ISSN: 2456-9348
Vol (03) _Issue (07) Impact Factor: 4.520

iJETRM
International Journal of Engineering Technology Research & Management

# DESIGN OF WEB-BASED LEARNING SYSTEM

Myo Ma Ma[*1]
Zarni Sann[2]
Thi Thi Soe[3]
[*1, 3]Faculty of Computer Science
[2]Faculty of Computer Systems and Technologies
[*1, 2, 3]University of Computer Studies (Mandalay), Myanmar
[*1]myomama.singaing@gmail.com
[2]zarnisann@gmail.com
[3]hlaing.nn@gmail.com

**ABSTRACT**
This paper intends to build a web-based learning system by taking the characteristics of learning agent. The system help user in the area of learning environments. The operation of the system includes the study courses of English Grammar and finally the students answer the question of English Grammar exam. Learning agent acting as a tutor to assist the students with specific learning needs, just like a human tutor or a classmate. This learning system is implemented with ASP.Net platform.

**KEYWORDS:**
English grammar, Learning agent, Web based learning

## INTRODUCTION

There are many languages, among them English language is a global language. Four main classes can be categorized in studying English such as speaking, writing, reading and listening. Writing grammatically is important. In this paper, we present a web-based learning system in order to learn English grammar in [1]. The web-based learning system is designed based on the concept of learning agent [2, 3]. An agent is a computer system that is capable of independent action on behalf of it user or owners. Users can study the first level, second level, third level about the English grammar and they can know their grade by answering each level. Finally, the system produces the marks and the grade. In this way the learning agent can help some of the difficulties faced by the learners of English Grammar. The remainder of the paper is organized as follows. Section II describes the several types of agents. In section III, we devote the design process to build the web-based learning system. Preliminary testing is carried out on the system, which is explored in section IV. Finally, we conclude the paper in section V.

## METHODOLOGY

The agent program takes the current percept as input from the sensors and returns an action to the actuators. There are four kinds of agents' program are [2]:

**Simple reflex agent**

Simple reflex agents act only on the basis of the current percept, ignoring the rest of the percept history. The agent function is based on the condition-action rule: if condition then action. This agent function only succeeds when the environment is fully observable. Some reflex agents can also contain information on their current state which allows them to disregard conditions whose actuators are already triggered. Infinite loops are often unavoidable for simple reflex agents operating in partially observable environments [2].

**Global-based agent**

Goal-based agents further expand on the capabilities of the model-based agents, by using "goal" information. Goal information describes situations that are desirable. This allows the agent a way to choose among multiple possibilities, selecting the one which reaches a goal state. Search and planning are the subfields of artificial intelligence devoted to finding action sequences that achieve the agent's goals. In some instances, the goal-based agent appears to be less efficient; it is more flexible because the knowledge that supports its decisions is represented explicitly and can be modified [2].

**Utility-based agent**

Goal-based agents only distinguish between goal states and non-goal states. It is possible to define a measure of how desirable a particular state is. This measure can be obtained through the use of a utility function which maps a state to a measure of the utility of the state. A more general performance measure should allow a comparison of different world states according to exactly how happy they would make the agent. A rational utility-based agent chooses the action that maximizes the expected utility of the action outcomes-that is, the agent expects to derive, on average, given the probabilities and utilities of each outcome. A utility based agent has to model and keep track of its environment, asks that have involved a great deal of research on perception, representation, reasoning and learning [2].

**Learning agent**

A learning agent is a tool in AI that is capable of learning from its experiences. It starts with some basic knowledge and is then able to act and adapt autonomously, through learning, to improve its own performance. Unlike intelligent agents that act on information provided by a programmer, learning agents are able to perform tasks, analyse performance and look for new ways to improve on those tasks [2]. Learning has an advantage that its allows the agents to initially operate in unknown environments and to become more component than its initial knowledge alone might allow. The most important distinction is between the "learning element", which is responsible for selecting external actions.

A learning agent can be divided into four basis components [3].

**Performance element:** The performance element chooses what action to take. It later shifts to a new action based on feedback and suggestions for improvement. In our system, user can select first level, second level and third level.

**Critic element:** The critic element determines the outcome of the action and gives feedback. In our system, a typical feedback form consists tutorial results where students have to give a "Grade".

**Learning element:** The learning element uses feedback and determines how the performance element should be modified to do better in the future. In our system, user can learn English Grammar Tenses.

**Problem generator:** That is tasked with developing new experiences for the learning agent to try. In our system, depends on the tutorial grade give suggestion for users.

## SYSTEM FRAMEWORK

The simulation focused on the Unified Modeling Language (UML) as a tool for requirement specification and design. UML is an object-oriented modeling language using graphical notation for specifying, visualizing, constructing and documenting the analysis and the design phase of the system [4].

**Use Case Diagram for Admin**

Use case diagrams are excellent to describe the problem domain requirements and commutating with the system users [4]. The web-based learning system is designed using use case notation offered by UML. The UML use case diagram for admin of the system is shown in fig. 1.

**Admin**

Login: Activity that used for entry in the system

Update Lesson: Activity that used to add, delete, and update lesson with respective to level.

Update Tutorial: Activity that used to add, delete, and update tutorial exercise.

Logout: Activity that used for exist from the system

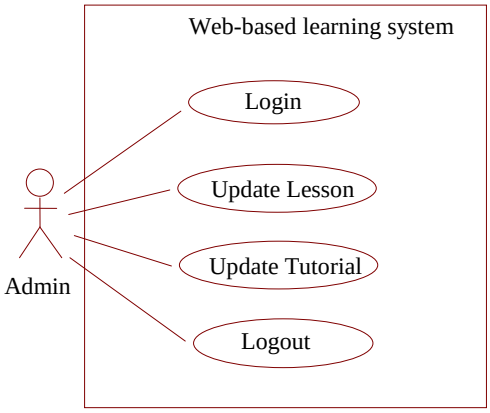



***Fig. 1: Use Case Diagram for Admin***

iJETRM
International Journal of Engineering Technology Research & Management

**Use Case Diagram for User**

Use case diagram for user of the system is shown in fig. 2.

**User**

Login: Activity that used for entry in the system
Learn Lesson: Activity that used to learn desired lesson with respective to level.
Answer Tutorial: Activity that used to answer exercises.
Logout: Activity that used for exist from the system

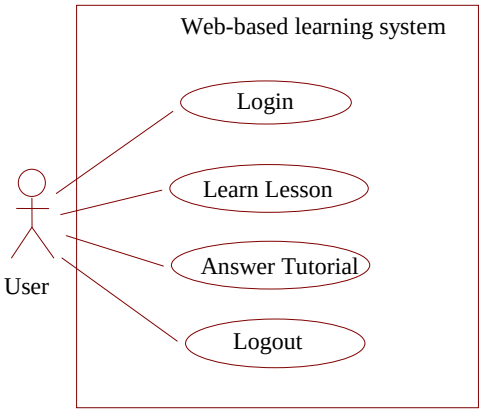
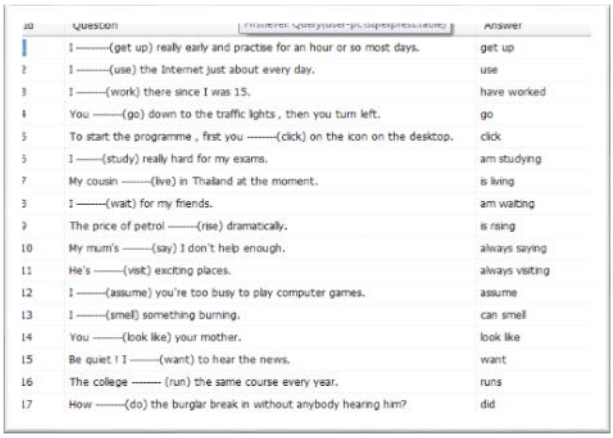



***Fig. 2: Use Case Diagram for User***

**System Database**

The web-based learning system has a database which is useful for entering data and viewing information to and from the database. The database is composed of following tables: student records, teaching courses for English grammar (tenses), question table, and grade table. Each table has its own operation and different number of fields. Example form of exercise is shown below.



| | Question | Answer |
|---|---|---|
| 1 | I ---------(get up) really early and practise for an hour or so most days. | get up |
| 2 | I ---------(use) the Internet just about every day. | use |
| 3 | I ---------(work) there since I was 15. | have worked |
| 4 | You ---------(go) down to the traffic lights , then you turn left. | go |
| 5 | To start the programme , first you ---------(click) on the icon on the desktop. | click |
| 6 | I ---------(study) really hard for my exams. | am studying |
| 7 | My cousin ---------(live) in Thailand at the moment. | is living |
| 8 | I ---------(wait) for my friends. | am waiting |
| 9 | The price of petrol ---------(rise) dramatically. | is rising |
| 10 | My mum's ---------(say) I don't help enough. | always saying |
| 11 | He's ---------(visit) exciting places. | always visiting |
| 12 | I ---------(assume) you're too busy to play computer games. | assume |
| 13 | I ---------(smell) something burning. | can smell |
| 14 | You ---------(look like) your mother. | look like |
| 15 | Be quiet ! I ---------(want) to hear the news. | want |
| 16 | The college ---------(run) the same course every year. | runs |
| 17 | How ---------(do) the burglar break in without anybody hearing him? | did |

***Fig. 3: Exercise Form***

## PRELIMINARY TESTING

After finishing the design phase, the web-based learning system.is implemented by ASP.net [5] and preliminary observation is carried out. The system is intended for 2 levels of users with different right upon the data that can be stored, modified, or answer. Each user of the system must be filled identification requirements in order to login in its personalized interface and use the application and its feature. The system has three level to learn the English grammar (tenses). Each level has relevant lessons and tutorials. Admin can add, delete, update each level. Data entry form for admin is shown in fig. 4.

iJETRM
International Journal of Engineering Technology Research & Management

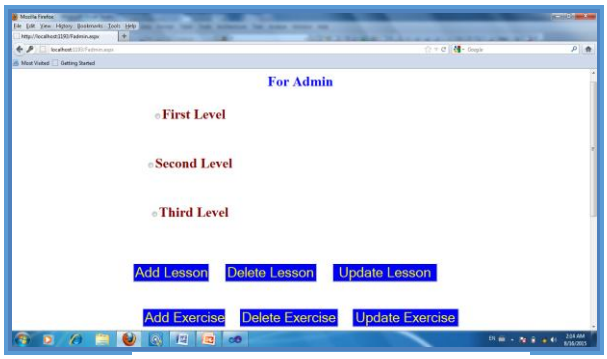



*Fig. 4 Interface for Admin*

Registered user can be learned tenses, and answered the tutorial, and exercises with their appropriate level. Interface for user is shown in following figure.

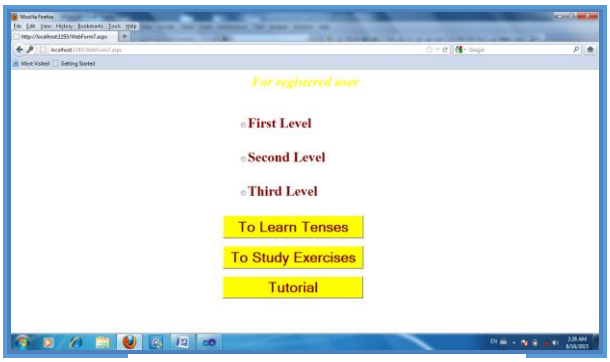



*Fig. 5 Interface for User*

By answering the exercises and tutorial, the system notified grade level to user with message box. Figure 6 illustrate the answer form and notified message for third level user.

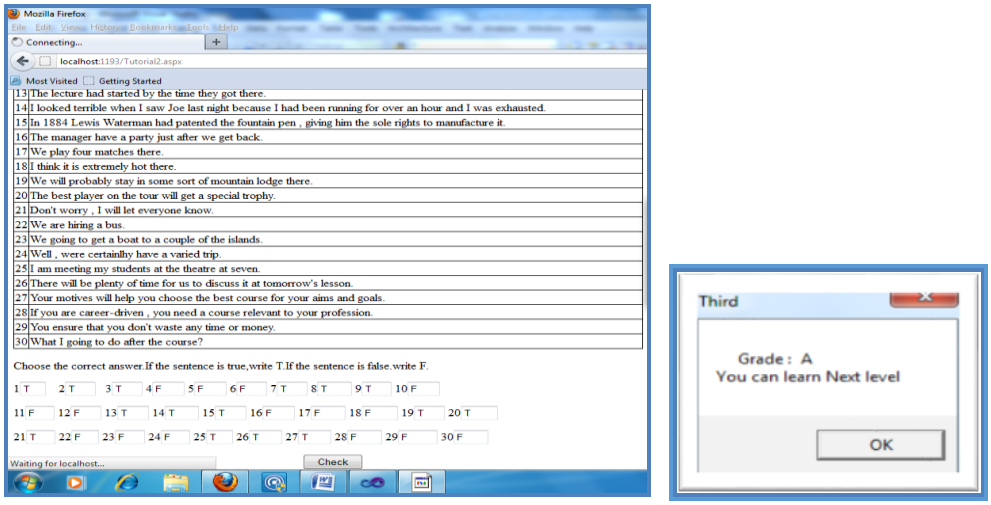



*Fig. 6 Answer form and Message Box for Third Level User*

iJETRM
International Journal of Engineering Technology Research & Management

## CONCLUSION

In this paper, design phase of web-based learning system is presented. This work intends to learn the tenses of English grammar through the online access by three level role. The process is based on the aspect of learning agent The presented system worked adequately throughout the preliminary testing. In the future works, the system can extend by including the remaining concepts of English grammar.

## REFERENCES

[1] Diana Hopkins,Pauline Cullen," Grammar for IELTS",ISBN 0-521-70611-4,Printed in India at Gopsons Papers ltd,Noida,2007
[2] Stuart Russell,Peter Norving,"Artificial Intelligence A Modern Approach",ISBN 81-203-2382-3,Printed in Jay Pant Pack Private Limited,New Delhi-110015,2005
[3] https://study.com/academy/lesson/learning-agents-definition-components-examples.html
[4] G. Booch, James Rumbaugh, Ivar Jacobson, "The Unified Modeling Language User Guide", printed in 10th May 2003, ISBN 0201-57168-4.
[5] Murach, Anne Prince," murach's ASP.NET web programming with VB.NET", ISBN 81-7366-922-8, 2008.