   0.17   0.087    0.06   0.94
## Residuals   10  14.13   1.413
```

```
fit.receive=manova(Y~receive)
summary(fit.receive)
```

```
##           Df Pillai approx F num Df den Df Pr(>F)
## receive    2  0.428    0.817      6     18   0.57
## Residuals 10
```

```
summary.aov(fit.receive)
```

```
##  Response PRT1 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## receive      2   7.92    3.96    1.28   0.32
## Residuals   10  31.00    3.10
##
##  Response PRT2 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## receive      2   0.09   0.046    0.02   0.98
## Residuals   10  19.60   1.960
##
##  Response PRT3 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## receive      2   4.91    2.45    2.61   0.12
## Residuals   10   9.40    0.94
```

```
fit.study=manova(Y~study)
summary(fit.study)
```

```
##           Df Pillai approx F num Df den Df Pr(>F)
## study      1   0.22    0.845      3      9    0.5
## Residuals 11
```

```
summary.aov(fit.study)
```

```
##  Response PRT1 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## study        1    3.4    3.41    1.06   0.33
## Residuals   11   35.5    3.23
##
##  Response PRT2 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## study        1   2.88    2.88    1.89    0.2
## Residuals   11  16.81    1.53
##
##  Response PRT3 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## study        1    0.0   0.002       0   0.97
## Residuals   11   14.3   1.301
```

```
fit.watch=manova(Y~watch)
summary(fit.watch)
```

```
##           Df Pillai approx F num Df den Df Pr(>F)
## watch      2  0.319     0.57      6     18   0.75
## Residuals 10
```

```
summary.aov(fit.watch)
```

```
##  Response PRT1 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## watch        2    1.9    0.94    0.26   0.78
## Residuals   10   37.0    3.70
##
##  Response PRT2 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## watch        2   0.06   0.029    0.02   0.99
## Residuals   10  19.63   1.963
##
##  Response PRT3 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## watch        2   3.67    1.84    1.73   0.23
## Residuals   10  10.63    1.06
```

```
fit.subtitles=manova(Y~subtitles)
summary(fit.subtitles)
```

```
##           Df Pillai approx F num Df den Df Pr(>F)
## subtitles  2  0.259    0.447      6     18   0.84
## Residuals 10
```

```
summary.aov(fit.subtitles)
```

```
##  Response PRT1 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## subtitles    2    1.4    0.71    0.19   0.83
```

```
## Residuals   10   37.5    3.75
##
##  Response PRT2 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## subtitles    2   2.07    1.03    0.59   0.57
## Residuals   10  17.63    1.76
##
##  Response PRT3 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## subtitles    2   2.68    1.34    1.15   0.35
## Residuals   10  11.62    1.16
```

```
fit.howoften=manova(Y~howoften)
summary(fit.howoften)
```

```
##           Df Pillai approx F num Df den Df Pr(>F)
## howoften   2   0.25    0.429      6     18   0.85
## Residuals 10
```

```
summary.aov(fit.howoften)
```

```
##  Response PRT1 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## howoften     2    1.5    0.76     0.2   0.82
## Residuals   10   37.4    3.74
##
##  Response PRT2 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## howoften     2   0.79   0.396    0.21   0.81
## Residuals   10  18.90   1.890
##
##  Response PRT3 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## howoften     2   1.71   0.854    0.68   0.53
## Residuals   10  12.60   1.260
```

```
fit.sitcoms=manova(Y~No.Sitcoms)
summary(fit.sitcoms)
```

```
##            Df Pillai approx F num Df den Df Pr(>F)
## No.Sitcoms  4  0.912    0.874     12     24   0.58
## Residuals   8
```

```
summary.aov(fit.sitcoms)
```

```
##  Response PRT1 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## No.Sitcoms   4   11.5    2.88    0.84   0.54
## Residuals    8   27.4    3.43
##
##  Response PRT2 :
```

```
##             Df Sum Sq Mean Sq F value Pr(>F)
## No.Sitcoms   4   5.94    1.49    0.86   0.52
## Residuals    8  13.75    1.72
##
##  Response PRT3 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## No.Sitcoms   4   5.31    1.33    1.18   0.39
## Residuals    8   9.00    1.12
```

```
fit.freq.use=manova(Y~use:freq)
summary(fit.freq.use)
```

```
##           Df Pillai approx F num Df den Df Pr(>F)
## use:freq   5   1.36     1.16     15     21   0.37
## Residuals  7
```

```
summary.aov(fit.freq.use)
```

```
##  Response PRT1 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## use:freq     5   28.2    5.63    3.67   0.06 .
## Residuals    7   10.8    1.54
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##  Response PRT2 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## use:freq     5   6.94    1.39    0.76    0.6
## Residuals    7  12.75    1.82
##
##  Response PRT3 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## use:freq     5   0.81   0.162    0.08   0.99
## Residuals    7  13.50   1.929
```

```
fit.receive.study=manova(Y~receive:study)
summary(fit.receive.study)
```

```
##               Df Pillai approx F num Df den Df Pr(>F)
## receive:study  3  0.648    0.826      9     27    0.6
## Residuals      9
```

```
summary.aov(fit.receive.study)
```

```
##  Response PRT1 :
##               Df Sum Sq Mean Sq F value Pr(>F)
## receive:study  3   8.92    2.97    0.89   0.48
## Residuals      9  30.01    3.33
##
##  Response PRT2 :
##               Df Sum Sq Mean Sq F value Pr(>F)
```

```
## receive:study  3    3.3    1.10     0.6   0.63
## Residuals      9   16.4    1.82
##
##  Response PRT3 :
##               Df Sum Sq Mean Sq F value Pr(>F)
## receive:study  3   5.58   1.861    1.92    0.2
## Residuals      9   8.72   0.969
```

```
fit.sitcom=manova(Y~howoften:No.Sitcoms)
summary(fit.sitcom)
```

```
##                      Df Pillai approx F num Df den Df Pr(>F)
## howoften:No.Sitcoms  6   1.51     1.02     18     18   0.48
## Residuals            6
```

```
summary.aov(fit.sitcom)
```

```
##  Response PRT1 :
##                      Df Sum Sq Mean Sq F value Pr(>F)
## howoften:No.Sitcoms  6   21.0    3.50    1.17   0.43
## Residuals            6   17.9    2.99
##
##  Response PRT2 :
##                      Df Sum Sq Mean Sq F value Pr(>F)
## howoften:No.Sitcoms  6   7.53    1.25    0.62   0.71
## Residuals            6  12.17    2.03
##
##  Response PRT3 :
##                      Df Sum Sq Mean Sq F value Pr(>F)
## howoften:No.Sitcoms  6   6.64    1.11    0.87   0.57
## Residuals            6   7.67    1.28
```

```
fit.sitcom1=manova(Y~No.Sitcoms:subtitles)
summary(fit.sitcom1)
```

```
##                      Df Pillai approx F num Df den Df Pr(>F)
## No.Sitcoms:subtitles  8   1.81    0.764     24     12   0.72
## Residuals             4
```

```
summary.aov(fit.sitcom1)
```

```
##  Response PRT1 :
##                      Df Sum Sq Mean Sq F value Pr(>F)
## No.Sitcoms:subtitles  8   27.3    3.41    1.17   0.47
## Residuals             4   11.7    2.92
##
##  Response PRT2 :
##                      Df Sum Sq Mean Sq F value Pr(>F)
## No.Sitcoms:subtitles  8   12.7    1.59    0.91   0.58
## Residuals             4    7.0    1.75
##
```

```
##  Response PRT3 :
##                       Df Sum Sq Mean Sq F value Pr(>F)
## No.Sitcoms:subtitles  8  11.14   1.393    1.76   0.31
## Residuals             4   3.17   0.792
```

```
fit.sitcom2=manova(Y~watch:No.Sitcoms)
summary(fit.sitcom2)
```

```
##                   Df Pillai approx F num Df den Df Pr(>F)
## watch:No.Sitcoms  8   2.12      1.2     24     12   0.38
## Residuals         4
```

```
summary.aov(fit.sitcom2)
```

```
##  Response PRT1 :
##                   Df Sum Sq Mean Sq F value Pr(>F)
## watch:No.Sitcoms  8   21.8    2.72    0.63   0.73
## Residuals         4   17.2    4.29
##
##  Response PRT2 :
##                   Df Sum Sq Mean Sq F value Pr(>F)
## watch:No.Sitcoms  8  16.53   2.066    2.61   0.19
## Residuals         4   3.17   0.792
##
##  Response PRT3 :
##                   Df Sum Sq Mean Sq F value Pr(>F)
## watch:No.Sitcoms  8   10.3    1.29    1.29   0.43
## Residuals         4    4.0    1.00
```

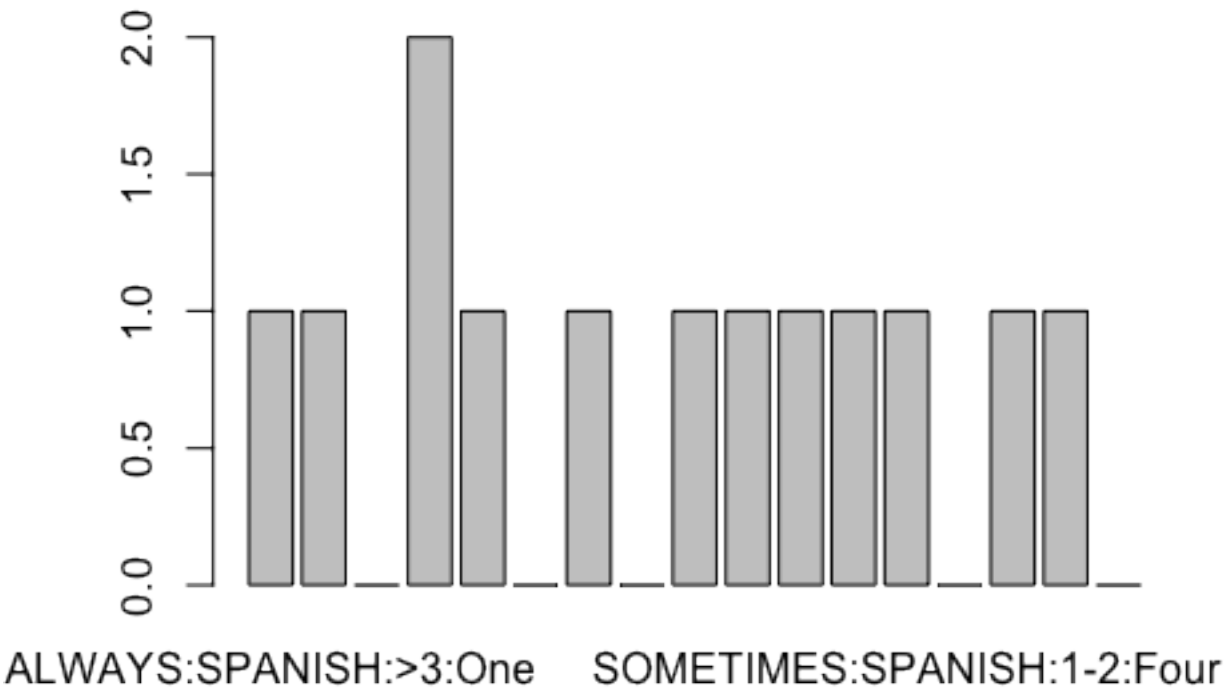
```
fit.sitcom3=aov(Y~sitcoms)
summary(fit.sitcom3)
```

```
##  Response PRT1 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## sitcoms     11   34.4    3.13     0.7   0.74
## Residuals    1    4.5    4.50
##
##  Response PRT2 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## sitcoms     11   19.2    1.75    3.49    0.4
## Residuals    1    0.5    0.50
##
##  Response PRT3 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## sitcoms     11   14.3     1.3 6.6e+30  3e-16 ***
## Residuals    1    0.0     0.0
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
summary.aov(fit.sitcom3)
```

```
##  Response PRT1 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## sitcoms     11   34.4    3.13     0.7   0.74
## Residuals    1    4.5    4.50
##
##  Response PRT2 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## sitcoms     11   19.2    1.75    3.49    0.4
## Residuals    1    0.5    0.50
##
##  Response PRT3 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## sitcoms     11   14.3     1.3 6.6e+30  3e-16 ***
## Residuals    1    0.0     0.0
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
plot(sitcoms)
```



APPENDIX 10 MULTIVARIATE ANALYSIS OF VARIANCE OF INTERMEDIATES' RESULTS ACCORDING TO TEACHER-DEFINED LEVEL WITH STUDENT WHO SCORED HIGH AND NEVER WATCHED SITCOMS REMOVED.

Key:

study = Hours participants study English throughout the week
No.Sitcoms = No. Sitcoms watched by participants (Derived Variable)
use = Frequency participants use English with friends or family
receive = Frequency participants receive private English classes
subtitles = Whether participants use English or Spanish subtitles
watch = Frequency participants watch English language Sitcoms
howoften = how many times participants watched sitcoms the previous week
freq = Frequency with which participants are in contact with English outs
ide the classroom.
PRT1 = Score on the Vocabulary section of the pretest
PRT2 = Score on the Vocabulary in Context section of the pretest
PRT3 = Score on the Reading Comprehension section of the pretest
Y = Table with PRT1, PRT2, and PRT3

```
fit.age=manova(Y~age)
summary(fit.age)
```

```
##           Df Pillai approx F num Df den Df Pr(>F)
## age        2  0.133    0.189      6     16   0.98
## Residuals  9
```

```
summary.aov(fit.age)
```

```
##  Response PRT1 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## age          2    3.6    1.81    0.47   0.64
## Residuals    9   34.4    3.82
##
##  Response PRT2 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## age          2   0.42   0.208     0.1    0.9
## Residuals    9  18.50   2.056
##
##  Response PRT3 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## age          2   0.17   0.083    0.06   0.94
## Residuals    9  12.50   1.389
```

**As there were no males in this group a MANOVA of the results for SEX is n
ot possible.**

```
fit.freq=manova(Y~freq)
summary(fit.freq)
```

```
##           Df Pillai approx F num Df den Df Pr(>F)
## freq       1  0.178    0.576      3      8   0.65
## Residuals 10
```

```
summary.aov(fit.freq)
```

```
##  Response PRT1 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## freq         1      6     6.0    1.88    0.2
## Residuals   10     32     3.2
##
##  Response PRT2 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## freq         1   0.17   0.167    0.09   0.77
## Residuals   10  18.75   1.875
##
##  Response PRT3 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## freq         1   0.67   0.667    0.56   0.47
## Residuals   10  12.00   1.200
```

```
fit.use=manova(Y~use)
summary(fit.use)
```

```
##           Df Pillai approx F num Df den Df Pr(>F)
## use        2  0.776     1.69      6     16   0.19
## Residuals  9
```

```
summary.aov(fit.use)
```

```
##  Response PRT1 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## use          2   15.9    7.95    3.24  0.087 .
## Residuals    9   22.1    2.46
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##  Response PRT2 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## use          2   4.02    2.01    1.21   0.34
## Residuals    9  14.90    1.66
##
##  Response PRT3 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## use          2   0.17   0.083    0.06   0.94
## Residuals    9  12.50   1.389
```

```
fit.receive=manova(Y~receive)
summary(fit.receive)
```

```
##           Df Pillai approx F num Df den Df Pr(>F)
## receive    2  0.428    0.726      6     16   0.64
## Residuals  9
```

```
summary.aov(fit.receive)
```

```
##  Response PRT1 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## receive      2   7.28    3.64    1.07   0.38
## Residuals    9  30.72    3.41
##
##  Response PRT2 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## receive      2   0.03   0.014    0.01   0.99
## Residuals    9  18.89   2.099
##
##  Response PRT3 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## receive      2   4.17   2.083    2.21   0.17
## Residuals    9   8.50   0.944
```

```
fit.study=manova(Y~study)
summary(fit.study)
```

```
##           Df Pillai approx F num Df den Df Pr(>F)
## study      1  0.208    0.701      3      8   0.58
## Residuals 10
```

```
summary.aov(fit.study)
```

```
##  Response PRT1 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## study        1      3    3.03    0.87   0.37
## Residuals   10     35    3.50
##
##  Response PRT2 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## study        1   2.57    2.57    1.57   0.24
## Residuals   10  16.35    1.64
##
##  Response PRT3 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## study        1   0.01   0.012    0.01   0.92
## Residuals   10  12.65   1.265
```

```
fit.watch=manova(Y~watch)
summary(fit.watch)
```

```
##           Df Pillai approx F num Df den Df Pr(>F)
## watch      2  0.254    0.388      6     16   0.88
## Residuals  9
```

```
summary.aov(fit.watch)
```

```
##  Response PRT1 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## watch        2    1.5    0.75    0.18   0.83
## Residuals    9   36.5    4.06
##
##  Response PRT2 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## watch        2   0.12   0.058    0.03   0.97
## Residuals    9  18.80   2.089
##
##  Response PRT3 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## watch        2   2.57    1.28    1.14   0.36
## Residuals    9  10.10    1.12
```

```
fit.subtitles=manova(Y~subtitles)
summary(fit.subtitles)
```

```
##           Df Pillai approx F num Df den Df Pr(>F)
## subtitles  2  0.246    0.374      6     16   0.89
## Residuals  9
```

```
summary.aov(fit.subtitles)
```

```
##  Response PRT1 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## subtitles    2    1.1    0.57    0.14   0.87
## Residuals    9   36.9    4.10
##
##  Response PRT2 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## subtitles    2   2.74    1.37    0.76   0.49
## Residuals    9  16.18    1.80
##
##  Response PRT3 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## subtitles    2   1.92   0.958     0.8   0.48
## Residuals    9  10.75   1.194
```

```
fit.howoften=manova(Y~howoften)
summary(fit.howoften)
```

```
##           Df Pillai approx F num Df den Df Pr(>F)
## howoften   1 0.0444    0.124      3      8   0.94
## Residuals 10
```

```
summary.aov(fit.howoften)
```

```
##  Response PRT1 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## howoften     1    0.6    0.60    0.16    0.7
## Residuals   10   37.4    3.74
##
##  Response PRT2 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## howoften     1   0.02   0.017    0.01   0.93
## Residuals   10  18.90   1.890
##
##  Response PRT3 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## howoften     1   0.07   0.067    0.05   0.82
## Residuals   10  12.60   1.260
```

```
fit.sitcoms=manova(Y~No.Sitcoms)
summary(fit.sitcoms)
```

```
##            Df Pillai approx F num Df den Df Pr(>F)
## No.Sitcoms  3  0.778    0.934      9     24   0.51
## Residuals   8
```

```
summary.aov(fit.sitcoms)
```

```
##  Response PRT1 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## No.Sitcoms   3   10.6    3.53    1.03   0.43
## Residuals    8   27.4    3.43
##
##  Response PRT2 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## No.Sitcoms   3   5.17    1.72       1   0.44
## Residuals    8  13.75    1.72
##
##  Response PRT3 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## No.Sitcoms   3   3.67    1.22    1.09   0.41
## Residuals    8   9.00    1.12
```

```
fit.freq.use=manova(Y~use:freq)
summary(fit.freq.use)
```

```
##           Df Pillai approx F num Df den Df Pr(>F)
## use:freq   5   1.35     0.98     15     18   0.51
## Residuals  6
```

```
summary.aov(fit.freq.use)
```

```
##  Response PRT1 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## use:freq     5  29.33    5.87    4.06  0.059 .
## Residuals    6   8.67    1.44
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##  Response PRT2 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## use:freq     5   6.17    1.23    0.58   0.72
## Residuals    6  12.75    2.12
##
##  Response PRT3 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## use:freq     5   1.25    0.25    0.13   0.98
## Residuals    6  11.42    1.90
```

```
fit.receive.study=manova(Y~receive:study)
summary(fit.receive.study)
```

```
##               Df Pillai approx F num Df den Df Pr(>F)
## receive:study  3  0.644    0.729      9     24   0.68
## Residuals      8
```

```
summary.aov(fit.receive.study)
```

```
##  Response PRT1 :
##               Df Sum Sq Mean Sq F value Pr(>F)
## receive:study  3   8.18    2.73    0.73   0.56
## Residuals      8  29.82    3.73
##
##  Response PRT2 :
##               Df Sum Sq Mean Sq F value Pr(>F)
## receive:study  3   3.01    1.00     0.5   0.69
## Residuals      8  15.91    1.99
##
##  Response PRT3 :
##               Df Sum Sq Mean Sq F value Pr(>F)
## receive:study  3   4.96   1.655    1.72   0.24
## Residuals      8   7.70   0.963
```

```
fit.sitcom=manova(Y~howoften:No.Sitcoms)
summary(fit.sitcom)
```

```
##                      Df Pillai approx F num Df den Df Pr(>F)
## howoften:No.Sitcoms  5   1.41     1.06     15     18   0.44
## Residuals            6
```

```
summary.aov(fit.sitcom)
```

```
##  Response PRT1 :
##                      Df Sum Sq Mean Sq F value Pr(>F)
## howoften:No.Sitcoms   5   20.1    4.02    1.35   0.36
## Residuals             6   17.9    2.99
##
##  Response PRT2 :
##                      Df Sum Sq Mean Sq F value Pr(>F)
## howoften:No.Sitcoms   5   6.75    1.35    0.67   0.66
## Residuals             6  12.17    2.03
##
##  Response PRT3 :
##                      Df Sum Sq Mean Sq F value Pr(>F)
## howoften:No.Sitcoms   5   5.00    1.00    0.78    0.6
## Residuals             6   7.67    1.28
```

```
fit.sitcom1=manova(Y~No.Sitcoms:subtitles)
summary(fit.sitcom1)
```

```
##                      Df Pillai approx F num Df den Df Pr(>F)
## No.Sitcoms:subtitles  7   1.73    0.781     21     12    0.7
## Residuals             4
```

```
summary.aov(fit.sitcom1)
```

```
##  Response PRT1 :
##                      Df Sum Sq Mean Sq F value Pr(>F)
## No.Sitcoms:subtitles  7   26.3    3.76    1.29   0.43
## Residuals             4   11.7    2.92
##
##  Response PRT2 :
##                      Df Sum Sq Mean Sq F value Pr(>F)
## No.Sitcoms:subtitles  7   11.9    1.70    0.97   0.54
## Residuals             4    7.0    1.75
##
##  Response PRT3 :
##                      Df Sum Sq Mean Sq F value Pr(>F)
## No.Sitcoms:subtitles  7   9.50   1.357    1.71   0.31
## Residuals             4   3.17   0.792
```

```
fit.sitcom2=manova(Y~watch:No.Sitcoms)
summary(fit.sitcom2)
```

```
##                  Df Pillai approx F num Df den Df Pr(>F)
## watch:No.Sitcoms  7   2.02     1.17     21     12    0.4
## Residuals         4
```

```
summary.aov(fit.sitcom2)
```

```
##  Response PRT1 :
##                  Df Sum Sq Mean Sq F value Pr(>F)
## watch:No.Sitcoms  7   20.8    2.98    0.69   0.69
```

```
## Residuals         4   17.2    4.29
##
##  Response PRT2 :
##                  Df Sum Sq Mean Sq F value Pr(>F)
## watch:No.Sitcoms  7  15.75   2.250    2.84   0.16
## Residuals         4   3.17   0.792
##
##  Response PRT3 :
##                  Df Sum Sq Mean Sq F value Pr(>F)
## watch:No.Sitcoms  7   8.67    1.24    1.24   0.44
## Residuals         4   4.00    1.00
```

```
fit.sitcom3=aov(Y~sitcoms)
summary(fit.sitcom3)
```

```
##  Response PRT1 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## sitcoms     10   33.5    3.35    0.74   0.73
## Residuals    1    4.5    4.50
##
##  Response PRT2 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## sitcoms     10   18.4    1.84    3.68   0.39
## Residuals    1    0.5    0.50
##
##  Response PRT3 :
##             Df Sum Sq Mean Sq  F value Pr(>F)
## sitcoms     10   12.7    1.27 1.03e+32 <2e-16 ***
## Residuals    1    0.0    0.00
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
summary.aov(fit.sitcom3)
```

```
##  Response PRT1 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## sitcoms     10   33.5    3.35    0.74   0.73
## Residuals    1    4.5    4.50
##
##  Response PRT2 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## sitcoms     10   18.4    1.84    3.68   0.39
## Residuals    1    0.5    0.50
##
##  Response PRT3 :
##             Df Sum Sq Mean Sq  F value Pr(>F)
## sitcoms     10   12.7    1.27 1.03e+32 <2e-16 ***
## Residuals    1    0.0    0.00
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

APPENDIX 11 MULTIVARIATE ANALYSIS OF VARIANCE OF ALL PARTICIPANTS RESULTS ACCORDING TO TEACHER-DEFINED LEVEL EXCEPT THE ADVANCED PARTICIPANT.

Key:

study = Hours participants study English throughout the week
No.Sitcoms = No. Sitcoms watched by participants (Derived Variable)
use = Frequency participants use English with friends or family
receive = Frequency participants receive private English classes
subtitles = Whether participants use English or Spanish subtitles
watch = Frequency participants watch English language Sitcoms
howoften = how many times participants watched sitcoms the previous week
freq = Frequency with which participants are in contact with English outside the classroom.
PRT1 = Score on the Vocabulary section of the pretest
PRT2 = Score on the Vocabulary in Context section of the pretest
PRT3 = Score on the Reading Comprehension section of the pretest
Y = Table with PRT1, PRT2, and PRT3

```
fit.age=manova(Y~age)
summary(fit.age)
```

```
##           Df Pillai approx F num Df den Df Pr(>F)
## age        3  0.215    0.439      9     51   0.91
## Residuals 17
```

```
summary.aov(fit.age)
```

```
##  Response PRT1 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## age          3    4.1    1.38    0.25   0.86
## Residuals   17   92.8    5.46
##
##  Response PRT2 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## age          3    1.1   0.366    0.16   0.92
## Residuals   17   39.5   2.322
##
##  Response PRT3 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## age          3    3.8    1.27    0.92   0.45
## Residuals   17   23.4    1.38
```

```
fit.sex=manova(Y~sex)
summary(fit.sex)
```

```
##           Df Pillai approx F num Df den Df Pr(>F)
## sex        1  0.181     1.25      3     17   0.32
## Residuals 19
```

```
summary.aov(fit.sex)
```

```
##  Response PRT1 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## sex          1    1.3    1.34    0.27   0.61
## Residuals   19   95.6    5.03
##
##  Response PRT2 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## sex          1    0.8   0.794    0.38   0.55
## Residuals   19   39.8   2.094
##
##  Response PRT3 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## sex          1   4.57    4.57    3.83  0.065 .
## Residuals   19  22.67    1.19
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
fit.freq=manova(Y~freq)
summary(fit.freq)
```

```
##           Df Pillai approx F num Df den Df Pr(>F)
## freq       2  0.342     1.17      6     34   0.35
## Residuals 18
```

```
summary.aov(fit.freq)
```

```
##  Response PRT1 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## freq         2    6.4    3.22    0.64   0.54
## Residuals   18   90.5    5.03
##
##  Response PRT2 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## freq         2    5.5    2.75    1.41   0.27
## Residuals   18   35.1    1.95
##
##  Response PRT3 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## freq         2    2.6    1.30    0.95   0.41
## Residuals   18   24.6    1.37
```

```
fit.use=manova(Y~use)
summary(fit.use)
```

```
##           Df Pillai approx F num Df den Df Pr(>F)
## use        2  0.296    0.983      6     34   0.45
## Residuals 18
```

```
summary.aov(fit.use)
```

```
##  Response PRT1 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## use          2    7.7    3.86    0.78   0.47
## Residuals   18   89.2    4.96
##
##  Response PRT2 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## use          2    7.4    3.69       2   0.16
## Residuals   18   33.2    1.84
##
##  Response PRT3 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## use          2   1.94   0.969    0.69   0.51
## Residuals   18  25.30   1.406
```

```
fit.receive=manova(Y~receive)
summary(fit.receive)
```

```
##           Df Pillai approx F num Df den Df Pr(>F)
## receive    3  0.381    0.825      9     51    0.6
## Residuals 17
```

```
summary.aov(fit.receive)
```

```
##  Response PRT1 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## receive      3   18.4    6.12    1.32    0.3
## Residuals   17   78.6    4.62
##
##  Response PRT2 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## receive      3    3.5    1.18    0.54   0.66
## Residuals   17   37.0    2.18
##
##  Response PRT3 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## receive      3   2.64   0.881    0.61   0.62
## Residuals   17  24.60   1.447
```

```
fit.study=manova(Y~study)
summary(fit.study)
```

```
##           Df Pillai approx F num Df den Df Pr(>F)
## study      1 0.0822    0.508      3     17   0.68
## Residuals 19
```

```
summary.aov(fit.study)
```

```
##  Response PRT1 :
##              Df Sum Sq Mean Sq F value Pr(>F)
## study         1    3.3    3.30    0.67   0.42
## Residuals    19   93.7    4.93
##
##  Response PRT2 :
##              Df Sum Sq Mean Sq F value Pr(>F)
## study         1    0.4   0.358    0.17   0.69
## Residuals    19   40.2   2.116
##
##  Response PRT3 :
##              Df Sum Sq Mean Sq F value Pr(>F)
## study         1   0.45   0.452    0.32   0.58
## Residuals    19  26.79   1.410
```

```
fit.watch=manova(Y~watch)
summary(fit.watch)
```

```
##           Df Pillai approx F num Df den Df Pr(>F)
## watch      3  0.428    0.943      9     51    0.5
## Residuals 17
```

```
summary.aov(fit.watch)
```

```
##  Response PRT1 :
##              Df Sum Sq Mean Sq F value Pr(>F)
## watch         3      7    2.33    0.44   0.73
## Residuals    17     90    5.29
##
##  Response PRT2 :
##              Df Sum Sq Mean Sq F value Pr(>F)
## watch         3    6.5    2.16    1.08   0.39
## Residuals    17   34.1    2.01
##
##  Response PRT3 :
##              Df Sum Sq Mean Sq F value Pr(>F)
## watch         3   4.84    1.61    1.22   0.33
## Residuals    17  22.40    1.32
```

```
fit.subtitles=manova(Y~subtitles)
summary(fit.subtitles)
```

```
##           Df Pillai approx F num Df den Df Pr(>F)
## subtitles  3   0.34    0.725      9     51   0.68
## Residuals 17
```

```
summary.aov(fit.subtitles)
```

```
##  Response PRT1 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## subtitles    3    4.5    1.51    0.28   0.84
## Residuals   17   92.4    5.44
##
##  Response PRT2 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## subtitles    3    5.4    1.80    0.87   0.47
## Residuals   17   35.2    2.07
##
##  Response PRT3 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## subtitles    3   3.22    1.07    0.76   0.53
## Residuals   17  24.01    1.41
```

```
fit.howoften=manova(Y~howoften)
summary(fit.howoften)
```

```
##           Df Pillai approx F num Df den Df Pr(>F)
## howoften   2  0.311     1.04      6     34   0.41
## Residuals 18
```

```
summary.aov(fit.howoften)
```

```
##  Response PRT1 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## howoften     2    3.5    1.77    0.34   0.72
## Residuals   18   93.4    5.19
##
##  Response PRT2 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## howoften     2    7.1    3.54     1.9   0.18
## Residuals   18   33.5    1.86
##
##  Response PRT3 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## howoften     2   3.46    1.73    1.31   0.29
## Residuals   18  23.77    1.32
```

```
fit.sitcoms=manova(Y~No.Sitcoms)
summary(fit.sitcoms)
```

```
##            Df Pillai approx F num Df den Df Pr(>F)
## No.Sitcoms  4  0.847     1.57     12     48   0.13
## Residuals  16
```

```
summary.aov(fit.sitcoms)
```

```
##  Response PRT1 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## No.Sitcoms   4   23.3    5.81    1.26   0.33
```

```
## Residuals   16   73.7    4.61
##
##  Response PRT2 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## No.Sitcoms   4   15.6    3.90     2.5  0.084 .
## Residuals   16   25.0    1.56
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##  Response PRT3 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## No.Sitcoms   4   7.02    1.75    1.39   0.28
## Residuals   16  20.22    1.26
```

```
fit.freq.use=manova(Y~use:freq)
summary(fit.freq.use)
```

```
##           Df Pillai approx F num Df den Df Pr(>F)
## use:freq   6  0.907     1.01     18     42   0.47
## Residuals 14
```

```
summary.aov(fit.freq.use)
```

```
##  Response PRT1 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## use:freq     6   17.9    2.98    0.53   0.78
## Residuals   14   79.1    5.65
##
##  Response PRT2 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## use:freq     6   18.7    3.12       2   0.13
## Residuals   14   21.9    1.56
##
##  Response PRT3 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## use:freq     6   4.61   0.768    0.48   0.82
## Residuals   14  22.63   1.616
```

```
fit.receive.study=manova(Y~receive:study)
summary(fit.receive.study)
```

```
##               Df Pillai approx F num Df den Df Pr(>F)
## receive:study  4  0.561     0.92     12     48   0.53
## Residuals     16
```

```
summary.aov(fit.receive.study)
```

```
##  Response PRT1 :
##               Df Sum Sq Mean Sq F value Pr(>F)
## receive:study  4   14.7    3.67    0.71   0.59
## Residuals     16   82.3    5.14
```

```
##
##  Response PRT2 :
##               Df Sum Sq Mean Sq F value Pr(>F)
## receive:study  4    7.6    1.91    0.93   0.47
## Residuals     16   32.9    2.06
##
##  Response PRT3 :
##               Df Sum Sq Mean Sq F value Pr(>F)
## receive:study  4   5.46    1.36       1   0.43
## Residuals     16  21.78    1.36
```

```
fit.sitcom=manova(Y~howoften:No.Sitcoms)
summary(fit.sitcom)
```

```
##                      Df Pillai approx F num Df den Df Pr(>F)
## howoften:No.Sitcoms  7   1.16     1.17     21     39   0.33
## Residuals           13
```

```
summary.aov(fit.sitcom)
```

```
##  Response PRT1 :
##                      Df Sum Sq Mean Sq F value Pr(>F)
## howoften:No.Sitcoms  7   38.9    5.56    1.24   0.35
## Residuals           13   58.1    4.47
##
##  Response PRT2 :
##                      Df Sum Sq Mean Sq F value Pr(>F)
## howoften:No.Sitcoms  7   16.2    2.31    1.24   0.35
## Residuals           13   24.4    1.87
##
##  Response PRT3 :
##                      Df Sum Sq Mean Sq F value Pr(>F)
## howoften:No.Sitcoms  7   10.8    1.54    1.21   0.36
## Residuals           13   16.5    1.27
```

```
fit.sitcom1=manova(Y~No.Sitcoms:subtitles)
summary(fit.sitcom1)
```

```
##                       Df Pillai approx F num Df den Df Pr(>F)
## No.Sitcoms:subtitles  9    1.7      1.6     27     33  0.099 .
## Residuals            11
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
summary.aov(fit.sitcom1)
```

```
##  Response PRT1 :
##                       Df Sum Sq Mean Sq F value Pr(>F)
## No.Sitcoms:subtitles  9   54.8    6.09    1.59   0.23
## Residuals            11   42.2    3.83
##
```

```
##  Response PRT2 :
##                      Df Sum Sq Mean Sq F value Pr(>F)
## No.Sitcoms:subtitles  9   19.9    2.21    1.18   0.39
## Residuals            11   20.7    1.88
##
##  Response PRT3 :
##                      Df Sum Sq Mean Sq F value Pr(>F)
## No.Sitcoms:subtitles  9   16.6    1.84     1.9   0.16
## Residuals            11   10.7    0.97
```

```
fit.sitcom2=manova(Y~watch:No.Sitcoms)
summary(fit.sitcom2)
```

```
##                   Df Pillai approx F num Df den Df Pr(>F)
## watch:No.Sitcoms 10   1.56     1.09     30     30   0.41
## Residuals        10
```

```
summary.aov(fit.sitcom2)
```

```
##  Response PRT1 :
##                   Df Sum Sq Mean Sq F value Pr(>F)
## watch:No.Sitcoms 10   33.1    3.31    0.52   0.84
## Residuals        10   63.8    6.38
##
##  Response PRT2 :
##                   Df Sum Sq Mean Sq F value Pr(>F)
## watch:No.Sitcoms 10   33.8    3.38    5.01 0.0089 **
## Residuals        10    6.8    0.68
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##  Response PRT3 :
##                   Df Sum Sq Mean Sq F value Pr(>F)
## watch:No.Sitcoms 10   11.2    1.11    0.69   0.71
## Residuals        10   16.1    1.61
```

```
fit.sitcom3=manova(Y~use:watch:No.Sitcoms)
summary(fit.sitcom3)
```

```
##                       Df Pillai approx F num Df den Df Pr(>F)
## use:watch:No.Sitcoms 12   1.78    0.973     36     24   0.54
## Residuals             8
```

```
summary.aov(fit.sitcom3)
```

```
##  Response PRT1 :
##                       Df Sum Sq Mean Sq F value Pr(>F)
## use:watch:No.Sitcoms 12   47.5    3.95    0.64   0.77
## Residuals             8   49.5    6.19
##
##  Response PRT2 :
```

```
##                       Df Sum Sq Mean Sq F value Pr(>F)
## use:watch:No.Sitcoms 12   36.1   3.006    5.34  0.012 *
## Residuals             8    4.5   0.562
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##  Response PRT3 :
##                       Df Sum Sq Mean Sq F value Pr(>F)
## use:watch:No.Sitcoms 12   12.7    1.06    0.59   0.81
## Residuals             8   14.5    1.81
```

```
fit.sitcom4=manova(Y~use:watch)
summary(fit.sitcom4)
```

```
##           Df Pillai approx F num Df den Df Pr(>F)
## use:watch  8   1.22     1.03     24     36   0.45
## Residuals 12
```

```
summary.aov(fit.sitcom4)
```

```
##  Response PRT1 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## use:watch    8     26    3.25    0.55    0.8
## Residuals   12     71    5.91
##
##  Response PRT2 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## use:watch    8   31.1    3.88    4.91 0.0071 **
## Residuals   12    9.5    0.79
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##  Response PRT3 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## use:watch    8   6.81   0.851     0.5   0.83
## Residuals   12  20.43   1.702
```

```
fit.sitcom5=manova(Y~use:No.Sitcoms)
summary(fit.sitcom5)
```

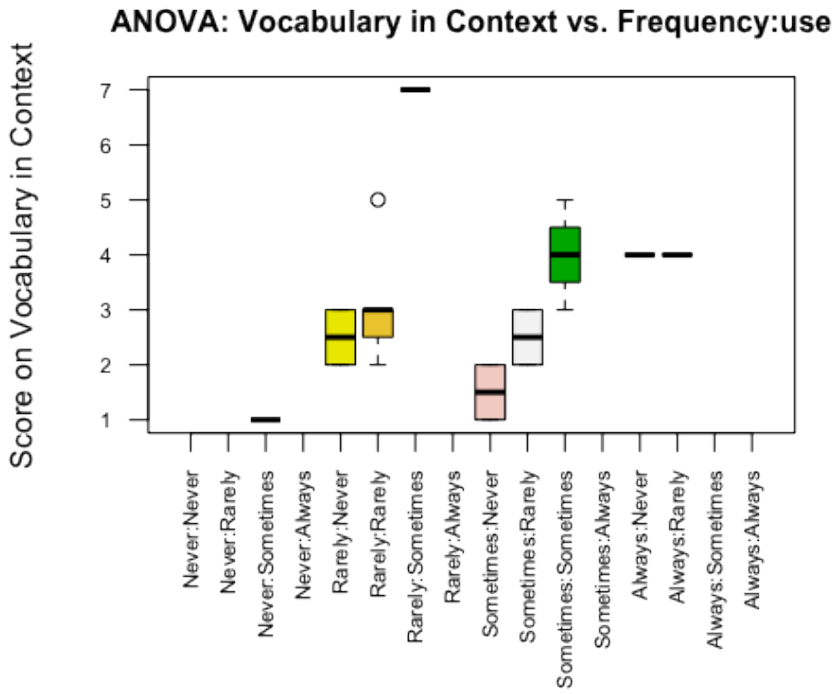
```
##                Df Pillai approx F num Df den Df Pr(>F)
## use:No.Sitcoms  9   1.38     1.04     27     33   0.45
## Residuals      11
```

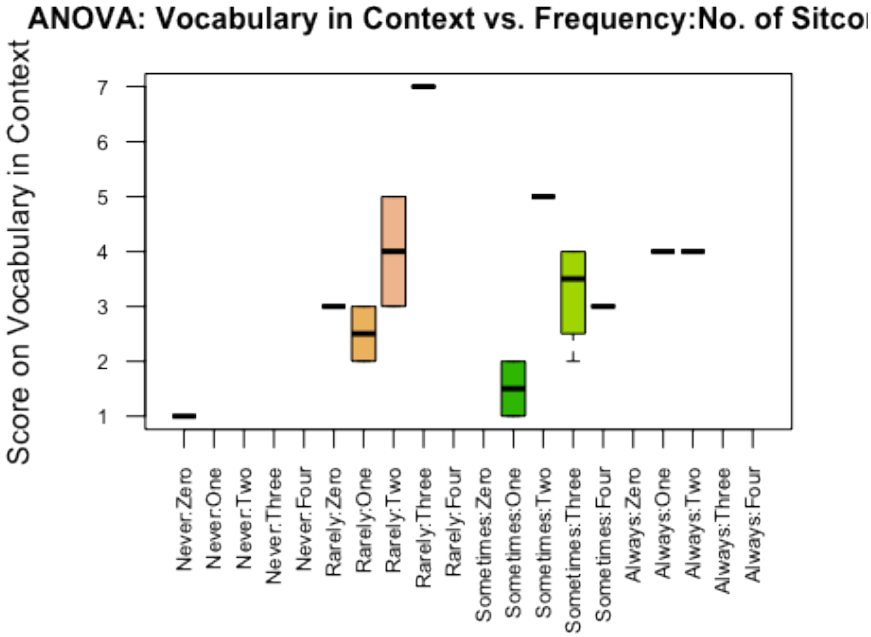
```
summary.aov(fit.sitcom5)
```

```
##  Response PRT1 :
##                Df Sum Sq Mean Sq F value Pr(>F)
## use:No.Sitcoms  9   38.7    4.30    0.81   0.62
## Residuals      11   58.2    5.29
##
```

```
##  Response PRT2 :
##                Df Sum Sq Mean Sq F value Pr(>F)
## use:No.Sitcoms  9   27.3    3.03    2.51  0.077 .
## Residuals      11   13.3    1.21
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##  Response PRT3 :
##                Df Sum Sq Mean Sq F value Pr(>F)
## use:No.Sitcoms  9   10.4    1.16    0.76   0.65
## Residuals      11   16.8    1.53
```

Significant results plotted:




ANOVA: Vocabulary in Context vs. Frequency:No. of Sitco
Score on Vocabulary in Context
1
2
3
4
5
6
7
Never:Zero
Never:One
Never:Two
Never:Three
Never:Four
Rarely:Zero
Rarely:One
Rarely:Two
Rarely:Three
Rarely:Four
Sometimes:Zero
Sometimes:One
Sometimes:Two
Sometimes:Three
Sometimes:Four
Always:Zero
Always:One
Always:Two
Always:Three
Always:Four

APPENDIX 12 MULTIVARIATE ANALYSIS OF VARIANCE OF ALL PARTICIPANTS RESULTS ACCORDING TO TEACHER-DEFINED LEVEL WITH ADVANCED PARTICIPANT AND THE PARTICIPANTS REMOVED FROM THE MANOVAS OF BEGINNERS AND INTERMEDIATES REMOVED.

Key:

study = Hours participants study English throughout the week
No.Sitcoms = No. Sitcoms watched by participants (Derived Variable)
use = Frequency participants use English with friends or family
receive = Frequency participants receive private English classes
subtitles = Whether participants use English or Spanish subtitles
watch = Frequency participants watch English language Sitcoms
howoften = how many times participants watched sitcoms the previous week
freq = Frequency with which participants are in contact with English outs
ide the classroom.
PRT1 = Score on the Vocabulary section of the pretest
PRT2 = Score on the Vocabulary in Context section of the pretest
PRT3 = Score on the Reading Comprehension section of the pretest
Y = Table with PRT1, PRT2, and PRT3

```
fit.age=manova(Y~age)
summary(fit.age)
```

```
##           Df Pillai approx F num Df den Df Pr(>F)
## age        3  0.257    0.469      9     45   0.89
## Residuals 15
```

```
summary.aov(fit.age)
```

```
##  Response PRT1 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## age          3   11.5    3.83    0.72   0.55
## Residuals   15   79.7    5.31
##
##  Response PRT2 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## age          3    2.1    0.70    0.31   0.82
## Residuals   15   33.6    2.24
##
##  Response PRT3 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## age          3   2.87   0.958    0.63   0.61
## Residuals   15  22.92   1.528
```

```
fit.sex=manova(Y~sex)
summary(fit.sex)
```

```
##           Df Pillai approx F num Df den Df Pr(>F)
## sex        1  0.224     1.44      3     15   0.27
## Residuals 17
```

```
summary.aov(fit.sex)
```

```
##  Response PRT1 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## sex          1    7.2    7.16    1.45   0.25
## Residuals   17   84.0    4.94
##
##  Response PRT2 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## sex          1    1.3    1.30    0.64   0.43
## Residuals   17   34.4    2.02
##
##  Response PRT3 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## sex          1   4.35    4.35    3.45  0.081 .
## Residuals   17  21.44    1.26
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
fit.freq=manova(Y~freq)
summary(fit.freq)
```

```
##           Df Pillai approx F num Df den Df Pr(>F)
## freq       2  0.365     1.11      6     30   0.38
## Residuals 16
```

```
summary.aov(fit.freq)
```

```
##  Response PRT1 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## freq         2    6.9    3.45    0.66   0.53
## Residuals   16   84.2    5.27
##
##  Response PRT2 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## freq         2   5.43    2.72    1.44   0.27
## Residuals   16  30.25    1.89
##
##  Response PRT3 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## freq         2   2.29    1.15    0.78   0.48
## Residuals   16  23.50    1.47
```

```
fit.use=manova(Y~use)
summary(fit.use)
```

```
##           Df Pillai approx F num Df den Df Pr(>F)
## use        2  0.499     1.66      6     30   0.16
## Residuals 16
```

```
summary.aov(fit.use)
```

```
##  Response PRT1 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## use          2    9.5    4.73    0.93   0.42
## Residuals   16   81.7    5.11
##
##  Response PRT2 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## use          2   13.3    6.64    4.74  0.024 *
## Residuals   16   22.4    1.40
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##  Response PRT3 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## use          2   1.97   0.984    0.66   0.53
## Residuals   16  23.82   1.489
```

```
fit.receive=manova(Y~receive)
summary(fit.receive)
```

```
##           Df Pillai approx F num Df den Df Pr(>F)
## receive    3  0.355    0.672      9     45   0.73
## Residuals 15
```

```
summary.aov(fit.receive)
```

```
##  Response PRT1 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## receive      3   15.1    5.02    0.99   0.42
## Residuals   15   76.1    5.07
##
##  Response PRT2 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## receive      3    4.1    1.37    0.65    0.6
## Residuals   15   31.6    2.11
##
##  Response PRT3 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## receive      3   1.96   0.652    0.41   0.75
## Residuals   15  23.83   1.589
```

```
fit.study=manova(Y~study)
summary(fit.study)
```

```
##           Df Pillai approx F num Df den Df Pr(>F)
## study      1  0.102    0.565      3     15   0.65
## Residuals 17
```

```
summary.aov(fit.study)
```

```
##  Response PRT1 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## study        1    2.7     2.7    0.52   0.48
## Residuals   17   88.5     5.2
##
##  Response PRT2 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## study        1    0.5   0.481    0.23   0.64
## Residuals   17   35.2   2.071
##
##  Response PRT3 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## study        1   0.39   0.388    0.26   0.62
## Residuals   17  25.40   1.494
```

```
fit.watch=manova(Y~watch)
summary(fit.watch)
```

```
##           Df Pillai approx F num Df den Df Pr(>F)
## watch      2  0.218    0.612      6     30   0.72
## Residuals 16
```

```
summary.aov(fit.watch)
```

```
##  Response PRT1 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## watch        2    6.6    3.28    0.62   0.55
## Residuals   16   84.6    5.29
##
##  Response PRT2 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## watch        2    1.7   0.842     0.4   0.68
## Residuals   16   34.0   2.125
##
##  Response PRT3 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## watch        2   3.57    1.78    1.28    0.3
## Residuals   16  22.22    1.39
```

```
fit.subtitles=manova(Y~subtitles)
summary(fit.subtitles)
```

```
##            Df Pillai approx F num Df den Df Pr(>F)
## subtitles   2  0.157    0.426      6     30   0.86
## Residuals  16
```

```
summary.aov(fit.subtitles)
```

```
##  Response PRT1 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## subtitles    2    4.7    2.36    0.44   0.65
## Residuals   16   86.4    5.40
##
##  Response PRT2 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## subtitles    2    0.6   0.288    0.13   0.88
## Residuals   16   35.1   2.194
##
##  Response PRT3 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## subtitles    2   2.22    1.11    0.75   0.49
## Residuals   16  23.57    1.47
```

```
fit.howoften=manova(Y~howoften)
summary(fit.howoften)
```

```
##            Df Pillai approx F num Df den Df Pr(>F)
## howoften    2  0.325     0.97      6     30   0.46
## Residuals  16
```

```
summary.aov(fit.howoften)
```

```
##  Response PRT1 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## howoften     2   18.5    9.25    2.04   0.16
## Residuals   16   72.7    4.54
##
##  Response PRT2 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## howoften     2   4.18    2.09    1.06   0.37
## Residuals   16  31.50    1.97
##
##  Response PRT3 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## howoften     2   2.27    1.13    0.77   0.48
## Residuals   16  23.52    1.47
```

```
fit.sitcoms=manova(Y~No.Sitcoms)
summary(fit.sitcoms)
```

```
##             Df Pillai approx F num Df den Df Pr(>F)
## No.Sitcoms   3  0.664     1.42      9     45   0.21
## Residuals   15
```

```
summary.aov(fit.sitcoms)
```

```
##  Response PRT1 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## No.Sitcoms   3   18.0    5.99    1.23   0.33
## Residuals   15   73.2    4.88
##
##  Response PRT2 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## No.Sitcoms   3   12.7    4.24    2.77  0.078 .
## Residuals   15   23.0    1.53
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##  Response PRT3 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## No.Sitcoms   3   5.57    1.86    1.38   0.29
## Residuals   15  20.22    1.35
```

```
fit.freq.use=manova(Y~use:freq)
summary(fit.freq.use)
```

```
##           Df Pillai approx F num Df den Df Pr(>F)
## use:freq   6   0.98     0.97     18     36   0.51
## Residuals 12
```

```
summary.aov(fit.freq.use)
```

```
##  Response PRT1 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## use:freq     6   25.2    4.19    0.76   0.61
## Residuals   12   66.0    5.50
##
##  Response PRT2 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## use:freq     6   18.4    3.07    2.14   0.12
## Residuals   12   17.2    1.44
##
##  Response PRT3 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## use:freq     6   4.04   0.673    0.37   0.88
## Residuals   12  21.75   1.813
```

```
fit.receive.study=manova(Y~receive:study)
summary(fit.receive.study)
```

```
##               Df Pillai approx F num Df den Df Pr(>F)
## receive:study  4  0.597     0.87     12     42   0.58
## Residuals     14
```

```
summary.aov(fit.receive.study)
```

```
##  Response PRT1 :
##               Df Sum Sq Mean Sq F value Pr(>F)
## receive:study  4   12.1    3.03    0.54   0.71
## Residuals     14   79.1    5.65
##
##  Response PRT2 :
##               Df Sum Sq Mean Sq F value Pr(>F)
## receive:study  4   9.11    2.28     1.2   0.35
## Residuals     14  26.58    1.90
##
##  Response PRT3 :
##               Df Sum Sq Mean Sq F value Pr(>F)
## receive:study  4   4.59    1.15    0.76   0.57
## Residuals     14  21.20    1.51
```

```
fit.sitcom=manova(Y~howoften:No.Sitcoms)
summary(fit.sitcom)
```

```
##                      Df Pillai approx F num Df den Df Pr(>F)
## howoften:No.Sitcoms  6  0.995    0.992     18     36   0.49
## Residuals           12
```

```
summary.aov(fit.sitcom)
```

```
##  Response PRT1 :
##                      Df Sum Sq Mean Sq F value Pr(>F)
## howoften:No.Sitcoms  6   33.6     5.6    1.17   0.38
## Residuals           12   57.6     4.8
##
##  Response PRT2 :
##                      Df Sum Sq Mean Sq F value Pr(>F)
## howoften:No.Sitcoms  6   13.3    2.22    1.19   0.37
## Residuals           12   22.4    1.86
##
##  Response PRT3 :
##                      Df Sum Sq Mean Sq F value Pr(>F)
## howoften:No.Sitcoms  6   9.32    1.55    1.13    0.4
## Residuals           12  16.47    1.37
```

```
fit.sitcom1=manova(Y~No.Sitcoms:subtitles)
summary(fit.sitcom1)
```

```
##                       Df Pillai approx F num Df den Df Pr(>F)
## No.Sitcoms:subtitles  7   1.59     1.77     21     33  0.068 .
## Residuals            11
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
summary.aov(fit.sitcom1)
```

```
##  Response PRT1 :
##                       Df Sum Sq Mean Sq F value Pr(>F)
## No.Sitcoms:subtitles  7   49.0    7.00    1.83   0.18
## Residuals            11   42.2    3.83
##
##  Response PRT2 :
##                       Df Sum Sq Mean Sq F value Pr(>F)
## No.Sitcoms:subtitles  7   15.0    2.15    1.14    0.4
## Residuals            11   20.7    1.88
##
##  Response PRT3 :
##                       Df Sum Sq Mean Sq F value Pr(>F)
## No.Sitcoms:subtitles  7   15.1    2.16    2.23   0.11
## Residuals            11   10.7    0.97
```

```
fit.sitcom2=manova(Y~watch:No.Sitcoms)
summary(fit.sitcom2)
```

```
##                   Df Pillai approx F num Df den Df Pr(>F)
## watch:No.Sitcoms  8   1.39     1.08     24     30   0.42
## Residuals        10
```

```
summary.aov(fit.sitcom2)
```

```
##  Response PRT1 :
##                   Df Sum Sq Mean Sq F value Pr(>F)
## watch:No.Sitcoms  8   27.3    3.42    0.54   0.81
## Residuals        10   63.8    6.38
##
##  Response PRT2 :
##                   Df Sum Sq Mean Sq F value Pr(>F)
## watch:No.Sitcoms  8  28.93    3.62    5.36 0.0081 **
## Residuals        10   6.75    0.68
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##  Response PRT3 :
##                   Df Sum Sq Mean Sq F value Pr(>F)
## watch:No.Sitcoms  8   9.71    1.21    0.75   0.65
## Residuals        10  16.08    1.61
```

```
fit.sitcom3=manova(Y~use:watch:No.Sitcoms)
summary(fit.sitcom3)
```

```
##                       Df Pillai approx F num Df den Df Pr(>F)
## use:watch:No.Sitcoms 10   1.61    0.931     30     24   0.58
## Residuals             8
```

```
summary.aov(fit.sitcom3)
```

```
##  Response PRT1 :
##                      Df Sum Sq Mean Sq F value Pr(>F)
## use:watch:No.Sitcoms 10   41.7    4.17    0.67   0.73
## Residuals             8   49.5    6.19
##
##  Response PRT2 :
##                      Df Sum Sq Mean Sq F value Pr(>F)
## use:watch:No.Sitcoms 10   31.2   3.118    5.54  0.012 *
## Residuals             8    4.5   0.563
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##  Response PRT3 :
##                      Df Sum Sq Mean Sq F value Pr(>F)
## use:watch:No.Sitcoms 10   11.3    1.13    0.62   0.76
## Residuals             8   14.5    1.81
```

```
fit.sitcom4=manova(Y~use:watch)
summary(fit.sitcom4)
```

```
##           Df Pillai approx F num Df den Df Pr(>F)
## use:watch  7   1.11    0.925     21     33   0.57
## Residuals 11
```

```
summary.aov(fit.sitcom4)
```

```
##  Response PRT1 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## use:watch    7   27.9    3.99    0.69   0.68
## Residuals   11   63.2    5.75
##
##  Response PRT2 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## use:watch    7   26.2    3.74    4.33  0.015 *
## Residuals   11    9.5    0.86
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##  Response PRT3 :
##             Df Sum Sq Mean Sq F value Pr(>F)
## use:watch    7   5.46   0.779    0.42   0.87
## Residuals   11  20.33   1.848
```

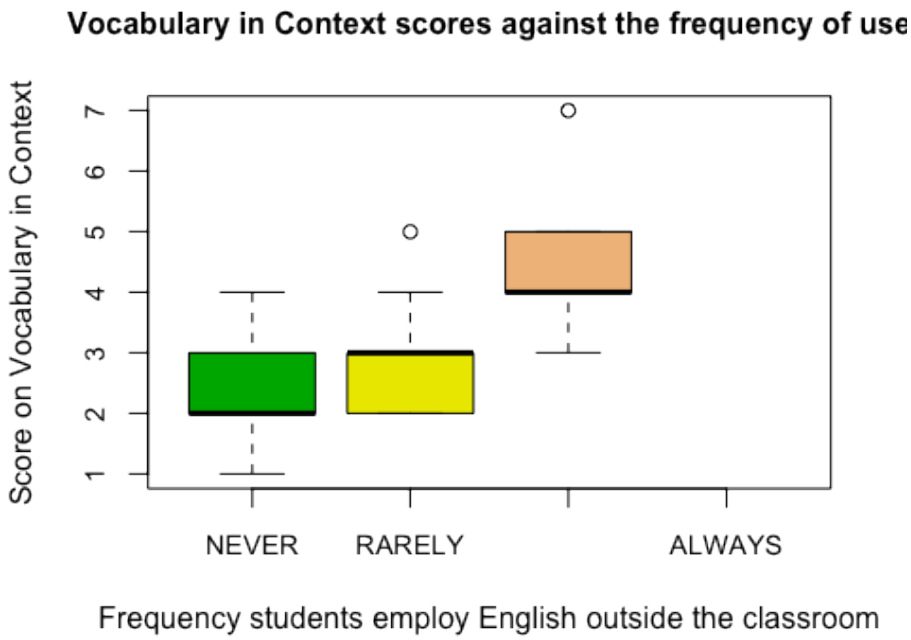
```
fit.sitcom5=manova(Y~use:No.Sitcoms)
summary(fit.sitcom5)
```

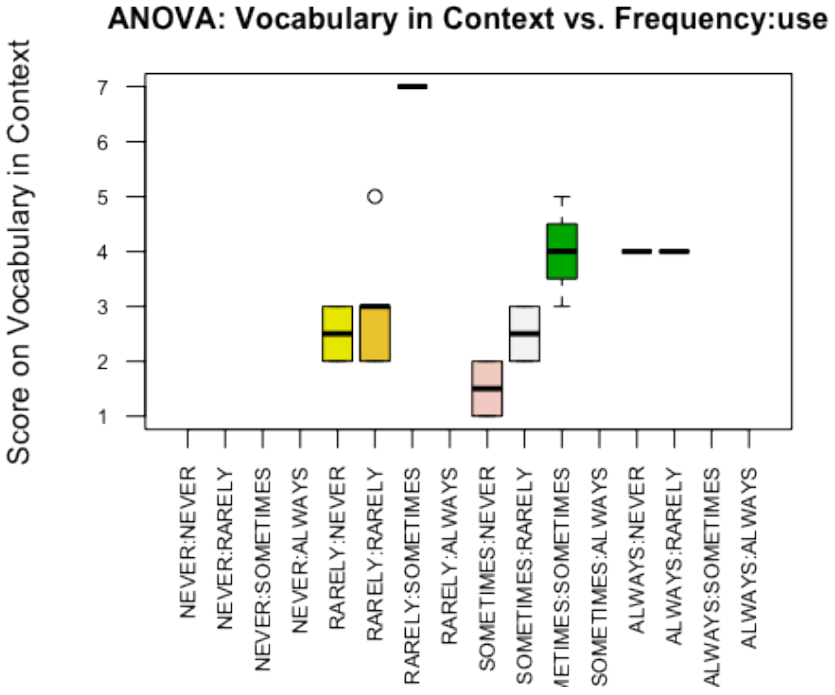
```
##                Df Pillai approx F num Df den Df Pr(>F)
## use:No.Sitcoms  7   1.17        1     21     33   0.48
## Residuals      11
```

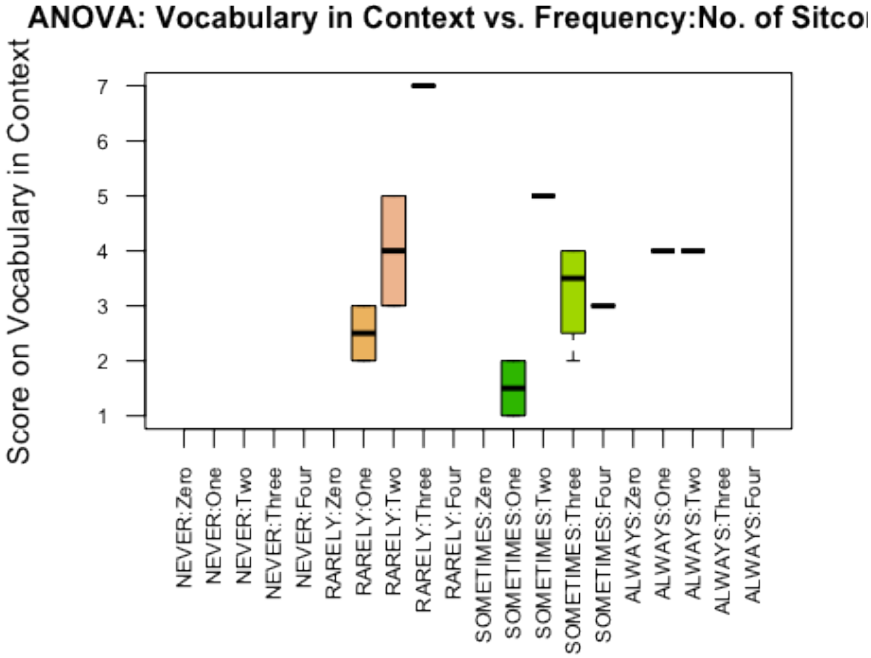
```
summary.aov(fit.sitcom5)
```

```
##  Response PRT1 :
##                Df Sum Sq Mean Sq F value Pr(>F)
## use:No.Sitcoms  7   32.9    4.71    0.89   0.55
## Residuals      11   58.2    5.29
##
##  Response PRT2 :
##                Df Sum Sq Mean Sq F value Pr(>F)
## use:No.Sitcoms  7   22.4    3.20    2.64  0.072 .
## Residuals      11   13.3    1.21
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##  Response PRT3 :
##                Df Sum Sq Mean Sq F value Pr(>F)
## use:No.Sitcoms  7   8.99    1.28    0.84   0.58
## Residuals      11  16.80    1.53
```

Significant results plotted:




ANOVA: Vocabulary in Context vs. Frequency:use
Score on Vocabulary in Context
1
2
3
4
5
6
7
NEVER:NEVER
NEVER:RARELY
NEVER:SOMETIMES
NEVER:ALWAYS
RARELY:NEVER
RARELY:RARELY
RARELY:SOMETIMES
RARELY:ALWAYS
SOMETIMES:NEVER
SOMETIMES:RARELY
METIMES:SOMETIMES
SOMETIMES:ALWAYS
ALWAYS:NEVER
ALWAYS:RARELY
ALWAYS:SOMETIMES
ALWAYS:ALWAYS


ANOVA: Vocabulary in Context vs. Frequency:No. of Sitco
Score on Vocabulary in Context
1
2
3
4
5
6
7
NEVER:Zero
NEVER:One
NEVER:Two
NEVER:Three
NEVER:Four
RARELY:Zero
RARELY:One
RARELY:Two
RARELY:Three
RARELY:Four
SOMETIMES:Zero
SOMETIMES:One
SOMETIMES:Two
SOMETIMES:Three
SOMETIMES:Four
ALWAYS:Zero
ALWAYS:One
ALWAYS:Two
ALWAYS:Three
ALWAYS:Four