THE eGRAMMAR CLINIC: A MOODLE-BASED TUTORING SYSTEM FOR ENGLISH AS A SECOND LANGUAGE

Sorin M. Popovici

A Dissertation Submitted in Partial Fulfillment of the Requirements for the Degree of Doctor of Philosophy in eLearning Methodology

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The eGrammar Clinic: A Moodle-based Tutoring System for English as a Second Language

By

Sorin M. Popovici

A Dissertation

Submitted to the Graduate Degree Program in eLearning Methodology, College of Internet Distance Education of Assumption University of Thailand in partial fulfillment of the requirements for the degree of Doctor of Philosophy

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ABSTRACT

The eGrammar Clinic was developed as a Moodle-Based Tutoring System designed to help students improve their sentence grammar. It was installed on the website http://hal.cide.au.edu/Eng4. The eGrammar Clinic consisted of ten sessions, tests and quizzes. The ten sessions were based on the content of the English IV textbook and the weekly English IV class-work practice taught at Assumption University. The implementation of the eGrammar Clinic was conducted during the first semester (June – September 2011). Students participating in this study were Assumption University English IV students divided into two groups: the Online and the Classroom Group, 80 students in each group. The Independent Samples T-Test and the Paired Samples T-Test techniques of SPSS were used to measure if there has been any statistical difference in the scores of the online and classroom groups. The results showed that there was a significant difference between the mean scores of the Online and Classroom Group at the end of the experiment (p = 0.000*). A questionnaire was given to the Online Group in order to assess the students’ satisfaction towards the eGrammar Clinic at the end of the experiment. More than 80% of students strongly agreed that the ten sessions of sentence patterns and activities were useful and helped them improve their sentence grammar. They also found that the Moodle-based system was easy to access and navigate through.

Key Words: eGrammar, eLearning, Moodle, Tutoring Systems.
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CHAPTER I
INTRODUCTION

1. Background Information

E-learning has now become a major force in education, transforming education through innovation, new technologies and emerging pedagogies. The Internet has facilitated the introduction of the concept of learning through eLearning by making use of agent-based technologies, such as: virtual agents, intelligent agents or tutoring agents.

In this new era in education, we are witnessing the society’s evolution from an Information Age to the Interaction Age. In a Virtual Classroom (VC), for instance, students not only act, but interact. They are now information seekers, while the teacher is just a facilitator, a “guide on the side”.

1.1 A New Era in Education

The field of eLearning, born a mere 25 years ago, in the mid to late ‘70s, with the very invention of computer networking and communications, has become a major force in education and society. It is now in the midst of transforming education, shifting the educational paradigm, as we have known it for the past three centuries. eLearning now recognizes the dawn of a new era in education. Through innovative use of modern technology, eLearning is innovating education and making it more accessible. The emergence and rapid advance of web-based technologies in the last two decades of the previous century has changed the way we live, communicate and learn. New technologies and emerging pedagogies are harnessing the power of the Internet and Information Communication Technologies (ICT) at a very fast pace. New trends in eLearning are bringing about dramatic
changes in the local educational landscape, transforming the quality and opportunities for learning from anywhere, for anyone, and at anytime.

In this competitive era, education has become equally demanding and competitive. Innovation in the sphere of education has led to new ways of learning. Internet has now made learning dynamic by introducing the concept of learning through eLearning. The dynamism in eLearning can be made more powerful with the help of intelligent agents, or virtual agents. Intelligent, autonomous, mobile, rational, reactive, persistent and, moreover, proactive computer codes, the so called agents, represent the next tidal wave of innovation and development in the Information age. These agents perform specific tasks on the behalf of students, instructors, and other members of the educational community including parents and alumni. The agent-based technology is expected to have an effect as profound and lasting as the World Wide Web. It is growing to be a continuously evolving and expanding area (Agarwal, R. et. al., 2004).

Rapid developments in the new ways of knowing and new ways of learning have evolved against a backdrop of society’s evolution from an Information Age to the current Interaction Age dominated by emergent technologies. According to Milne (2007), the society is extending from the Information Age into the Interaction Age. In the Interaction Age, the role of digital content is broadened as something around which people engage and interact. Table 1 provides a summary of Milne’s analysis regarding the shift from Information Age to Interaction Age in terms of networks, devices, interfaces, and user focus.
Table 1: Shift from Information Age to Interaction Age

<table>
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<td>Networks</td>
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<td>Interfaces</td>
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Source: Milne (2007)

In the emerging Interaction Age, people are witnessing an explosion of individually owned portable devices which are designed to augment the daily cycle of work and play. These devices enable students to plug in anywhere and share and engage with one another through shiny and colorful touch screen interfaces.

For second language acquisition, when compared to human language teachers, a virtual tutor engaged in a natural conversation may still appear vastly inferior, but it does have some, at least potential benefits over a human teacher: 1) Practice time. The success of second language learning is dependent on the student having ample opportunity to practice. Very few human tutors have the unlimited amount of time, patience and flexibility to practice individually at any hour that a virtual tutor has. 2) Prestige. Many students are embarrassed to make errors in front of a human teacher, but may be less bashful about interacting with an agent. 3) Augmented reality.

Instructions to improve pronunciation, for example, often require reference to phonetics and articulation. An agent can give feedback or articulations that a human tutor cannot easily demonstrate, by revealing articulator movements normally hidden from the outside view. This type of feedback may improve the learner's perception of new language
sounds as well as the production by internalizing the relationships between the speech sounds and the gestures (Engwall, O. et al. 2007).

Catalyzed by the introduction of the World Wide Web in the first half of the 90s, Distance Learning (dLearning) took a new dimension by going through the “main change-over” from Distance to Electronic Learning (eLearning), (Klaussen, 2002). With the increasing use of networked computers and advances in telecommunication technologies, now the Internet is widely recognized as an indispensable area. Broadly speaking, eLearning, sometimes also called online learning or web-based learning, is a type of distance learning in which training or educational material is delivered electronically to remote learners via the Internet or Intranet. An eLearning system provides a configurable infrastructure that integrates learning material, tools, and services into a single solution in order to quickly, effectively, and economically create and deliver training or educational content. It has become an important alternative to classroom learning. The combination of wireless technology and mobile computing is resulting in escalating transformations of the educational world.

One great advantage of the World Wide Web is that it is a platform that is independent and supports several media types, for instance, audio and video. It is also available globally. From an educational perspective, it means that teaching could now take place both synchronously and asynchronously (Keegan, 2002). The impact on students is that they may study course content from their computer screens, and thus are not dependent on being physically present at school. Time and place are no longer restrictions as the learning experience can be tapped anywhere one has a computer and access to the Internet. The teacher’s role is made more flexible in that they can now tutor from the confines of their
offices or homes. Student-teacher / student-student interaction in eLearning is mediated through the use of e-mail, discussion forums, chat rooms and the like.

1.2 The Traditional Classroom vs. the Virtual Classroom or the Sage on Stage vs. the Guide on the Side

With the beginning of this new century, eLearning has emerged as a new technology for delivering online, hybrid, and synchronous learning regardless of physical location, time of day, or digital reception or distribution devices in use today. It is then legitimate to assume that in the twenty-first century we will witness a continuation of this trend. And this will inevitably widen the gap between traditional learning environments, centered round a “sage on the stage”, and virtual learning environments, with their “guide on the side”, King, A. (1993).

The traditional classroom, where students are expected to passively reproduce knowledge, will gradually evolve into a virtual classroom, where learners will actively produce knowledge. In fact, Mason, J. (2005) argues that there is already a shift from e-learning to e-knowledge, stressing the growing significance of e-learning as knowledge management.

The teacher’s role in virtual education is that of a facilitator in the learning process. The main challenge is to provide pedagogical support to students independent of time and location. To do so, changes in the way the teacher works are essential. Tight classroom schedules are non-existent and most educational content is readily available to the tutor on mobile devices or can be accessed using a wired or wireless Internet connection (Sariola, Sampson, et. al., 2002). These possibilities allow for a great degree of flexibility and
interactivity that is important in adult student education (Paulsen, 2002). Other studies indicate that the use of mobile devices in education facilitated communication with colleagues in addition to allowing them to search the web for resources (Shotsberger and Vetter, 2001). Shotsberger and Vetter (ibid.) note that when teachers interact synchronously while surfing the web for resources, they can plan lessons that incorporate web resources more effectively, while drawing from the experiences and insights of a large pool of teachers. These possibilities may contribute to a better quality of material that is presented to students as it allows the teacher to exchange views on different topics. It also gives the teacher a light tool to use for personal research and collaboration with students and peers when they are not within the confines of the educational institution.

The student's role in a virtual learning environment is that of an information seeker. To assist them in realizing this objective, wireless data solutions allow them to access a wide range of internal and external learning resources. The former encompasses educational materials that are copyright material produced by the school, while the latter refers to freely available (or in some cases may require a fee) web resources (Paulsen, 2001, p. 203). Exposure to the Internet "enhances the learning experience by increasing student-instructor and student-student interactions" (Shotsberger and Vetter, 2001). In addition, students can establish learning communities with individuals who share similar interests, but who are not students at the school. According to Sariola (2001), eLearning also offers students the opportunity to conveniently interact with researchers particularly in authentic research situations. eLearning may thus have a place as a useful tool in experiential learning. However, some researchers think that its use as a tool in learning science subjects is limited, as one cannot have the same experience as that derived from physically working in a laboratory. But for language learning/teaching, the dramatic increase in the use of eLearning
devices in general, and of mobile, portable devices in particular, is an encouraging development. Students equipped with mobile learning devices will spend less time in the library. With all study material readily available on smart phones and laptops, students no longer need to spend much of their time in the library looking for academic resources. This raises important issues with regards to student-computer ratio (Hansen, 2002). An increase in the number of those using mLearning will free more library resources, such as computers connected to the Internet, to other students or teachers. Other research indicates that when students use mobile devices as learning tools, the response rate to the tutor’s questions is much higher than in a traditional classroom (Shotsberger and Vetter, 2001). Increased responses have a double effect: It enables reserved students to participate more actively in discussions (Paulsen, 2001, p.100) and it provides the tutor with better feedback on how well a given topic has been understood (Shotsberger and Vetter, op.cit.). In effect, what this means is a higher quality of service for the student as the teacher can adapt his study methods to cater for the students who seem to have problems with certain areas of the syllabus. In summary, one can say that mLearning makes the student’s total learning experience more flexible.

For language learning, the past three decades have already witnessed the shift from Computer-Aided Instruction (CAI), where students merely individually enter a computer-based environment, to Computer-Assisted Language Learning (CALL), where the learner has the significant advantage of electronic interaction. To host eLearning programs, various Virtual Learning Systems (VLS) have been adopted and customized to meet the needs of participating learners. Virtual classrooms are growing in adoption across all vertical markets because of ease of use and increased awareness of the benefits of deploying various open-source and commercial Learning Management Systems (LMS) for managing, teaching and
training activities. Today’s more flexible virtual learning environments are creating more demand for academic, commercial and community produced learning content assets.

A virtual classroom, as an ICT based system designed for supporting teaching and learning in an educational setting, continues to be the most familiar analog for building eLearning programs. The intention of virtual classrooms is to extend the structure and services that accompany formal face-to-face (F2F) programs from the campus or learning center to learners, wherever they are located. Virtual classrooms are for those who may be pursuing a distance education program made up entirely of online lessons, or it may include experiences where learners join in from a variety of distributed locations in a real-time class session via the Internet. The virtual classroom model includes places for posting papers for review and comment, completing tutorials, distributing class assignments, team review of more secure files containing multimedia assets, and breaking away into study sections using web conferencing tools.

Over the past two decades, a number of language learning/teaching environments have emerged, all taking advantage of the major potential the Internet has on language learning and teaching. One such environment is Computer-Assisted Language Learning (CALL) and its later extension and development into Intelligent Computer-Assisted Language Learning (ICALL), or more specifically, using the Internet for language learning and teaching purposes. These systems offer the students a high degree of autonomy, that is, the possibility of learning without the classical “learner-teacher” interactional pattern. CALL is now widely regarded as the central acronym to refer to studies concerned with second language and computer technology. For example, individual learning through adaptive computer systems, promoted as intelligent CALL (ICALL), and web-enhanced language
learning (WELL), is used by educators who promote Internet-based activities. Overall, the main objective of CALL is to “improve the learning capacity of those who are being taught a language through computerized means” (Cameron, 1999).

2. Statement of Research Problem

This research seeks to understand how to alleviate a demanding problem students of English have here in Thailand, that is grammar, and provide them with well-grounded guides to remedial action. Thailand is now facing the rapid changes in the world of advanced technologies, especially information technology. Its educational institutions are required by the government to play a more proactive and developmental role in preparing the Thai people to cope with the globalization movements today and tomorrow. As English has become the international language of commerce, science and Technology, business and arts, and also the official working language of ASEAN, the Thai government has undertaken a policy of improving the English proficiency of students from elementary schools to universities. Nevertheless, teaching English in Thai schools faces many challenges including the lack of a clear objective and of qualified English teachers, Bangkok Post (2010).

On the positive side, the number of internet users in Thailand has increased tremendously during the past decade. Mobile phones and other ubiquitous devices come with many features that could be utilized for language learning. Learning a foreign language or improving their proficiency in English using these devices could be a great benefit to the users of these devices as they do provide learning opportunities at any time and at any place and pace.
Assumption University, established in 1969, is the first international university in Thailand where the media instruction has been English since its inception. In order to prepare students to study their courses in English, Assumption University requires students of all faculties to at least take the minimum of four English courses, namely English I – English IV. The university also provides English Laboratory for students to supplement the English teaching in class room. This research explores the possibility of filling an existing gap in English instruction at Assumption University that is, the absence of online English courses. Initially, an online tutoring system for sentence grammar practice will be designed and used in conjunction with the current curriculum of the Institute for English Language Education.

Two meaningful questions to be asked at this point are “will a tutoring system for sentence grammar practice be attractive enough to engage a significant number of students to go online and practice?”, and “what will be the effectiveness of such a system in helping students improve their sentence grammar?” An overwhelming majority of English IV students surveyed through informal questionnaires expressed a highly positive attitude towards using a virtual learning environment for sentence grammar practice. More female students than males showed a genuine interest in accessing the Internet for their tutoring.

At the beginning of each semester this researcher conducts an opinion poll with about one hundred-twenty students registered for the English IV course. The question they are asked to answer is this:

Do you think that an online eGrammar course designed to improve your grammar through a five-minute daily practice would be good for you? Would you use it?
Over the past ten semesters, more than one thousand students have answered this question. And this researcher’s informal results are that around 99% of the students questioned responded positively. Overall, more females than males responded positively, but that’s because, normally there are more female students than males in a class. In other words, our students are ready and waiting. They are “eReady”!

3. Purpose and Objectives

3.1 Purpose

The purpose of this research is to design and develop an online tutoring system for sentence grammar practice. Initially, the system may cover certain areas of difficulty, such as problematic sentences in English (fragment, rambling, run-on sentences), modals, determiners and their relationship to singulars/plurals, etc., with the possibility of expanding the system to other areas. The system and its courseware will be tried out on university students to explore its effectiveness, strengths and weaknesses. A Moodle-based tutoring system model for sentence grammar practice will be developed after the trial period.

3.2 Research Objectives

The objective of this research is to explore the value of work done so far on tutoring systems and apply it in a setting that can be useful to alleviate an existing problem. Specifically, this research will explore the existing online resources on Virtual Learning Environments (VLEs) for language learning in general, and for sentence grammar in particular, with the aim of gaining the necessary web design know-how in order to create and develop a prototype of eLearning tools, a Virtual Learning Environment (VLE) for sentence grammar practice. This prototype will be designed as a Moodle-based tutoring system,
specifically tailored for university students who, in traditional classroom environments, have failed to acquire the basic sentence grammar of English.

Specifically, the objectives of this research are as follows:

1. To develop a Moodle-based tutoring model for sentence grammar practice.
2. To identify the main components needed for an effective Moodle-based tutoring system.
3. To try out and test the tutoring system model in a simulated situation in order to assess its effectiveness.
4. To assess the effectiveness of a Moodle-based tutoring system by measuring the improvement of a group of students who benefit from extra, online sentence grammar practice using this system as compared with a regular classroom group of students.

The appropriate techniques, theory formulation, hypothesis testing using experimental methods, sampling, data collection techniques, statistical treatment of data, and validation or rejection of hypotheses will be applied in a setting where the implications of the research are immediately obvious.

4. Research Questions

A number of significant questions need to be addressed in relation to this research paper. The questions are relevant to the focus of this research, namely, a Moodle-based tutoring system for sentence grammar practice.

1) What is a Moodle-based tutoring system, and how can students benefit from using it?
2) To what extent a Moodle-based tutoring system designed to help students improve their sentence grammar through online practice can be effective in achieving this goal?
3) What are the components for developing such a system?

4) Will the students benefit from this experiment?

5. Significance of This Research

The significance of this research rests on the fact that it explores practical and real opportunities to improve learning through eLearning. The potential of eLearning as a tool in the quest for life-long learning is great. This research explores the eLearning technologies currently available and future trends. It addresses the challenges faced in connection with the provision of education using eLearning, as well as its impact on students and teachers.

1. It offers Assumption University English IV students the chance to improve their sentence grammar through online practice and as a supplement to their regular classroom practice, as an extension to what they do in class.

2. It represents an issue that is particularly timely in importance: Assumption University students have one fundamental problem with English: grammar. Most of them are also tired of traditional classroom grammar lessons. A new approach to sentence grammar practice, an online approach, may alleviate this major problem students have. Herein lies the significance of this research.

3. The outcome of this research may have significant implications for a wider population. Not only English IV students can benefit from this research, but all Assumption University students, students from other universities, as well as all those interested in improving their sentence grammar online.

4. The problem at hand relates to a critical issue among a vast population. Not only Thai learners of English have grammar as a major obstacle in their progress but also students from China, Japan, Korea, Vietnam, Laos, etc. And, for the same reason: all these languages, and most Asian languages, lack inflections.
5. The completed work would fill a gap in the research literature. There are not many practical tutoring systems for sentence grammar practice that can be applied for actual online sentence grammar practice. Those which are too ambitious in scope or design often remain stuck at the research level never getting to the level of implementation. A practical easy-to-use Moodle-based system is needed.

6. The definition of an important concept would be refined. The concept of eGrammar is new; it is an innovation at this point, and it is bound to become an inspiration in the near future. It needs to be applied, defined and refined.

7. The results will have implications for a wide range of practical problems. As mentioned before, the implications of this research can be enormous, not just for students of English, but for students of other languages, and for students of anything, anywhere, anytime.

Significantly, Article 34 in Carta ASEAN states that the working language of the Association of Southeast Asian Nations (ASEAN) shall be English. Consequently, proficiency in English is a must. Moreover, the Association of Southeast Asian Nations (ASEAN) is now insisting in its aspiration to become an “ASEAN Economic Community” (AEC) by 2015, having English as its official working language.

6. Moodle and Grammar

Sentence grammar practice using an online management system such as Moodle has not been investigated thoroughly. In fact there are few prior studies that address this issue. This makes this research particularly significant as it attempts to fill a gap in the research literature. A virtual learning environment such as a tutoring system for sentence grammar practice based on Moodle software will be designed, developed and implemented at Assumption University. Being an open source system, the Moodle course management
system will be used by this researcher and English IV students at this university. In conjunction with Moodle, the instrumental environment called Hot Potatoes can be imported and integrated in Moodle. Hot Potatoes for Windows is an instrumental work environment which includes six applied programs that can be used to create interactive exercises for sentence grammar practice: JQuiz-is a quiz with multiple choice of answers, JCloze- filling in a missing word or phrase, JMatch-pairing correct word/phrases, JCross-crossword puzzles, JMix-putting words/phrases in correct order, and JMasher-a program allowing in combining different materials in thematic exercises.

A significant proportion of the demand for portable wireless devices is now generated within educational institutions. They often offer the issue of choice between laptops, handhelds, or tablet PCs, and especially the increased use of wireless. Mobile and wireless devices already are, and will be, playing an important role in education. Part of this research tries to shed some light on various ways in which mobile devices are being used in education and will explore the new possibilities of incorporating such devices in an existing eLearning environment. A model will be developed to show the best way possible that existing eLearning or blended learning could be developed for achieving true learning on demand.

Education for life as well as learner-centered education requires a change in educational methods. Learner-centered methods together with the adoption of lifelong education and lifelong learning as guiding principles of education policy are able to provide extensive education and learning opportunities mainly because of the Internet. The findings of this research will therefore help Assumption University and many other universities in Thailand to the methods on how to integrate ubiquitous devices in teaching English and other courses. In this age of globalization and rapid technological innovation, multiple forms of
Literacy are becoming increasingly relevant to economic and civic participation. Realistically, many of our students and many adults who want to learn a second language or improve their English are challenged by lack of time, location flexibility, and convenient access. Current technologies can address these concerns through interactive Web sites which support learning anytime, anyplace.

7. Scope and Limitation of the Research

The scope of this research is to offer Assumption University English IV students a supplement to our regular classroom practice. The exercises will be extensions of what we do in class. At this point, the scope will be limited to our English IV course. eGrammar will cover only sentence grammar problems exemplified and documented by and through the writings of our students, for instance: subject sentences, run-on sentences, determiners and singulars/plurals, modals and making recommendations, etc.

As for limitations, perhaps the major one is the time constraint. Just one semester will not allow for a replication of the study. Although the total number of participating subjects, 160 divided into two groups, 80+80, is not necessarily small, at least one replication of the study would be better. Nevertheless, this researcher will try to alleviate this shortcoming by having multiple tests during the semester: quiz 1, mid-test, and quiz 2 (in conjunction to the pre-test and post-test). Another potential limitation is the fact that our English IV students are already overwhelmed by the difficulty of this course. Some may find that going online for more grammar practice is too much.

On a different note, another potentially major limitation of any research, this one included, is that the researcher is often seen by his fellow teachers and supervisors as an
agent of change, an intruder, in an often relatively closed environment. Everyone seems curious about what the researcher is doing, what he or she is looking for, and why he or she “lurks around” and asks questions. (Handbook of research design and social measurement, p. 6, Delbert Charles Miller, Neil J. Salkind SAGE, 2002). Others start asking questions, such as “What do you expect to find?”, “What are you trying to do?”, “Are you going to put us on a couch?” etc.

In the case of this particular research, considering the fact that this researcher attempts to develop an online tutoring system for ESL, some of his colleagues may be worried that their teaching jobs will become redundant. But this is not the case. This online tutoring system will be designed to help improve the well-being of our individual students and can and will be used as a supplement to, and in conjunction with our existing courses, but as a different, as a new way for students to improve certain grammar problems they have.

8. Expected Outcomes

It is expected that this research concludes a positive achievement in students’ learning ability when using eLearning for sentence grammar practice. There should be no noticeable or significant difference in levels of achievement in a given subject between males and females or the faculty they represent. It is also expected that the attitude of students towards eLearning improves.

9. Definitions of Terms

In this sub-chapter, besides defining the key terms in this research, we will first attempt to redefine the currently accepted, but border-based, definition of English as a Second Language and English as a Foreign Language. This researcher will try to do so by
relating English language learning to the generally accepted idea that eLearning is *borderless*. This is an original idea that will be introduced and supported in a paper that will be presented by this researcher at an international conference on eLearning.

**English as a Second Language**, or **ESL**: means *acquiring* the English language as language two (L2) in an environment where English is the main local language, for instance, the U.K., the U.S., etc. The process involved is more of an acquisition nature since the learner is physically surrounded by English; the learner lives in an environment of English.

**English as a Foreign Language**, or **EFL**: means *learning* the English language as language two (L2) in an environment where English is not the main local language; Thailand, for example. Now the process involved is more of a learning nature, with the student having a teacher, attending classes, etc.

The important thing to note about these definitions is that they are both *border-based*. Now the question is "If eLearning is borderless, how can learning/acquiring English online be border-based"? In other words, when English is acquired/learned online, the distinction between EFL/ESL does not apply anymore. Hence, this researcher will use the term ESL throughout this research.

By learning/acquiring English online, the learners can surround themselves with an English language environment of their choice anytime and all the time, and can choose their preferred models of English (living in the U.K. or the U.S. may certainly not render this luxury). In fact, living in a Virtual Learning Environment (VLE), a motivated learner of English can gain and benefit more than living in an English speaking country.
**eGrammar**: can be defined as a prototype of a virtual learning system designed to provide a variety of features, including error detection and correction, specific feedback and adaptive features for grammar practice.

**Virtual Learning Environments (VLEs)**: are web-based information spaces designed to support a variety of teaching and learning activities, allowing interaction among participants in an educational setting.

**Moodle**: is a course management system for online learning. It stands for Modular Object-Oriented Dynamic Learning Environment, and its design is based on socio-constructivist pedagogy. It allows for collaborative interaction among students as a standalone or in addition to conventional classroom instruction.
CHAPTER II
LITERATURE REVIEW

1. Introduction

This literature review provides a brief introductory information about the history of distance learning, electronic learning, mobile learning, and other related issues, followed by a more detailed review of the development of virtual learning environments, thus establishing a rich context for this research study. Specifically, this literature review investigates issues related to Computer-Assisted Language Learning (CALL), Intelligent Computer-Assisted Language Learning (ICALL) and Parser-Based Tutoring Systems. This chapter will also present a detailed review of parser-based tutoring systems developed by other researchers. This study is expected to provide the basic and necessary insights for existing virtual language learning environments and how a tutoring system could be developed for sentence grammar practice.

2. Distance Learning

Distance from the source of learning has always been an obstacle. Learning, or more specifically distance learning, has gone through changes over the ages, especially during the industrial and later information revolution. Here is a brief historical background of distance learning.

2.1 Distance Learning (dLearning)

The technologies – especially communications and transport - developed during the industrial revolution in the late nineteenth and early twentieth centuries, paved the way for dLearning (Keegan, 2002). dLearning stands for distance learning, and it means offering
tutorial services at a distance. A more detailed definition of distance education, often referred to as dLearning follows: Distance education is education where teacher and pupils/students are separated by space and/or time. Technical media are used to impart knowledge and to make possible real to-way-communication, in support of the process of teaching (Stortingsmelding nr. 43, 1988-89). A remark to Stortingsmelding nr. 43 is that distance education need not necessarily include the use of technical aids. Norsk Kunnskaps-Institutt (NKI), for instance, has offered Internet-based teaching since 1987. Previously, communication between the teacher and student was done by regular mail or phone. Keegan (2002) characterized distance education by:

- The separation of the teacher and the learner;
- The separation of the learner from the learning group;
- Technology being used as a media to communicate with the tutor or educational institution.

dLearning offers students the opportunity to work or stay at home and study course materials when they find it convenient. Course materials took the form of printed material sent by post. This called for improved road and rail transport especially to marginal areas. Advancements in information technology in the 1980s, have led to the introduction of audiovisual aids, cable and satellite that further enhanced the learning experience. Through the application of these new technologies, it then became possible to link several geographically dispersed locations simultaneously, and create a virtual classroom. Technology thus extended the dLearning experience from one that was solely individual to one offering group-based, face-to-face teaching at a distance (Keegan, 2002). Group-based dLearning is not limited to part-time students. It can be used for the simultaneous dissemination of didactical content to full-time students at several locations. By providing the teacher with an array of technological
tools it became possible - among other things - to be joined by experts from a remote location who would further enlighten students on various subjects (Chen, 2002). Such educational moments provide students with a better understanding of a given area, and aims at motivating the use of dLearning. dLearning has also allowed teachers to have a more flexible time schedule (Chen, 2002) as all teaching sessions could be stored on visual-audio aids and dispatched or broadcasted.

2.2 Electronic Learning (eLearning)

The electronics revolution in the 80s also marked the era of personal computing. Since then, we have witnessed technological advances in processor speed, and significant drops in the price of personal computers. Each new chip from AMD and Intel brings with it an increase in the performance to price ratio. Personal computers are now a ubiquitous commodity in homes throughout the developed world, and are increasingly gaining ground at institutions and homes in the developing world. Catalyzed by the introduction of the World Wide Web in the 90s, dLearning took a new dimension - eLearning. Klaussen (2002) attributes the main change-over from dLearning to eLearning as having taken place at that time.

Brahmawong (2005) provides the following definition for eLearning: eLearning is a system of learning in which ICT is used to support interactive two-way communication among learners and instructors. The combination of on-screen interactive (OSI) and web-based instruction is developed for effective teaching and learning in the form of digital and analog, synchronous and asynchronous, and on-line and off-line, and narrowcast or broadcast delivery systems. One great advantage of the World Wide Web is that it is platform independent and supports several media types, for instance, audio and video. It is also available globally. From an educational perspective, it meant that teaching could now take
place both synchronously and asynchronously (Keegan, 2002). The impact on students is that they may study course content from their computer screens, and thus are not dependent on being physically present at school. Time and place are no longer restrictions as the learning experience can be tapped anywhere one has a computer and access to the Internet. The teacher’s role is made more flexible in that they can now tutor from the confines of their offices or homes. Student-teacher / student-student interaction in eLearning is mediated through the use of e-mail, discussion forums, chat rooms and the like. The model in Figure 1 illustrates how eLearning works: The screen is the computer screen where the students receive course content, student support services, have access to the web and other materials. The student may also communicate with the teacher or peers from here via email, or a chat session, for instance.

![Diagram of e-Learning environment](source: Keegan, 2002)

The term eLearning is analogous to online education. Paulsen and Keegan *et al.*, (2002, p. 23) provide the following interpretation of this form of education:
“Online education is characterized by:

- The separation of teachers and learners which distinguishes it from face-to-face education
- The influence of an educational organization which distinguishes it from self-study and private tutoring
- The use of a computer network to present or distribute some educational content
- The provision of two-way communication via a computer network so that students may benefit from communication with each other, teachers, and staff”.

In his book “Delivering eLearning for Information Services in Higher Education”, (Catherall, P. 2004) refers to eLearning as “a computer-based form of learning which encompasses any technology that allows for the delivery of learning resources or communication between tutor and students” (pp. 1-2).

Luskin, B. (2006), an eLearning pioneer, argues that the “e” in eLearning must be understood to have a broader meaning if eLearning is to be effective. He says that “the “e” in eLearning should be interpreted to mean exciting, energetic, enthusiastic, emotional, extended, excellent, and educational in addition to “electronic” which is the traditional interpretation.”

This researcher clearly favors this broader interpretation of eLearning which allows for 21st century technologies and new pedagogies to promote new ways of learning. eLearning, which includes online learning, web-based training, virtual universities and classrooms, digital collaboration, and technology assisted distance learning (Keegan, 2002), depends on the availability of a wired network connection to the Internet. This restricts its use
among students and corporate professionals who are constantly on the move. However, with the current popularity of wireless networking technologies, the concept of learning at anytime, anywhere is slowly beginning to take shape. Keegan (2002) notes that the move from wired to wireless was already evident as we entered the new millennium. On the one hand, it may be argued the eLearners can overcome the anywhere limitation of eLearning by printing course content, and taking it along with them (Klaussen, 2002). On the other hand, they are still handicapped by the fact that they cannot access additional course content on-demand (Klaussen, 2002).

2.3 Mobile Learning (mLearning)

Wireless technology and the capability of being mobile while learning are the main features of mLearning. Coupled with the use of a hand-held wireless device and software / hardware solutions that make it possible to access educational content, students are exposed to a new educational experience, mobile education or mLearning. Experts in the field have offered different definitions for this form of education. The following quotes are obtained from —The future of learning: From eLearning to mLearning (Keegan, 2002): —The ability to receive learning anytime, anywhere and on any device (Chabra, Figueiredo, 2002). —The point at which mobile computing and eLearning intersect to produce an anytime, anywhere learning experience (Harris, 2001). mLearning—it’s eLearning through mobile computational devices: Palms, Windows CE machines, even your digital cell phone (Quinn, 2000). Based on these definitions, and for purposes of this research, the following definition of mLearning is offered here: mLearning is learning that can take place anytime, anywhere with the help of a mobile computer device. The device must be capable of presenting learning content and providing wireless two-way communication between teacher(s) and student(s). Typically, an
Figure 2: Wireless learning environment of tomorrow (Source: Keegan, 2002)

mLearning not only breaks barriers, but also presents new challenges in the educational arena.

3. Virtual Learning Environments

Two significant research questions need to be addressed in this chapter, namely:

1. What are the existing online resources for Virtual Learning Environments (VLEs) in general, and
2. What are the existing online resources for Virtual Language Learning Environments (VLLEs) in particular?

3.1 The Concept

Chapter Two of this Documentary Research will first attempt to define the concept of Virtual Learning Environments (VLEs), or virtual classrooms, as programs designed to host various eLearning teaching and learning activities. The second part of this chapter will focus
on Virtual Learning Environments (VLEs) tailored for language learning in general, and for ESL in particular.

The concept of “virtual learning environment” is not just a popular label to describe any educational software. The concept includes several interesting features that justify the use of this specific label. These features in themselves do not guarantee pedagogical effects; turning potential effects into actual outcomes is the challenge that lies ahead for the web designer.

3.2 Definition

**Virtual Learning Environments (VLEs)** are web-based information spaces designed to support a variety of teaching and learning activities, allowing interaction among participants in an educational setting.

According to Dillenbourg *et al.*, (2002), *Virtual Learning Environment*, virtual learning environments can be identified by a number of specific features:

- A virtual learning environment is a designed information space.
- A virtual learning environment is a social space: educational interactions occur in the environment, turning the space into a place (for learning).
- Students are not only active, but also actors: they co-construct the virtual space.
- Virtual learning environments are not restricted to distance education; they also enrich classroom activities.
- Virtual learning environments integrate heterogeneous technologies and multiple pedagogical approaches.
Most virtual environments overlap with physical environments.

In other words, Virtual Learning Environments can be defined as a range of systems that comprise features such as a designed information space, a social space being a place, and participants who are active and present actors.

Virtual Learning Environments (VLEs) can also be defined as computer-based ICT systems allowing interactions and encounters among participants, providing a wide range of resources, and designed to support a variety of teaching and learning activities in an educational setting. The definition will further explore the similarities of VLEs with, and advantages over, Computer Aided Instruction (CAI), and expand the definition of traditional language environments to include three VLE dimensions: technology, interaction and control.

Virtual Learning Environments (VLEs) can be further defined as “Web-based technologies that are relatively open systems, allowing interaction and encounters with other participants” and providing access to a wide range of resources (Wilson 1996, p. 8). VLEs are distinguished from computer micro-worlds, where the students individually enter a self-contained computer-based environment, and classroom-based learning environments, where some technologies can also be used as tools to enhance classroom activities.

VLEs share many similarities with the related but narrower concept of Computer Aided Instruction (CAI), or computer micro-worlds where the learner can access the material independently, individuals can follow different paths through it, and can utilize different material displays. But the VLE concept is much broader than CAI and adds the communication dimension to a previously individualized learning experience. VLEs can
foster communities of learners and encourage electronic interaction and discussion. Now, the learning process is no longer an individual endeavor, but can incorporate the relations among learners and with instructors (Wilson 1996).

In their article called "Virtual Learning Environments", Dillenbourg et al., (2002), argue that a virtual learning environment can be identified by the following features:

- A virtual learning environment is a designed *information space*. The architecture of this information space needs to have a number of functional requirements, such as: using information in educational interactions, and multi-authoring (language specialists, domain experts, students);

- A virtual learning environment is a *social space*: educational interactions occur in this environment, turning the *space* into a *place*. Virtual environments are *populated* spaces, similar to a seminar where students interact.

- Students are not only *active*, but also *actors*. The difference between other constructivist environments and what virtual environments can potentially offer can be described as making students not only active, but also actors, for example making students members and contributors of the social and information space.

- Virtual learning environments integrate *heterogeneous technologies* and multiple *pedagogical approaches*. In the case of virtual learning environments, there is a technical and pedagogical integration, both of them may vary in degree and with the technical integration always supporting the pedagogical interaction.

Having provided this broad definition of virtual learning environments, a legitimate question to ask is "do they enhance the effectiveness of learning?"
A reasonable way to answer this question is to say that virtual learning environments have significant potential effects. The difficulty is to set up the necessary conditions to turn potential effects into actual effects. As mentioned at the beginning of this chapter, this is a formidable challenge that lies ahead for the web designer.

4. Historical Development

This section of Chapter 2 investigates the progress from Computer-Aided Instruction (CAI), initially called Computer-Based Instruction (CBI), which dominated the last three decades of the previous century, and where the students individually enter a self-contained computer-based learning environment, to the VLEs of the 1990s until today, where students have the advantage of a significant new dimension: electronic interaction.

4.1 Computer-Aided Instruction (CAI)

In the early days of Computer-Aided Instruction (CAI), in the late 1960s and 1970s, educational technologists started developing programs of computer-based instruction (CBI) to drill, tutor and test students and to manage instructional programs. Soon, these CBI programs started being used increasingly in schools to supplement or replace more traditional methods. Many educational technologists believed that CBI will not only reduce educational costs in the long run but it will also enhance educational gains.

CAI usage was initiated in the USA in the 60s with early work being done at Florida State University, Dartmouth and Stanford. At Stanford in the mid-sixties, Suppes and Atkinson (1965) applied CAI methodology in the area of mathematics through computerized drill and practice. CAI work continued at Stanford with entire CAI courses offered in mathematics and Russian.
Evaluators conducted many studies to determine whether CBI can, in fact, produce such beneficial effects. They divided classes of students into experimental and control groups and taught experimental group students with computer assistance while teaching the control group with conventional methods only. The conclusions from traditional reviews have been basically positive. Some researchers drew the conservative conclusion that CBI is at least as effective as traditional instruction, and it may also result in substantial savings of student time. Suppes and Morningstar (1969) reported mixed or positive results at the end of their drill-and-practice Mathematics Program and the Russian Program at Stanford University in 1967. The tentative evaluation of the CAI course in physics developed at the Florida State University, indicated that instructional time was reduced by 17% over the traditional lecture course and students scored higher on final exams. Other reviews showed even more positive results. Good (1979) reported that achievement gains over other methods of instruction are the norm, within a shorter period of time and with an improved attitude towards computers.

But the interest in CAI in its early stage was not limited to the United States. Following closely and almost in parallel, Computer Assisted Learning (CAL), as CAI is known in the United Kingdom, began in the late 60s with important projects headed by the University of London and the University of Edinburgh. With the British government becoming seriously interested in this kind of research, the subsequent funds turned Leeds University into a base for projects in chemistry and statistics, the University of London into a base for engineering science projects while the University of London combined with the University of Surrey became centers for developing materials in support of undergraduate education in the sciences.
Perhaps the most successful implementation of the CAI mode in the U.K. has been done by the Open University. The Open University develops CAI programs and uses them successfully, both educationally and financially.

Besides the U.S. and the U.K., Canada and Japan both have shown strong interests in CAI and have developed centers of activity. Major Canadian centers include the Ontario Institute for Studies in Education, the National Research Council of Canada, Queen’s University, Concordia University and others.

In Japan, experimentation with CAI has been in progress at higher education level as well as in industry. Research studies in CAI have been conducted at such institutions as Osaka University, Hokkaido University of Education, and others.

However, the drill-and-practice CAI approach was a limiting and negative influence upon developing the educational potential of the personal computer. What actually occurred in CAI, was a very narrow range of machine-generated responses to a narrow range of expected or predictable inputs. Too often, people using computers, simply transposed books and lectures, and so they missed the component of active learning. Nevertheless, the meaningful question to be asked at this point is

*Does all of the above mean that Computer Aided Instruction was effective?*

Chambers and Sprecher in their article “Computer Assisted Instruction” (1980) argue that overall, a review of the literature revealed the following consistencies:

-The use of CAI either improved learning or showed no differences when compared to traditional learning environments.
The use of CAI reduced learning time when compared with the regular classroom.

The use of CAI improved the students’ attitudes in relation to the use of computers.

The successful implementation of CAI programs at different levels of education in different parts of the world was based on the realization that using the computer provided a more active learning environment, one that demands the involvement of the learner, and that is “self-pacing” in terms of the speed at which material is received and responses made. Nevertheless, this individualized self-paced computer-based learning environment was missing one significant means used to increase motivation and mastery of skills: collaborative learning, that is, cooperative work among a peer group of students, guided by an instructor. The Virtual Classroom (VC) was born out of this necessity to enable students and teachers dispersed in space and time to form an active, supportive and effective community.

4.2 The Virtual Classroom (VC), the Age of the Internet

The Virtual Classroom shares with Computer Aided Instruction the goal of using the computer to provide a more active learning environment but, unlike Computer Aided Instruction, through networking and instructional styles and activities, it has no limitations in its ability to form a collaborative learning community that includes a diversity of people: different ages, different life experiences to share, from any part of the world.

In her book called “The Virtual Classroom” (1994), Hiltz defines the virtual classroom as a teaching and learning environment located within a computer-mediated communication system; it consists of a set of group communication and work spaces and facilities, which are constructed in software. Some of these communication structures
resemble facilities and procedures used in traditional classrooms. Others support forms of interaction that would be impossible in a face-to-face environment. Participation is asynchronous, that is, participants go online at any time around the clock and from anywhere in the world.

A virtual learning environment (VLE) or a virtual classroom is an ICT based system designed for supporting teaching and learning in an educational setting. This is, perhaps, the most familiar analog for building eLearning programs. The intention of virtual classrooms is to extend the structure and services that accompany formal face-to-face (F2F) programs from the campus or learning center to learners, wherever they are located. Virtual classrooms are for those who may be pursuing a distance education program made up entirely of online lessons, or it may include experiences where learners join in from a variety of distributed locations in a real-time class session via the Internet. The virtual classroom model includes places for posting papers for review and comment, completing tutorials, distributing class assignments, team review of more secure files containing multimedia assets, and breaking away into study sections using web conferencing tools. In other words, and for the first time in the evolution of computer-based instruction, participants now have the advantage of a significant new dimension: electronic interaction. A new era is born: the age of the Internet.

4.3 Computer-Assisted Language Learning (CALL)

Computer Assisted Language Learning was defined as “the search for and study of applications of the computer in language teaching and learning” (Levy, 1997). The subject is interdisciplinary in nature, and it has evolved out of early efforts to find ways of using the computer for teaching or for instructional purposes across a wide variety of subject areas, with language learning having ultimately resulted in a more specialized field of study.
Chronologically, the development of CALL from the early years of Computer-Aided Instruction (CAI), was closely linked to major technological developments, theories of learning and language teaching approaches. Warschauer (1996) identifies four phases of CALL development as follows:

- Behaviouristic CALL (Main-frame and Mini Computers, 1960s-1970s)
- Communicative CALL (Personal Computers, late 1970s-early 1980s)
- Integrative CALL (Multimedia CD-ROM, late 1980s-early 1990s)
- Integrative CALL (Internet Applications, 1990s-present).

Early uses of CALL in English language teaching and learning can be divided as follows (Torut, 1999):

- Drill and practice,
- Computer as tutor,
- Computer as simulation/problem-solving,
- Games on computers,
- Computer as a tool for English language teachers and learners,
- Internet applications.

CALL may be said to have begun with the PLATO (Programmed Logic for Automatic Teaching Operations) project. PLATO was a prominent Computer Assisted Instruction (CAI) project initiated at the University of Illinois in the 60s, and designed to
teach foreign languages and other subjects. It was a ground-breaking educational computing project with several incarnations, one of them being PLATO IV (Hart, 1995), (Levy, 1997, p. 15). PLATO IV, implemented on mainframe computers, was probably the version of this project that had the biggest impact on the development of CALL. Extensive PLATO-based materials were developed for a number of languages, the most comprehensive being designed by Marty (1981) for French language learners. General examples of foreign language CALL materials can be found in the areas of reading, writing and listening (Chapelle and Jamieson 1984: 17-18).

In their article “Computer-Assisted Language Learning as a Predictor of Success in the Acquisition of English as Second Language” (1986), Chapelle and Jamieson report the results of a study of the effectiveness of CALL in the acquisition of English as a second language by Spanish-speaking and Arabic-speaking students. The study also examined two student variables: time spent using CALL and attitudes towards CALL, as well as four cognitive/affective characteristics: field independence, ambiguity tolerance, motivational intensity to English-class anxiety. Results indicated that time spent using and attitudes towards CALL were significantly related to field independence and motivational intensity. In other words,

a) some students may be better suited to certain CALL materials than others, and

b) it is necessary to consider many learner variables when researching the effectiveness of CALL.

That is to say that individualized language instruction has long been recognized as a significant advantage of CALL over workbook tasks. A one size fits all approach is not appropriate for a learning environment. Students learn at their own pace and often work for
their own purposes. Learners also vary with respect to prior language experience, aptitude, cognitive needs, beliefs, attitudes and/or learning styles.

Motivation is clearly a key factor in language learning success and CALL practitioners have been keen to point out that computer environments themselves can motivate many students. According to Pennington (1996), learners gain motivation through computer use because they are less threatened and thus take more risks and are more spontaneous. With reference to computer based writing, Pennington (1999) credits positive attitudes toward computing as a key factor in student motivation to produce high quality materials.

One key role of computers is to deliver materials. Increasingly, Internet access to foreign newspapers, specialized websites, and other forms of media has shifted a view of materials as authentic discourse. Specifically because they help make available such a wide range of authentic materials, Kramsch (1999) writes that “computers seem to realize the dream of every language teacher – to bring the language and culture as close and as authentically a possible to students in the classroom.” However, they remind us, even though digitized materials give the appearance of authenticity, such media reshape the context of language use.

With the advent of networked computers and the Internet, in particular, learners are increasingly called upon to design and execute their own computer-based activities. The growing availability of Internet access has prompted CALL instructors to move away from stand-alone workstations and more toward networked computers (Debski, 2000). Socio-collaborative approaches to teaching and learning are replacing communicative ones, and
debates about pedagogy now center on aspects of learner autonomy, collaborative project design, and appropriate assessment practices. CALL educators are also being challenged to keep pace with rapid change and innovation to meet concerns about evolving technologies, professional development, and rising student levels of electronic literacy.

Broadly speaking, CALL is made possible through an interdependent relationship among computers, students, and instructors. The use of computers, for example, influences the nature of student activities which in turn affects how teachers may set goals and constructs the learning environment. In each of the three stages of CALL, the role of students changes in tandem with shifts in learning theory, the capabilities of computers, and instructional processes. In structural CALL, students were dependent on programs of instruction than efficiently delivered grammar and vocabulary materials. Communicative CALL practices sought to place learners in independent relationships with the computer, as students progressed through interactive work with applications. Within integrative CALL, students are expected to work collaboratively and utilize the computer as a “toolbox” for group project work. Increasing student familiarity with computers, now challenges CALL educators to direct their use for the specific purposes of language learning. To better understand the relationship of students to the computer, CALL researchers have explored learner strategies, examined the status of learners, and begun to characterize the skills and practices required to work effectively in computer environments.

Generally, applied linguists hold a strong interest in learner strategies. In CALL, this interest has been directed to looking at student behaviors regarding online reading, listening, speaking, and writing, particularly in regard to the comprehension of second language
multimedia. Chun and Plass (1997) framed the key issues of “multimedia comprehension” based on studies of online reading and visual interpretation.

Though far from perfect, speech technologies for language learning are developing rapidly as educators seek to make student learning more engaging within the computer environment. With an emphasis on pronunciation, Aist (1999) provides a solid outline of current developments in speech recognition software for language learning. Essentially, the student can interact through speech in three general ways. The first is in the form of “visual feedback,” which shows a student a display of intonation and loudness patterns. The second, when a student utterance is compared to that of a native speaker and scored automatically, a “template-based” approach is used. And the third way to assist students with pronunciation is to have a “model-based” approach. By building up a model of mispronunciations through comparison to native speaker utterances or predicted common errors, students gain specific feedback on errors and a guide on how to correct them.

Hoven (1999a) clearly places the learner in control of his or her own learning. She believes that the learner needs to be in control of the “content, mode, order, pace, and level of self-direction of the package”. An advocate of integrative CALL, Hoven argues that syllabus design should be framed in a sociocultural theoretical perspective, in which the texts are negotiated, mediated, and made to be interactive. In her principles for implementing a “learner-centered CALL” syllabus, she suggests that any allocation of control to the learners needs to be accompanied by awareness-raising activities that encourage responsible management. As part of this, she argues that sophisticated online help facilities coupled with effective navigation elements may help foster learner control.
The integration of CALL into the classroom has challenged instructors to become familiar with new technologies and redefine their views of teaching. Not only have computers shifted instructional practices, they have changed the way materials are designed, assessment is conducted, and how programs are evaluated. In both structural and communicative CALL, the teacher should serve as a mediator between the computer and students throughout the learning process. Although computer usage generally fosters a "programmed" approach to instruction, instructors are nonetheless reminded to stay on hand to keep things running smoothly. The computers should act as "active partners" rather than "passive assistants" to the instructional process. CALL is now widely regarded as the central acronym to refer to studies concerned with second language and computer technology. For example, individual learning through adaptive computer systems, promoted as intelligent CALL (ICALL), and web-enhanced language learning (WELL), is used by educators who promote Internet-based activities. Overall, the main objective of CALL is to "improve the learning capacity of those who are being taught a language through computerized means" (Cameron, 1999).

Computer-Assisted Language Learning (CALL), as is immediately clear from its name, is a field in which computers and language naturally play key roles. Its related topic, and the one that is of far more interest to computational linguists, is called intelligent CALL (ICALL), but some authors prefer to call it parser-based CALL. Parser-based CALL is defined on the one hand by second language acquisition theories and teaching practice, on the other, by natural language processing and artificial intelligence.
4.4 Intelligent Computer-Assisted Language Learning (ICALL) is an emerging discipline that seeks to apply advanced technologies, especially Natural Language Processing (NLP), to the problems of language learning and research on learning. As a multidisciplinary area of research, it combines Natural Language Processing (NLP), Intelligent Tutoring Systems (ITS), and Second Language Acquisition (SLA).

NLP technology provides ways of programming the computer with enough information on language, in the form of rules and patterns, that it can analyze the structure of sentences that users put into it, detect errors, and provide feedback. NLP gives learners the ability to create original sentences in the language they are learning and enter them into the computer for feedback and response. The development of sophisticated parsers and the effort to tailor their output to provide linguistically precise feedback on grammatical structure for the benefit of learners is one of the best known aspects of ICALL. This is a dramatic departure from answering the multiple choice and fill-in-the-blank questions of the conventional computer-assisted instruction (CAI). So far, most of the work done in ICALL has primarily focused on the development of NLP technology for error detection and diagnosis. The challenge ahead lies in designing ICALL systems which focus primarily on the specific needs of language students.

4.5 Parser-Based Systems: Intelligent CALL (ICALL) / Parser-Based CALL / Intelligent Language Tutoring Systems

The notion of parser-based CALL captures the nature of the field much better than the somewhat misleading term Intelligent CALL, which may imply that all other CALLs are un-intelligent! At the same time, the technology-defined borders between these three sub-fields of CALL are not even clearly identifiable. For these reasons, the terms parser-based systems,
ICALL systems and ILT systems will be used interchangeably, although the term parser-based systems is preferred.

What is it that makes these systems intelligent?

Their “intelligence” lies in the use of parsing. Parsing is a technique that enables the computer to encode complex grammatical knowledge such as humans use to assemble sentences, recognize errors, and make corrections: “Parsing is the process by which grammatical strings of words are assigned syntactic structure” (Patten, 1992, p. 29).

The main pieces of a typical parsing component are a text preprocessor, a morphological analyzer, a lexicon, and a syntactic parser. A parser used for intelligent CALL often additionally incorporates an error handling facility. These pieces function to identify the words in an input sentence and to analyze the relations among them:

First, a written input, such as “The girl write the story” is submitted to an interactive preprocessor which identifies spelling mistakes to the student. Next, the morphological analyzer decomposes the words into subparts (roots and affixes) based on information in the lexicon, or computational dictionary. Then, the words are unified back into their original state and passed to the syntactic parser. Finally, the tutor output: the subject “girl” does not agree with the verb “write”.

Because the parser is going to be used for tutoring, one very important component is the error handler, which must obey precise specifications: it must be able to tolerate, detect, and diagnose errors, and it should be flexible in reporting errors (Intelligent language tutors: theory shaping technology), Holland et al., (1995), The role of Natural Language Processing (NLP) techniques, such as parsing and semantic analysis, is described in relation to language
tutoring systems (LTS) in “Natural language processing techniques in computer-assisted language learning”, (Holland et al., 1995).

Natural language processing techniques provide computational methods of analyzing human text and discourse that have been developed and used in such applications as machine translation and message extraction (ARPA, 1993; Hutchins and Somers, 1992; Nirenburg, 1993). The increasing availability of these methods has stimulated the advance in intelligent computer-assisted language learning which deploys NLP to help learners of second languages. Pioneers in both computer-assisted language learning and artificial intelligence research (e.g. Imlah and du Boulay, 1985, Underwood, 1984, Weischedel, Voge and James, 1978) envisioned that NLP technologies could benefit language learning by enabling simulated conversation between learner and computer and by providing a detailed diagnosis of the learner’s linguistic difficulties. Areas of Artificial Intelligence (AI) which are relevant to CALL, such as Natural Language Processing (NLP) and Intelligent Language Tutoring Systems (ILTSs) have played a significant role in the development of CALL, in its design and implementation. NLP-based CALL is aiming at interactive computer systems possessing a high degree of artificial intelligence and capable of processing natural language input (Holland et al., 1993). The strength of NLP is that it allows for a sophisticated error analysis where student tasks can go beyond multiple-choice questions or fill-in-the-blanks exercises. Many simple drills, on the other hand, are based on string matching algorithms, that is, the student response is compared letter for letter against an answer key.
5. From Grammar to eGrammar

This section of the Research Proposal attempts to answer two meaningful research questions:

1. What are the existing resources on sentence grammar and on sentence slots, and
2. What are the online resources on eGrammar?

In order to be able to answer sub-question 1, we need to understand the concept of sentence grammar and that of sentence slots. Both are essential concepts for this researcher’s future plan of action.

5.1 Sentence Grammar can be understood as the grammatically correct and semantically meaningful arrangement of a group of words in a statement. For instance, the sentence:

"Children love to go gambling in Las Vegas" — is grammatically correct but semantically meaningless: children do not go to Las Vegas, and they do not gamble.

By contrast, the sentence:

"Many adults love to gambling in Las Vegas" — is semantically correct but grammatically incorrect: love to gamble or love gambling, are the correct forms.

Since words do not live independently, by themselves, separated from sentences, simply knowing the meaning of a vocabulary item is far from everything. It is knowing, or feeling, how to put that particular word in a grammatically correct and semantically meaningful sentence that matters, and this knowledge marks the difference between those who master and those who do not master the grammar of the English language.
5.2 Sentence Slots. One interesting way to look at a sentence is to picture it as a series of slots. In this simple sentence below

"The students are studying"

the two main slots are occupied by the subject noun "students" and the predicate verb "studying". But each one is preceded by another slot: the determiner "the", which signals a noun, and the auxiliary "are" which signals a verb. In other words, a sentence is a sequence of slots; omitting one slot, when required, renders the sentence incorrect, for example:

"The students are sleeping" (correct)

"Students sleeping" (incorrect)

In her book "Understanding English Grammar", Kolln, M. (1998) offers an interesting classification of the basic sentence patterns in English. Although the potential number of sentences in English a speaker can produce is infinite, the number of basic sentence patterns, or forms, is very small. There are ten sentence patterns which account for the underlying skeletal structure of almost all the grammatical sentences in English. This is possible because of the systematic nature of sentence structure and the limited number of elements that make up the sentences. The skeletal structure of all ten patterns is based on the two parts they all have in common, the subject and the predicate. The subject of the sentence is what the sentence is about – its topic. The predicate is what is said about the subject. So, these two parts can be thought of as the topic and the comment. This subject-predicate relationship underlies every sentence, even those where the subject is not stated. For example, in the sentence "Sit down", the unstated subject is (you) while the predicate is sit down.

It is important to notice that, in the classification of sentences into patterns, the subject can remain the same, unchanged, while all the variations are in the predicate, variations in the
verb and in the slots following the verb. This means that, in a sentence, it is the verb that occupies the central, pivotal slot.

Here is a list of the ten basic sentence patterns in English:

I. **The students** are **upstairs.**
   - NP (subject) be (predicating verb)
   - ADV/TP (adverbial of time/place)

II. **The students** are **diligent.**
    - NP (subj) be (pred vb)
    - ADJ (subj complement)

III. **The students** are **scholars.**
    - NP1 (subj) be (pred vb)
    - NP1 (subj comp)

IV. **The students** seem **diligent.**
    - NP (subj) linking verb (pred vb)
    - ADJ (subj comp)

V. **The students** became **scholars.**
   - NP1 (subj) link vb (pred vb)
   - NP1 (subj comp)

VI. **The students** rest.
   - NP (subj) intransitive verb (pred vb)

VII. **The students** studied **their assignment.**
    - NP1 (subj) transitive verb (pred vb)
    - NP2 (direct object)
VIII. The students gave the professor their homework.

IX. The students consider the teacher intelligent.

X. The students consider the course a challenge.

In each of these sentences, it is important to recognize that the subject is the student – not just student; in other words, the subject slot in all these sentences is a noun phrase-NP (a unit of two or more words), not just a noun. Naturally, any noun phrase-NP or verb phrase-VP can be expanded into a larger phrase consisting of several different slots:

All the good students in my new English IV class are diligent.

This is a good way to look at a sentence and to picture it as a series of slots. The first one in every pattern is the subject slot followed by the predicate slot. But both the subject slot and the predicate slot usually have a number of other slots, some required, some optional.
It is precisely this knowledge of the required slots in a sentence that students of ESL need to have, and it is the strong belief of this researcher that the development of, and practice using, an Intelligent Language Tutoring System (ILTS) will help students achieve that particular goal.

Virtual Learning Environments (VLEs), in order to be effective, besides being technology driven, need to provide a specific pedagogical framework for explaining the ways in which Intelligent Language Tutoring Systems (ILTSs), for example, can enhance and facilitate ESL learning. A number of themes from the traditional Second Language Acquisition (SLA) classroom can be incorporated into Virtual Learning Environments (VLEs). For instance, computers can help teachers create opportunities for students to interact in the target language with an authentic audience and with different audiences.

5.3 eGrammar

Authored by Yang et al. (2005), eGrammar is a prototype of an assessment-based learning environment designed to provide a variety of adaptive features. In addition, it also utilizes pedagogical agents in conveying the grammar instruction and providing feedback. The system has two levels: the macro-adaptive level and the micro-adaptive level. At the macro-adaptive level, the system adapts to students’ ages, native languages, cultural background and difficulty levels. At the micro-adaptive level, the system integrates a Bayesian student model that is used to provide adaptive sequencing and feedback according to the students’ knowledge and performance levels.
Being an adaptive system, unlike many of the previous one-size-fits-all approaches, *e-Grammar* aims at effectively accommodating individual differences in students while helping each student develop the knowledge and skills required to perform a task. *eGrammar’s* pedagogical agents are used to facilitate learning by supporting human-like interaction by providing adaptive sequencing of questions and adaptive feedback based on the state of the Bayesian student model. *eGrammar’s* adaptive feedback mechanism, externalized here as *Dr. Grammar*, takes into account the student’s performance and activities based on, and compared to the student model.

This *eGrammar* prototype is made up of six major steps. It is focused on students as its targeted users. Figure 3 summarizes the steps a student takes when interacting with *eGrammar*.

Step 1 is the “log in” step. At step 2, students answer a few questions about age, native language, level of difficulty they want to begin with. At step 3, students learn English grammar through helping a pedagogical agent named “Xiaoding”. Students are asked to help Xiaoding to identify and correct errors. In addition, there is another pedagogical agent named “Dr. Grammar”, who provides adaptive feedback to the student. At step 4, students write an essay using the sentences they have practiced previously. At step 5, they are provided with a performance summary. Finally, at step 6, students are asked several questions based on current model information and past performance. Students can choose to repeat the cycle using the same or a new grammatical structure.
Step 1: Log In,
Step 2: Initialize Parameters
Step 3: Helping an Artificial Agent Solve Grammar Problems
Step 4: Writing Activity
Step 5: Summative Feedback
Step 6: Reflective activities
Option 2: Go to step 2 'work on a new grammar structure'
Option 1: Return to step 3 'keep practicing the same grammar structure'

Figure 3: e-Grammar’s framework, Source: Yang et al. (2005)

Figure 4 shows a screenshot of eGrammar at step 3. Dr. Grammar provides adaptive feedback, such as the correct answer, related educational materials according to the current state of the student model. Dr. Grammar also shows his estimate of the student’s knowledge on “Determiners” (i.e. Intermediate).
As can be seen from the e-Grammar prototype, technology can be used to create authentic tasks and to get students involved in solving authentic tasks using the target language as a condition for language learning. Virtual programs can provide learners with opportunities to obtain and produce comprehensible input and output, facilitate interaction and provide a rich content. Virtual Learning Environments (VLEs) such as Intelligent Language Tutoring Systems (ILTSs) can also be created to cater to differences among learners by providing possibilities for adapting activities to different learning styles, strategies and motivation. The physical autonomy of the language learner is also supported by these virtual environments. Students have the possibility to immerse themselves in, and surround themselves with the target language environment at any time or all the time. They have the
independence to choose their preferred models of the target language, rather than being stuck in the classroom with a teacher they don’t like. This is undoubtedly one of the greatest values and perhaps the glory of the virtual classroom as opposed to the traditional classroom.

It is going to be Google, not Guru, from now on!

6. Second Language Acquisition (SLA) Using Virtual Learning Environments (VLEs)

This section attempts to introduce, describe and analyze some of the research on Virtual Language Learning Environments (VLEs) already developed, or being developed for certain languages, with the aim of providing this researcher with the basic know-how in order to design and develop his own Intelligent Tutoring System (ITS) for ESL.

6.1 The Intelligent Tutoring System for Passive Voice in French

This is a parser-based tutoring system developed by Eliades at the University of Edinburgh. According to the author, the motive for selecting passive voice is that it is considered one of the areas Anglophone students have difficulties with. Common errors in the formation of the passive voice are to be found in verb tense and agreement. The areas of passive voice in French that need to be explicitly clarified for the native speakers of English are

- Past participle agreements
- Verb agreements
- Spotting where the direct object is
- Formation of the past participle
- Getting the tense right
Its author claims that the system is capable of handling various language tasks and of providing individualized feedback to the learner, and it is easily accessible through the Web. Another meaningful characteristic of the Intelligent Tutoring System for Passive Voice in French is that the researcher, in pursuing this field, wants to explore the effects of using an ILTS for tutoring a certain area of French grammar, that is, the Passive Voice for Anglophone students.

6.2 The German Tutor, authored by Heift (2001b), is an intelligent language tutoring system for German grammar practice. This ILTS for German is designed to provide meaningful and interactive vocabulary and grammar practice for learners of German. Unlike previous systems, the German Tutor emulates two significant aspects of a student-teacher interaction: it provides error-specific feedback and it allows for individualization in the learning process.

This is, in fact, the pedagogical goal behind an ILTS: to provide error-specific feedback. If a student, for example, chooses an incorrect article in German, the system detects the error and tailors its feedback to suit the learner's level. In her German Tutor, Heift asked her 33 students from introductory German classes to create a grammatical German sentence using all provided words. The answer is passed to the Natural Language Processing (NLP) parser for evaluation and feedback.

6.3 Nihongo - CALI, meaning Computer-Assisted Language Instruction for Japanese, developed by Nagata, also employs one type of artificial intelligence approach, Natural Language Processing (NLP), to facilitate more sophisticated error analysis and feedback for students of Japanese. The exercises in Nihongo-CALI permit students to answer questions
with full sentences, stimulating sentence-level processing skills. In this project, 34 second
year university students of a Japanese course at the University of Pittsburgh were given a
real-life scenario. The answers are sent to the NLP parser to get grammatical information.
The parser can analyze non-grammatical sentences and produce output messages. These are
checked with a pattern matching algorithm to see if the response was appropriate. Final
feedback is produced. Clearly, the more productive the exercises that a system provides, the
greater the variety of errors it must be able to handle.

6.4 Banzai is a newer intelligent language tutoring program developed by Nagata at
the University of San Francisco. The Banzai application is programmed in Java and runs in a
web browser over the Internet. It is designed to develop learners’ grammatical and production
skills in Japanese as well as to instill cultural knowledge about Japan. More importantly,
Banzai employs artificial intelligence (AI) and natural language processing (NLP)
technology, which enables the program to read, parse and correct sentences typed by learners.
The NLP analyzer consists of a lexicon, a morphological generator, a morphological parser, a
syntactic parser, a word segmentor, an error detector, and a feed-back generator. The program
has been integrated into the Japanese curriculum at the University of San Francisco since
2000. The Banzai program’s NLP technology allows students to type in any sentence and to
receive immediate corrections and detailed feedback concerning the grammatical errors they
have produced. Hence, students can receive more frequent feedback concerning their specific
weaknesses than is possible in traditional CALL programs.

6.5 Textana is an experimental, but highly ambitious, prototype of a grammar
checker for English-speaking learners of German, Schulze (2001). The notion of feedback is
investigated with particular reference to the diagnosis of grammatical errors. This prototype
aims to analyze problems associated with the design, creation and implementation of a functional grammar checker. Overall, Textana attempts to demonstrate the potential of parsing technology in computer-assisted language learning, a technology that is good for learners, because it provides error feedback of a high quality, and also, good for researchers because it enables the computer to record relevant data about the learning process.

6.6 eGrammar, as mentioned before, is a prototype of an assessment-based learning environment designed to provide a variety of adaptive features. In addition, it also utilizes pedagogical agents in conveying the grammar instruction and providing feedback.

As seen from the systems presented above, the issue of feedback is a most significant one and it comes up in practically every discussion on ILTSs. It is, in fact, the quality that identifies this type of Virtual Learning Environment, the ILTS, as being superior to all previous CALL environments. Nagata (1993) identifies four types of feedback that tutoring systems use in relation to feedback messages:

- present correct answer;
- pinpoint location of error;
- list of anticipated errors and their feedback;
- perform linguistic analysis of the students’ response.

Traditional systems concentrate on the first three types usually utilizing a “wrong, try again” approach of interaction, but cannot analyze the students’ response from a linguistic perspective. Heift (2000) provided different feedback based on the learners’ level. Beginners were returned the most detailed feedback, whereas the Intermediate level learners were
informed that, for example, a certain agreement error occurred. The advanced level learners merely received a notification that there was an error in their answer. The better the language skill, the less the feedback needed.

Ferreira (2003) has also explored various intelligent feedback strategies. Her results suggest using a combination of feedback strategies, depending on the error and on the level of the learner. Ferreira’s findings suggest that a good feedback approach for grammar would be using Prompting Answers Strategies (PAS): Elicitation, Clarification, and the use of Metalinguistic information.

7. Moodle and Language Learning

Although not specifically designed for language learning, Moodle has great potential to create a successful language learning experience by providing a plethora of excellent tools that can be used to enhance conventional classroom instruction or any distance learning arrangements (Brandl, 2005). Its appeal to this language teacher rests on the fact that it is a template-based platform to which content must be added. Nevertheless, for truly effective language learning results, the design of the learning tasks must be grounded in theories of second language acquisition. Moodle is a course management and delivery system based on socio-constructivist pedagogy. This means its goal is to provide a set of tools that support an inquiry- and discovery-based approach to online learning. Furthermore, it purports to create an environment that allows for collaborative interaction among students as a standalone or in addition to conventional classroom instruction. One of the advantages of Moodle is that it has been developed as an Open Source software project. It is available free of charge and, as such, it is accessible to everybody.
Being a template-based system to which content must be added makes Moodle's interface very intuitive and allows for easy navigation. The whole page is presented in a "flat view" format. It is laid out in small blocks and organized around sections following a topic or weekly outline. Each section has its own tools such as lessons, quizzes, assignments, and forums which are all linked to a built-in grade book (see section on assessment below). All blocks on a page can be individually arranged, and the elements within each section can be easily moved around or be hidden. Figure 5 shows an example of a course setup in the topic format.

Figure 5: Sample of a course setup in the topic format (Brandl, 2005)

Moodle offers a multitude of course management features. For example, access to nearly all lesson assignments can be made time-restricted, quizzes can be password and time-restricted. Moodle also keeps automatic log reports of each student work. This means that the teacher knows not only when students have completed or uploaded an assignment, but also how much time they spent on an assigned task or quiz. The teacher can also set deadlines or timeframes when assignments must be completed, and restrict access to learning tasks once
the deadline has passed. Students can look up their grades themselves. (Figure 6) Teachers have also the option to download student grades in Excel format. Students can look up the assignments on a calendar by moving the cursor over a given day which will list all the assignments for that day. The calendar is optional and can be displayed on the front page.

<table>
<thead>
<tr>
<th>Name</th>
<th>Attempts</th>
<th>Highest grade /10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Klaus Brandl</td>
<td>8.0  3 June 2004, 11:31 PM (1 min 30 secs)</td>
<td>8.0</td>
</tr>
<tr>
<td></td>
<td>0.0  20 July 2004, 06:49 PM (238 days 14 hours)</td>
<td></td>
</tr>
<tr>
<td>Paloma Borreguero</td>
<td>10.0  4 June 2004, 02:10 PM (1 min 3 secs)</td>
<td>10.0</td>
</tr>
<tr>
<td>Jay Waltmanson</td>
<td>6.0  4 June 2004, 02:53 PM (1 min 28 secs)</td>
<td>6.0</td>
</tr>
<tr>
<td></td>
<td>4.0  8 June 2004, 08:38 AM (28 secs)</td>
<td></td>
</tr>
<tr>
<td>Paul Aoki</td>
<td>4.0  8 June 2004, 09:39 AM (1 min 22 secs)</td>
<td>10.0</td>
</tr>
<tr>
<td></td>
<td>2.0  8 June 2004, 09:42 AM (35 secs)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>10.0  8 June 2004, 09:43 AM (22 secs)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4.0  22 July 2004, 02:22 PM (45 secs)</td>
<td></td>
</tr>
<tr>
<td>Carmina Brandl</td>
<td>6.0  10 June 2004, 09:36 AM (45 secs)</td>
<td>10.0</td>
</tr>
<tr>
<td></td>
<td>10.0  10 June 2004, 12:43 PM (41 days 20 hours)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4.0  22 July 2004, 09:37 AM (55 secs)</td>
<td></td>
</tr>
<tr>
<td>Kaoru Ohta</td>
<td>8.0  10 June 2004, 11:24 AM (2 mins 45 secs)</td>
<td>8.0</td>
</tr>
</tbody>
</table>

Figure 6: Sample log report of students' work (Brandl, 2005)

As for content and resources, Moodle allows for the integration of a wide range of resources. These include any kind of text-based or html-formatted documents, multimedia resources such as graphics, video or audio (e.g., MP3 files), PowerPoint, Half-Baked exercises (http://www.halfbakedsoftware.com), or Flash-based applications. Lesson tasks within Moodle can be linked to any resources that are uploaded to one's server or that are available on the Internet. The students' exploration of any of the content-based resources can be easily assessed by using any of the Moodle-based evaluation and feedback tools (see Example 1).
Moodle is powerful in content creation due to its built-in HTML editor. Moodle also has a built-in glossary module. This allows teachers, individually or in cooperation with their students, to create their own text-, course-, or site-specific dictionaries. In this way, texts integrated within Moodle, especially authentic texts or resources, can be tailored to a particular level of language proficiency and thus be made more easily accessible to learners.

Moodle allows for a wide range of assessment strategies. The quiz module includes the following response types: fill-ins, multiple-choice, multi-choice (more than one answer can be selected), true-false, matching, short-answer (exact matching). All types are supported with automatic tallying and scoring, based on teacher or student-determined rating scales. The essay module allows open-ended questions with built-in comment boxes for instructors to provide feedback. Particularly noteworthy is the workshop module, which is designed on the basis of peer assessment. All of these assessment types can be made time and password restricted, and can be set to allow for limited or multiple retakes.

As a learning management system (LMS), Moodle allows to present information to learners in small units, assess what they have learned, and based on the quality of their achievement, branch out into additional review of material or move to the next level. In other words, the lesson module allows to design lessons that closely control the learning path guiding learners step-by-step, and allowing for advancement only if sufficient mastery has been achieved.

Feedback is, naturally, of great significance in any language eLearning environment. However, students who participate in eLearning environments often complain about the lack of feedback that is available in conventional classroom settings (Brandl, 2004). In Moodle,
almost all modules are designed to allow teachers or course participants to provide feedback in qualitative or quantitative form. For example, both the journal and assignment module give the instructor the option to provide their comments in a feedback box. The assignment module, which is designed so that students can upload their assignments in any file format to the server, also allows the instructor to upload comments about the student's work in form of text- or audio-based (e.g., MP3) files. Feedback can be teacher-restricted or made accessible to all participants in both forums.

As mentioned earlier, as a course management and delivery system, Moodle has great potential to create a successful eLearning experience by providing a plethora of excellent tools that can be used to enhance conventional classroom instruction, in hybrid courses, or in any distance learning arrangements. In whatever form of instruction Moodle is used, for language learning, the design of the learning tasks must be grounded in theories of second language acquisition.

8. Technology Acceptance Model (TAM)

8.1 Definition

TAM is an extension of Ajzen and Fishbein's theory of reasoned action (TRA). It was developed by Fred Davis and Richard Bagozzi (Bagozzi et al., 1992; Davis et al., 1989). TAM replaces many of TRA's attitude measures with the two technology acceptance measures — ease of use, and usefulness. TRA and TAM, both of which have strong behavioral elements, assume that when someone forms an intention to act, they will be free to act without limitation. In the real world, however, there will be a number of significant constraints (Bagozzi et al., 1992).
8.2 TAM Usage

According to Taylor and Todd (1995), the innovation diffusion and acceptance can be approached from several levels. Some researchers have approached the situation from a macro-view within a societal context or at country level. Other researchers have examined this issue at an organizational level, and still other researchers have approached this issue by investigating the determinants of adoption and usage by individuals (e.g. Mathieson, 1991).

Taylor and Todd (1995), further distinguish the research on the determinants of information technology usage into two streams: those based on intention-based models, exemplified by such theories as TAM, and diffusion of innovation, best exemplified by Rogers’ diffusion of innovation theory (Rogers, 1995). TAM proposed by Davis, Bagozzi, and Warshaw (1989) to explain computer usage behavior is one of most-widely used model in this issue of technology adoption.

The TAM has received extensive empirical support through validations, applications, and replications (e.g. Mathieson 1991; Plouffe, Hulland, and Vandenbosch 2001; Legris, Inghamb, and Collerettec 2003). It was adapted from the Theory of Reasoned Action (TRA) which was developed by Ajzen and Fishbein (1980) which is very general. TRA is—designed to explain virtually any human behavior (Ajzen and Fishbein 1980: 4) and consists of two factors that affect behavioral intentions; attitude towards behavior and subjective norms. Attitude is defined as an individual’s positive or negative feeling towards performing a behavior. Subjective norm is the individual’s perception of social pressure to perform the behavior. The TAM proposes two specific beliefs—perceived ease of use (PEOU) and perceived usefulness (PU)—that determine one’s behavioral intention to use a technology.
Behavioral intention is a measure of the strength of one’s intention to perform a specified behavior. Figure 7 shows the TAM.

**Figure 7: Technology Acceptance Model** (Source: Davis et al., 1989)

Perceived usefulness is defined as—a prospective user’s subjective probability that using a specific application system will increase this or her job performance within an organizational context (Davis et al., 1989). Further, the TAM assumes that perceived usefulness will be influenced by perceived ease of use, because, other things being equal, the easier is a technology to use, the more useful it can be. Perceived ease of use refers to—the degree to which the prospective user expects the target system to be free of effort (Davis et al., 1989). By assuming that other variables are constant, the easier is a technology to be used, the higher is its possibility to be adopted by users.

### 8.3 TAM for eGrammar

The dissertation by Kaasinen (2005) studies user acceptance of technology, mainly mobile services, based on a series of case studies on information technology services targeted at consumers and accessed via wireless devices. User acceptance is based on three factors: perceived value of the service, perceived ease of use, and trust. A fourth user acceptance factor, perceived ease of adoption, is required to get the users from intention-to-use to actual usage, as shown in Figure 7.
The technology acceptance model has been evolved and applied widely, but mainly in the context of introducing ready-made products rather than in designing new technologies. However, Davis himself together with Venkatesh also encourages using the model as a design tool (Davis and Venkatesh, 2004).

This researcher will use the model proposed by Davis and Venkatesh (2004) as his design tool for developing a Moodle-based tutoring system for sentence grammar practice. It is expected that its perceived ease of use, value, and trust will cause the system to be widely accepted by students who would like to use it in conjunction with their classroom practice.

9. Data Mining

Educational data mining is an emerging discipline, concerned with developing methods for exploring the unique types of data that come from the educational context. This section is a survey of the specific application of data mining in learning management systems and using the Moodle system. We attempt to describe how the process of mining eLearning data works as well as how to apply the main data mining techniques used, such as statistics, visualization, classification, clustering, association rule mining, pattern mining and text mining of Moodle data.

Learning management systems accumulate a great deal of log data about students’ activities. They can record whatever student activities are involved, such as reading, writing, taking tests, performing various tasks, and even communicating with peers (Mostow et al., 2005). They normally also provide a database that stores all the system’s information: personal information about the users (profile), academic results, user’s interaction data, etc. However, due to the vast quantities of data these systems can generate daily, it is very
difficult to manage manually, and authors demand tools which assist them in this task, preferably on a continuous basis. Although some platforms offer some reporting tools, when there are a great number of students, it becomes hard for a tutor to extract useful information. They do not provide specific tools which allow educators to thoroughly track and assess all the activities performed by their learners and to evaluate the structure and contents of the course and its effectiveness in the learning process (Zorrilla et al., 2005). A very promising area for attaining this objective is the use of data mining (Zaïane and Luo, 2001).

Data mining is a multidisciplinary area in which several computing paradigms converge: decision tree construction, rule induction, artificial neural networks, instance-based learning, Bayesian learning, logic programming, statistical algorithms, etc. And some of the most useful data mining tasks and methods are: statistics, visualization, clustering, classification, association rule mining, sequential pattern mining, text mining, etc.

The knowledge discovered can be used not only by providers (educators) but also by the users themselves (students), so it can be oriented for different ends from each particular point of view (Zorrilla et al., 2005). It could be oriented towards students in order to recommend learners’ activities, resources, suggest path pruning and shortening or simply links that would favor and improve their learning, or oriented towards educators in order to get more objective feedback for instruction, evaluate the structure of course content and its effectiveness in the learning process, classify learners in groups based on their needs for guidance and monitoring, find learner’s regular as well as irregular patterns, find the most frequently made mistakes, find activities that are more effective, etc. It could also be oriented towards the academics and administrators responsible in order to obtain parameters about how to improve site efficiency and adapt it to the behavior of their users (optimal server size,
network traffic distribution, etc.), have measures about how to better organize institutional resources (human and material) and their educational offer, enhance educational program offers, etc.

10. Advantages and Disadvantages of Using VLEs for Sentence Grammar Practice

As with any technology used in teaching and learning, VLEs have no intrinsic educational value in themselves. The way in which online courses and online activities are designed and delivered can add value and increase effectiveness. Below are some of the commonly perceived advantages of using VLEs:

- easy online delivery of materials;
- easy to use;
- widens student access on and off campus to learning materials and resources;
- flexible support for students and educators who do not need to be on a fixed schedule;
- active and independent learning which makes use of online communication, online assessment and collaborative learning.

While most of the literature emphasizes the value, or potential value, of technology in education, and while the advantages, usability and practicality of researching and developing a tutoring system are clear and obvious to this researcher, the disadvantages of such an approach to education remain relatively undefined. To be sure, parsing technology is expensive and difficult to implement. Students in VLEs may experience feelings of isolation, frustration anxiety and confusion or reduced interest in the subject matter. Nevertheless, an average of only 3% of the students surveyed and asked whether an online practice-based
sentence grammar course would help them improve their production of correct sentences in English, responded that they would miss the chance to meet and make new friends in a face-to-face, classroom-like environment. But, we are not talking about meeting and making friends here. We are talking about learning something that we have failed to learn in a traditional language learning environment that is, improving our sentence grammar in a Virtual Learning Environment.
CHAPTER III
RESEARCH METHODOLOGY

This chapter presents the methodology of this research. It also describes the purpose and objectives of the study, research questions and hypotheses, research design, description of participants, research procedures, instruments, learning platforms, data collection and analysis, and expected findings.

1. Purpose and Objectives of the Study

The purpose of this research was to design and develop a tutoring system for sentence grammar practice. The system was designed as a Moodle-based virtual learning environment and will be tried out on English IV students to explore its effectiveness, strengths and weaknesses. A model of a Moodle-based tutoring system for sentence grammar practice was developed based on the results of the experiment.

The objectives of this research were as follows:

1. To develop a Moodle-based tutoring model for sentence grammar practice.
2. To try out and test the tutoring system model with the online group of students in order to assess its effectiveness.
3. To identify the main components needed for an effective Moodle-based tutoring system.
4. To assess the effectiveness of this Moodle-based tutoring system by measuring the improvement of a group of students who benefit from extra, online sentence grammar practice using this system as compared with a regular classroom group of students.
2. Research Questions

The main research questions for this research were

1) What is a Moodle-based tutoring system, and how can students benefit from using it?
2) To what extent a Moodle-based tutoring system designed to help students improve their grammar through online practice can be effective in achieving this goal?
3) What are the components for developing such a system?
4) Will the students benefit from this experiment?

3. Research Hypotheses

This researcher's hypothesis was that, by practicing online a set of patterns and/or problematic sentences designed as a supplement to regular classroom practice, Assumption University English IV students will show a significant improvement in their production of grammatically correct sentences. The results of this research will hopefully prove that the online group of students, which benefits from additional, extra, supplementary practice, shows significant improvement compared with the classroom group.

Thus, the null hypothesis here was

\[ H_0: \text{There is no significant difference in learning gains between the Online Group (OG) and the Classroom Group (CG)}; \]

And the alternative hypothesis was

\[ H_a: \text{There is a significant difference in learning gains between the Online Group (OG) and the Classroom Group (CG)}; \]

But also, and at the same time, the results would show a significant improvement within the online group.
So, the null hypothesis would be

$$H_0: \text{There is no significant improvement in learning gains within the Online Group (OG);}$$

While the alternative hypothesis

$$H_a: \text{There is a significant improvement in learning gains within the Online Group (OG).}$$

This optimistic assumption was based on preliminary questionnaires conducted with hundreds of university students. The vast majority had shown a real interest in improving their grammar online. Considering the fact that this researcher’s wish was to demonstrate that an online tutoring system is indeed capable of providing enhanced learning performance, the most plausible formation of the hypothesis for this research was to search for the learning gain between two learner groups: one that was given a Moodle-based tutoring system in conjunction to the regular classroom practice, the Online Group (OG), and the other one that was taught only in a traditional classroom environment, the Classroom Group (CV). The two groups were

1. *The Online Group* (traditional classroom practice + online practice)
2. *The Classroom Group* (traditional classroom practice only)

The outcomes of this research would constitute the basis for helping this researcher design a useful and practical tool in helping students improve their sentence grammar through online practice, a Moodle-based tutoring system.

4. Research Methodology

Based on the knowledge accumulated during the writing of the documentary research, this researcher has conducted a study to assess the effectiveness of a Moodle-based tutoring
system for sentence grammar practice. Participating students in this longitudinal study were 160 Assumption University English IV students. They were pre-tested at the beginning of the semester to assess their level of mastery of certain basic/problematic sentence patterns, and post-tested at the end, to assess their improvement. During the semester they had been separated into two groups:

The Online Group (OG), 80 students;

The Classroom Group (CG), 80 students.

The Online Group (OG) had been offered ten Sessions, each one consisting of one or several sentence patterns and/or of problematic sentences. The sentence patterns and activities of each session were supplements to those practiced in class and have been designed in the shape of, and based on the English IV textbook.

The research methodology consisted of two main parts:

1) The eGrammar Clinic development, and

2) The Experiment.

The eGrammar Clinic development included six steps of developmental testing tryout and has been carried out with three sets of criteria in mind, all indicating that the eGrammar Clinic can help students significantly improve their sentence grammar: the efficiency criteria, the learning progress, and the students’ opinion towards web-based practice.

The Experiment included three main stages:
1) **Pre-testing:** all participating students were given a pre-test consisting of the ten basic sentence patterns in English, together with their slots, determiners, modifiers, etc., and possible variations and expansions. Each sentence or sentence pattern reflects one of the ten Sessions that were administered during the “treatment” period, the semester. This was a cross-sectional test designed to assess the level of our students at a certain point in time, that is, at the beginning of the semester. At the end of the semester, after the “treatment”, the post-test measured their improvement, the learning gains of students. The post-test also consisted of another, similar set of ten sentence patterns, each one representing one of the ten Sessions administered during the semester. The post-test results have been compared with the pre-test results. Since all students had gone through the same classroom practice during the semester, “treatment”, they all showed some level of progress at the end. However, the online group of students, who benefited from extra, online sentence grammar practice, showed significant progress compared with the classroom group.

2) **Treatment:** or the *eGrammar Clinic*; during the semester, the Online Group (OG) of students had been administered ten Sessions, each one consisting of one or several sentence patterns that are normally done in class. They had to practice these particular patterns together with the determiners, modifiers, etc., that go with them. The sentences were extensions, supplements of what English IV students do in class.

**Example 1**

In the first week, for instance, the question in class was

*What is the subject of this (given) story?*

The answer:

*This story is about ...* (they have to finish with a correct sentence).
For example, the given story is titled “Why so Many Children?”

Most students will give the wrong answer/sentence:

“This story is about why so many children”.

One right answer/sentence is

“This story is about the main factors that influence birth rate”

Or

“This story is about what factors influence birth rate”

Or

“This story is about the fact that there are too many children”

What is the pedagogical rationale for the selection of this particular question?

The reasons why this particular choice was made is twofold:

1. Every task in English IV, except for the essay writing, begins with a reading passage. It is essential for English IV students to be able to identify the subject/main idea of a story.

2. It is equally important for students to be able to write the subject in a grammatically correct sentence.

For the purpose of this research, the focus is on the second reason, that is, the grammatically correctness of the sentence.

At the end of the week, the online group was given Session One.

Session One Sentence Pattern

Using the fact that
The first Yahoo News story of today is

"One Year after Times Square Scare, Concerns Endure"

*What* is the correct sentence to answer the question: What is the subject of this story?

This story is about *the fact that*, one year after the terrorist attack in Times Square, people of New York are still worried and concerned.

Or

This story is about *the fact that*, one year after Times Square Scare, Concerns Endure.

**Session One Activity:**

Instructions: Go to Yahoo News, read the first five news stories, then answer the question:

> “What is the subject of each story?”

Answer: “The first story is about …,” etc.

For example, on April 13, 2011, the first Yahoo News story was

“Despite rift with NATO, U.S. holds to limited role in Libya”

The correct answer/sentence would be

“The first news story is about *the fact that* the U.S. holds to limited role in Libya despite the rift with NATO”

**Example 2**

In another Session, for making recommendations for instance, online students will be given the following *sentence patterns*:

The government should show concern for flood victims.

People must be concerned about their relatives in Sendai area, Japan.
The data had been collected, analyzed and compared, and the results would be discussed in the following chapters.

5. Research Design and Development

The design of this research methodology consisted of two main parts:

1) The eGrammar Clinic development, and
2) The Experiment.

5.1 The eGrammar Clinic Development

Stages in the development of the eGrammar Clinic:

The Pre-test was designed based on the content of the ten Sessions to be administered during the treatment, that is, the semester. One sentence pattern for each Session was given in the pre-test. The next stage, the design of the treatment, was the most challenging aspect of the eGrammar Clinic development. It consisted of ten Sessions. The ten Sessions were based on the content of the English IV textbook and were also based on the weekly English IV class-work practice.

Each Session consists of two parts:

1. Session Sentence Pattern(s)
2. Session Activity

Quiz One was developed consisting of material covered in the first three weeks of the June semester. This was followed by the Mid-test and by Quiz Two. The Post-test concluded the eGrammar Clinic development. It consisted of ten similar (but not the same) sentence patterns that were administered in the pre-test.
During the design and development of the *eGrammar Clinic*, this researcher has sought the cooperation of fellow teachers of the English IV course as well as the opinion and advice of other experts in the field of grammar.

5.2 The Experiment

The Experiment actually consisted of five stages of experimental tryout:

1. Pretest
2. Quiz One
3. Mid-test
4. Quiz Two
5. Posttest

Note: The pretest and the posttest were administered to both groups of students, the classroom group and the online group, while the two quizzes and the mid-test, only to the online group. This was done in order to assess the difference in learning gains between a group that had only class-work practice and one that benefited from extra online practice.

The Pretest was administered at the very beginning. It consisted of 10 questions and it was timed 1 hour. The objective of the Pretest was to assess the level of the Classroom and Online groups of students at the beginning of the Experiment.

The Posttest was administered at the end of the Experiment. It also consisted of 10 questions, and it was also timed 1 hour. The objective of the Posttest was to assess the level of the two groups at the end of the Experiment. The questions in both the Pretest and the Posttest were similar, but not the same. The 10 questions reflected the 10 Sessions discussed above. Each question was 10 marks, totaling a maximum score of 100.
Quiz 1, 20 questions in 20 minutes, was given after Sessions 1, 2, and 3, the Midterm, 30 minutes, covered the first five sessions, Quiz 2, Sessions 6, 7, and 8. The objective of the quizzes and midtest was to assess the progress, the improvement of the Online Group of students as compared with the Classroom Group.

5.3 The Learning Management System (LMS)

Moodle was the learning management system of choice for this project. Being developed as an open source software project, Moodle offered great potential to create a successful language learning experience. Although not specifically designed for language learning, Moodle provides a variety of excellent tools that can be used to enhance conventional classroom instruction or any distance learning arrangements provided the language learning tasks are grounded in theories of second language acquisition. Moodle's appeal to this language teacher is based on the fact that it is a template-based platform to which content must be added. Moodle's interface is very intuitive and allows for easy navigation. Moodle can also keep automatic log reports of each student work. This means that the teacher knows not only when students have completed an assignment, but also how much time they spent on an assigned task. This feature was amply used when designing the Sessions and the Activities. The teacher can also set deadlines or timeframes when assignments must be completed, and restrict access to learning tasks once the deadline has passed. This feature was very useful when setting the quiz and test schedules.

The content for this learning management system was created by this researcher and consisted of ten Sessions, two Quizzes, a Pretest, a Midtest and a Posttest.
Each Session consisted of two parts: Sentence Pattern(s) and Activity(s). All ten sessions were posted online using Moodle templates. Participating students were given a Moodle account based on their identification card. After logging in, they had the possibility to study Sentence Patterns online, or download the content in PDF file. The Sentence Patterns part of each Session could be studied repeatedly. The Activity part of each Session was also open to repeated attempts. Students could see their score at the end of each attempt and had the chance to practice again and again. The quizzes and tests were timed and could be accessed just once.

At the end of the experiment, all participants in the online group were given a questionnaire in order to measure their attitudes towards this online learning experience. After the three-month long experiment, they were asked how they generally felt participating in this experiment. They were basically asked two sets of questions: one related to the Learning Management System and the other to the eGrammar Clinic. The Questionnaire is available in Appendix A.

5.4 Population and Samples

The sample participants in this research were 160 students from the population of undergraduate students who were registered for the English IV course at the beginning of June, 2011. English IV is the last required English course offered by Assumption University. It is also the most difficult, and many students fail to pass it and need to take it again and again. The main reason they fail is because their grammar is poor. And, with English IV being a writing course, their written sentence grammar makes the difference between passing and failing. English IV students are fully aware of the fact that they need to improve their grammar in order to pass.
This researcher usually teaches four English IV sections/per semester, numbering an average of 125 students. As mentioned earlier, at the beginning of each semester this researcher conducts an opinion poll with about one hundred-twenty five students registered for the English IV course. The question they are asked to answer is this:

*Do you think that an online eGrammar course designed to improve your grammar through a five or ten-minute daily practice would be good for you? Would you use it?*

Over the past ten semesters, more than one thousand students have answered this question. And this researcher’s informal results are that around 99% of the students questioned responded positively. Overall, more females than males responded positively, but that’s because, normally there are more female students than males in a class. In other words, our students are ready and waiting to improve their sentence grammar online: They are “eGrammar ready”!

Students who normally register for English IV at Assumption University have varying degrees of proficiency in English. Most of them take it for the first time while others, for the second, third, etc. As Assumption University is an international university comprising students from many nationalities, many students also have a variety of first/native languages; mostly Asian, but non Asian also. This researcher had to make certain that the population sample selected for this study would accommodate students of different nationalities, with Thai students to be in majority. This issue opened a highly meaningful question:

*Do all students make basically the same grammatical errors, and consequently require the same treatment?*
To answer this question we needed to take a brief look at the native languages/first languages of the students involved in this study. Out of all the students normally registered for an English IV class, about 90% are Thais. As for the remaining 10%, the vast majority are Chinese, about 6%, followed by Koreans, 3%, and others (Vietnamese, Cambodians, Burmese) at 1%.

Now, the answer to the question is

Yes, they basically make the same mistakes and, consequently, they require the same treatment.

And, for the same reason: Unlike English, all these Asian languages mentioned above, Thai, Chinese, Vietnamese, Cambodian, Burmese, but also Korean and Japanese, have no or little inflection. In grammar, inflection or inflexion is the modification of a word to express different grammatical categories such as tense, grammatical mood, grammatical voice, aspect, person, number, gender and case. Conjugation is the inflection of verbs; declension is the inflection of nouns, adjectives and pronouns.

Consequently, English IV students tend to make the same errors in their written sentences regardless of their first language:

- determiner-noun disagreement: this cats,
- subject-verb disagreement: they is,
- erroneous use of modals: I should to go with you,
- absence of a necessary plural or determiner: I like cat,
- absence of determiner/plural/3rd person singular –s: student like.
- fragment sentences: Because I have no money,
- run-on sentences: I met my friend yesterday she came back from London.
- rambling sentences: *John usually gets up before 7 o'clock, but yesterday his alarm clock did not ring, so he was still asleep when his boss called him at 10.30 to ask where he was and tell him that he would lose his job if he was late again.*

Incidentally, it is precisely this list of common errors that English IV students make on a regular basis, and it is this researcher’s firm belief that an intelligently designed program, a Moodle-based tutoring system that offers clear and correct sentence patterns as examples, followed by practice-based activities, is the answer to designing an effective tutoring system for sentence grammar practice.

### 5.5 Research Instruments

5.5.1 The main instrument used in this research is a courseware package and learning management system called Moodle. This researcher has developed the courseware for ten sessions based on the English IV textbook and class-work. The course contents for each session and for all tests have been prepared in consultation with other professional English teachers.

5.5.2 A questionnaire designed to evaluate student satisfaction towards the eGrammar Clinic (Appendix C).

### 5.6 Data Collection and Analysis

All the data, beginning with the pretest, continuing with quiz one, midterm, quiz two, posttest, and ending with the questionnaire, have been collected and analyzed. The data collected have been stored on MySQL database system. SPSS and Microsoft Excel have been used to analyze the collected data. The Independent Samples T-Test and the Paired Samples T-Test techniques of SPSS were used to measure if there has been any statistical difference in the scores of the online and classroom groups. Specifically, the Independent Samples T-Test
was used to assess the statistical difference between the online and the classroom groups, while the Paired Samples T-Test was used to measure the improvement/learning gains within one group. The questionnaire was pre-tested for reliability using the Cronbach Alpha Reliability Test. The results of the survey were also analyzed and interpreted and, combined with the results of the T-Tests, a conclusion was drawn.
CHAPTER IV
RESULTS AND DISCUSSION

Chapter four of this research is presented in two major parts: results and discussion. For results, a detailed description of the eLearning courseware, "the eGrammar Clinic", the results of the Questionnaire reliability test, the results of the implementation of the eLearning courseware and the test of the hypotheses will be described.

1. Results

The first part of this chapter will present a description of the courseware, the eGrammar Clinic, the results of the implementation of the courseware, the results of the Questionnaire reliability test and the test of the hypotheses.

1.1 The eLearning Courseware

From the beginning of this study, the researcher has developed a comprehensive eLearning courseware designed to help students improve their sentence grammar through regular, weekly online practice. This eLearning courseware was called the "eGrammar Clinic".

The development of the eGrammar Clinic and the implementation of the Experiment has been a long and arduous process characterized by constant question-asking and answer-questioning. Issues related to the design and presentation of the sessions, the content, the choice of practice sentences, the sequencing of the ten Sessions, and similarly, questions related to the design of the tests and quizzes, were permanently present in this research.
During the development of the *eGrammar Clinic* and the implementation of the Experiment, the researcher has been in constant contact and consultation with fellow English IV teaching experts. Through informal interaction, often in unexpected places, such as the bus, the elevator, a drinking place, etc., ideas were born, given life and exchanged. Various ideas, suggestions and recommendations were collected, and they became part of the courseware development. One such idea, that was not entirely new to the researcher but one of fundamental value for language learning, came from Mr. Miles: “Students should only practice five to ten minutes per day, but everyday”. This idea may sound trivial but in reality it is deeply rooted in the psychology of language learning: memory span and retention capabilities are limited to short periods of time. Frequency, not quantity, is of essence. These kinds of exchanges among a select group of English IV experts have been a constant during the development of this project. Their expert opinion has been requested and considered particularly when designing the ten Sessions, the Pre and Post Tests, and the Quizzes. Some of the experts who offered their opinions and recommendations in reference to this study were:

- Mr. Robert Miles, former Deputy Chairperson in charge of English IV and English IV teacher;
- Mr. Ian Slater, former Deputy Chairperson, co-author of the English IV textbook and English IV teacher;
- Dr. Gregory Karmalki, former English IV teacher;
- Ms. Afsheen Sardar, English IV teacher.

*The eGrammar Clinic* consists of 10 sessions, and each session is divided into two parts:

- Session Sentence Pattern(s), and
- Session Activity
Each one of the ten sessions deals with one particular sentence grammar problem or problematic sentence. The selection of these specific sentence grammar problems and of problematic sentences was based on this researcher’s extensive teaching practice and on consultations with other English IV teachers. These are all common sentence grammar problems which tend to show up again and again. Naturally, there are more common grammar problems which need to be addressed. This can be done in a future extension of the eGrammar Clinic.

Part one of each session, Sentence Pattern(s), is the “study” part of the session. It contains the presentation of the sentence problem, followed by examples of correct sentence patterns. In the second part, Session Activity, students are supposed to practice and apply the knowledge accumulated from the study of sentence patterns. This is important, and, in order to achieve best results, the instructions for each session are “study Sentence Patterns well before trying the Activity”.

The Activity part of the session consisted of mostly multiple choice exercises, specifically designed to offer students the chance to identify the correct pattern through repeated practice. Each question was scored on a 1 to 10 scale. Students were instructed to repeat the activity after twelve hours if their score was less than 8. Most students repeated each activity several times. This was a major objective of this researcher: to create situations where students improve through repeated practice. Most sessions had one activity, while some had two: Activity A, and Activity B. Figures 8, 9, 10 and 11 show the eGrammar Clinic access page that students see before they enter one session pattern and/or activity.
1. **PRETEST**
   Click on the link below to take the test.
   ✔ PRETEST

2. **Session 1 - Sentence Patterns**
   Click on the following document (Sentence Patterns) and study it well before trying the activities.
   ✔ Sentence Patterns
   After studying the above Sentence Patterns, click on Activity 1 below and select the correct answer. Check your mark and, if it is less than 8 out of 10, study again and do Activity 1 once more after 12 hours.
   ✔ Activity 1

3. **Session 2 - Sentence Patterns**
   Click on the following document (Sentence Patterns) and study it well before trying the activities.
   ✔ Sentence Patterns
   After studying the above Sentence Patterns, click on Activity 2A below and select the correct answer. Check your mark and, if it is less than 8 out of 10, study again and do it once more after 12 hours. After completion of Activity 2A, click on Activity 2B and do the same.
   ✔ Activity 2A
   ✔ Activity 2B

4. **Session 3 - Sentence Patterns**
   Click on the following document (Sentence Patterns) and study it well before trying the activities.
   ✔ Sentence Patterns
   After studying the above Sentence Patterns, click on Activity 3 below and select the correct answer. Check your mark and, if it is less than 8 out of 10, study again and do Activity 3 once more after 12 hours.
   ✔ Activity 3

5. **QUIZ 1**
   You can only do it once/one attempt any time during Friday, Saturday, or Sunday August 5, 6, or 7, 2011.
   Time allowed: 20 minutes. When ready, click on the Quiz 1 below and the timer starts. When you finish the Quiz, click on Submit.
   ✔ Quiz 1

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**Figure 8**: the *eGrammar Clinic* access page (part 1)
6 Session 4 - Sentence Patterns

Click on the following document (Sentence Patterns) and study it well before trying the activities.

_sentence_patterns

After studying the above Sentence Patterns, click on Activity 4A below and select the correct answer. Check your mark and, if it is less than 9 out of 10, study again and do it once more after 12 hours. After completion of Activity 4A, click on Activity 4B and do the same.

Instructions for Activity 4A:
Is each of the sentences below a fragment or a sentence?
☐ Activity 4A

Instructions for Activity 4B:
Of the three sentences in each group, one contains a fragment sentence. Select the two correct sentences.
☐ Activity 4B

7 Session 5 - Sentence Patterns

Click on the following document (Sentence Patterns) and study it well before trying the activities.

_sentence_patterns

After studying the above Sentence Patterns, click on Activity 5 below and select the correct answer.

Instructions for Activity 5:
Each group of sentences below contains one rambling sentence. Study all sentences, and decide which one is the rambling sentence.
☐ Activity 5

8 MIDTEST

This Midtest has four parts A, B, C and D. Total time: 30 minutes. You can only do it once/one attempt any time during Friday, Saturday or Sunday, August 19, 20 or 21, 2011. When you finish the Midtest, click on Submit.
☐ Midtest

Figure 9: the eGrammar Clinic access page (part 2)
Session 6 - Sentence Patterns

Click on the following document (Sentence Patterns) and study it well before trying the activities.
Sentence Patterns

After studying the above Sentence Patterns, click on Activity 6 below and select the correct answer.

Instructions for Activity 6:
Decide which article you need.
Activity 6

Session 7 - Sentence Patterns

Click on the following document (Sentence Patterns) and study it well before trying the activities.
Sentence Patterns

Instructions for Activity 7:
Choose the right determiner: article, demonstrative, possessive or other determiner.
Activity 7

Session 8 - Sentence Patterns

Click on the following document (Sentence Patterns) and study it well before trying the activities.
Sentence Patterns

After studying the above Sentence Patterns, click on Activity 6A and 8B below and select the correct answer.

Instructions for Activity 8A: Choose the right article.
Activity 8A

Instructions for Activity 8B: Choose a determiner that is right.
Activity 8B

QUIZ 2

You can only do it once/one attempt any time during Friday, Saturday, or Sunday September 2, 3, or 4, 2011.
Time allowed: 25 minutes. When ready, click on the Quiz 2 below and the timer starts. When you finish the Quiz, click on Submit.
Quiz 2

Figure 10: the eGrammar Clinic access page (part 3)
Session 9 - Sentence Patterns

Click on the following document (Sentence Patterns) and study it well before trying the activities.

After studying the above Sentence Patterns, click on Activity 9 below and select the correct answer.

Instructions for Activity 9: Select the correct modal

Activity 9

Session 10 - Sentence Patterns

Click on the following document (Sentence Patterns) and study it well before trying the activities.

After studying the above Sentence Patterns, click on Activity 10 below and select the correct answer.

Instructions for Activity 10A: Read the following titles, then decide which sentence is correct.

Activity 10A

Instructions for Activity 10B: Go to Yahoo News and write down ten news titles. Rewrite them as correct sentences beginning with “This story is about...”

Activity 10B

POSTTEST

Click on the link below to take the test.

POSTTEST

Questionnaire

Click on the following link and answer 25 questions. Don’t forget to click on the Submit Survey button after you finish answering all the questions.

The eGrammar Clinic Questionnaire

Figure 11: the eGrammar Clinic access page (part 4)

Following is a brief presentation of each one of the ten sessions. The Pretest, Quiz 1, Midtest, Quiz 2 and Posttest are presented in Appendix A.

SESSION 1

The Sentence Pattern section of this session deals with the fundamental structure of each sentence: subject – predicate. This relationship is essential because it underlies every correct sentence in English. It is also a primary source of sentence grammar errors. The issue of sentence “slots” is also discussed in this session. One interesting way to look at a sentence is to picture it as a sequence of slots. The subject and predicate are the main slots, but each one consists of other slots, some required, some optional; omitting one required
SESSION 2
This session explores the issue of sentence types, mainly that of dependent and independent clauses. This is an extremely significant sentence grammar issue since it is the source of frequent errors. With clear examples (green-correct, red-incorrect), this major sentence grammar problem is presented in detail.

SESSIONS 3, 4 and 5 focus on problematic sentences. Three kinds of problematic sentences are discussed here: run-on sentences, fragment sentences and rambling sentences. These are indeed big problems and a source of many errors.

SESSIONS 6, 7 and 8 deal with the issue of determiners. Determiners are a very complex and complicated issue in English grammar. The absence of determiners, when required, is responsible for one of the most common types of errors English IV students make (example):

I like car.
I saw cat on the roof.
Both sentences are incorrect because the two countable nouns car and cat being singular, require a determiner.

Three groups of determiners are discussed in these sessions: articles, demonstratives and possessives.

The use of articles, both definite the, and indefinite, a, an, is again a highly difficult issue. The two sentences below

I saw the dog, and
I saw a dog, are both correct, but their meaning is different.
Demonstratives, such as, *this, that, these, those*, together with possessives, *mine, your, its*, etc., are also determiners which, together with articles, must always be used before a countable noun such as, cat, dog, student, etc. So, the incorrect sentence

*I saw cat on the roof*, can easily be corrected with a/any determiner:

*I saw a cat on the roof*

*I saw your cat on the roof*, and so on.

The relationship between determiners and singulars/plurals (Session 8) is also a highly sensitive one. The sentence

*I saw your cat on the roof*, is correct because it has a determiner before the singular noun cat.

But, if the noun is plural, the determiner is optional:

*I saw your cats on the roof*

*I saw cats on the roof*, both are correct (with, and without a determiner).

After studying well the explanation and the examples in Session Sentence Patterns, students are supposed to practice Activity 6, 7 and 8.

**SESSION 9** deals with modal verbs. Modal verbs are often a source of errors for several reasons:

- They can have multiple meanings, such as:

  *I can* ride a horse (ability).

  *We can* stay with my brother when we are in Paris (opportunity).

  *She cannot* stay out after 10 PM (permission).

  *Can* you hand me the stapler (request)?

  *Any child can* grow up to be president (possibility).

- They have no 3rd person singular “s”

  *He must be* home by 10 pm.

- No past and future tense (the verb “have to” needs to be used instead).
Modal verbs, such as: must, should, ought to, can, may, etc., are often used together with certain verbal phrases when making recommendations, giving advice, or expressing an obligation or expectation:

- When you go to Berlin, you should visit the museum (recommendation).
- You should focus more on your family and less on work (advice).
- I really should be in the office by 7:00 AM (obligation).
- By now, they should already be in Dubai (expectation).

SESSION 10. “What is this story about” or “what is the subject of this story” are questions English IV students have to answer all the time. Answering such a question involves two things:

1. Being able to extract the essence of a passage in one sentence, and
2. Being able to put it in a grammatically correct sentence.

For the purpose of this research, the focus is on the second point.

If we take a news story from Yahoo, such as “Israel: Egypt embassy attack is 'blow' to ties”,

most students would write

This story is about Israel Egypt embassy attack is blow to ties, which, of course, is wrong.

The sentence patterns section of this session teaches students how to turn this title into a correct subject sentence:

- the title must first be changed into a complete sentence, such as

Israel says the Egypt embassy attack is a blow to the ties (between them)

- then, using the fact that, the correct sentence is

This story is about the fact that Israel says the Egypt embassy attack is a blow to the ties.
In Activity 10A and 10B, students are asked to practice the same subject sentence pattern with ten Yahoo news stories.

The table below shows an outline of each Session, its objective and activity.

**Table 2: Description of the eGrammar Clinic**

<table>
<thead>
<tr>
<th>Session Number</th>
<th>Session Topic</th>
<th>Objective</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Subject-Predicate</td>
<td>To discuss the relationship between topic-comment</td>
<td>Twenty multiple choice practice exercises</td>
</tr>
<tr>
<td></td>
<td></td>
<td>To clarify the issue of “slots”</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Sentence Types</td>
<td>To explore the issue of dependant and independent clauses</td>
<td>Activity A and B: Twenty multiple choice clauses</td>
</tr>
<tr>
<td>3, 4, 5</td>
<td>Problematic Sentences</td>
<td>Run-on sentences</td>
<td>Students need to identify the correct sentence</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fragment sentences</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Rambling sentences</td>
<td></td>
</tr>
</tbody>
</table>
| 6, 7, 8        | Determiners                | Articles: definite and indefinite  
Demonstratives and possessives  
Determiners and plurals         | Multiple choice exercises                                                  |
| 9.             | Modals                     | Modal verbs                                                               | Multiple choice exercises               |
|                |                            | Making recommendations                                                    |                                         |
| 10.            | Subject Sentence           | Write correct subject sentences                                           | Activity A and B: Ten Yahoo News topics |
1.2 Results of the Questionnaire Reliability Test

The Cronbach Alpha Reliability Test was performed in order to test the reliability of the questionnaire. Cronbach's alpha is the most common measure of internal consistency ("reliability"). It is most commonly used when the researcher has multiple Likert questions in a survey/questionnaire that form a scale, and the researcher wishes to determine if the scale is reliable.

For this questionnaire, the researcher has selected five Likert-type questions with the aim of measuring how the online group of participating students felt about their online experiment. The questions were divided into two sets:

- three questions referring to the learning management system (LMS):

  LMS1: It was easy to access the eGrammar Clinic
  LMS2: It was easy to navigate through the eGrammar Clinic
  LMS3: The instructions given for each session were clear

- four questions referring to the eGrammar Clinic (eGC):

  eGrammar Clinic1: The content of session activities was clear
  eGrammar Clinic2: The content of sentence patterns was clear
  eGrammar Clinic3: I believe the eGrammar Clinic helped me improve my grammar
  eGrammar Clinic4: I think the eGrammar Clinic should be offered to all English IV students

Each question was a 5-point Likert item, from "strongly disagree" to "strongly agree". The Cronbach's alpha was run on a sample size of 20 students.
Since the two sets of variables, LMS and eGrammar Clinic, are different, they were tested separately.

The Cronbach Alpha Reliability Test results for the Learning Management System (LMS)-3 items and eGrammar Clinic (eGC)-4 items, run on 20 students and consisting of 3 and 4 items respectively, are presented in Table 3.

Table 3: Cronbach alpha reliability test results

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Items</th>
<th>Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learning Management System</td>
<td>20</td>
<td>3</td>
<td>0.8717</td>
</tr>
<tr>
<td>eGrammar Clinic</td>
<td>20</td>
<td>4</td>
<td>0.8062</td>
</tr>
</tbody>
</table>

In interpreting Cronbach's alpha, the researcher wishes to assess the degree of internal consistency among a set of questionnaire items. The researcher is interested in learning two things from each student:

1. The first is the level of value that the online group of students place on the learning management system. This variable is called the LMS value and represents the degree to which the students believe the learning management system used in this Experiment was easy to access, easy to use, and clear. To assess the level of value that students placed on this particular learning management system, they were asked three questions related to the LMS.

2. The second is the level of value that the students place on the content and effectiveness of the eGrammar Clinic. This variable is called the eGrammar Clinic value and represents the degree to which the students believe that the eGrammar Clinic's content was clear and useful to English IV students. To assess the level of value that students
placed on the eGrammar Clinic, the students were asked four questions related to the eGC.

The Cronbach Alpha reliability test results for the Learning Management System (LMS) show an overall alpha of .8717, which is very high and indicates strong internal consistency among the three learning management system items. Essentially, this means that respondents who tended to select high scores for one item also tended to select high scores for the others; similarly, respondents who selected low scores for one item tended to select low scores for the other LMS items. Thus, knowing the score for one LMS item would enable the researcher to predict with some accuracy the possible scores for the other two LMS items.

Corrected Item-Total Correlation, displays the correlation between a given LMS item and the sum score of the other two items. This means that there is a strong positive correlation between the scores of the one item (item 1) and the combined score of the other two (items 2 and 3), the mean of inter-item correlation \( r = .7542 \). This is a way to assess how well one item's score is internally consistent with composite scores from all other items that remain. If this correlation is weak, less than .30, then that item should be removed and not used to form a composite score for the variable in question.

The Cronbach Alpha reliability test results for the eGrammar Clinic (eGC) show that the overall alpha is .8062, which is also very high and indicates strong internal consistency among the four eGrammar Clinic items. Essentially this means that respondents who tended to select high scores for one item also tended to select high scores for the others; similarly, respondents who selected low scores for one item tended to select low scores for the other eGC items. Thus, knowing the score for one eGC item would enable the researcher to predict with some accuracy the possible scores for the other three eGC items. This test results also show that there is a strong positive correlation between the scores of the one item (item 1)
and the combined score of the other three (items 2, 3 and 4). With a value of $r = .6211$, it shows how well one item's score is internally consistent with composite scores from all other items that remain.

Considering the fact that Cronbach’s alpha reliability coefficient normally ranges between 0 and 1, and that the closer the coefficient is to 1, the greater the internal consistency of the items in the scale, this researcher is happy to report an alpha coefficient that is higher than .8 for both sets of variables, thus concluding that the Questionnaire given to the Online Group of students at the end of the Experiment was reliable.

The Cronbach alpha reliability tests are available in Appendix B.

1.3 The Results of the Implementation of the eLearning Courseware and Hypothesis Testing

At the beginning of this research study, in June, 2011, all participating students were administered the Pretest: the Online Group of students, online, and the Classroom Group, in class. As mentioned earlier, the Pretest consisted of ten questions, each one being the subject of one subsequent Session to be presented online during the semester. The total score for the pretest was 100, each question, 10 points.

After Sessions 1, 2, and 3, Quiz 1 was given to both groups of students, again, online and in class. The quiz was designed to reflect the material covered in the first three sessions. This was followed by Midtest, covering sessions 1, 2, 3, 4, and 5. After session 6, 7, and 8, Quiz 2 was administered, reflecting those particular sessions, and, finally, the Posttest concluded the data collection process. Similar to the Pretest, but administered at the end of the semester, in September 2011, the Posttest also consisted of ten questions, each one representing one session.
Each test and quiz consisted of ten questions, and each question valued 10 points, so the total for each test and quiz was 100 points. All test and quiz scores, for both the online and the classroom groups of students, were initially stored in Excel file, then transferred to SPSS data file. The following tables below show the mean results for both groups: the Online Group (class type 1), and the Classroom Group (class type 0):

Table 4: Test Mean results for the Online Group (Class type 1)

<table>
<thead>
<tr>
<th>Activity</th>
<th>N</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Std. Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pretest</td>
<td>80</td>
<td>50.85</td>
<td>12.76</td>
<td>1.42</td>
</tr>
<tr>
<td>Quiz 1</td>
<td>80</td>
<td>7.47</td>
<td>1.30</td>
<td>0.14</td>
</tr>
<tr>
<td>Midtest</td>
<td>80</td>
<td>78.45</td>
<td>12.64</td>
<td>1.41</td>
</tr>
<tr>
<td>Quiz 2</td>
<td>80</td>
<td>8.38</td>
<td>0.84</td>
<td>0.09</td>
</tr>
<tr>
<td>Posttest</td>
<td>80</td>
<td>84.05</td>
<td>7.25</td>
<td>0.81</td>
</tr>
</tbody>
</table>

Table 5: Test Mean results for the Classroom Group (Class type 0)

<table>
<thead>
<tr>
<th>Activity</th>
<th>N</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Std. Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pretest</td>
<td>80</td>
<td>50.60</td>
<td>11.10</td>
<td>1.24</td>
</tr>
<tr>
<td>Quiz 1</td>
<td>80</td>
<td>6.09</td>
<td>1.14</td>
<td>0.12</td>
</tr>
<tr>
<td>Midtest</td>
<td>80</td>
<td>63.04</td>
<td>11.28</td>
<td>1.26</td>
</tr>
<tr>
<td>Quiz 2</td>
<td>80</td>
<td>6.73</td>
<td>1.12</td>
<td>0.12</td>
</tr>
<tr>
<td>Posttest</td>
<td>80</td>
<td>69.41</td>
<td>10.41</td>
<td>1.16</td>
</tr>
</tbody>
</table>

As the tables clearly show, at the beginning of the Experiment, the Online Group scored a mean of 50.85 for the Pretest. The mean result was higher after the Midtest, at 78.45, and it reached 84.05 after the Posttest. At the same time, the mean of the Classroom Group
after the Pretest was 50.60, a bit higher after the Midtest, and 69.41 at the end of the Experiment.

All the data collected have been analyzed using SPSS. The Independent Samples T-Test and the Paired Samples T-Test techniques of SPSS were used to measure if there has been any statistically significant difference in the scores of the online and classroom groups. Specifically, the Independent Samples T-Test was used to assess the statistical difference between the online and the classroom groups, while the Paired Samples T-Test was used to measure the progress, improvement/learning gains within one group, the Online Group. The questionnaire, which was given at the end of the experiment, was pre-tested for reliability using the Cronbach Alpha Reliability Test.

The Independent Samples T-tests were performed in order to assess whether there was a statistically significant difference between the mean scores of the Online Group and the Classroom Group at the beginning of the Experiment (Pretest), and at the end of the Experiment (Posttest).

Following are the hypotheses for the independent samples T-test:

**Ho 1: There is no significant difference between the means of Online and Classroom group (Pretest)**

**Ha 1: There is a significant difference between the means of Online and Classroom group (Pretest)**

**Ho 2: There is no significant difference between the means of Online and Classroom group (Posttest)**

**Ha 2: There is a significant difference between the means of Online and Classroom group (Posttest)**
From the experiment, it was found that the independent samples T-test for the Pretest shows the mean value for the Online Group of 50.85 and the mean value for the Classroom Group of 50.60 (Table 6).

**Table 6: Independent samples T-Test (Pretest and Posttest-Online and Classroom groups)**

<table>
<thead>
<tr>
<th>Test</th>
<th>Class type</th>
<th>Mean</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pretest</td>
<td>Online</td>
<td>50.85</td>
<td>0.395</td>
</tr>
<tr>
<td></td>
<td>Classroom</td>
<td>50.60</td>
<td></td>
</tr>
<tr>
<td>Posttest</td>
<td>Online</td>
<td>84.05</td>
<td>0.000*</td>
</tr>
<tr>
<td></td>
<td>Classroom</td>
<td>69.41</td>
<td></td>
</tr>
</tbody>
</table>

* Significant difference, \( p<0.05 \)

The results show that there is no statistically significant difference between the mean scores of the Online and Classroom groups at the beginning of the Experiment \( (p = 0.395) \). The meaning of this output is that the null hypothesis \( (H_0 1) \) failed to reject.

For the Posttest, the mean value for the Online and Classroom Group were 84.05, and 69.41 respectively (Table 6): The results show that there is a statistically significant difference between the mean scores of the Online and Classroom groups \( (p = 0.000*) \) at the end of the Experiment. It means that the null hypothesis \( (H_0 2) \) is rejected.

The Paired Samples T-Tests was carried out in order to assess the improvement of the Online Group students during the interval between the Pretest and Posttest. For this particular research, the researcher compared the mean test scores of the Online group before (Pretest) and after (Posttest.)
The hypothesis of this category is as follows:

\(Ho 3: \text{There is no significant difference between the Pretest and the Posttest means of the Online group}\)

\(Ha 3: \text{There is a significant difference between the Pretest and Posttest means of the Online group}\)

The paired Samples T-test has been used to measure the improvement/the learning gains of the online group of students beginning with the pretest, then continuing with quiz 1, midtest, quiz 2, and posttest. Table 7 shows the statistics for the paired samples T-test for the Pretest and Posttest for the Online Group:

\[\begin{array}{|c|c|c|c|}
\hline
\text{Test} & \text{N} & \text{Mean} & \text{p value} \\
\hline
\text{Pretest} & 80 & 50.85 & 0.000^* \\
\text{Posttest} & 80 & 84.05 & \\
\hline
\end{array}\]

*Significant difference \(p<0.05\)

Therefore the null hypothesis (Ho 3) is rejected. In other words, the results show that there is a statistically significant difference between the mean scores of the Online and Classroom groups at the end of the Experiment \((p = 0.000^*)\).

1.4 The Test of the Hypotheses

The Independent Samples T-tests were performed in order to assess whether there was a statistically significant difference between the mean scores of the Online Group and the Classroom Group at the beginning of the Experiment (Pretest), and at the end of the Experiment (Posttest).
1.4.1 The Independent T-test for the Pretest

The Null Hypothesis for this test was

$H_0: \text{There is no significant difference between the mean scores of Online and Classroom group (Pretest)}$

The Alternative Hypothesis was

$H_1: \text{There is a significant difference between the mean scores of Online and Classroom group (Pretest)}$

The descriptive statistics for the two variables being tested are

- Class type: 1 for the Online Group
  2 for the Classroom Group
- N stands for sample sizes: 80 students for the Online Group
  80 students for the Classroom Group
- Mean: 50.85 for the Online Group
  50.60 for the Classroom Group

For this test, the p-value (Sig.) = .395 (not significant) (Table 6).

The results show that there is no statistically significant difference between the mean scores of the Online and Classroom groups at the beginning of the Experiment. The mean scores of 50.85 and 50.60 are very similar, clearly showing that the two groups of students started the Experiment from about the same level.

1.4.2 The Independent T-test for the Posttest

The Null Hypothesis for this test was

$H_0: \text{There is no significant difference between the mean scores of Online and Classroom group (Posttest)}$

For this test, the p-value (Sig.) = .395 (not significant) (Table 6).
The Alternative Hypothesis was

\[ \text{Ha}_2: \text{There is a significant difference between the mean scores of Online and Classroom group (Posttest)} \]

The descriptive statistics for the two variables being tested were described. The Class Type and sample size (N) are the same. However, the means are different: 84.05 for the Online Group and 69.41 for the Classroom Group.

The Sig. p-value of 0.000 (significant) was obtained (Table 6).

The meaning of this output is that the null hypothesis is rejected and the alternate hypothesis is validated. In other words, the results show that there is a statistically significant difference between the mean scores of the Online and Classroom groups at the end of the Experiment.

The mean score of 84.05 of the Online Group is significantly higher than the mean score of 69.41 of the Classroom Group underlining the unavoidable conclusion that the eGrammar Clinic “treatment” was effective. The Online Group of students who benefitted from online practice shows significant improvement as compared with the Classroom Group who did not benefit from extra practice, thus validating the researcher’s hypothesis.

1.4.3 The Paired Samples T-test for the Pretest and Posttest

The Paired Samples T-test was carried out in order to assess the improvement of the Online Group during the interval between the Pretest and the Posttest.
The Null Hypothesis for this test was that

\textit{Ho 3: There is no significant difference between the pretest and posttest means of the Online group.}

The Alternate Hypothesis was

\textit{Ha 3: There is a significant difference between the pretest and posttest means of the Online group.}

It was found that the Sig. (2-Tailed) value in this paired t-test is 0.000 (Table 7). This value is less than 0.05. Because of this, the researcher can conclude that there is a statistically significant difference between the mean score of the Pretest and the mean score of the Posttest, with the mean score of the Posttest being greater than the mean score of the Pretest.

Consequently, the null hypothesis is rejected.

The obvious interpretation of all this data is that the students who benefitted from extra, online practice improved significantly during the Experiment. The Paired Samples \textit{T-test} results underline the obvious conclusion that the \textit{eGrammar Clinic} was effective in helping students significantly improve their sentence grammar, thus validating the researcher’s hypothesis.
Table 8: Summary of Hypothesis Testing

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>p value</th>
<th>Result</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ho1: There is no significant difference between the means of Online and Classroom group (Pretest)</td>
<td>0.395</td>
<td>Failed to Reject</td>
<td>Independent Samples T-Test</td>
</tr>
<tr>
<td>Ho2: There is no significant difference between the means of the Online and Classroom group (Posttest)</td>
<td>0.000*</td>
<td>Rejected</td>
<td>Independent Samples T-Test</td>
</tr>
<tr>
<td>Ho3: There is no significant difference between the Pretest and Posttest means of the Online group</td>
<td>0.000*</td>
<td>Rejected</td>
<td>Paired Samples T-test</td>
</tr>
</tbody>
</table>

* Significant difference p<0.05
2. Discussion

The eGrammar Clinic is a Moodle-based tutoring system designed to offer Assumption University English IV students the chance to improve their sentence grammar online. It is also a practice-based system in that it presents certain sentence patterns to be studied, followed by related activities to be practiced repeatedly. The eighty students participating in this experiment have shown a high degree of enthusiasm from the beginning of the study. This was exemplified by the number of attempts for each activity, often exceeding a total of 140. The outcome of the Experiment, exemplified by the Pretest, Quiz 1, Midtest, Quiz 2, and Posttest results, shows significant learning gains of the Online Group as compared to the Control Group. Both the Independent Samples and the Paired Samples T-test results underline the obvious conclusion that the eGrammar Clinic was effective in helping students significantly improve their sentence grammar, thus validating this researcher's hypotheses. These results are consistent with the researcher's assumption that extra, online sentence grammar practice of certain grammar problems has a positive effect in improving the students' production of correct sentences.

The Questionnaire given at the very end of the Experiment shows an overwhelmingly positive attitude participating students have towards the eGrammar Clinic. More than 80% strongly agree that the ten sessions of sentence patterns and activities were useful and have helped them improve their sentence grammar. They also found the Moodle-based system easy to navigate through, easy to access the activities in order to repeat the attempts, or to go back to a particular session for more study. One suggestion that was offered by several students was to improve the design of the sessions with more colors and some animation. A suggestion that will most certainly be considered in the future.
2.1 Student Satisfaction with the Learning Management System (LMS)

The eighty participating students from the Online Group have expressed overall positive satisfaction with the learning management system. When referring to the LMS1 question “It was easy to access the eGrammar Clinic”, 38% were neutral, 37% agreed and 25% strongly agreed. When asked whether “It was easy to navigate through the eGrammar Clinic”, LMS2, 32% were neutral, 38% agreed, and 30% strongly agreed. In reference to the LMS3 question “The instructions given for each session were clear”, 20% were neutral, 35% agreed, and 45% strongly agreed.

These responses show that, although the overall level of satisfaction with the learning management system was positive, students had some reservations. This was probably caused by the fact that a couple of times the system was down, students could not access the system, and they were confused as to what was happening. Naturally, such technical glitches are unavoidable in any environment where accessibility depends on many factors. Technology is constantly improving and, alongside, the management of technology driven learning systems.

2.2 Student satisfaction with the eGrammar Clinic

All participating students in this experiment have shown an overwhelmingly positive attitude towards the eGrammar clinic. When asked whether “The content of session patterns was clear”, eGrammar Clinic1, 81% of respondents strongly agreed, 10 agreed, and another 9 were neutral. The answers were similar in reference to the related question eGrammar Clinic2 “The content of session activities was clear”: 82% strongly agreed, 10% agreed, and only 8% were neutral. The next question, eGrammar Clinic3, “I believe the eGrammar Clinic helped me improve my grammar”, generated the most positive responses from the eighty
participating students: 88% strongly agreed, 9% agreed, and only 3% were neutral. The question “I think the eGrammar Clinic should be offered to all English IV students”, eGrammar Clinic, also generated highly positive responses: interestingly, 84% strongly agreed, 11% agreed, and 5% were neutral.

The results show a surprisingly high level of satisfaction with the eGrammar Clinic. All students who started the Experiment at the beginning of the semester, continued all the way to the end (with the exception of those who dropped out of English IV during the semester). In fact, this researcher was aware of one student who, although dropped English IV from the third week, continued to access the eGrammar Clinic until the end of the semester!

2.3 Student participation in the Experiment

The high overall positiveness of the Questionnaire responses is not totally surprising considering the enthusiastic student participation in the Experiment. From the very beginning, all participating students have shown great interest in accessing the eGrammar Clinic, in studying the Session Sentence Patterns and in doing the Activity(s). All students accessed the sentence patterns section of each session at least once, and spent an average of ten minutes studying it. But most students went back to study again previous session sentence patterns at least three times during the Experiment. This is consistent with this researcher’s initial estimation that students should spend an average of ten minutes per day practicing sentence grammar online.

In doing the activity part of each session, students have shown even greater enthusiasm. Since the activity part was designed to give students the chance to practice repeatedly through several attempts, they practiced each activity by repeating it on an
average, three times. They had the chance to improve their score through repeated attempts. This was, again, consistent with this researcher’s original idea to create a practice-based tutoring system for sentence grammar practice.

2.4 Validation of research assumption

This research was originated on the assumption that regular classroom practice of certain sentence patterns and/or of problematic sentences is not enough in helping English IV students improve their sentence grammar. What is needed is more, extra practice done in a different way, that is, online. The Experiment, which lasted from the beginning of the first semester in June 2011, to the end of the semester, in September, proved to be highly successful. As mentioned earlier, student participation was enthusiastic and the results, encouraging. All results, as presented in detail in the previous chapter, point in the same direction: the eGrammar Clinic is a tutoring system capable of helping English IV students improve their production of grammatically correct sentences in English.
CHAPTER V
CONCLUSION AND RECOMMENDATIONS

Chapter V of this dissertation presents a clear and comprehensive set of conclusions and implications of the results of the study, and offers recommendations for further research. In the beginning of this chapter, the researcher wishes to reaffirm the significance of this research and how the body of this research can contribute to the body of scholarship on this topic.

As mentioned earlier, the significance of this research rests on the fact that it explores practical and real opportunities to improve learning through eLearning, namely the potential of eLearning as a tool in the quest for life-long learning, some eLearning technologies currently available, and future trends. It also addresses the challenges faced in connection with the provision of education using eLearning, as well as its impact on students and teachers.

Specifically, it offers Assumption University English IV students the chance to improve their sentence grammar through online practice and as a supplement to their regular classroom practice. It represents an issue that is particularly timely in importance: Assumption University students have one fundamental problem with English: grammar. Most of them are also tired of traditional classroom grammar lessons. A new approach to sentence grammar practice, an online approach, may alleviate this major problem students have.

The outcome of this research may have strong implications for a wider population. Not only English IV students can benefit from this research, but all Assumption University
students, students from other universities, as well as all those interested in improving their sentence grammar online. Moreover, the problem at hand relates to a critical issue among a vast population: not only Thai learners of English have grammar as a major obstacle in their progress but also students from China, Japan, Korea, Vietnam, Laos, etc. And, for the same reason: all these languages, and most Asian languages, lack inflections.

The completed work would fill a gap in the research literature. There are not many practical tutoring systems for sentence grammar practice that can be applied for actual online sentence grammar practice. Those which are too ambitious in scope or design often remain stuck at the research level never getting to the level of implementation. A practical easy-to-use Moodle-based system is needed.

Also, the definition of an important concept would be refined. The concept of eGrammar is new; it is an innovation at this point, and it is bound to become an inspiration in the near future. It needs to be applied, defined and refined. The results will have implications for a wide range of practical problems. As mentioned before, the implications of this research can be enormous, not just for students of English, but for students of other languages, and for students of anything, anywhere, anytime.

1. Conclusions

A number of significant conclusions can be logically drawn from the results of this study. First, a Moodle-based tutoring system for sentence grammar practice can be an ideal tool in helping students improve their production of grammatically correct sentences in English; it is easy to access and use, it offers a plethora of features that both students and teachers find attractive and, as an open-source software, it is available to all, free of charge.
Second, such an online tutoring system can be highly effective in helping students achieve their goal. This was amply exemplified through the test results. At the end of the Experiment, the Online Group of students showed significantly higher scores as compared with the Classroom Group. At the same time, the improvement within the Online Group was much higher than the progress of the Classroom Group. In conclusion, students who benefitted from this Experiment improved their sentence grammar significantly as compared to those who did not.

The possible impact the conclusions listed above can have on understanding the issue being studied is huge, and so are the potential improvements of the problematic situation under discussion and the overall benefits to society. First of all, this Moodle-based tutoring system can offer English IV students the chance to solve their biggest problem: improve their grammar. Importantly, they can achieve this goal online, through a short but daily practice routine using the gadgets they love so much to use. Most students are tired of traditional classroom grammar (and of grammar teachers!). They are eGrammar ready!

The implications of the outcome of this research go beyond Assumption University English IV students, and beyond AU students: students from other universities, as well as all those interested in improving their sentence grammar online can benefit from this research. This research was done with all these students in mind.

This study fills a gap in the research literature. The eGrammar Clinic is a simple, practical tutoring system for sentence grammar practice that can be applied for actual online sentence grammar practice. Those systems which are too ambitious in scope or design often remain stuck at the research level never getting to the level of implementation. A practical
easy-to-use Moodle-based system is needed. In this respect, this study can prove to be a benefit to society, to any society. As mentioned earlier, the results of this project can have implications for a wide range of practical problems. Namely, the implications of this research can be enormous, not just for students of English, but for students of other languages.

The design of this research methodology consisted of two main parts: The eGrammar Clinic development, and The Experiment. The development of the eGrammar Clinic included the preparation of the ten Sessions, tests and quizzes. The Experiment was implemented from the beginning of the semester, in June, to the end, in September 2011, in the form of Pretest, Quiz 1, Midtest, Quiz 2 and Posttest. A questionnaire was given to the students at the end of the Experiment.

The ten Sessions were based on the content of the English IV textbook and were also based on the weekly English IV class-work practice. Each Session consists of two parts: Session Sentence Pattern(s) and Session Activity. During the design and development of the eGrammar Clinic, the researcher has sought the cooperation of fellow teachers of the English IV course as well as the opinion and advice of other experts in the field of grammar.

The objective of this study has been to assess the effectiveness of a Moodle-based tutoring system for sentence grammar practice. Participating students in this longitudinal study were 160 Assumption University English IV students. They were pre-tested at the beginning of the semester to assess their level of mastery of certain basic/problematic sentence patterns, and post-tested at the end, to assess their improvement. During the semester they have been separated into two groups: the Online Group (OG), 80 students, the Classroom Group (CG), 80 students.
The Online Group (OG) has been offered ten Sessions, each one consisting of one or several sentence patterns and/or of problematic sentences. The sentence patterns and activities of each session were supplements to those practiced in class and have been designed in the shape of, and based on the English IV textbook.

The results of the Posttest, which was given at the end of the Experiment, show that there is a significant difference between the mean scores of the Online and Classroom groups at the end of the Experiment. The mean score of 84.05 of the Online Group is significantly higher than the mean score of 69.41 of the Classroom Group underlining the unavoidable conclusion that the eGrammar Clinic “treatment” was effective (Table 4.5). The Online Group of students who benefitted from online practice shows significant improvement as compared with the Classroom Group who did not benefit from extra practice, thus validating the researcher’s hypothesis. In other words, the meaning of this output is that the null hypothesis is rejected and the alternate hypothesis is validated.

2. Implications and Recommendations for Further Research

The results of this study can have enormous implications for a wide range of practical problems. As mentioned before, the implications of this research can be vast, not just for students of English, but for students of other languages, and for students of anything, anywhere, anytime.

First of all, this research has meaningful implications for Assumption University English IV students. They are the first to benefit. In fact, the Online Group of students who took part in this project already benefitted from this research. They have validated the significance of this study, not just in statistical terms: in numbers, in results, etc., but equally,
and more importantly, in their attitude: they found the eGrammar Clinic interesting, enjoyable! This was beyond this researcher’s expectations!

Consequently, the meaning of all this is that the eGrammar Clinic idea is a good one; it is successful, it benefits students, they like it: it needs to be developed and implemented, not only because it was specifically conceived by this researcher as a genuine instrument designed to perform a specific function, but also, and more importantly, because it actually does the job: it brings students enthusiastically do something they otherwise hate to do, that is, practice grammar. This idea is especially true with English IV students: they keep failing the course because their grammar is poor. But the English IV course does not teach basic grammar! This dilemma can easily and successfully be solved by implementing this Moodle tutoring system into the English IV courseware. Participating students in this experiment have shown that they enjoy doing it, and that they strongly agree that the eGrammar Clinic can significantly help them improve their sentence grammar; they’re eGrammar ready!

Clearly, this project needs to be replicated, improved and expanded in the future. There are many other grammar problems to be addressed. The possibilities are infinite. For those who have the vision to see the potential of using Moodle as a management system for language learning, there are no limits. Most certainly, this researcher is one of them.
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Appendix A

The eGrammar Clinic Tests and Quizzes

1. Pretest

Question 1. Instructions:
Go to Yahoo News, click on the first news story and survey it.
Then answer the question:
What is this story about?
Your answer must be a full sentence beginning with
This story is about

Question 2. Instructions:
The sentence below is incorrect:
I went to Barcelona during the summer vacation it is the most beautiful place I
have ever visited.
Rewrite the sentence correctly.

Question 3. Instructions:
This sentence is also incorrect:
I don't think I'm going to get a good grade. Because I didn't study.
Rewrite the sentence correctly.

Question 4. Instructions:
And this sentence is incorrect too:
Mary usually gets up before 7 o'clock, but yesterday her alarm clock did not ring, so she
was still asleep when her boss called her at 10.30 to ask where she was and tell her that
she would lose her job if she was late again.
Rewrite the sentence correctly.
Instructions: Choose the correct article

5. Do you have .... brother? No, I have only sisters.
   □ a. a    □ b. an    □ c. the

6. We're going to buy .... new house next week.
   □ a. a    □ b. an    □ c. the

7. .... new house is on a hill.
   □ a. a    □ b. an    □ c. the

8. I don’t like .... black dog!
   □ a. a    □ b. an    □ c. the

9. I like .... black cat!
   □ a. a    □ b. an    □ c. the

10. Would you like .... apple?
    - No, thanks. I'm not hungry.
   □ a. a    □ b. an    □ c. the

11. Have you ever ridden .... camel? No, I’ve only ridden horses.
    □ a. a    □ b. an    □ c. the

12. I need to go to the library to return .... books I borrowed.
    □ a. a    □ b. an    □ c. the

13. Can you please return .... money I gave you yesterday.
    □ a. a    □ b. an    □ c. the

14. Look! There's .... cat on the roof. I think it’s the cat of my neighbor.
    □ a. a    □ b. an    □ c. the

15. Do you like .... new Harry Potter book?
    □ a. a    □ b. an    □ c. the

16. I try to protect my skin against .... sun.
    □ a. a    □ b. an    □ c. the

17. I think .... new Prime Minister is a nice person.
    □ a. a    □ b. an    □ c. the

18. Do you like to look at .... moon at night?
    □ a. a    □ b. an    □ c. the

19. When we have a big problem, we call .... police.
    □ a. a    □ b. an    □ c. the

20. My brother will come back home soon; he’s now in .... army.
    □ a. a    □ b. an    □ c. the
21. I have to go to ..... market to buy some food.
   □ a. a □ b. an □ c. the

22. This is ..... only apple I could find. Would you like it?
   □ a. a □ b. an □ c. the

23. Don't forget to buy ..... things I told you to buy.
   □ a. a □ b. an □ c. the

24. It was ..... most beautiful day of my life; the day when I met you.
   □ a. a □ b. an □ c. the

Question 25
Instructions: The next ten sentences have singular countable nouns without determiners. If you think they need a determiner, choose one from the list below. Write your answers in the provided space:

a, an, the, this, that, what, which, any, every, each, my, your, his, her, its, our, your, their, no, one, etc.

1. .... dog chased .... cat.
2. I like .... car.
3. There is .... tourist in our guest house.
4. I heard .... dog barking.
5. I don’t need .... advice now.
6. They should drive .... own car now.
7. .... other dog can replace poor old Max.
8. .... thing I can tell you for sure: I hate English IV!
9. .... day I begin with a shower.
10. .... day of the week do you like the most?

2. Quiz 1

A. Dependent or independent clauses
Instructions: decide whether the sentence in red is a dependent or an independent clause. (Each question: 1 minute. Ten questions: 10 minutes)

1. Although he was only in grade 8, he was the best football player in school.
   □ a. dependent □ b. independent

2. We decided to have an outdoor party although the weather wasn't very good.
   □ a. dependent □ b. independent

3. Before you go home today, you need to go to the office and say goodbye.
   a. dependent □ b. independent
4. Because it had rained all night, I had terrible problems getting to school.
   a. dependent □ b. independent

5. While my sister was doing her homework, I practiced on the guitar.
   a. dependent □ b. independent

6. Do you know the student who lost the tennis tournament?
   a. dependent □ b. independent

7. Since I came to Japan, I have not once played tennis.
   a. dependent □ b. independent

8. You are not going to pass the test unless you start practicing harder.
   a. dependent □ b. independent

9. Whether you pass English IV or not, I don’t know.
   a. dependent □ b. independent

10. He did his homework and went to bed.
    a. dependent □ b. independent

B. Sentence types
Instructions: what type is each sentence below? (Each question: 1 minute. Five
questions: 5 minutes)

11. I have not seen my grandmother since I came to Germany.

12. The new girl in our ESL class has a brother in grade 7 and a sister in grade 9.

13. You should read every day if you want to improve your English more quickly.

14. Although it was cold and the rain was getting heavier, we decided to go fishing as
    planned.

15. Many European countries now use the Euro, but the United Kingdom still uses the Pound.

C. Run-on sentences
Instructions: the following groups of sentences have one run-on sentence. Check all the
correct sentences in each group. In some groups there is only one correct sentence; in
others, two or three. (Each question – 2 minutes. Five questions – 10 minutes)

16. Choose at least one answer.
    □ a. Cherry blossom time starts soon in Japan. Everyone loves that time of year.
17. Choose at least one answer.
   a. My daughter leaves for Spain tomorrow. She is very excited.
   b. My daughter leaves for Spain tomorrow; she is very excited.
   c. My daughter leaves for Spain tomorrow, and she is very excited.
   d. My daughter leaves for Spain tomorrow she is very excited.

18. Choose at least one answer.
   a. People often believe everything they read, so media has a responsibility to be honest.
   b. People often believe everything they read. Media has a responsibility to be honest.
   c. People often believe everything they read media has a responsibility to be honest.
   d. People often believe everything they read; media has a responsibility to be honest.

19. Choose at least one answer.
   a. Travelling in France was fun; Mary often felt tired.
   b. Travelling in France was fun Mary often felt tired.
   c. Travelling in France was fun. Mary often felt tired.
   d. Travelling in France was fun, but Mary often felt tired.

20. Choose at least one answer.
   a. My car just broke down I need to buy some food.
   b. My car just broke down, and I need to buy some food.
   c. My car just broke down; I need to buy some food.
   d. My car just broke down. I need to buy some food.

3. Midtest

Instructions:
A. Each group of sentences below has one rambling sentence. Read all sentences carefully, and decide which one is the rambling sentence. Choose one answer. (10 minutes)

1. Choose one answer.
   a. The kittens had some milk, and then they played and rolled. Eventually they became tired. They were out of breath, so they curled up by the fire and went to sleep.
   b. The kittens had some milk, and then they played and rolled, but eventually they became tired. They were out of breath, so they curled up by the fire and went to sleep.
   c. The kittens had some milk. Then they played and rolled. Eventually they became tired. They were out of breath. They curled up by the fire and went to sleep.
d. The kittens had some milk, and then they played and rolled, but eventually they became tired, and they were out of breath, so they curled up by the fire and went to sleep.

2. Choose one answer.

a. After everyone had left, when all but one or two of the lights had been turned off, the backyard seemed strangely empty, and where once a joyous group of students had danced and sung, a deep silence had settled amid the empty picnic tables and abandoned folding chairs, for night had fallen and the party had ended.

b. After everyone had left, when all but one or two of the lights had been turned off, the backyard seemed strangely empty. Where once a joyous group of children had danced and sung, a deep silence had settled amid the empty picnic tables and abandoned folding chairs. Night had fallen. The party had ended.

c. After everyone had left, when all but one or two of the lights had been turned off, the backyard seemed strangely empty. Where once a joyous group of children had danced and sung, a deep silence had settled amid the empty picnic tables and abandoned folding chairs. Night had fallen, and the party had ended.

3. Choose one answer.

a. I usually get up before 7 o'clock, but yesterday my alarm clock did not ring, so I was still asleep when my boss called me at 9:30 to ask where I was and tell me that I would lose my job if I was late again.

b. I usually get up before 7 o'clock. But yesterday my alarm clock did not ring. So I was still asleep when my boss called me at 9:30 to ask where I was and tell me that I would lose my job if I was late again.

c. After everyone had left, when all but one or two of the lights had been turned off, the backyard seemed strangely empty. Where once a joyous group of children had danced and sung, a deep silence had settled amid the empty picnic tables and abandoned folding chairs. Night had fallen, and the party had ended.

4. Choose one answer.

a. My sister asked me to go to the market to buy something for her but then she changed her mind and decided to go herself for she had several other things to do and needed to take the car.

b. My sister asked me to go to the store to buy something for her but then she changed her mind and decided to go herself. She had several other things to do and needed to take the car.
c. My sister asked me to go to the store to buy something for her. But then she changed her mind and decided to go herself. She had several other things to do and needed to take the car.

B. Is each of the sentences below a sentence or a fragment? (5 minutes)

5. The boys play football whenever the weather allows.
   - a. Fragment
   - b. Sentence

6. Because I don’t have money.
   - a. Fragment
   - b. Sentence

7. Where the road ends.
   - a. Fragment
   - b. Sentence

8. Whenever you can, come to visit.
   - a. Fragment
   - b. Sentence

C. Of the three sentences in each group, one contains a fragment sentence. Select the two correct sentences. (5 minutes)

9. Choose at least one answer.
   - a. Because he hasn’t done his homework, he’s not going out to play today.
   - b. He’s not going out to play today. Because he hasn’t done his homework.
   - c. He’s not going out to play today because he hasn’t done his homework.

10. Choose at least one answer.
    - a. What he said yesterday, it is true.
    - b. It is true. What he said yesterday.
    - c. It is true what he said yesterday.

11. Choose at least one answer.
    - a. We can talk about everything now that she left.
    - b. We can talk about everything. Now that she left.
    - c. Now that she left, we can talk about everything.

12. Choose at least one answer.
    - a. I don’t understand why you have to do that.
    - b. I don’t understand. Why you have to do that.
    - c. Why you have to do that, I don’t understand.

D. The following groups of sentences have one run-on sentence. Check all the correct sentences in each group. In some groups there is only one correct sentence; in others, two or three. (10 minutes)

13. Choose at least one answer.
    - a. My motorcycle has a flat tire. I’m very hungry.
    - b. My motorcycle has a flat tire, I’m very hungry.
    - c. My motorcycle has a flat tire; I’m very hungry.
    - d. My motorcycle has a flat tire I’m very thirsty.
14. Choose at least one answer.
   - a. Girls love dolls, but boys like cars.
   - b. Girls love dolls boys like cars.
   - d. Girls love dolls; boys like cars.

15. Choose at least one answer.
   - a. The Pink Panther is my favorite movie, and I love eating popcorn.
   - b. The Pink Panther is my favorite movie; I love eating popcorn.
   - c. The Pink Panther is my favorite movie. I love eating popcorn.
   - d. The Pink Panther is my favorite movie I love eating popcorn.

16. Choose at least one answer.
   - a. I want to learn Spanish. Mary wants to learn French.
   - b. I want to learn Spanish Mary wants to learn French.
   - c. I want to learn Spanish, and Mary wants to learn French.
   - d. I want to learn Spanish; Mary wants to learn French.

Quiz 2

A. Choose the right article.

1. Please close ..... door. It's windy outside.
   - a. a  
   - b. an  
   - c. the  

2. We're going to build ..... new house next year.
   - a. a  
   - b. an  
   - c. the  

3. Look! There's ..... cat on the roof.
   - a. a  
   - b. an  
   - c. the  

4. Can you tell me how to get to ..... river?
   - a. a  
   - b. an  
   - c. the  

5. I have ..... bottle of wine for the party.
   - a. a  
   - b. an  
   - c. the  

6. We have to go to ..... airport today to pick up my mother.
   - a. a  
   - b. an  
   - c. the  

7. I work in ..... new building downtown. (There are many new buildings.)
   - a. a  
   - b. an  
   - c. the  

8. I live in ..... old house near the centre of town. (You know that house.)
   - a. a  
   - b. an  
   - c. the  

9. Did you find ..... DVD you were looking for?
   - a. a  
   - b. an  
   - c. the
10. I hate ..... cat that lives in the next house. It steals our fish.
   □ a. a  □ b. an  □ c. the

11. I'd like ..... new Fiesta for my graduation!
   □ a. a  □ b. an  □ c. the

12. We had ..... accident on the way to school this morning.
   □ a. a  □ b. an  □ c. the

13. Don't sit on ..... table, please! It is not cool.
   □ a. a  □ b. an  □ c. the

14. I need ..... new notebook. This one is finished.
   □ a. a  □ b. an  □ c. the

15. You have not yet reached ..... last question of this quiz.
   □ a. a  □ b. an  □ c. the

B. Choose the right determiner: articles, demonstratives, possessives, and other determiners.

16. Waiter! There's a spider in ..... soup.
   □ a. a  □ b. my  □ c. the

17. ..... friend is not very tall.
   □ a. A  □ b. Your  □ c. The

18. I really like ..... car.
   □ a. a  □ b. all  □ c. this

19. ..... responsibility is to take care of our parents.
   □ a. A  □ b. Our  □ c. The

20. The ..... train leaves at 6 am.
   □ a. first  □ b. every  □ c. last

21. ..... determiners are very important.
   □ a. Many  □ b. All  □ c. No

22. When I took ..... entrance exam, I was very nervous.
   □ a. my  □ b. your  □ c. a

23. It is ..... duty to be fair.
   □ a. that  □ b. our  □ c. the

24. She got her driving license without ..... problem.
   □ a. every  □ b. any  □ c. some
25. I don't think ..... is coming to the party, except John and Mary.
   □ a. everybody □ b. anybody □ c. any

26. I always keep ..... money in my wallet for emergencies.
   □ a. some □ b. every □ c. any

27. This semester we've had ..... assignments in English.
   □ a. many □ b. much

28. How ..... material can we be expected to read in one week?
   □ a. many □ b. much

29. I've paid ..... attention to how ..... rain we've had.
   □ a. few, many □ b. few, much □ c. little, much □ d. little, many

30. Last week we had our ..... assignment before Quiz II.
   □ a. last □ b. next

31. I've met ..... new teacher this morning for the ..... time.
   □ a. my, first □ b. a, every □ c. a, first □ d. my, every

4. Posttest

Question 1. Instructions:
Go to Yahoo News, click on the first news story and survey it.
Then answer the question:
What is this story about?
Your answer must be a full sentence beginning with
This story is about

Question 2. Instructions:
The sentence below is incorrect:
I will go to Paris again during the summer vacation it is the most beautiful place in the world!
Rewrite the sentence correctly.

Question 3. Instructions:
This sentence is also incorrect:
I don't think I'm going to pass English IV. Because I was absent too many times.
Rewrite the sentence correctly.

Question 4. Instructions:
*And this sentence is incorrect too:*

After all the fun and laughter had ended, when all but one or two of the lights had been turned off, the garden seemed strangely empty, and where once a joyous group of students had danced and sung, a deep silence had settled amid the vacant picnic tables and abandoned folding chairs, for night had fallen and the party had ended.

Rewrite the sentence correctly.

---

Question 5. Instructions:
*Choose the correct article:*

5. Do you have ..... sister? No, I have only brothers.
   - a. a
   - b. an
   - c. the

6. We're going to buy ..... new care next week.
   - a. a
   - b. an
   - c. the

7. .... new car will be a Fiesta.
   - a. a
   - b. an
   - c. the

8. I like .... Old English IV book!
   - a. a
   - b. an
   - c. the

9. I like .... black cat!
   - a. a
   - b. an
   - c. the

10. Would you like ..... apple?  
    - No, thanks. I'm not hungry.
    - a. a
    - b. an
    - c. the

11. Have you ever ridden .... horse? No, I’ve only ridden motorcycles.
    - a. a
    - b. an
    - c. the

12. I need to go to the library to return ..... books I borrowed.
    - a. a
    - b. an
    - c. the

13. Can you please return ..... CD I gave you last week.
    - a. a
    - b. an
    - c. the
14. Look! ..... cat is on the roof again. (same one)
   □ a. a □ b. an □ c. the

15. Do you like ..... last Harry Potter movie?
   □ a. a □ b. an □ c. the

16. I always try to protect my skin against ..... sun.
   □ a. a □ b. an □ c. the

17. I think ..... new President of the U.S. is going to be a woman.
   □ a. a □ b. an □ c. the

18. Do you like to look at ..... moon at night?
   □ a. a □ b. an □ c. the

19. When we have an accident, we call ..... police.
   □ a. a □ b. an □ c. the

20. My brother will come back home soon; he’s now in ..... army.
   □ a. a □ b. an □ c. the

21. I have to go to ..... market to buy some vegetables.
   □ a. a □ b. an □ c. the

22. This is ..... only jazz CD I could find. Would you like it?
   □ a. a □ b. an □ c. the

23. Don’t forget to buy ..... things I told you to buy.
   □ a. a □ b. an □ c. the

24. It was ..... most beautiful girl I’ve seen.
   □ a. a □ b. an □ c. the

Question 25
Instructions:
The next ten sentences have singular countable nouns without determiners.
If you think they need a determiner, choose one from the list below.
Write your answers in the provided space:

   a, an, the, this, that, what, which, any, every, each, my, your, his, her, its, our, your, their, no, one, etc.

1. ..... dog chased ..... cat.
2. I like ..... car.
3. There is ..... foreign tourist in our guest house.
4. I heard ..... dog barking.
5. I don’t need ..... advice now.
6. They should drive .... own car now.
7. .... other dog can replace poor old Max.
8. .... thing I can tell you for sure: I hate English IV!
9. .... day I begin with a shower.
10. ...day of the week do you like the most?
Appendix B

Results of All Tests

Independent Samples T-test for the Pretest

Table 1: Group Statistics for the Pretest

<table>
<thead>
<tr>
<th>Class Type</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Std. Error Mean</th>
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<tr>
<td>PRET 1</td>
<td>80</td>
<td>50.85</td>
<td>12.76</td>
<td>1.43</td>
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<tr>
<td>0</td>
<td>80</td>
<td>50.60</td>
<td>11.11</td>
<td>1.24</td>
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Table 2: Independent Samples Test for the Pretest

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<th>t-test for Equality of Means</th>
<th>95% Confidence Interval of the Difference</th>
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<td>F</td>
<td>Sig.</td>
<td>t</td>
</tr>
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<td>Equal variances assumed</td>
<td>,728</td>
<td>,395</td>
</tr>
<tr>
<td>Equal variances not assumed</td>
<td>,132</td>
<td>155,047</td>
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</table>

Pretest p = 0.395 (not significant)
**Independent Samples T-test for Posttest**

Table 3: Group Statistics for the Posttest

<table>
<thead>
<tr>
<th>Class Type</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Std. Error Mean</th>
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</thead>
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<td>7.25991</td>
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<tr>
<td>0</td>
<td>80</td>
<td>69.4125</td>
<td>10.41748</td>
<td>1.16471</td>
</tr>
</tbody>
</table>

Table 4: Independent Samples Test for the Posttest

<table>
<thead>
<tr>
<th>Levene's Test for Equality of Variances</th>
<th>t-test for Equality of Means</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>F</td>
</tr>
<tr>
<td>Equal variances assumed</td>
<td>15.032</td>
</tr>
<tr>
<td>Equal variances not assumed</td>
<td>10.311</td>
</tr>
</tbody>
</table>

Posttest $p = 0.000$ (significant)
Paired Samples T-Test for the Pretest and Posttest
Class Type = 1 (Online)

Table 5: Paired Samples Statistics for the Pretest and Posttest

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>N</th>
<th>Std. Deviation</th>
<th>Std. Error Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pair 1 PRET</td>
<td>50.8500</td>
<td>80</td>
<td>12.76278</td>
<td>1.42692</td>
</tr>
<tr>
<td>POST</td>
<td>84.0500</td>
<td>80</td>
<td>7.25991</td>
<td>0.81168</td>
</tr>
</tbody>
</table>

Table 8: Paired Samples Correlations for Pretest and Posttest

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Correlation</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pair 1 PRET &amp; POST</td>
<td>80</td>
<td>.667</td>
<td>.000</td>
</tr>
</tbody>
</table>

Table 9: Paired Samples Test for the Pretest and Posttest

<table>
<thead>
<tr>
<th></th>
<th>Paired Differences</th>
<th>t</th>
<th>df</th>
<th>Sig. (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>Std. Deviation</td>
<td>Std. Error Mean</td>
<td>95% Confidence Interval of the Difference</td>
</tr>
</tbody>
</table>

Paired T-test Sig. (2-tailed) = 0.000 (significant)
Cronbach Alpha Reliability Test for the Learning Management System (LMS)

***** Method 1 (space saver) will be used for this analysis *****

RELIABILITY ANALYSIS - SCALE (ALPHA)

Statistics for SCALE

<table>
<thead>
<tr>
<th>Scale</th>
<th>Mean</th>
<th>Variance</th>
<th>Std Dev</th>
<th>Variables</th>
</tr>
</thead>
<tbody>
<tr>
<td>LMS1</td>
<td>8.3000</td>
<td>1.6947</td>
<td>.7542</td>
<td>3</td>
</tr>
<tr>
<td>LMS2</td>
<td>8.4500</td>
<td>1.9447</td>
<td>.6617</td>
<td>3</td>
</tr>
<tr>
<td>LMS3</td>
<td>8.5500</td>
<td>1.6289</td>
<td>.8555</td>
<td>3</td>
</tr>
</tbody>
</table>

Reliability Coefficients

<table>
<thead>
<tr>
<th>N of Cases</th>
<th>N of Items</th>
<th>Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>20,0</td>
<td>3</td>
<td>.8717</td>
</tr>
</tbody>
</table>

Alpha = 0.8717 (high)
Cronbach Alpha Reliability Test for the eGrammar Clinic (eGC)

***** Method 1 (space saver) will be used for this analysis *****

<table>
<thead>
<tr>
<th>Statistics for</th>
<th>Mean</th>
<th>Variance</th>
<th>Std Dev</th>
<th>Variables</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCALE</td>
<td>17,5000</td>
<td>3,4211</td>
<td>1,8496</td>
<td>4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Item-total Statistics</th>
<th>Scale Mean</th>
<th>Scale Variance</th>
<th>Corrected Item-Total Correlation</th>
<th>Corrected Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scale Deleted</td>
<td></td>
<td></td>
<td></td>
<td>Alpha</td>
</tr>
<tr>
<td>EGC1</td>
<td>13,0000</td>
<td>2,2105</td>
<td>,6211</td>
<td>,7607</td>
</tr>
<tr>
<td>EGC2</td>
<td>12,9500</td>
<td>2,1553</td>
<td>,6708</td>
<td>,7399</td>
</tr>
<tr>
<td>EGC3</td>
<td>13,1000</td>
<td>2,0947</td>
<td>,7380</td>
<td>,7123</td>
</tr>
<tr>
<td>EGC4</td>
<td>13,4500</td>
<td>1,7342</td>
<td>,5554</td>
<td>,8285</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Reliability Coefficients</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>N of Cases</td>
<td>20,0</td>
</tr>
<tr>
<td>N of Items</td>
<td>4</td>
</tr>
<tr>
<td>Alpha</td>
<td>,8062</td>
</tr>
</tbody>
</table>

Alpha = 0.8062 (high)
Appendix C

The eGrammar Clinic Questionnaire

Demographic Information

1. Student ID: ____________________

2. Full Name: ____________________

3. Gender
   - Male
   - Female

4. First Language
   - Thai
   - Chinese
   - Vietnamese
   - Burmese
   - Nepali
   - Laotian
   - Others

5. How many times have you taken English IV?
   - 1st Time
   - 2nd Time
   - 3rd Time
   - More than 3 times

6. On average, how much time do you spend online in one day?
   - Less than 1 hour
   - Between 1 to 2 hours
   - Between 2 to 3 hours
   - Between 3 to 4 hours
   - Between 4 to 5 hours
   - More than 5 hours

7. Rank what you do when you go online (on a 1 to 5 scale: 1=least; 5=most frequently)

<table>
<thead>
<tr>
<th>Activity</th>
<th>5</th>
<th>4</th>
<th>3</th>
<th>2</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Listen to/download music</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Watch/download movies</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Play games</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Send/read emails</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Search for news</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Search for information</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chat/go to Facebook, etc.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Improve my English</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
8. What type of computing device did you use to access the eGrammar Clinic?
- [ ] Windows based PC
- [ ] Macintosh
- [ ] Tablets, i.e. iPad
- [ ] Mobile Phones

**Part A: Learning Management System (LMS) of the eGrammar Clinic**

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>9. It was easy to access the eGrammar Clinic</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. It was easy for me to navigate through the eGrammar System, i.e.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>access Sentence Patterns, Session Activities, return, repeat, etc.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. Instructions given for each session were clear</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Part B: Contents of the eGrammar Clinic**

In the following questions (12-15), use the scale of 1 to 5 to answer each question.
(1=very poor, 2=poor, 3=average, 4=good, 5=very good)

12. Evaluate your English skills (before) taking English IV and this online eGrammar Clinic
- Listening: 5 4 3 2 1
- Speaking Conversation: 5 4 3 2 1
- Reading: 5 4 3 2 1
- Writing: 5 4 3 2 1

13. Evaluate your English skills (after) taking English IV and this online eGrammar Clinic
- Listening: 5 4 3 2 1
- Speaking Conversation: 5 4 3 2 1
- Reading: 5 4 3 2 1
- Writing: 5 4 3 2 1

14. Sentence Pattern
   - The Content of Sentence Pattern was 5 4 3 2 1

15. Session Activities
   - The Content of Session Activities was 5 4 3 2 1

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16. On average, how much time did you spend studying the Sentence Patterns of each session?
- Less than 10 minutes
- 10 – 20 minutes
- 21 – 30 minutes
- 31 – 40 minutes
- More than 40 minutes

17. On average, how much time did you spend doing each Session Activity?
- Less than 10 minutes
- 10 – 20 minutes
- 21 – 30 minutes
- 31 – 40 minutes
- More than 40 minutes

18. On average, how many times did you do one Session Activity?
- 1 time
- 2 times
- 3 times
- 4 times
- More than 4 times

19. On average, how many times did you go back to review previous Session Patterns?
- 1 time
- 2 times
- 3 times
- 4 times
- More than 4 times

20. I believe the eGrammar Clinic helped me to improve my Grammar

21. I think the eGrammar Clinic should be offered to all students studying English IV

22. In a short paragraph, express your opinion about the eGrammar Clinic: your likes, dislikes (Essay Type question – up to 50 words)
23. How useful was the *eGrammar Clinic* for improving your grammar? (Essay Type question – up to 50 words)


24. Any suggestion on improving the format/design of the *eGrammar Clinic*? (Essay Type question – up to 50 words)


Appendix D

Questionnaire Responses

1.

First Language
Thai

How many times have you taken English IV?
2nd Time

On average, how much time do you spend online in one day?
between 1 to 2 hours

Rank what you do when you go online (on a 1 to 5 scale: 1=least; 5=most frequently)
Listen to/download music = 4
Watch/download movies = 4
Play games = 3
Send/read emails = 4
Search for news = 4
Search for information = 4
Chat/go to Facebook, etc. = 5
Improve my English. = 5

What type of computing device did you use to access the eGrammar Clinic?
Windows based PC

It was easy to access the eGrammar Clinic.
   Strongly agree

It was easy for me to navigate through the eGrammar System, i.e. access Sentence Patterns, Session Activities, return, repeat, etc.
   Neutral

Instructions given for each session were clear.
   Strongly agree

Evaluate your English skills (before) taking English IV and this online eGrammar Clinic.
   a) Listening = 4
   b) Speaking/Conversational = 4
   c) Reading = 3
   d) Writing = 3
Evaluate your English skills (after) taking English IV and this online eGrammar Clinic.
   a) Listening = 4
   b) Speaking/Conversational = 4
   c) Reading = 4
   d) Writing = 5

Session Activities
   The content of Session Activities was = 5

Sentence Patterns
   The content of Sentence Patterns was = 5

On average, how much time did you spend studying the Sentence Patterns of each session?
   21 – 30 minutes

On average, how much time did you spend doing each Session Activity?
   21 – 30 minutes

On average, how many times did you do one Session Activity?
   2 times

On average, how many times did you go back to review previous Session Patterns?
   2 times

I believe the eGrammar Clinic helped me to improve my Grammar.
   Strongly agree

I think the eGrammar Clinic should be offered to all students studying English IV.
   Strongly agree

In a short paragraph, express your opinion about the eGrammar Clinic: your likes, dislikes
<br>(Essay Type question – up to 50 words)
   I like it because it's easy to understand and information is clearly. It provide many knowledge for people who studying English and want to improve their skills in English grammar.

How useful was the eGrammar Clinic for improving your grammar?
<br>(Essay Type question – up to 50 words)
   It helps to improve grammar.
2.

First Language
Thai

How many times have you taken English IV?
1st Time

On average, how much time do you spend online in one day?
between 1 to 2 hours

Rank what you do when you go online (on a 1 to 5 scale: 1=least; 5=most frequently)
- Listen to/download music = 4
- Watch/download movies = 5
- Play games = 2
- Send/read emails = 6
- Search for news = 5
- Search for information = 6
- Chat/go to Facebook, etc. = 6
- Improve my English. = 5

What type of computing device did you use to access the eGrammar Clinic?
Windows based PC

It was easy to access the eGrammar Clinic.
Strongly agree

It was easy for me to navigate through the eGrammar System, i.e. access Sentence Patterns, Session Activities, return, repeat, etc.
Strongly agree

Instructions given for each session were clear.
Strongly agree

Evaluate your English skills (before) taking English IV and this online eGrammar Clinic.
a) Listening = 3
b) Speaking/Conversational = 4
c) Reading = 3
d) Writing = 3
Evaluate your English skills (after) taking English IV and this online eGrammar Clinic.

a) Listening = 4
b) Speaking/Conversational = 5
c) Reading = 4
d) Writing = 4

Session Activities
The content of Session Activities was = 6

Sentence Patterns
The content of Sentence Patterns was = 6

On average, how much time did you spend studying the Sentence Patterns of each session?
More than 40 minutes

On average, how much time did you spend doing each Session Activity?
10 – 20 minutes

Session Patterns?
More than four times

I believe the eGrammar Clinic helped me to improve my Grammar.
Strongly agree

I think the eGrammar Clinic should be offered to all students studying English IV.
Strongly agree

In a short paragraph, express your opinion about the eGrammar Clinic; your likes, dislikes <br>(Essay Type question – up to 50 words)
I like this eGrammar Clinic because I can improve my English skills, especially writing. Moreover, I can know little important points about grammar. Then I can use correct grammar in writing before in the past. Also, it is easy to practice. I can do quiz and readding sentence pattern everywhere by my ipad. Consequently, I think this course useful who interested for improve english grammar. It can help me to improve my writing in the exam.

How useful was the eGrammar Clinic for improving your grammar?<br>(Essay Type question – up to 50 words)

The eGrammar Clinic can improve my grammar. I can improve my grammar by doing quiz on the eGrammar Clinic. Then, I can get good marks in the exam rather than quiz I. Moreover, it can improve my reading skill. When I read article from other subject, I can understand that article very well before in the past. Consequently, this course can practice my responsibility.I
must do online quiz every week. Then, in this case, I can improve my writing and reading skills very well.

Any suggestion on improving the format/design of the eGrammar Clinic?

(Essay Type question – up to 50 words)

Now, the eGrammar Clinic has good format and design, but sometimes it has little problem about network system.

3.

First Language
Thai

How many times have you taken English IV?
1st Time

On average, how much time do you spend online in one day?
between 1 to 2 hours

Rank what you do when you go online (on a 1 to 5 scale: 1=least; 5=most frequently)

Listen to/download music = 6
Watch/download movies = 6
Play games = 4
Send/read emails = 5
Search for news = 4
Search for information = 5
Chat/go to Facebook, etc. = 5
Improve my English. = 5

What type of computing device did you use to access the eGrammar Clinic?
Windows based PC

It was easy to access the eGrammar Clinic.
Strongly agree

It was easy for me to navigate through the eGrammar System, i.e. access Sentence Patterns, Session Activities, return, repeat, etc.
Strongly agree

Instructions given for each session were clear.
Strongly agree
Evaluate your English skills (before) taking English IV and this online eGrammar Clinic.
   a) Listening = 4
   b) Speaking/Conversational = 4
   c) Reading = 4
   d) Writing = 4

Evaluate your English skills (after) taking English IV and this online eGrammar Clinic.
   a) Listening = 5
   b) Speaking/Conversational = 5
   c) Reading = 6
   d) Writing = 5

Session Activities
   The content of Session Activities was = 6

Sentence Patterns
   The content of Sentence Patterns was = 6

On average, how much time did you spend studying the Sentence Patterns of each session?
   10 – 20 minutes

On average, how much time did you spend doing each Session Activity?
   10 – 20 minutes

On average, how many times did you do one Session Activity?
   3 times
On average, how many times did you go back to review previous Session Patterns?
   3 times

I believe the eGrammar Clinic helped me to improve my Grammar.
   Strongly agree

I think the eGrammar Clinic should be offered to all students studying English IV.
   Strongly agree

In a short paragraph, express your opinion about the eGrammar Clinic: your likes, dislikes
   (Essay Type question – up to 50 words)
   In my opinion, the eGrammar Clinic is very good. I like it because this activities can help me to improve my English such as grammars and sentences. Moreover, I think that this activities is necessary for people who want to improve English and know how to use it correctly. So, I like to do this online activities.
How useful was the eGrammar Clinic for improving your grammar?
<br>(Essay Type question – up to 50 words)

The eGrammar Clinic are useful for me because it can improve my grammar. At the first time, When I did this activities, I think it is a very good exercises and i think it can help me to gains more knowledge from this activities because it has a sentence patterns for everyone read before take a exam. It is a very good a sentence patterns. Thank you A.Sorin that you make a good activities for us.

Any suggestion on improving the format/design of the eGrammar Clinic?
<br>(Essay Type question – up to 50 words)
I think it should have more color and may be you can add some cartoons for making it relaxed when people come to do this activities, they will be more interesting.

Any suggestion to improve the contents and activities of the eGrammar Clinic?
<br>(Essay Type question – up to 50 words)
I think your contents and activities are very good. Thank you so much that you make this activities for us.

4.
First Language
Thai

How many times have you taken English IV?
1st Time

On average, how much time do you spend online in one day?
less than 1 hour

Rank what you do when you go online (on a 1 to 5 scale: 1=least; 5=most frequently)
Listen to/download music = 6
Watch/download movies = 6
Play games = 6
Send/read emails = 4
Search for news = 6
Search for information = 5
Chat/go to Facebook, etc. = 4
Improve my English. = 5

What type of computing device did you use to access the eGrammar Clinic?
Macintosh
It was easy to access the eGrammar Clinic.
   Strongly agree

It was easy for me to navigate through the eGrammar System, i.e. access Sentence Patterns, Session Activities, return, repeat, etc.
   Strongly agree

Instructions given for each session were clear.
   Strongly agree

Evaluate your English skills (before) taking English IV and this online eGrammar Clinic.
   a) Listening = 3
   b) Speaking/Conversational = 4
   c) Reading = 5
   d) Writing = 5

Evaluate your English skills (after) taking English IV and this online eGrammar Clinic.
   a) Listening = 3
   b) Speaking/Conversational = 4
   c) Reading = 5
   d) Writing = 6

Session Activities
The content of Session Activities was = 6

Sentence Patterns
The content of Sentence Patterns was = 6

On average, how much time did you spend studying the Sentence Patterns of each session?
   10 – 20 minutes

On average, how much time did you spend doing each Session Activity?
   Less than 10 minutes

On average, how many times did you do one Session Activity?
   2 times

On average, how many times did you go back to review previous Session Patterns?
   2 times

I believe the eGrammar Clinic helped me to improve my Grammar.
   Strongly agree
I think the eGrammar Clinic should be offered to all students studying English IV.
Strongly agree

In a short paragraph, express your opinion about the eGrammar Clinic: your likes, dislikes

In my opinion, I like it because it can help me to improve my English skills such as reading skill and writing skill. Moreover, it doesn't spend more time to understand because it has the examples clearly. Finally, I think this program should have every section in next semester.

How useful was the eGrammar Clinic for improving your grammar?

It can help me to improve my reading and writing skill because it teach me to use about the basic grammar such as how to use the articles, and so on. For example, before I take this course, I don't know how the difference and how to use between a and the, but now I know how to use it already. So, I would like to say thank you A.Sorin to offer this course.

Any suggestion on improving the format/design of the eGrammar Clinic?

I think that it is good already because it provides all about the explanations and examples clearly. So, it helps students don't spend too much time to understand the lesson therefore they are willing to take this course because they can get more knowledge that they don't know before.

Any suggestion to improve the contents and activities of the eGrammar Clinic?

I think that the contents and activities are already good as well because they are the basic grammar which I use as a routine. So, it makes me has a courage to use the English language because I'm confident that I can use it correctly.

5.
First Language
Thai

How many times have you taken English IV?
2nd Time

On average, how much time do you spend online in one day?
between 1 to 2 hours

Rank what you do when you go online (on a 1 to 5 scale: 1=least; 5=most frequently)
Listen to/download music = 4
Watch/download movies = 3  
Play games = 3  
Send/read emails = 5  
Search for news = 3  
Search for information = 6  
Chat/go to Facebook, etc. = 5  
Improve my English. = 4

What type of computing device did you use to access the eGrammar Clinic?  
Tablets, i.e. iPad  
It was easy to access the eGrammar Clinic.  
Agree

It was easy for me to navigate through the eGrammar System, i.e. access Sentence Patterns, Session Activities, return, repeat, etc.  
Agree

Instructions given for each session were clear.  
Strongly agree

Evaluate your English skills (before) taking English IV and this online eGrammar Clinic.  
a) Listening = 4  
b) Speaking/Conversational = 4  
c) Reading = 4  
d) Writing = 4

Evaluate your English skills (after) taking English IV and this online eGrammar Clinic.  
a) Listening = 4  
b) Speaking/Conversational = 4  
c) Reading = 5  
d) Writing = 5

Session Activities  
The content of Session Activities was = 5

Sentence Patterns  
The content of Sentence Patterns was = 4

On average, how much time did you spend studying the Sentence Patterns of each session?  
31 – 40 minutes

On average, how much time did you spend doing each Session Activity?  
10 – 20 minutes
On average, how many times did you do one Session Activity?
2 times

On average, how many times did you go back to review previous Session Patterns?
2 times

I believe the eGrammar Clinic helped me to improve my Grammar.
Strongly agree

I think the eGrammar Clinic should be offered to all students studying English IV.
Agree

In a short paragraph, express your opinion about the eGrammar Clinic: your likes, dislikes
<br>(Essay Type question – up to 50 words)
I like the eGrammar Clinic. I believe that the eGrammar Clinic help me to improve my English skills. I spend time to do my activity because I want to increase knowledge. The eGrammar Clinic is make me get more benefits. After I do the activities, I think my English skills were increased. I like to learn the online eGrammar Clinic.

How useful was the eGrammar Clinic for improving your grammar?
<br>(Essay Type question – up to 50 words)
The eGrammar Clinic has many benefits. My grammar skills can be improve. I can understand about the conjunction and complete sentences. When I must answer the question essay, I can answer with my complete sentences and can use the grammar in right way. Before I learning the online, I can't write the essay in limit time. But now, I can write any essay and write with the better sentences.

Any suggestion on improving the format/design of the eGrammar Clinic?
<br>(Essay Type question – up to 50 words)
The eGrammar Clinic has a good design. The format is quite good.

Any suggestion to improve the contents and activities of the eGrammar Clinic?
<br>(Essay Type question – up to 50 words)

6.
It was easy to access the eGrammar Clinic.
Agree
It was easy for me to navigate through the eGrammar System, i.e. access Sentence Patterns, Session Activities, return, repeat, etc.
    Agree

Instructions given for each session were clear.
    Neutral

Session Activities
    The content of Session Activities was = 4

Sentence Patterns
    The content of Sentence Patterns was = 4

I believe the eGrammar Clinic helped me to improve my Grammar.
    Strongly agree

I think the eGrammar Clinic should be offered to all students studying English IV.
    Strongly agree

7.

It was easy to access the eGrammar Clinic.
    Agree

It was easy for me to navigate through the eGrammar System, i.e. access Sentence Patterns, Session Activities, return, repeat, etc.
    Agree

Instructions given for each session were clear.
    Agree

Session Activities
    The content of Session Activities was = 6

Sentence Patterns
    The content of Sentence Patterns was = 6

I believe the eGrammar Clinic helped me to improve my Grammar.
    Strongly agree

I think the eGrammar Clinic should be offered to all students studying English IV.
    Agree
8.

It was easy to access the eGrammar Clinic.
    Strongly agree

It was easy for me to navigate through the eGrammar System, i.e. access Sentence Patterns, Session Activities, return, repeat, etc.
    Strongly agree

Instructions given for each session were clear.
    Strongly agree

Session Activities
    The content of Session Activities was = 5

Sentence Patterns
    The content of Sentence Patterns was = 6

I believe the eGrammar Clinic helped me to improve my Grammar.
    Strongly agree

I think the eGrammar Clinic should be offered to all students studying English IV.
    Strongly agree

9.

It was easy to access the eGrammar Clinic.
    Strongly agree

It was easy for me to navigate through the eGrammar System, i.e. access Sentence Patterns, Session Activities, return, repeat, etc.
    Strongly agree

Instructions given for each session were clear.
    Strongly agree

Session Activities
    The content of Session Activities was = 6

Sentence Patterns
    The content of Sentence Patterns was = 6

I believe the eGrammar Clinic helped me to improve my Grammar.
    Strongly agree
I think the eGrammar Clinic should be offered to all students studying English IV.
   Strongly agree

10.

It was easy to access the eGrammar Clinic.
   Neutral

It was easy for me to navigate through the eGrammar System, i.e. access Sentence Patterns, Session Activities, return, repeat, etc.
   Agree

Instructions given for each session were clear.
   Neutral

Session Activities
   The content of Session Activities was = 5

Sentence Patterns
   The content of Sentence Patterns was = 5

I believe the eGrammar Clinic helped me to improve my Grammar.
   Strongly agree

I think the eGrammar Clinic should be offered to all students studying English IV.
   Agree
Appendix E

1. Conference Paper:

The eGrammar Clinic: A Moodle-based Tutoring System for English as a Second Language*

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Abstract - This paper explores the significance of developing a virtual language learning system to enhance the production of correct grammatical sentences of Assumption University students. The research seeks to understand how to alleviate a demanding problem students of English have here in Thailand, that is grammar, and provide them with well-grounded guides to remedial action. The paper argues that the development of a Moodle-based tutoring system for sentence grammar practice is particularly timely in importance. It begins by highlighting the characteristics of the new Interaction Age, and the widening gap between the traditional classroom and the virtual classroom. The paper then presents the proposed research methodology, with its two main components, the eGrammar Clinic development and the Experiment, followed by data collection and analysis.

Keywords - Virtual learning environments; eGrammar; virtual classroom; tutoring systems; learning management systems; Moodle.

I. INTRODUCTION

eLearning has now become a major force in education, transforming education through innovation, new technologies and emerging pedagogies. The Internet has facilitated the introduction of the concept of learning through eLearning by making use of agent-based technologies, such as: virtual agents, intelligent agents or tutoring agents.

In this new era in education, we are witnessing the society’s evolution from an Information Age to the Interaction Age, [1]. In a Virtual Classroom (VC), for instance, students not only act, but interact. They are now information seekers, while the teacher is just a facilitator, a “guide on the side”.

New technologies and emerging pedagogies are harnessing the power of the Internet and Information Communication Technologies (ICT) at a very fast pace. New trends in eLearning are bringing about dramatic changes in the local educational landscape, transforming the quality and opportunities for learning from anywhere, for anyone, and at anytime.

II. THE TRADITIONAL CLASSROOM VS. THE VIRTUAL CLASSROOM

With the beginning of this new century, eLearning has emerged as a new technology for delivering online learning regardless of physical location or time of day, or digital reception or distribution devices in use today. It is then legitimate to assume that in the twenty-first century we will witness a continuation of this trend. And this will inevitably widen the gap between traditional learning environments, centered round a “sage on the stage”, and virtual learning environments, with their “guide on the side” [2]. The traditional classroom, where students are expected to passively reproduce knowledge, is gradually evolving into a virtual classroom, where learners are actively producing knowledge. In fact, [3] argues that there is already a shift from e-learning to e-knowledge, stressing the growing significance of e-learning as knowledge management.

The teacher’s role in virtual education is that of a facilitator in the learning process. The student’s role in a virtual learning environment is that of an information seeker. The main challenge is to provide pedagogical support to students independent of time and location. To do so, changes in the way the teacher works are essential. Tight classroom schedules are non-existent and most educational content is readily available to the tutor on mobile devices or can be accessed using a wired or wireless Internet connection [4].

III. THE VIRTUAL CLASSROOM: THE AGE OF THE INTERNET

A virtual classroom is an ICT-based system designed to support teaching and learning in an educational setting. It is a designed information space and also a social space where educational interactions occur, turning the space into a place (for learning). Students are not only active, but also actors: they co-construct the virtual space.

The intention of virtual classrooms is to extend the structure and services that accompany formal face-to-face (F2F) programs from the campus or learning center to learners, wherever
they are located. Through networking and instructional styles and activities, the virtual classroom has no limitations in its ability to form a collaborative learning community that includes a diversity of people: different ages, different life experiences to share, from any part of the world.

The virtual classroom model includes places for posting lessons, quizzes, papers for review and comment, completing tutorials, distributing class assignments, team review of more secure files containing multimedia assets, and breaking away into study sections using web conferencing tools. In other words, and for the first time in the evolution of computer-based instruction, participants now have the advantage of a significant new dimension: electronic interaction. A new era in education is here: the age of the Internet.

IV. MOODLE AND LANGUAGE LEARNING

Although not specifically designed for language learning, Moodle has great potential to create a successful language learning experience by providing a plethora of excellent tools that can be used to enhance conventional classroom instruction or any distance learning arrangements [5]. Its appeal to this language teacher rests on the fact that it is a template-based platform to which content must be added. Nevertheless, for truly effective language learning results, the design of the learning tasks must be grounded in theories of second language acquisition.

Moodle is a course management and delivery system based on socio-constructivist pedagogy. This means its goal is to provide a set of tools that support an inquiry-and-discovery-based approach to online learning. Furthermore, it purports to create an environment that allows for collaborative interaction among students as a standalone or in addition to conventional classroom instruction. One of the advantages of Moodle is that it has been developed as an Open Source software project. It is available free of charge and, as such, it is accessible to everybody.

Moodle offers a multitude of course management features. For example, access to nearly all lesson assignments can be made time-restricted, quizzes can be password and time-restricted. Moodle also keeps automatic log reports of each student work. This means that the teacher knows not only when students have completed or uploaded an assignment, but also how much time they spent on an assigned task or quiz. Teachers have also the option to download student grades in Excel format. As mentioned earlier, when used for language
learning, the design of the learning tasks must be grounded in theories of second language acquisition.

V. AN ONLINE TUTORING SYSTEM FOR ESL?

It is this researcher’s firm belief that a Moodle-based tutoring system designed to offer students online practice of problematic sentence patterns will show significant learning gains of the online group of students as opposed to the classroom group. Nevertheless, an important issue needs to be addressed at this point. As Assumption University is an international university comprising students from many nationalities, the researcher will have to make certain that the study will also accommodate students of different nationalities, with Thai students to be in majority. This issue opens a highly meaningful question:

*Do all students make basically the same grammatical errors, and consequently require the same treatment?*

To answer this question we need to take a brief look at the native languages/first languages of the students involved in this study. Out of all the students normally registered for a semester at Assumption University, about 90% are Thais. As for the remaining 10%, the vast majority are Chinese, about 6%, followed by others (Vietnamese, Cambodians, Burmese, Laotians).

Now, the answer to the question is

*Yes, they basically make the same mistakes and, consequently, they require the same treatment.*

And for the same reason:

Unlike English, all these Asian languages mentioned above, Thai, Chinese, Vietnamese, Cambodian, Burmese, Lao, have no (or in the case of Korean and Japanese), limited inflection. In grammar, inflection or inflexion is the modification of a word to express different grammatical categories such as tense, grammatical mood, grammatical voice, aspect, person, number, gender and case. Conjugation is the inflection of verbs; declension is the inflection of nouns, adjectives and pronouns. Consequently, Assumption University students tend to make the same errors in their written sentences regardless of their first language.

Some of these common errors are
- determiner-noun disagreement: this cats,

- subject-verb disagreement: they is,

- erroneous use of modals: I should to go with you,

- absence of a necessary plural or determiner: I like cat,

- absence of determiner/plural/3rd person singular -s: student like,

- fragment sentences: Because I have no money,

- run-on sentences: I met my friend yesterday she came back from London.

- rambling sentences: John usually gets up before 7 o'clock, but yesterday his alarm clock did not ring, so he was still asleep when his boss called him at 10.30 to ask where he was and tell him that he would lose his job if he was late again.

Incidentally, it is exactly this list of common errors that Assumption University students make on a regular basis, and it is this researcher’s firm belief that an intelligently designed program, created around a Moodle-based platform that can detect these particular errors and provide a clear feedback, is the answer to designing a Moodle-based tutoring system for sentence grammar practice.

Precisely such a tutoring system has been developed at Assumption University by this researcher. It consists of two main parts: the eGrammar Clinic development and the Experiment. The system has been tested at Assumption University, the data have been collected and analyzed.

VI. RESEARCH METHODOLOGY

Based on the knowledge accumulated during the practice of teaching English IV at Assumption University for over six years, this researcher has conducted a study to assess the effectiveness of a Moodle-based tutoring system for sentence grammar practice. Participating students in this longitudinal study were 160 Assumption University English IV students. They were pretested at the beginning of the semester to assess their level of mastery of basic sentence patterns, and post-tested at the end, to assess their improvement. From the beginning of the semester they were separated into two groups:
The Online Group (OG), 80 students;

The Control Group (CG), 80 students.

The Online Group (OG) was offered ten Sessions, each one consisting of one or several sentence patterns and/or problematic sentences. The sentences are supplements to those we practice in class, and are designed in the shape of online activities.

The proposed research methodology consists of two main parts:

A. The eGrammar Clinic development, and

B. The Experiment

A. The eGrammar Clinic Development

There were six stages in the development of the eGrammar Clinic:

The Pretest was designed based on the content of the ten Sessions to be administered during the treatment, that is, the semester. One sentence pattern for each Session was given in the pretest. The next stage, the design of the Treatment, was probably the most challenging aspect of the eGrammar Clinic development. It consists of ten Sessions. The ten Sessions are based on the content of our English IV textbook and are also based on our weekly class-work practice. The first five sessions, for example, deal with sentence types and problem sentences, sessions 6, 7 and 8 with determiners, and the remaining two sessions will focus on modal verbs and verbal phrases for making recommendations. Each Session consists of two parts:

1. Session Sentence Pattern(s)
2. Session Activity

Figure 1 is a screenshot of the eGrammar Clinic access/log-in site where students enter the sessions, quizzes and tests.
Session 3: Sentence Patterns

Click on the following document (Sentence Patterns) and study it well before trying the activities.

Sentence Patterns

After studying the above Sentence Patterns, click on Activity 3 below and select the correct answer. Check your mark and, if it is less than 8 out of 10, study again and do Activity 3 once more after 12 hours.

Activity 3

QUIZ 1

You can only do it once (one attempt) any time during Friday, Saturday, or Sunday August 5, 6, or 7, 2011. Time allowed 25 minutes. When ready, click on the Quiz 1 below and the timer starts. When you finish the Quiz, click on Submit.

Quiz 1

Figure 1: The Moodle eGrammar Clinic log-in site

Quiz One was developed and administered consisting of material covered in the first three sessions. This was followed by the Midtest, covering the content of sessions 1, 2, 3, 4 and 5, and then by Quiz Two (sessions 6, 7, 8). The Posttest concluded the eGrammar Clinic development. It consisted of ten similar (but not the same) sentence patterns that were administered in the pretest.

B. The Experiment

The Experiment actually consisted of five stages of experimental tryout:

1. Pre-test
2. Quiz One
3. Mid-test
4. Quiz Two
5. Post-test
Note: All tests and quizzes were administered to both groups of students, the control group and the online group, while the ten sessions, only to the online group. This was to assess the difference in learning gains between a group that has only class-work practice and one that benefits from extra online practice.

At the end of the experiment, all participants were given a questionnaire. They were surveyed in order to measure their attitudes towards the eGrammar Clinic. After the three-month long experiment, they were asked how they generally felt participating in this experiment and their overall opinion about eGrammar. Some of the questions asked were How useful was the eGrammar Clinic for improving your grammar, and Do you think the eGrammar Clinic has helped you to improve your grammar? Figure 2 shows questions 4 and 5 of Quiz 1.

Q4. Because it had rained all night, I had terrible problems getting to school.
Choose one answer:  
○ a. dependent
○ b. independent

Q5. While my sister was doing her homework, I practiced on the guitar.
Choose one answer:  
○ a. dependent
○ b. independent

Figure 2: A screenshot of questions 4 and 5 of Quiz 1

VII. DATA COLLECTION AND ANALYSIS

At the beginning of this research study, in June, 2011, all participating students were administered the Pretest: the Online Group of students, online, and the Classroom Group, in class. As mentioned earlier, the Pretest consisted of ten questions, each one being the subject of one subsequent Session to be presented online during the semester. The total score for the pretest was 100, each question, 10 points. The pretest results for both groups were stored in Excel file.
After Sessions 1, 2, and 3, Quiz 1 was given to both groups of students, again, online and in class. The quiz was designed to reflect the material covered in the first three sessions. This was followed by Midtest, covering sessions 1, 2, 3, 4, and 5. After session 6, 7, and 8, Quiz 2 was administered, reflecting those particular sessions, and, finally, the Posttest concluded the data collection process. Similar to the pretest, but administered at the end of the semester, in September, 2011, the posttest also consisted of ten questions, each one representing one session.

Each test and quiz consisted of a number of questions, and the total for each test and quiz was 100 points. All test and quiz scores, for both the online and the classroom groups of students, were initially stored in Excel file, then transferred to SPSS data file.

All the data collected have been analyzed using SPSS. The Independent Samples T-Test and the Paired Samples T-Test techniques of SPSS were used to measure if there has been any statistically significant difference in the scores of the online and classroom groups. Specifically, the Independent Samples T-Test was used to assess the statistical difference between the online and the classroom groups, while the Paired Samples T-Test was used to measure the progress, improvement/learning gains within one group. The questionnaire, which was given at the end of the experiment, was pre-tested for reliability using Cronbach Alpha Reliability Test.

The Independent Samples T-tests were performed in order to assess whether there was a statistically significant difference between the mean scores of the Online Group and the Classroom Group at the beginning of the Experiment (Pretest), and at the end of the Experiment (Posttest). The results of these tests show a Pretest \( p \) - value of 0.395 (not significant), and a Posttest \( p \) - value of 0.000 (significant). In other words, the results show that there was no statistically significant difference between the mean scores of the Online and Classroom groups at the beginning of the Experiment, and that there was a statistically significant difference between the mean scores of the Online and Classroom groups at the end of the Experiment. The mean score of 84.05 of the Online Group was significantly higher than the mean score of 69.41 of the Classroom Group underlining the unavoidable conclusion that the eGrammar Clinic’s “treatment” was effective. The Online Group of students who benefitted from online practice showed significant improvement as compared with the Classroom Group who did not benefit from extra practice.
The Paired Samples T-test was carried out in order to assess the improvement of the Online Group during the interval between the Pretest and the Posttest. The result of the test shows a mean of 50.85 (Pretest) and 84.05 (Posttest), and a Paired T-test Sig. (2-tailed) value of 0.000 (significant). The Paired Samples T-test results underline the obvious conclusion that the eGrammar Clinic was effective in helping students significantly improve their sentence grammar, thus validating this researcher’s hypothesis.

The Cronbach Alpha Reliability Test was performed in order to test the reliability of the questionnaire. For this questionnaire, the researcher has selected seven Likert-type questions with the aim of measuring how the online group of participating students felt about their online experiment. The questions were divided into two sets:

- three questions referring to the learning management system (LMS), and
- four questions referring to the eGrammar Clinic (EGC).

Each question was a 5-point Likert item, from "strongly disagree" to "strongly agree". The Cronbach’s alpha was run on a sample size of 20 students. The Cronbach Alpha Reliability Test for the Learning Management System (LMS) showed an Alpha coefficient of 0.8717 (high). The Cronbach Alpha Reliability Test for the eGrammar Clinic (EGC) showed an Alpha coefficient of 0.8062 (high). Considering the fact that Cronbach’s alpha reliability coefficient normally ranges between 0 and 1, and that the closer the coefficient is to 1, the greater the internal consistency of the items in the scale, this researcher is happy to report an alpha coefficient that is higher than 0.8 for both sets of variables, thus concluding that the Questionnaire given to the Online Group of students at the end of the Experiment was reliable.

All Moodle sessions, tests, quizzes, the questionnaire, plus all the T-tests and results, student lists, etc., will be available for presentation at the Conference.

VIII. CONCLUSION

The eGrammar Clinic is a Moodle-based tutoring system designed to offer Assumption University English IV students the chance to improve their sentence grammar online. It is also a practice-based system in that it presents certain sentence patterns to be studied, followed by related activities to be practiced repeatedly. The eighty students participating in this experiment have shown a high degree of enthusiasm from the beginning of the study.
This was exemplified by the number of attempts for each activity, often exceeding a total of 120. The results of the experiment, that is the Pretest, Quiz 1, Midtest, Quiz 2, and Posttest, show significant learning gains of the Online Group as compared to the Control Group. Both the Independent Samples and the Paired Samples T-test results underline the obvious conclusion that the *eGrammar Clinic* was effective in helping students significantly improve their sentence grammar, thus validating this researcher’s hypothesis. These results are consistent with the researcher’s assumption that extra, online sentence grammar practice of certain grammar problems, has a positive effect in improving their production of correct sentences.

The Questionnaire given at the very end of the Experiment shows an overwhelmingly positive attitude participating students have towards the *eGrammar Clinic*. More than 80% strongly agree that the ten sessions of sentence patterns and activities were useful and have helped them improve their sentence grammar. They also found the Moodle-based system easy to navigate through, easy to access the activities in order to repeat the attempts, or to go back to a particular session for more study. One suggestion that was offered by several students was to improve the design of the sessions with more colors and some animation. A suggestion that will most certainly be considered in the future.

REFERENCES


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