

# An Intelligent Tutoring System for Teaching English Grammar

Mahmoud Abu Ghali<sup>1</sup>, Abdullah Abu Ayyad<sup>1</sup>, Samy S Abu-Naser<sup>1</sup>, Mousa Abu Laban<sup>2</sup>

<sup>1</sup>Department of Information Systems,  
Faculty of Engineering and information technology,  
Al-Azhar University, Gaza

<sup>2</sup>Faculty of Education, Islamic university, Gaza

**Abstract:** Education sector in the world takes the largest part from the other sectors, because of this; all countries are interested in the field of education. If we look at learning English language is the third most common languages in the world. Also, IS the internationally dominant in the telecommunications, science and radio, aviation, entertainment, read and diplomatic language as most of the areas of work now taught in English. In this paper, we describe an intelligent tutoring system to help students to help students learn English language grammar easily and smoothly. Therefore, AI experts developed tools for improve learning ways under the name Intelligent Tutoring System. The Intelligent Tutoring System (ITS) is a computer system that offers an instant, adapted instruction and customized feedback to students without human teacher interference. System adapts with all the individual differences of students and begins gradually with students from easier to harder level. The intelligent tutoring system was given to a group of students all age groups to try it and to see the impact of the system on students.

**Keywords:** Intelligent Tutoring System, Authoring Tool, ITSB, Expert system, English Grammars, Education

## 1. INTRODUCTION

### 1.1 Authoring System

A program that help in creating more than ITS with relatively easy way and provide the experience of crating ITS without the need of expert programmer to made it.

### 1.2 Our Intelligent Tutoring System

This Intelligent Tutoring System was constructed using ITSB language which stands for Intelligent Tutoring System Builder [1]. It is a two-languages supported system (English and Arabic) and easy to manage through their student UI and the Teacher UI screens. The ITSB implemented in Delphi Embarcadero RAD Studio XE8 [1]. ITSB is easy for the domain expert to build the ITS system and for the end users when they use it, without any requirement of programming of use.

The system helps students to learn Structures after Hope and Wish, the conjunctions (as long as – provided "that" – unless), the obligations (must – don't have to – had to), would rather and Prefer grammars. During the process the intelligent tutoring system gives assistance and feedback of many types in an intelligent manner according to the behavior of the student. An evaluation of the intelligent tutoring system has revealed reasonably acceptable results in terms of its usability and learning abilities are concerned.

## 2. LITERATURE REVIEW

In recent years, we have a huge development of Intelligent Tutoring System, ITS has attracted much attention of the researchers. There are many intelligent tutoring systems, such as ITS teach students English dialogues through interaction with students and it takes into account

the individual differences of students through levels [3]. PIXIE Design by Sleeman in 1987 is based on Leeds Modeling System (LMS) to examine errors in algebra [4]. MYCIN [5] is expert system for diagnosing diseases such as cancers, based on MYCIN, Designed GUIDON to display the lessons of the disease and symptoms, showing rules in the knowledge base of the student [6]. A comparative study between Animated Intelligent Tutoring Systems (AITS) and Video-based Intelligent Tutoring Systems (VITS) [7], Affective tutoring systems (ATS) based on embedded devices is a system that relies on embedded devices for detecting the feelings, emotion, psychology student and also adapt to the student's mood such as angry, frustrated and fatigued etc. Based on the mood and feelings of the student, the student will learn [8, 9], teaching AI searching algorithms [10], teaching database to sophomore students in Gaza [11], Predicting learners performance using NT and ITS [12], learning to program in C++ [13], and security[44-54 ].

## 3. ITS ARCHITECTURE

We used the Intelligent Tutoring System Builder (ITSB) tool in building intelligent tutoring system for learning grammar English tenses. ITSB authoring tool is developed using Delphi Embarcadero XE8, 2015; ITSB authoring tool consists of two systems. The former is the teacher is a system through which add materials and questions and answers etc. and the latter is the students a system through which learn the course material and answer the exercises [14].

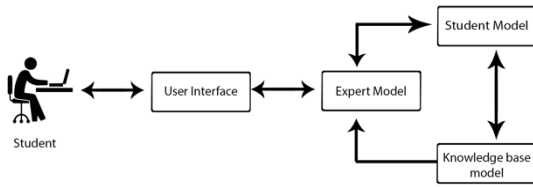


Figure 1 : Architecture of the Intelligent Tutoring System.

### 3.1. Domain model (knowledge base model)

This model is named domain model and it is synonymous with the domain model of other architectures. The model presents the materials and the teachings in a simple and it creates a lot of problems for each lesson taking into account, the individual differences. When a student responds to the problem, determines whether good or bad, as well as it evaluate the student. This model deals with many important topics of interest in the System for English grammar. The topics covered in intelligent tutoring system are:

- Structures after Hope and Wish
- The conjunctions: as long as – provided "that" – unless
- The obligations: (must – don't have to – had to)
- Would rather and Prefer

### 3.2. Student model

The admin (teacher) of ITS must create student account before a student can use the system, the student account including student's information such as name, number, login date, score and level of difficulty.

### 3.3. Expert model

The learning martial have several levels which inserted by teacher. Each level has a part of the lessons and have a question at the end of level. Each level question contains an assessment and special criteria for progression to the next level. e.g. "in question at level one student score must get above 59% to pass in this level to move to the next level 'level two', but if get less than 60% must repeats to the questions at the same level"

### 3.4. User interface model

The ITSB tool used for building the current ITS system has an interface that supports two classes of users: teachers and students. When the teacher's log into the system, the teacher can add/modify lessons, exercises, answers, initial information about the student, configure/adjust the color, font name, and size of all buttons, menus, and combo boxes. Therefore, this interface provides the system with the required heftiness and suppleness. A screenshot of the teacher's interface is shown in, Fig 2 to Fig 8.

But when the student logs into the system, he/she can study the lessons, examples, solve the exercises for each lesson. A screenshot of the student's interface can be seen in Fig 9 to

Fig 14.

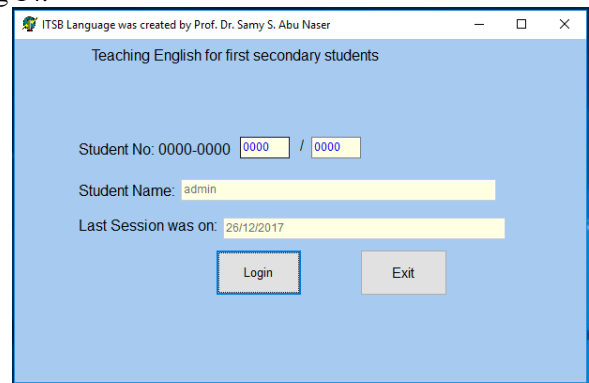


Figure 2: Login Screen

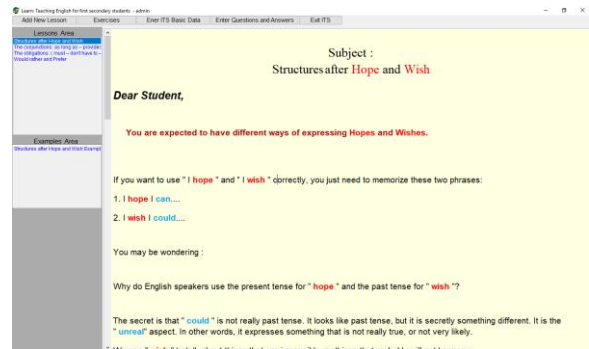


Figure 3: Lessons Area

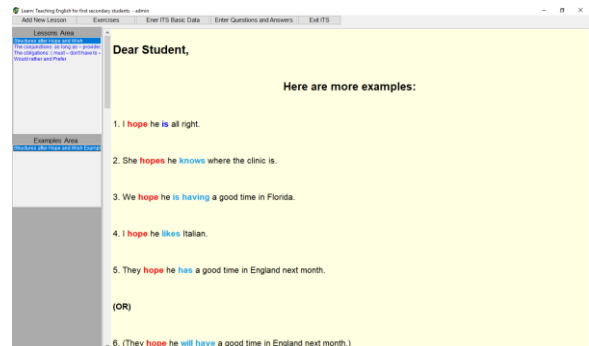


Figure 4 : Examples Area

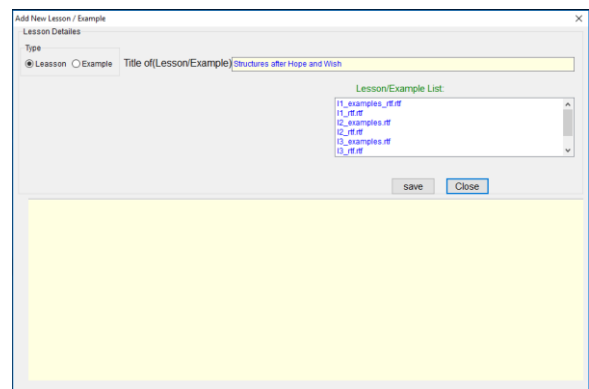


Figure 5: Add Lesson/Example Screen

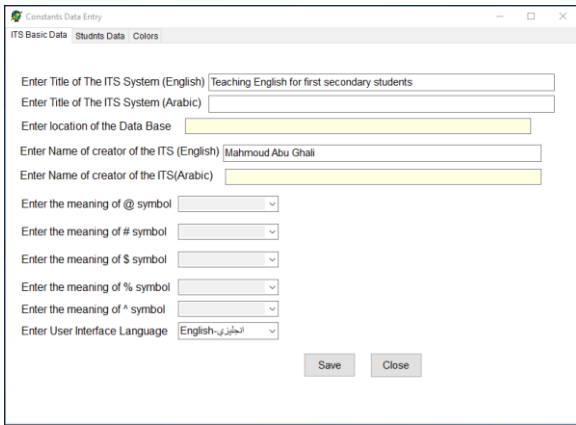


Figure 6: Add basic ITS data

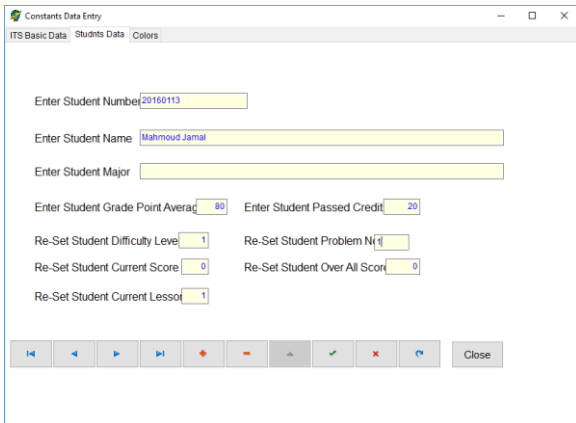


Figure 7: Add Students to System

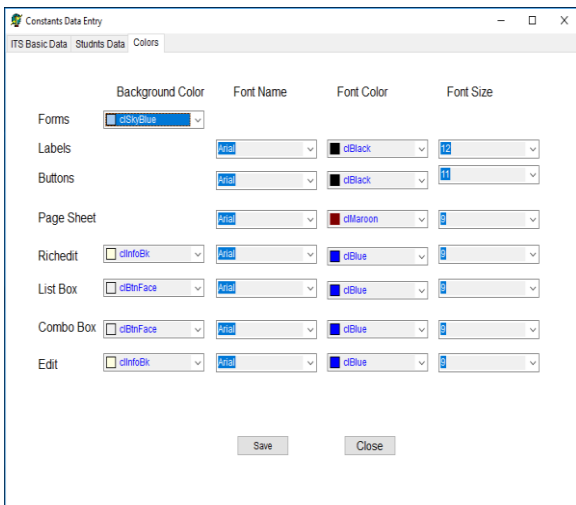


Figure 8 : Choose the font, color, sizes for other screens

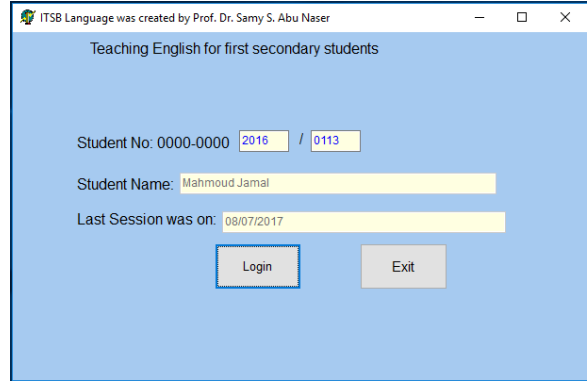


Figure 9: Student login screen

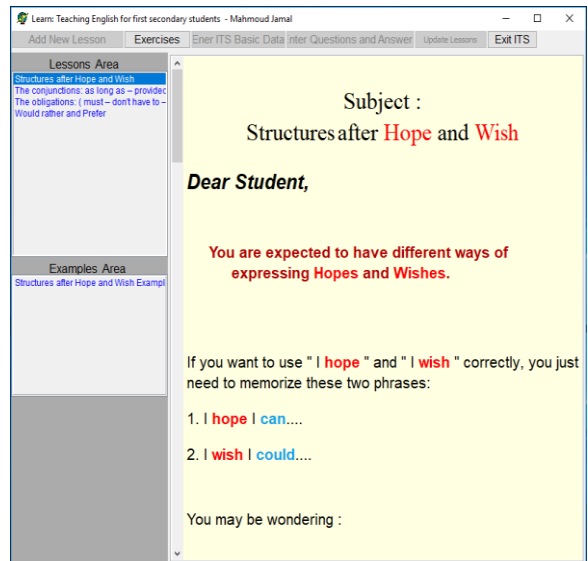


Figure 10: Student Main screen (Lessons)

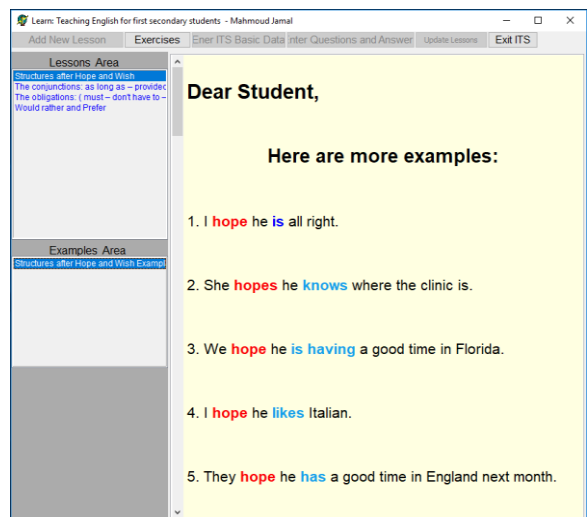


Figure 11: Student login screen (Examples)

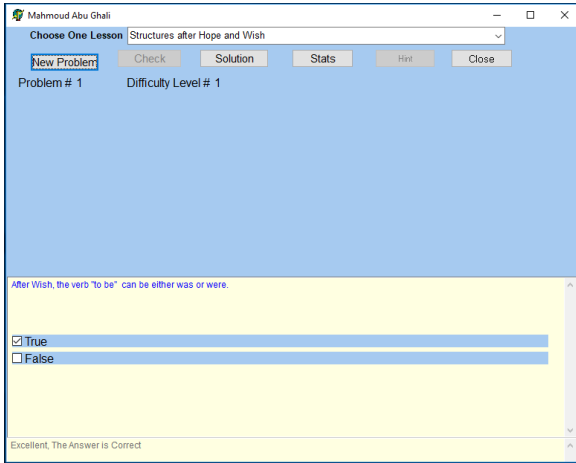


Figure 12: Question screen (if answer is correct)



Figure 13: Question screen (if answer is incorrect)

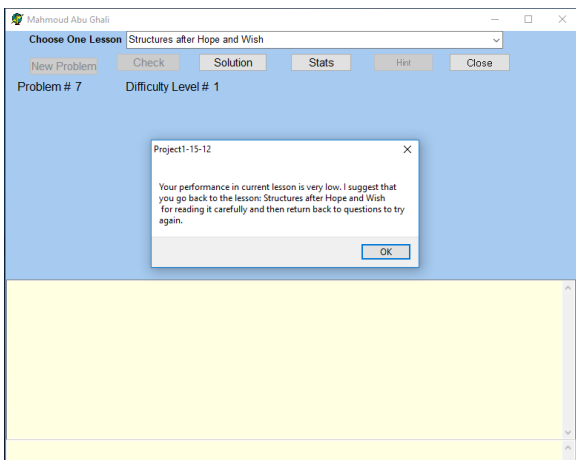
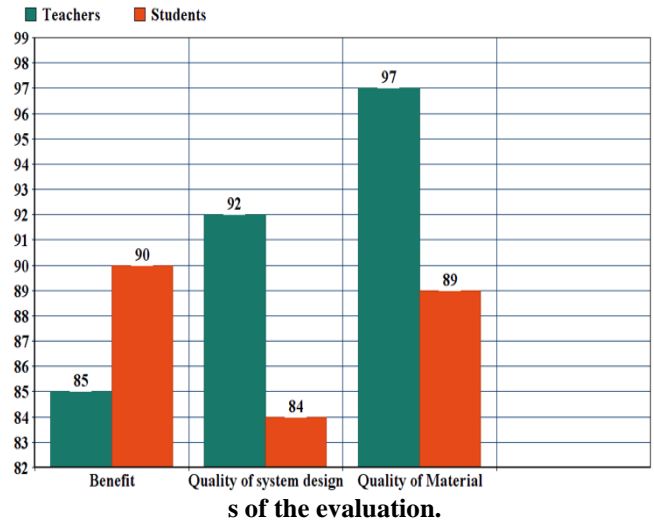


Figure 14: student performance status

#### 4. EVALUATION

We evaluated the Intelligent Tutoring System for English Grammar by presenting the system on a group of teachers who specialize in teaching English language and a group of students at the high school and university. Then we introduced a number of questions for each teacher and each student in terms of benefit, comprehensiveness of material, quality of system design and quality of material. The result of the evaluation by teachers and students are pleasing as shown in Fig 9.

Figure 9 : The result



#### 5. CONCLUSION

In the future, we will suggest an intelligent system to teaching the skills of listening, spelling, writing and conversation in the English language.

We have designed an intelligent tutoring system for English grammar using ITSB tool. The system is designed to facilitate the study of English grammar to students and overcome the difficulties they face with ease and smoothness. System architecture and requirements of each part in the system has been explained.

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