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The Influence of Online English Language Instruction
on ESL Learners' Fluency Development

Rebecca Mae Aaron

A thesis submitted to the faculty of
Brigham Young University
in partial fulfillment of the requirements for the degree of

Master of Arts

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ABSTRACT

The Influence of Online English Language Instruction on ESL Learners' Fluency Development

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Master of Arts

The number of students participating in online-based instruction has grown steadily over the past decade as improvements in Internet availability, speed, and bandwidth have enabled students from around the world to enroll in online courses rather than participate in onsite traditional college courses. Online courses have also provided educational opportunities for language learners that are more convenient and cost effective.

With the growth occurring in online instruction, it is critical to ask about the effectiveness of online English language learning. Even though this type of instructional medium has been available for more than a decade, there has been little empirical research documenting the linguistic changes of English language learners as most research has focused on curriculum development or the structure of such courses (Moore and Kearsly, 2005 & Vai & Sosulski, 2011). Moreover, online language courses that have evaluated language development have focused on skills such as reading, writing, and listening (Blake, 2008). In order to investigate the benefits of English language courses taught completely online and the oral fluency gains that learners make within such a course, this study analyzed audio samples produced by intermediate level ESL students during the initial and final speaking tasks of the course. Instruction utilized asynchronous and synchronous interactions between the teacher, tutor, and fellow students. Results showed that fluency features for learners did change over the course of 14 weeks of instruction, and that learners valued the interaction that they had with tutors and faculty during the course.

Keywords: ESL, Online Instruction, Oral Fluency Development

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PREFACE

Within the guidelines of the TESOL MA program, this master's thesis was prepared as a manuscript to be submitted to *Language Learning & Technology*. This journal was chosen because of the focus of the journal. *Language Learning & Technology* publishes research focused on classroom-based research.

In preparation for submitting this manuscript for publication with the *Language Learning & Technology*, the manuscript was written in the American Psychological Association 6th Edition style. The word count for this journal usually does not exceed 8,500 words. This manuscript is approximately 8,500 words.

Other journals that have been considered for publication include *The Language Learning Journal* and *TESOL-EJ*. Both of these alternative journals have a focus on classroom-based research. The manuscript requirements for these two journals are different from *Language Learning & Technology*. *The Language Learning Journal* requires manuscripts to be submitted in their own style. Additionally, there is no word limit for *The Language Learning Journal*. *TESOL-EJ* requires manuscripts to be submitted using the American Psychological Association format, and does not have a word limit.

Introduction

In 2012, more than 20 million college-level students were enrolled in online classes in the United States (U.S. Department, 2012). The movement to online-based instruction has grown steadily over the past decade as universities around the world now offer online courses in a range of topics, which in turn allow students to attend classes without requiring attendance at a physical campus (Means, Bakia, & Murphy, 2014). With these changes in education, it is clear that the Internet is transforming traditional educational practices and learning environments. With continual improvements in Internet speed and bandwidth, online courses provide opportunities for learners that are more convenient and cost effective (Allen & Seaman, 2008).

While many types of courses are offered online, one area of instruction within this medium that continues to grow is that of foreign language courses. Automatized use of a language is the aim of many language courses. Thus, teaching a performance skill online requires conscious efforts to incorporate meaningful practice using the target language (Ortega, 2009). According to a *U.S. News and World Report* article (Friedman, 2015, February 11), several educational institutions in the United States not only offer language courses online but also offer online bachelor-level degrees in languages such as Spanish (Friedman, 2015, February 11, paragraph 23). Among colleges that offer onsite second language courses, some have also started offering online English language courses. Some of these courses are not taken for college credit, but are preparatory for students planning to enter an American university that requires a TOEFL iBT (the Internet-based version of the Test of English as a Foreign Language) for admission.

Henrichsen (2001) reports that distance learning has been associated with the field of TESOL (Teaching English to Speakers of Other Languages) for over a decade. However, most research is situated in a traditional course environment despite the increase of distance learning

program. With this growth, it is critical to know if online language learning is effective (Allen & Seaman, 2008). Much of the available research has largely focused on hybrid language programs (Blake, 2008). A hybrid course has a mixture of both traditional face-to-face classroom education and with some assignments and tasks being completed through the online environment. Students must participate in both settings as part of their course enrollment; however, the majority of instruction takes place online (Christison & Murray, 2014). Online courses do not often require students to be in the same place to complete course work (Blake, 2008).

In order to investigate the benefits of online English language instruction and the oral fluency gains that may occur with such an interaction, this study investigated a series of fluency features within English as a foreign language participants' oral speech. Assessments were made during week 1 and week 14 of the course.

Methods Used in Online Language Learning

In a traditional classroom, the students and instructors interact face-to-face. Teachers are seen as facilitators of learning in the classroom and as such have several different roles (Vilches, 2008). When physically present, instructors can provide oral and written feedback that is meaningful, timely, manageable, and consistent (Evans, Hartshorn, McCollum, & Wolfersberger, 2010). A teacher who is physically in the presence of his or her students can give immediate feedback, correcting mistakes at the time the student makes them. This interaction, therefore, makes the feedback that the student receives much more applicable because the mistake is still fresh in the student's mind. In addition, since students and the teacher have face-to-face interactions several times a week, the feedback and interactions happen on a regular basis, encouraging continued improvement. In contrast, in an online educational course, the teacher

must deliberately identify ways to create meaningful interactions and opportunities for feedback (Vai & Sosulski, 2011).

Online learning requires a creative curriculum and dynamic technology to make the most of the interactions that occur. Often, these interactions are asynchronous, meaning that there is a delayed interaction between the student and the teacher (Belanger & Jordan, 2000). They do not occur in real time. This delay allows students flexibility to complete assignments when it is convenient for them to log in to the course site to complete an assignment. Many programs also have elements of synchronous, or real-time, interactions, where students are required to meet face-to-face virtually through the use of a program like Skype or Google Hangout, which allows the learners to log in and communicate in real time with an instructor or tutor to complete assignments that are part of the course curriculum (Belanger & Jordan, 2000). Asynchronous interactions appear to make up the majority of learning experiences in online learning, because they allow for flexibility on the part of the learner and teacher (Vai & Sosulski, 2011). Teachers assign tasks in which students typically have several days to complete the assignment.

Facilitating Online Language Instruction

While many universities around the world have incorporated online instruction into their course offerings, there is one university located in the Pacific region that is actively using online English as a second language (ESL) courses to target students in Asia and the Pacific Rim regions who, because of availability and cost, may have difficulty traveling to an American institution of higher learning to complete traditional coursework. The majority of the students who enroll in these online English courses are preparing to enroll in university-level classes. Thus, the online language courses are designed to increase students' language proficiency before they enroll in academic university programs.

One purpose for this university offering online English language courses is to facilitate faster graduation rates in support of its nine-semester enrollment limit for its undergraduate students. At this university, students have nine semesters to finish a bachelor's degree. This policy puts a great deal of pressure on international students since their English language skills must be sufficiently high prior to enrolling in the university so that they can complete their course of study in the nine semesters allotted.

Since English is not the native language of most of the international students attending this university, the option of taking English courses online has helped relieve some pressure for students who need longer than one semester of English language instruction. While this institution has offered these online courses to students for more than nine years (E. Bunker, Personal Communication, December 1, 2015), it is not known to what degree the students who are participating in these courses have actually improved their fluency, or the smoothness of their language in connected speech (Lennon, 2000; Riggensbach, 1991). The intent of this study was to analyze fluency features in audio samples from beginning and final speaking tasks of English as a foreign language (EFL) students enrolled in an online intermediate-level listening and speaking course, English as an International Language (EIL) 212, offered by the participating institution.

Review of Literature

Within the last 15 years, language teaching and learning has seen an increase in the use of online instruction as a means of providing students greater access to teachers who are native speakers and the benefits that this type of interaction brings. In this review of literature, there will first be a brief description of the online instructional methods and environments currently in use. Then, there will be a discussion of need for empirical studies which focus on assessing the

linguistic change of learners enrolled in these online classes. Finally, there will be a discussion of that research which has studied oral fluency and its features.

Online Language Learning

Structured learning occurring away from the traditional brick and mortar classroom environment is nothing new. For many years, people have been able to participate in correspondence courses. In such courses, students are sent instructional materials by mail. Once students have completed an assignment, they mail the assignment back to the instructor. This mode of distance learning, however, meant that feedback received from an instructor would be greatly delayed. Today, however, technology has improved the speed at which a message or document can be sent, which in turn has impacted the ways distance learning takes place.

Distance education experienced a “big boost with the arrival of the World Wide Web,” (Moore and Kearsly, 2005, p. 43). Not only has the Internet changed the speed at which messages can be communicated, but also, new technologies associated with the Internet have made learning online more effective and popular. The college students of today have been exposed to and have used Internet-based technology on a daily basis since their childhood (Blake, 2008). Because of student aptitude for technology, many universities have started offering online programs to help meet the educational and economic needs of students all over the world (Moore & Kearsly, 2005). While online learning is all based on the use of the Internet as a means of connection, the amount of time devoted to online methods of instruction may vary.

Online learning environments. Online courses can use the Internet in many different ways. Courses can be Web-facilitated, blended or hybrid, or taught completely online (Allen & Seaman, 2008). In reviewing the development of online education in the United States, Allen and Seaman (2008) found that Web-facilitated courses deliver most of the course content in a

traditional classroom, but a small amount (1 to 29 percent) of class instruction or participation occurs online, generally through using a course management system (CMS), such as Canvas or Blackboard where students may watch video instruction, complete course readings or connect with fellow students to complete course assignments.

The terms *blended courses* and *hybrid courses* are often used interchangeably to describe courses that have 30 to 80 percent of the course content available online. The face-to-face or traditional classroom course interactions within blended or hybrid course happen about 21 to 70 percent of the time, largely as a means to deliver content. Again, teachers in content courses (e.g. business classes, economics, sociology, etc.) may have video lectures recorded, PowerPoint slides, course readings or YouTube videos which they expect to be reviewed prior to attending class. For a course to qualify as an *online course* in Allen & Seaman's (2008) definition, no less than 80 percent of the course content is delivered online. In addition to having most of the course content delivered online, there is typically limited face-to-face interaction, much of this happening via some type of technology link such as Skype or Google Hangouts (Allen & Seaman, 2008). For the purpose of the present study, online instruction which falls into this 80 percent or higher range will be defined as *dedicated online instruction*.

Most quantitative research that has been conducted with general online language-learning courses has focused on blended or hybrid course environments (Blake, 2008). These studies have concentrated on the structure or organization of such classes (Moore and Kearsly, 2005 & Vai & Sosulski, 2011). Studies that have focused on language issues in online language courses have largely focused on the development of reading, writing, and listening comprehension skills (Blake, 2008). Courses that could be characterized as dedicated online language courses have

been the subject of limited research. The study reported on in this research was carried out 100 percent online.

Characteristics of online learning. While there are different ways of incorporating an online element into a course, there are design features that remain applicable to most online curricula. Vai and Sosulski (2011) outline necessary aspects of online course design. The four aspects they highlight are differences in (a) learning space, (b) planning and delivery of course content, (c) communication, and (d) delayed feedback. A clear difference between a traditional classroom and an online classroom is the physical location (Vai & Sosulski, 2011). The traditional course environment requires a building and students to meet together to receive instruction from the teacher. On the other hand, dedicated online classes are virtual; course work can be completed anywhere there is a computer and an Internet connection.

In a traditional classroom, students can talk to their instructor or other classmates face-to-face. However, dedicated online classes limit face-to-face interaction. Thus, most of the interaction that occurs between a student and a teacher is accomplished electronically through written communication or Internet Protocol Telephony software, such as Skype. Most feedback from the instructor is delayed. However, the instructor is usually available to answer questions and to clarify directions and assignment details through email. Therefore, it is important that the instructor anticipates students' questions and addresses them in his or her lecture or written instructions for assignments (Vai & Sosulski, 2011).

A variety of methods for instruction can be used as a means of improving student learning and language production within the online learning format. One style of instruction is asynchronous, or learning that does not occur in real time but is recorded and later accessed with the aid of technology (Belanger & Jordan, 2000; Vai & Sosulski, 2011). Asynchronous learning

is beneficial to students for several reasons. First, it is more flexible for students as it allows students to complete assignments based on their own time schedules within a set time period. Students are allowed to post an oral response to an established prompt by a preassigned due date. Second, students are not required to be in a specific location to complete assignments (Vai & Sosulski, 2011). Students may complete assignments at home or in a work setting, anywhere they have access to an Internet connection. Third, the pace of learning is controlled by the student. Learners can complete assignments and participate in lessons when it is convenient to them within a designated time period (Belanger & Jordan, 2000). Asynchronous prompts allow students to prepare an articulate response by organizing and practicing their discourse. In this type of instruction, however, feedback from an instructor or fellow students is often delayed, which can lead to the feedback being less meaningful.

In contrast to asynchronous learning, there is synchronous learning. This type of interaction is similar to traditional classroom instruction where interactions all take place in real time, even though they are done through an electronic platform (Belanger & Jordan, 2000; Vai and Sosulski, 2011). One major benefit of synchronous learning is immediate feedback, where students can receive clarification regarding tasks and assignments as well as immediate correction on oral and written discourse. Synchronous instruction can also facilitate collaboration between students, which in turn can improve motivation by giving students a social interaction that they would otherwise not have (Finkelstein, 2006).

Development of Speaking Proficiency

With technology aiding in the delivery and learning of content, it is not surprising that language learning programs have also begun utilizing online instruction. By moving beyond the traditional brick-and-mortar setting, classroom programs and teachers have access to a new

demographic of learners (Blake, 2008; Allen & Seaman, 2008). Learners in turn also have access to a different type of teacher, native-speakers, who have been pedagogically trained to provide carefully designed practice in the target language as well as corrective feedback that is meaningful and specifically focused on the types of errors the learner is producing or areas of weakness within particular skill areas such as reading, writing, listening, speaking, and grammar. Within the foreign language environment, students may have opportunities to interact periodically with native speakers of the target language. The difficulty with this type of interaction is that it is usually sporadic, and the native speaker is not focused on providing instructional feedback to the interlocutor, which will assist the learner in correcting errors and better performing in the target language. The interaction is largely focused on achieving successful communication of ideas. Through dedicated online language courses, learners can receive both content as well as skill development in the target language, helping them to move closer to their goal of achieving a higher level of language proficiency.

Empirical research investigating gains made by language learners' through dedicated online language programs is still limited. More research in this area is needed. In a related area, though, there has been research which has studied linguistic change, specifically fluency gains, made by learners in study abroad programs where students have the opportunity to interact with both trained teachers and native-speakers as part of their language learning practice (Baker-Smemoe, Dewey, Brown, & Martinsen, 2014; Freed, Segawlowitz, & Dewey, 2004). Study abroad programs aim to give students exposure to native speakers of the target language and to provide authentic practice using the target language, opportunities that online language courses could also offer. Baker-Smemoe, Dewey, Brown, and Martinsen (2014) investigated native English speakers who studied one of five different second languages (L2s) in different learning

environments. One of the environments studied was study abroad, to see if there was a change in the learners' oral fluency. A pre- and post-experience oral proficiency interview (OPI) was used to determine proficiency change. The researchers found that over time, the students' oral proficiency improved, which correlated with an improvement in oral fluency.

Freed, Segawlowitz, and Dewey (2004) studied native English-language speakers who were learning French. They specifically analyzed the different learning environments in which the students were enrolled. Two of the environments were a summer immersion course and a study abroad course. Similar to Baker-Smemoe et al. (2014), the students participated in evaluation interviews similar to an OPI, but the pre- and post-interviews were given at the beginning and end of the semester. Fluency features were analyzed to see which group improved the most. Those who were enrolled in the summer immersion program had the greatest improvement in their rate of speech and the number of words used in a speaking sample. The researchers found it surprising that the study abroad participants' fluency did not statistically improve in their post OPI.

While dedicated online language programs do not offer all of the same immersion benefits as study abroad programs, a similarity they do share is access to trained teachers and native speakers of the target language for practice and feedback. Research in study abroad and immersion programs have shown that fluency and proficiency can both be improved through these language learning contexts.

Oral proficiency. In language learning, growth is measured in a student's gains in proficiency regardless of the skill. Proficiency is made up of many different aspects of language use, such as accuracy and fluency. Many educational professionals see a dichotomy between accuracy and fluency (Lazaraton, 2014; Riggensbach, 2000). Accuracy is based on how language

is used (Brumfit, 1984) and refers to how accurate one's speech is in terms of language use (Riggenbach, 2000). In contrast, fluency is related to native-like aspects of speech (Brumfit, 1984), which includes the smoothness of one's speech (Riggenbach, 2000). In this study, the investigation of linguistic change will be on fluency development in oral speech production.

Fluency and its features. While there have been many studies investigating oral fluency, a single definition for this term has not been established. Riggenbach's (2000) definition of fluency is the "smoothness" of one's speech, particularly in continuous discourse. This definition applies to both native and non-native speakers of English, but Bailey and Nunan (2005) and Blake (2008) offer a definition for non-native speakers. They explain that fluency is the ability to speak within the norms of native speech.

While there is no standard definition for fluency, experts have agreed upon features of fluency. The norms of native speech can be found in reviewing the linguistic use of suprasegmentals or prosody, such as rate of speech, pausing, and the linking of thought groups, (Bohlke, 2014).

In fluency research, several different features have been reviewed to measure fluency development. Those features that appear repeatedly in this research include rate of speech, articulation rate, number of silent pauses, silent pause ratio, and mean length of run.

Rate of speech is defined as the average number of syllables produced per minute or second, depending on the preferred method of analysis (Baker-Smemoe et al., 2014; dos Santos, 2014; Ginther et al., 2010; Kormos, 2006, Kormos & Dénes, 2004; Riggenbach, 1991; Thompson, 2015).

Articulation rate is defined as the number of syllables produced per minute or second between pauses of a predetermined length (Baker-Smemoe et al., 2014; dos Santos, 2014;

Ginther et al., 2010; Kormos, 2006, Kormos & Dénes, 2004; Riggenbach,1991; Thompson, 2015).

Number of silent pauses is calculated by the number of pauses produced within a speaking sample of a minimum length that is determined by the researcher. Most research has defined a *silent pause* as any pause that was longer than 0.2 seconds or 200 milliseconds (Ginther et al., 2010; Kormos, 2006, Kormos & Dénes, 2004; Riggenbach,1991). However, other researchers have argued that looking at longer pauses might be a better measure of silent pauses as some pausing in speech is normal. Research into pause length has identified 0.3 seconds an appropriate length to mark a silent pause in the discourse (Baker-Smemoe et al., 2014)..

Mean length of run is an average of the number of syllables produced between silent pauses of approximately 0.25 seconds or longer (Ginther et al., 2010; Kormos, 2006; Kormos & Dénes, 2004; Thompson, 2015). Since the measure of 0.3 seconds was previously identified as an appropriate length for measuring silent pauses in the discourse, this length of pause would also be appropriate for use calculating of mean length of run.

Silent pause ratio is described as the percentage of time in a speaking sample that the participants speech is paused (Ginther et al., 2010). The silent pause ratio takes into account the amount of time the student had to complete the task, thus it may be a better measure of fluency than the number of silent pauses.

To investigate how dedicated online English language courses influence ESL students' fluency development in learning the target language, this study will focus on analyzing the linguistic output of learners participating in such programs. The university who provided the audio samples for evaluation has used online English language classes that focus on developing participants' listening and speaking skills. Courses offered typically draw students from the

Pacific Islands as well as the countries of the Pacific Rim (Green, Collier, & Evans, 2001). A number of international non-native English speaking students take these courses as a means of improving their English language skills so that they might be admitted to an American university. While online English language instruction has been offered for a few years now, little is known regarding the fluency gains that are made by students enrolled in these courses. The current curriculum relies heavily on asynchronous instruction, or non-real-time instruction, with weekly synchronous or real-time sessions between the students and language tutor (Belanger & Jordan, 2000).

Student Perceptions and Attitudes

Feedback is needed from students enrolled in dedicated online courses to see how they feel about the instruction received and the influence of the course on their language development. Students' perception and attitude of a course can correlate with development in knowledge or skill they receive for the effort they put into a course (Nguyen & Zhang, 2011). Thus, knowing how a student feels about the progress they have made in a course is important. Moore (2005) suggests that satisfaction with teachers, course outcomes, and peers is related to the improvement they believe they have made as a result of the course.

Research Questions

In this study, the following research questions were investigated:

1. What gains in oral fluency did EFL students enrolled in a dedicated online listening/speaking course achieve over the duration of 14 weeks as measured by five fluency features: rate of speech, articulation rate, mean length of run, number of silent pauses, and silent pause ratio?

2. Dependent on the results of research question one, what attitudes did students towards their participation in the online EIL course?
3. Dependent on the results of research question one, how did students' judge the value of the help they received from the teacher, tutor, and fellow students in the online course?

Delimitations

There were a number of constraints present in this study. These factors will be discussed in this section. The intent of this study was for it to be a controlled descriptive study of EFL learners' fluency development while participating in a dedicated online English language course focused on enhancing listening and speaking skills. The institution administering this course controlled the structure of the course, the nature of the speaking assignments, the frequency with which these tasks were recorded and posted online, and the frequency and duration of the interaction students had synchronously with the native speaking tutor for the class. In an agreement with the university department's administrator supervising the course, it was determined that audio data from the first and final assessment tasks would be provided to the researcher for analysis. The course selected is the one that is offered every semester, and taught by an experienced online instructor. Audio data from two semesters of the course (summer 2015 and fall 2015) were provided. The audio files that were received were in MP3 format and they had to be converted by the researcher into WAV files in order for them to be analyzed by a Praat script designed to gather measurements of specific fluency features: rate of speech, articulation rate, number of silent pauses, silent pause ratio, and mean length of run. The researcher had no control over the quality of the recordings received or whether an additional demographic survey created by the researcher would be administered to those participating in the online class.

Permission was granted by the institutional review boards (IRBs) at both institutions for this research to be performed. In an effort to maintain anonymity, the participating institution removed all identifying information from the speech samples and survey instrument data prior to sending it off for analysis.

Research Design

The purpose of this descriptive study was to analyze oral fluency change in EFL students enrolled in a dedicated online English language course. Audio data was obtained from the initial and final speaking assessments of a 14-week-long, intermediate-level listening and speaking online English language course. In addition to the audio data provided by the target institution, limited qualitative data was obtained from the participants through an online survey administered to class participants at the end of the semester.

Participants

Participants in this study were English as a foreign language students enrolled in an online English language course sponsored by the university during the Summer and Fall semesters in 2015. This university's mission is to serve the people of Asia and the Pacific Islands (BYU-Hawaii Mission and Vision). As a result of this educational focus, many of the students who attend the university are not native English speakers and need additional English language instruction to be successful in their university classes. In order to help meet the needs of these non-native English speakers, the university created online English courses in 2008 that students could participate in before applying and enrolling in university-level courses (E. Bunker. Personal Communication, December 1, 2015). According to the university's EIL department chair, Ellen Bunker, EIL students who enroll in the intermediate-level EIL speaking and listening course generally attend from countries along the northeast Pacific Rim and Oceanic countries.

During the Summer 2015 and Fall 2015 semesters, a total of 38 students were enrolled in the EIL course. The majority of the students in the course were from Asian countries (i.e., China, Hong Kong, Malaysia, Mongolia, South Korea), with one student from Brazil. The students' ages varied, with the youngest student being 17-years-old. No other demographic information about the students was shared with the researcher.

Instruments

During the course, students participated in weekly asynchronous speaking assignments posted online by the instructor. Each week, the instructor posted a video or listening component that corresponded to a weekly topic. After watching the video or listening to the audio selection, students were assigned to record and post a video of themselves expressing their opinion or reaction to a specific prompt. After responding to the teacher's prompt, students were then required to respond to at least two other students' posts. The course instructions indicated that the video responses were to be one to two minutes in length on average. Each week the theme of the prompts changed, while the instructions were always the same. Students were to post a total of four to five videos per week. In addition to the asynchronous video posts, students also met weekly in a 30-minute individual consultation with a tutor in a synchronous interaction via Skype. The tutors were usually undergraduate TESOL majors, not all of whom were native speakers. The synchronous interactions with the tutor usually involved first addressing any student concerns, then discussion topics related to the course content, and if there was time at the end of the 30 minutes, the tutor and student would have a conversation about a topic the student was not familiar with.

The university's EIL administrators separated the audio portions of the initial and final assessment with careful attention not to include any identifying information regarding the

speakers. In addition to the audio files, the university distributed a survey constructed by the researcher (see Appendix) via Qualtrics, which is an online surveying website, to participants in only the fall 2015 section of EIL 212 due to a miscommunication between the university's administrators and the researcher. Analyzing the students' linguistic production coupled with survey data would provide a clearer picture of how the students' oral fluency changed and what factors may have been responsible for this change.

Procedure

Both 14-week courses were taught by the same instructor using the same school-approved online curriculum. Data for the first semester was gathered at the beginning of April 2015 and at the end of July 2015. Data for the second semester class was gathered at the beginning of August 2015 and again at the end of November 2015. The university collected the video responses given by the participants. For the sake of anonymity, the university allowed only the principle investigator access to audio files for the pre- and post-course assessments. In the first week's assignment, students were asked to introduce themselves to their classmates. The final assignment involved the students responding to five different test prompts from the tutor.

Analysis

Once the MP3 audio data files were obtained from the university, they were converted to WAV files so that the software program Praat could analyze the fluency features of the audio tasks (Boersma & Paul, 2016). Praat is software that is used for acoustical analysis of speech. Many studies have used Praat in analyzing their speech data (Baker-Smemoe, et al., 2014; dos Santos, 2014; Ginther et al., 2010). Using Praat, five elements of fluency were investigated: rate of speech, articulation rate, mean length of run, number of silent pauses, and silent pause ratio. These features were the same as the features reviewed by Ginther, Dimova, and Yang (2010),

where automated scoring systems for the Oral English Proficiency Test (OEPT) scores were examined. The evaluation of these temporal fluency features were conducted with the aid of a Praat script (de Jong & Wempe, 2008), providing an acoustical analysis for these five features. The script used allowed the researchers to gather the results for multiple fluency features at one time, though some additional simple math was needed to determine mean length of run.

Rate of speech was determined by taking the total number of syllables produced in the sample then dividing by the total response time (speaking time and pause time combined). This number was given in seconds (dos Santos, 2014; Ginther et al., 2010, Kormos, 2006; Riggerbach, 1991).

Articulation rate was determined by taking the total number of syllables in the speech sample, then dividing this number by the total speaking time represented seconds. (Baker-Smemoe et al., 2014; dos Santos, 2014; Ginther et al., 2010; Kormos, 2006, Kormos & Dénes, 2004; Riggerbach,1991; Thompson, 2015).

The number of silent pauses, as established in previous research was tallied using pauses that were greater than 0.3 seconds (Baker-Smemoe et al., 2014; dos Santos, 2014; Kormos and Dénes, 2004).

Silent pause ratio represents the percentage of time during a speech sample that a participant paused compared to his or her response time. This number is represented as a decimal (Ginther et al., 2010).

Mean length of run is defined as the number of syllables produced between two silent pauses greater than 0.3 seconds (De Santos, 2014; Ginther et al., 2010). Mean length of run was determined by taking the number of syllables in the sample divided by the number of runs in a given sample.

Since Praat was used to analyze acoustic features within the audio files, the files were also reviewed individually by the principle investigator to determine if there was excess background noise that might prevent the Praat script from successfully analyzing the audio file. In running the preliminary statistics, numbers were generated from some files which were unusually large. In listening to these individual files, it was clear that there was a large amount of background noise, which made it impossible for the Praat script to accurately determine where the pause boundaries were occurring in the discourse. In some recordings, the researcher was able to reduce the background noise using Audacity's noise removal technology. Audacity is free software that allows for recording and editing audio files (Audacity Team, 2016). In other recordings, the reduction of the noise level was not possible and resulted in two students' files being deleted from the analysis. The problem of background noise dramatically affected the analysis of one feature in particular: mean length of run. In total, six students' files were unable to be included in the analysis due to excessive noise. Data for the 18 remaining students were included.

In addition to analyzing the speech samples, data were also obtained from a student survey completed by participants at the end of the semester. The intent of the survey was to obtain information from the students regarding their attitudes towards the class and perception of their language development as a result of the course. Questions were asked about the students' extracurricular activities and hobbies that elicited English language use, as this could have an influence on their fluency development. Extracurricular English language use or study may have had an influence on the students' oral fluency (Baker-Smemoe, Cundick, Evans, Henrichsen, & Dewey, 2012). In addition, students were asked questions about their experience in the online course and their interaction with fellow students, the teacher, and the tutor in the class. The

purpose of such questions was to see if students were satisfied with the course experience and to have them compare the type of interaction they had with the instructor, tutor, and fellow students in the course.

Using the software Statistical Package for the Social Sciences (SPSS), a one-way ANOVA was run to compare the mean scores for each of the fluency features across the population of students during week 1 of the course and again at week 14. The survey data were analyzed using measures of central tendency and aggregate measures available through the Qualtrics software program, which generated charts and graphs of the participants' responses.

Results

Using audio files collected during week 1 and week 14, a Praat script was used to analyze the audio for five features of fluency: rate of speech, articulation rate, mean length of run, number of silent pauses, and silent pause ratio. Additionally, a survey was sent to the students at the end of the semester to gather information about their interactions with their teacher, tutor and other classmates, as well as their perception of the language development due to their participation in the online course. The results of the data and survey analysis will be shared in the following section.

Quantitative Results

A one-way ANOVA was conducted to assess whether there were differences in each of the five features of fluency from week 1 to week 14. Table 1 shows the number of subjects (N), the mean scores (M), and standard deviations (SD) for the five features of fluency. The differences for *rate of speech*, *articulation rate*, and *mean length of run* were not statistically significant between week 1 and week 14, $F(1,44)=2.892$, $p=.096$, $\eta^2=.062$; $F(1,44)=2.858$, $p=.098$, $\eta^2=.061$; $F(1,34)=.027$, $p=.871$ respectively. However, the effect size for both rate of

speech and articulation rate as seen in the eta squared were borderline moderate (Cohen, 1988).

The number of silent pauses and the silent pause ratio had statistically significant differences from week 1 to week 14; $F(1,43) = 10.967, p = .002, \eta^2 = .203$; $F(1,44) = 13.549, p = .001, \eta^2 = 0.235$ respectively.

Table 1.

Descriptive Statistics for the Five Features of Fluency

<i>Fluency Feature</i>	Week 1			Week 14		
	<i>N</i>	<i>M</i>	<i>SD</i>	<i>N</i>	<i>M</i>	<i>SD</i>
Speech Rate	23	2.90	.793	23	2.56	.572
Articulation Rate	23	3.79	.801	23	4.11	.433
Number of Silent Pauses	22	25.23	14.602	23	36.82	8.103
Silent Pause Ratio	23	.57	.200	23	.39	.145
Mean Length of Run	18	6.45	2.010	18	6.59	2.982

Qualitative Results

This section will describe the survey results from the end-of-semester survey administered at the end of the fall 2015 semester. While audio data was collected from students participating in both the summer and fall 2015 semesters, university administrators did not send the end-of-semester survey to the summer 2015 students. Therefore, only one semester of survey data was collected. This survey was sent to the online students following their final exam. The aim of the survey was to better understand the participating students' perceptions of their language learning and development, their thoughts about the course, and the extracurricular activities that they participated in while enrolled in the EIL course.

The end-of-semester survey showed that all participating students either agreed or strongly agreed that their English had improved by the end of the semester.

Data from the survey also showed that students reported spending only four to five hours each week outside of their EIL course using English. Table 6 provides a breakdown of hours that students spent engaging in different English language activities.

Table 2.

Descriptive Statistics for Extracurricular English Time Spent (Hours) N=10

	<i>M</i>	<i>SD</i>
Watching English programming	5.20	3.03
Reading books in English	4.60	3.07
Listening to radio programs English	4.00	3.63
Speaking English	5.70	3.47

A third question from the survey asked students to report the perceived quality of helpfulness they received from other participants in the course. Their responses showed that students found interactions with their tutor to be most helpful, followed by interaction with their teacher, and lastly with their classmates. Figure 1 gives a visual presentation of the students' responses.

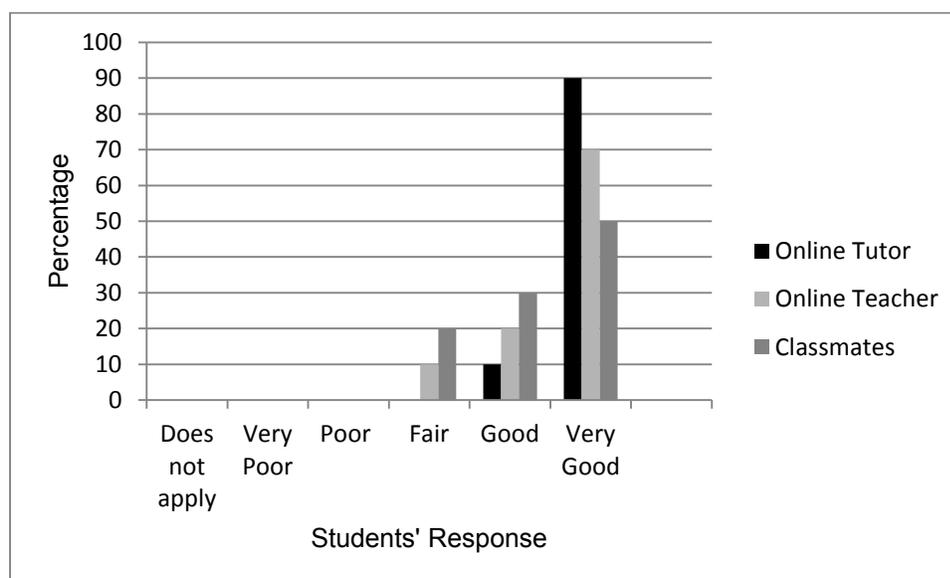


Figure 1. Student perception of how helpful interactions were with teacher, tutor, and classmates.

Discussion

The purpose of this descriptive study was to determine if the oral fluency of the EFL students enrolled in a dedicated online English language course changed from the first week in the semester to the last week in the semester. The results from the quantitative data showed that only two of five fluency features showed statistically significant change. The qualitative data captured through an end-of-semester survey showed that students valued the time spent receiving feedback from the online tutor and teacher and participants felt that their English proficiency did improve as a result of the EIL course.

For the specific fluency features measured through Praat, it was surprising to see that from week 1 to week 14, the average speaking rate for the participants decreased. While the change was not significant, other studies have reported an increase in students' rate of speech as a determiner of fluency development (Ginther, 2010; Smemoe et al., 2014). In addition, the number of pauses produced increased from week 1 to week 14. Generally, an increased number of pauses is linked with a breakdown in fluency, not an improvement (Baker-Smemoe et al., 2014). While no statistically significant differences were found, the effect size for both rate of speech and articulation rate were close to moderate. This moderate effect indicated that the instruction the students received between week 1 and week 14 might have been moderately influential.

In contrast, the silent pause ratio (percentage of time students paused compared to the time they spoke) changed significantly from week 1 to week 14. Students at week 1 paused an average of 57% of their allotted speaking time, but at week 14, they only paused for 39% of their allotted time. These results, combined with the data on pause frequency, suggest that while students were producing more pauses at week 14 in their speech, students were more efficient in

their speaking by filling more of the allotted speaking time with speech. This could suggest students were more aware of what was required for their speaking tasks.

After seeing inconsistencies in the data between the fluency measures, the researchers made a point of listening to the audio files again. It became clear that the inconsistencies found at week 1 and week 14 could be directly attributed to the nature of the speaking tasks given at those two time periods. At week 1, students had been given an asynchronous task to which they responded. The task asked students to introduce themselves, a task that many students have done repeatedly in a classroom setting. With an asynchronous task, students had time to prepare their answers prior to recording them and posting them online. It would have been easy for students to have created a script containing the answers to this oral prompt and then simply read the script during the recording process.

At week 14, students responded to multiple synchronous tasks. Through a Skype link, the tutor asked a series of five questions to which the students were asked to respond in real time with only 30 seconds of preparation for each prompt. Essentially, students had to form their answers and respond immediately. While the course curriculum determined the nature of the pre- and post-assessment tasks, the data obtained in this study shows the linguistic variability that the two different types of tasks produced in the participants' speech samples. This variability is an important indicator demonstrating that if online programs use different forms of pre- and post-assessment tasks, it is difficult to demonstrate accurately the types of fluency gains that participants may make through online language instruction.

Implications

The findings from this study have important implications for online English language courses utilizing both asynchronous and synchronous tasks in the language instruction and

assessment being provided. One of the strongest implications from this study is that similar task types, namely synchronous tasks, should be used at the beginning and end of the semester if the program seeks to obtain reliable and valid measurements of oral fluency development. The synchronous tasks provide a more accurate measure of students' authentic speech production behavior because students must respond to the prompts in real time with limited preparation time. If a program desires to use an asynchronous task at time 1 as a means of having students introduce themselves in a low stress context, then audio data saved from the first synchronous tutoring interaction could be used as a potential baseline to compare with the spontaneous speech tasks administered at the end of the semester.

In conjunction with having similar task types, it is also important to have similar prompt types administered during pre and post assessment tasks. Having similar prompts ensures collecting data which can be more readily compared between the two assessment periods. The researcher also recommended that speech data be recorded from multiple prompts to make the analysis more robust.

Students' responses in the survey data showed that they valued the weekly synchronous interactions they had with the language tutors in the class. They found their interaction with the tutor to be more helpful than the asynchronous interaction and feedback they received from the teacher. In the face-to-face feedback sessions through Skype, learners would receive immediate rather than delayed feedback regarding questions, errors, and speaking performance that was specific to their particular linguistic production. This may imply that students preferred the synchronous interaction because it allowed for real time practice of English and the feedback they received was immediate.

Limitations

In addition to the implications suggested, it is important to note that there were limitations to the study. The first major limitation to the study was the nature of assessment tasks course developers had programmed into this online English language course. Having different types of tasks (asynchronous vs. synchronous) for the pre- and post- assessment measures directly impacted the researcher's ability to appropriately analyze or compare students fluency development over the course of the 14 week semester. Unfortunately, the researcher had no control over the nature of the assessment tasks.

A second limitation to the study is related to the quality of the audio in the video posts made by students taking the online course. Clipping the audio portion from the video files by university administrators took considerable time delaying the distribution of the files to the researcher by nearly four months. Once the analysis was begun, it was clear that the quality of the audio recordings was also problematic for some students. Given that online students can record their responses to the asynchronous prompts in any location, several of the data files contained so much background noise that using Praat to analyze the fluency measures was impossible, necessitating the elimination of some data files.

Directions for Future Research

The results of this study provide direction for future research. By making some alterations to the current study in terms of task type and the nature of the prompts, researchers would be able to collect audio data which would allow better analysis of fluency gains made by students enrolled in the 14-week online course. Additionally, institutions conducting online English language courses must allow the audio data to be tied to data obtained from any survey instruments collected from participants. In this way, researchers can tie students' linguistic change their learner demographics such as motivation for learning English, age, amount of

contact with native speakers of the target language, and amount of time spent engaged in extracurricular English speaking activities.

Another change that would improve the study would be to increase the sample size. The current study was limited to the number of students enrolled in one online class taught during two different semesters. Future research could increase sample size by obtaining data from additional course sections and by requiring stricter recording conditions on the part of participants in an effort to eliminate extraneous noise.

Finally, while this study focuses on the oral fluency of students in an online course environments, researchers could also compare similar data collected from students in study abroad and immersion programs with data from students in an online course. This data could help shape the future of online language learning by providing evidence of its effectiveness compared to traditional instruction.

Conclusion

The aim of this study was to assess the development of oral fluency of students who had participated in a 14-week online EFL listening and speaking course. The audio files that were collected by the university were analyzed for five features of oral fluency: rate of speech, articulation rate, number of silent pauses, silent pause ratio, and mean length of run. In addition to this quantitative analysis, a survey was sent to a group of students to gather qualitative data related to their language learning experience. The discrepancy in the assignment type collected at week 1 and week 14 did produce some inconclusive results. While students were pausing more, they were also taking more of the allotted time given to them to respond to the prompts. However, from the qualitative results, it is evident that the students perceive their oral

proficiency had developed. In the qualitative data, students reported that they thought their oral proficiency had improved as a result of participating in the online course.

This study provides results benefitting the field of online language learning research by reviewing an existing online language course and identifying improvements that can be made to the assessment of fluency change more valid and reliable. These findings show that additional guidelines and assessment tasks must be implemented to more accurately determine actual fluency gains that EFL learners can make in a dedicated online English language class over the course of 14 weeks of instruction.

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Appendix

End of Course Evaluation for BYU-H EIL 212

1. Based on your experience from the EIL 212 course, please answer the question below.

	I don't know (1)	Strongly Disagree (2)	Disagree (3)	Neither Agree or Disagree (4)	Agree (5)	Strongly Agree (6)
I feel that my English has improved since enrolling in the online EIL course. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. Using your personal opinion, please answer the question below.

How important is it for you to speak English well?

5. My Internet connection caused problems when

	Never (1)	Rarely (2)	Sometimes (3)	Often (4)	All of the Time (5)
meeting with the online tutor. (1)	<input type="radio"/>				
accessing online course assignments. (2)	<input type="radio"/>				
accessing course materials. (3)	<input type="radio"/>				

6. In what ways did the online EIL 212 course help you improve your English?

7. Did you participate in other English language courses while enrolled in the EIL 212 course?

- Yes (1)
 No (2)

Answer question 8 if “Yes” was selected for question 7.

8. How many hours did you participate in the other course(s) you were enrolled in?

9. How much time (hours per week) did you spend participating in activities in English outside the class?

- _____ Watching TV Programs or movies in English? (1)
 _____ Reading books in English? (2)
 _____ Listening to radio programs or podcasts in English? (3)
 _____ Speaking in English? (4)

10. Why do you want to learn English? Rank your motivations from 1 to 8.

- _____ To attend a U.S. university (1)
- _____ To communicate with family members (2)
- _____ To improve opportunities for employment (3)
- _____ To make friends with English speakers (4)
- _____ To listen and comprehend English better (5)
- _____ To speak more fluently and accurately in English (6)
- _____ To have people better understand my English and what I am trying to say (7)
- _____ Other (8)