International Journal of Academic Pedagogical Research (IJAPR)
ISSN: 2000-004X
Vol. 2 Issue 12, December – 2018, Pages: 9-15

An Intelligent Tutoring System for Learning TOEFL

Hani M. Sh. Bakeer, Samy S. Abu-Naser

Department of Information Technology,
Faculty of Engineering and Information technology,
Al-Azhar University, Gaza, Palestine.

Abstract: *An e-learning system is increasingly gaining popularity in the academic community because of several benefits of learning anywhere anyplace and anytime. An Intelligent Tutoring System (ITS) is a computer system that aims to provide immediate and customized instruction or feedback to learners, usually without requiring intervention from a human teacher.(ITSB) is the tutoring system Builder Which designed and improved to help teachers in building intelligent tutoring system in many fields .In this paper we have an example and an evaluating are presented of building an intelligent tutoring system for teaching TOEFL using ITSB tool.*

Keywords: Intelligent Tutoring System, TOEFL

1. INTRODUCTION

Intelligent tutoring systems are educational applications of artificial intelligence and machine learning technologies. Intelligent tutoring systems are designed to interact directly with students and perform many of the instructional functions usually reserved for teachers or tutors.

Figure 1: Person practicing for TOEFL exam the traditional way

The systems have been used to teach students in such diverse domains as language, law, mathematics, medicine, physics, and reading comprehension. Tutoring systems research has continued to expand the variety of instructional functions, subject domains, and student responses that the systems can handle. Central to every tutoring system is the ability to capture data about student responses, use it to model each student's knowledge, metacognition, motivation or emotion, and adapt instruction to individual needs. Intelligent tutoring systems often present interfaces with which students interact throughout the learning activity. By tracking student moves at each step, an intelligent tutoring system can build a more detailed student model and also provide hints and feedback at the step-level, not only upon completion of an activity. Test of English as a Foreign Language (TOEFL) is a standardized test to measure the English language ability of non-native speakers wishing to enroll in English-speaking universities. The test is accepted by many English- speaking academic and professional institutions.

2. LITERATURE REVIEW

The subject of the intelligent tutoring system has been addressed in many papers because of its importance in the field of education in addition to its positive result, such as An Intelligent Tutoring System Authoring Tool designed by Abu Naser teaches how to use java program [4], SQL-Tutor, teaches and explains to students the way of writing queries in relational database through several lessons in the basics of writing query [6], ITS for Health problems related to addiction of video game playing [7], TS for C# Language [8], effectiveness of the CPP-Tutor [9], teaching AI searching algorithms [10], teaching database [11], and ITS for Teaching the 7 Characteristics for Living Things [17], ITS for teaching the right letter pronunciation in reciting the Holy Quran [12], ITS for teaching advanced topics in information security [13], Oracle Intelligent Tutoring System (OITS) [14], ITS for learning Computer Theory[15], e-learning system [16], ADO-Tutor: Intelligent Tutoring System for leaning ADO.NET [18], ITS for Parameter Passing in Java Programming [22], and Predicting learners performance using NT and ITS [19], CPP-Tutor for C++ Programming Language [20], a comparative study between Animated Intelligent Tutoring Systems (AITS) and Video-based Intelligent Tutoring Systems (VITS) [21], ITS for stomach disease Intelligent Tutoring System [23], ITS for diabetes [24], Computer Networks [25], DSE Tutor for Teaching DES Information Security Algorithm [26].

International Journal of Academic Pedagogical Research (IJAPR)
ISSN: 2000-004X
Vol. 2 Issue 12, December – 2018, Pages: 9-15

3. ITS SYSTEM ARCHITECTURE

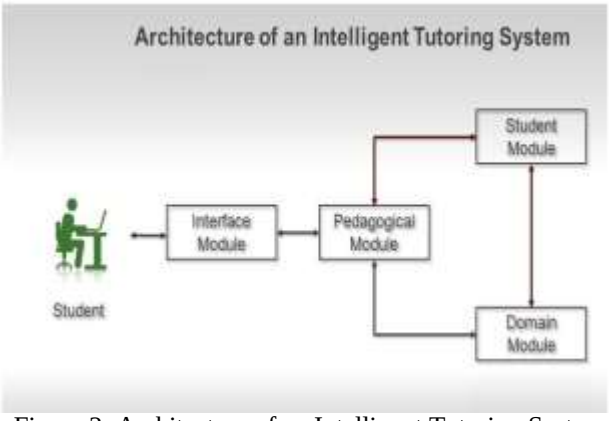

Figure 2: Architecture of an Intelligent Tutoring System

A normal ITS has four fundamental models: domain model, teaching (Pedagogical) model, student model and user interfaces are shown below in Figure 2.

3.1 Domain model

The domain model is concerned with the lessons, its arrangement and a range of elements. There are two fundamental components in domain model:

The first component, Domain Organization Model, deals with the arrangement and organization of the lessons and its topics. The second one, Repository, deals with the materials being taught them.

3.2 Student Model

State based approach was implemented in the student model. However, there are quite a few parameters for educational modeling of a student throughout a learning procedure.

3.3 Teaching module

Teaching module is considered to be the most important component of an ITS . The primary task of this module is to arrange a sequence of teaching actions to be taken during a teaching process. These actions and their sequence should go with the student's ability, requirement and objectives. The arrangement is done at two stages. At the first stage, ordering of the topics for the student needs to be arranged. This stage begins from the initial state and finishes when all the topics are included in the sequence. At the second stage, after a topic is chosen another arrangement is essential to compute the exact technique of teaching that topic. This engages selecting the proper type of the document and the proper medium.

3.4 User Interfaces

Interfaces are an essential part of the ITSB system. There are two classes of users, teachers and the students. The ITSB authoring tool has both interfaces. Each class of users see different interface for their interactions with the system. The teachers interface is the shell of ITSB for configuration and adjustment of the system. The teacher's interface or the authoring interface consists of three parts, used to configure the different parts of the system, one to configure the Student Model, one for authoring the Domain Organization Model and the third for maintaining the Repository Through these interfaces a teacher can configure various aspects of the system, like initial information about the student , enter students lessons, questions and answers, configure and adjust the color, font name and size of all menus, buttons, comb boxes etc. Thus, this interface provides the system with the required flexibility and robustness (as in Figure 3-Figure 7). Moreover, due to this interface the system can become domain independent. As show below some Figures added as a screen shoots showing the login screen, the Lessons screen, questions screen and the student status screen.

Figure 3: Login Screen

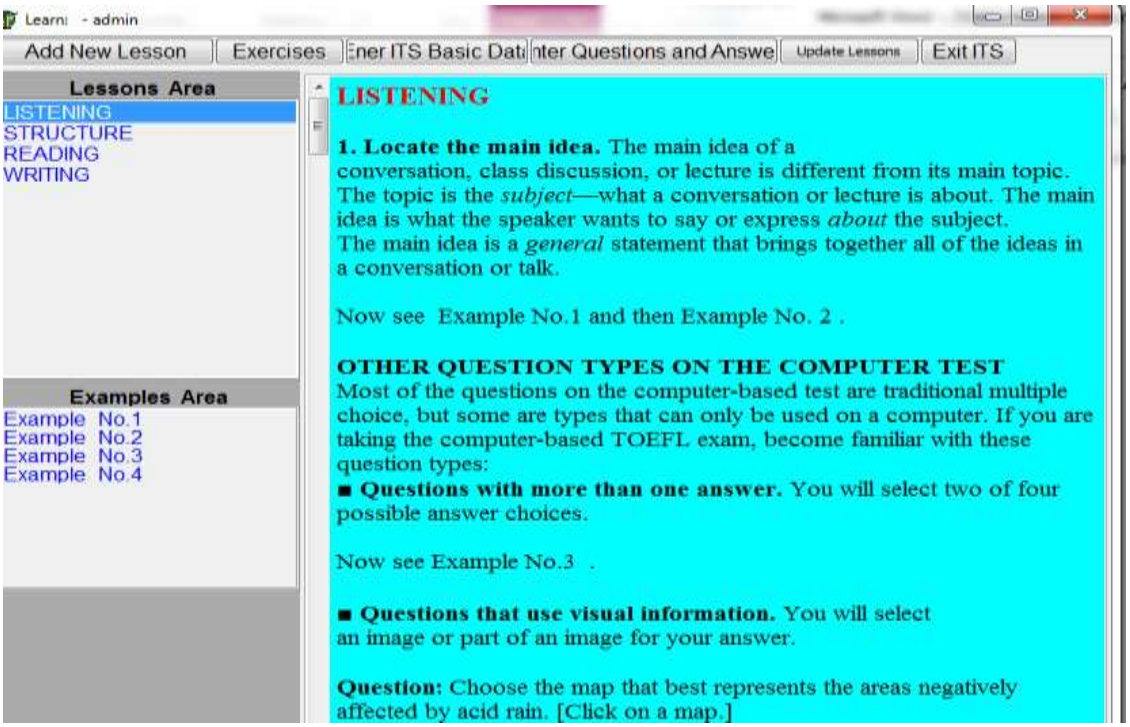

Figure 4: Screen shot of Lessons

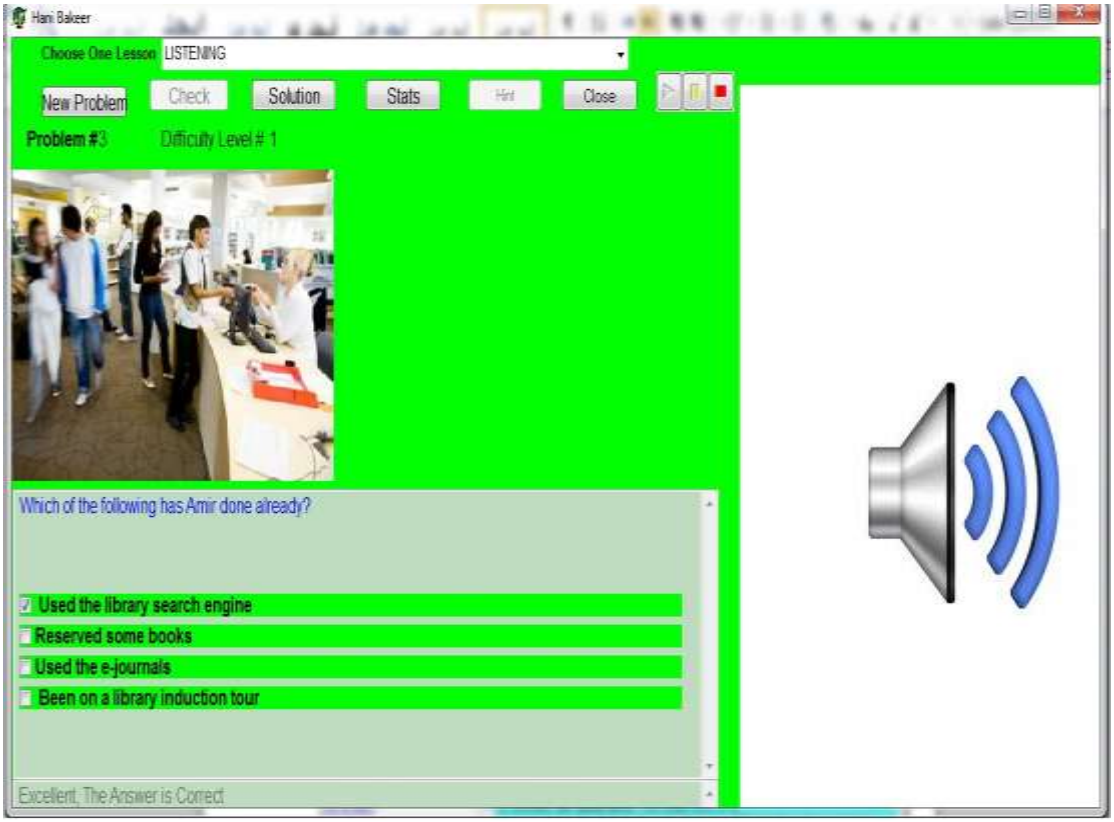

Figure 5: Questions Screen with sound effect

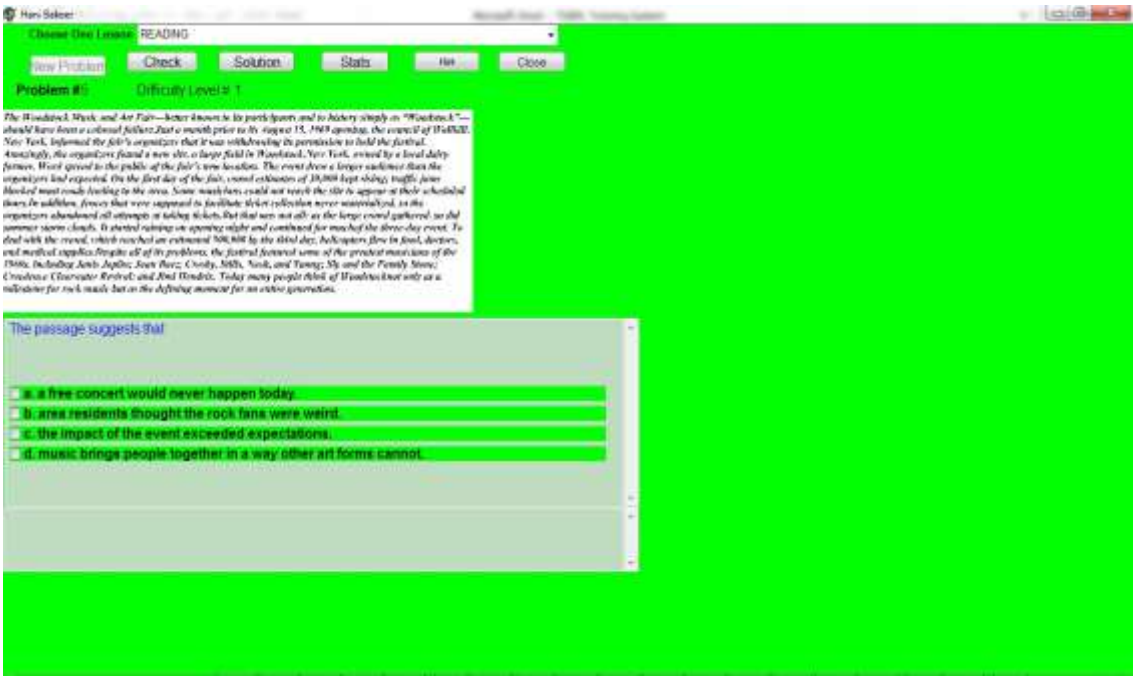

Figure 6: Question Screen without sound

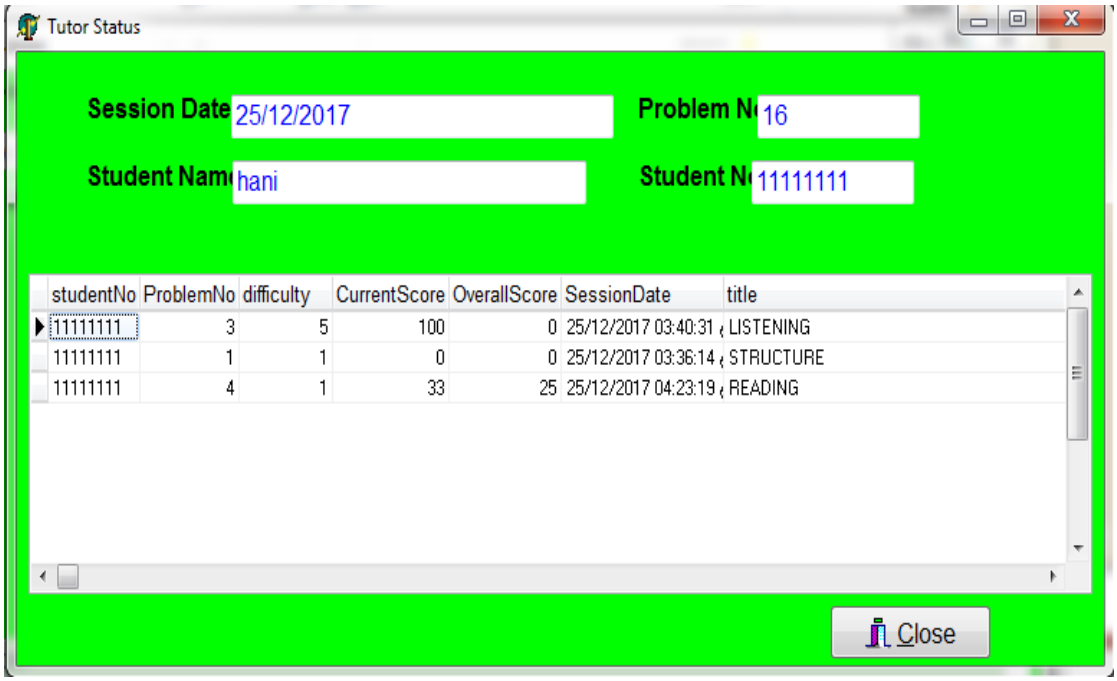

Figure 7: Summary of the scores the learner got so fare

University's Library to be able to reach via the University's web site.

4. TOEFL TUTORING SYSTEM EVALUATION

This Tutoring System will be useful and available for every university's student who wants to study the TOEFL subject , as it's important for the Master degree students to study the TOEFL . So we will add the program in the

5. Conclusion and Future Work

In This paper TOEFL Intelligent Tutoring System was described which designed using the ITSB Tool . This Tutoring System is for teaching students TOEFL and makes a test for the student to ensure that the student can make the TOEFL exam with an excellent mark.

This Tutoring System covering the four sections of TOEFL learning, LISTENING, STRUCTURE, READING and WRITING.

The Tutoring System presents lectures, examples and problems for student to solve in every section . In the future I hope that we can add a full TOEFL test questions , so after the student read the lessons finish and answer all the questions in this tutoring system he will have a TOEFL test exam and he must answer all the questions with an accepted mark and score which it is differ from institution to other .

References

[1] TOEFL exam essentials, 2004, Learning Express—1st ed , 1-57685-504 .
[2] https://www.examenglish.com .
[3] Abu Ghali, M., Abu Ayyad, A., Abu-Naser, S., & Abu Laban, M. (2018). An Intelligent Tutoring System for Teaching English Grammar. International Journal of Academic Engineering Research (IJAER), 2(2), 1-6.
[4] Abu Hasanein, H. A., & Abu Naser, S. S. (2017). An intelligent tutoring system for cloud computing. International Journal of Academic Research and Development, 2(1), 76-80.
[5] Abu Naser, S. (2008). An Agent Based Intelligent Tutoring System For Parameter Passing In Java Programming. Journal of Theoretical & Applied Information Technology, 4(7).
[6] Abu Naser, S. (2008). JEE-Tutor: An Intelligent Tutoring System for Java Expression Evaluation. Information Technology Journal, Scialert, 7(3), 528-532.
[7] Abu Naser, S., Ahmed, A., Al-Masri, N., & Abu Sultan, Y. (2011). Human Computer Interaction Design of the LP-ITS: Linear Programming Intelligent Tutoring Systems. International Journal of Artificial Intelligence & Applications (IJAIA), 2(3), 60-70.
[8] Abu Naser, S., & Akkila, A. N. (2008). A Proposed Expert System for Skin Diseases Diagnosis. INSInet Publication. Journal of Applied Sciences Research, 4(12), 1682-1693.
[9] Abu Naser, S., Al-Dahdooh, R., Mushtaha, A., & El-Naffar, M. (2010). Knowledge management in ESMDA: expert system for medical diagnostic assistance. AIML Journal, 10(1), 31-40.
[10] Abu Naser, S., & El Haddad, I. (2016). An Expert System for Genital Problems in Infants. World Wide Journal of Multidisciplinary Research and Development (WWJMRD), 2(5).
[11] Abu Naser, S., Sulisel, O., Alexandrescu, A., Anderson, J., Skwarecki, E., Anderson, J., . . . Brusilovsky, P. (2005). Growth and Maturity of Intelligent Tutoring Systems. Information Technology Journal, 7(7), 9-37.
[12] Abu Naser, S., Zaqout, I., Ghosh, M. A., Atallah, R., & Alajrami, E. (2015). Predicting Student Performance Using Artificial Neural Network: in the Faculty of Engineering and Information Technology. International Journal of Hybrid Information Technology, 8(2), 221-228.
[13] Abu Naser, S. S. (2006). Intelligent tutoring system for teaching database to sophomore students in Gaza and its effect on their performance. Information Technology Journal, 5(5), 916-922.
[14] Abu Naser, S. S. (2012). Predicting learners performance using artificial neural networks in linear programming intelligent tutoring system. International Journal of Artificial Intelligence & Applications, 3(2), 65.
[15] Abu Naser, S. S., & Sulisel, O. (2000). The effect of using computer aided instruction on performance of 10th grade biology in Gaza. Journal of the College of Education, 4, 9-37.
[16] Abu Naser, S. S. (2001). A comparative study between animated intelligent tutoring systems AITS and video-based intelligent tutoring systems VITS. Al-Aqsa Univ. J, 5(1), 72-96.
[17] Abu Naser, S. S. (2008). Developing an intelligent tutoring system for students learning to program in C++. Information Technology Journal, 7(7), 1055-1060.
[18] Abu Naser, S. S. (2008). Developing visualization tool for teaching AI searching algorithms. Information Technology Journal, Scialert, 7(2), 350-355.
[19] Abu Naser, S. S. (2012). A Qualitative Study of LP-ITS: Linear Programming Intelligent Tutoring System. International Journal of Computer Science & Information Technology, 4(1), 209.
[20] Abu Naser, S. S., Anderson, J., Corbett, A., Koedinger, K., Pelletier, R., Beal, C., . . . Soh, L. (2005). Adaptation of Problem Presentation and Feedback in an Intelligent Mathematics Tutor. Information Technology Journal, 5(5), 167-207.
[21] Abu Naser, S. S., Atallah, R. R., & Hamo, S. (2015). Building an Ontology in Educational Domain Case Study for the University of Palestine. International Journal of Research in Engineering and Science (IJRES), 3(1), 15-21.
[22] Abu Naser, S. S., Baker, J., Cruz, I., Liotta, G., Tamassia, R., Cooper, M., . . . Feldman, M. (2006). Information Visualization. Information Technology Journal, 7(2), pp: 403-404.
[23] AbuEloun, N. N., & Abu Naser, S. S. (2017). Mathematics intelligent tutoring system. International Journal of Advanced Scientific Research, 2(1), 11-16.
[24] AbuEl-Reesh, J. Y., & Abu-Naser, S. S. (2018). An Intelligent Tutoring System for Learning Classical

Cryptography Algorithms (CCAITS). International Journal of Academic and Applied Research (IJAAR), 2(2), 1-11.

[25] Abu-Naser, S., Ahmed, A., Al-Masri, N., Deeb, A., Moshtaha, E., & AbuLamdy, M. (2011). An intelligent tutoring system for learning java objects. International Journal of Artificial Intelligence and Applications (IJAIA), 2(2).

[26] Abu-Naser, S., Kashkash, K., Fayyad, M., Azaab, S., Riley, M., Williamson, M., . . . Maloy, O. (2005). Expert system methodologies and applications-a decade review from 1995 to 2004. Journal of Artificial Intelligence, 1(2), 9-26.

[27] Abu-Nasser, B. S., & Abu-Naser, S. S. (2018). Cognitive System for Helping Farmers in Diagnosing Watermelon Diseases. International Journal of Academic Information Systems Research (IJAISR), 2(7), 1-7.

[28] Akkila, A. E.-D. N., & Abu Naser, S. S. (2018). ITS-Tutor for Teaching Rules of Tajweed the Holy Quran. Al-Azhar University, Gaza, Palestine.

[29] Akkila, A. N., & Abu Naser, S. S. (2017). Teaching the right letter pronunciation in reciting the holy Quran using intelligent tutoring system. International Journal of Advanced Research and Development, 2(1), 64-68.

[30] Akkila, A. N., & Abu-Naser, S. S. (2018). Rules of Tajweed the Holy Quran Intelligent Tutoring System. International Journal of Academic Pedagogical Research (IJAPR), 2(3), 7-20.

[31] Al Rekhawi, H. A., & Abu Naser, S. (2018). An Intelligent Tutoring System for Learning Android Applications Ui Development. International Journal of Engineering and Information Systems (IJEAIS), 2(1), 1-14.

[32] Al Rekhawi, H. A., & Abu-Naser, S. S. (2018). Android Applications UI Development Intelligent Tutoring System. International Journal of Engineering and Information Systems (IJEAIS), 2(1), 1-14.

[33] Al-Ani, I. A. R., Sidek, L. M., Desa, M. M., Basri, N. A., Burns, J., Bhutani, J., . . . Fashokun, A. (2007). Water pollution and its effects on human health in rural areas of Faisalabad. Journal of Environmental Science and Technology, 5(5), 1-17.

[34] Alawar, M. W., & Abu Naser, S. S. (2017). CSS-Tutor: An intelligent tutoring system for CSS and HTML. International Journal of Academic Research and Development, 2(1), 94-98.

[35] Al-Bastami, B. G., & Abu Naser, S. S. (2017). Design and Development of an Intelligent Tutoring System for C# Language. EUROPEAN ACADEMIC RESEARCH, 6(10), 8795.

[36] Albatish, I., Mosa, M. J., & Abu-Naser, S. S. (2018). ARDUINO Tutor: An Intelligent Tutoring System for Training on ARDUINO. International Journal of Engineering and Information Systems (IJEAIS), 2(1), 236-245.

[37] Al-Bayed, M. H., & Abu Naser, S. S. (2017). An intelligent tutoring system for health problems related to addiction of video game playing. International Journal of Advanced Scientific Research, 2(1), 4-10.

[38] Al-Bayed, M. H., & Abu-Naser, S. S. (2018). Intelligent Multi-Language Plagiarism Detection System. International Journal of Academic Information Systems Research (IJAISR), 2(3), 19-34.

[39] Aldahdooh, R., & Abu Naser, S. S. (2017). Development and Evaluation of the Oracle Intelligent Tutoring System (OITS). EUROPEAN ACADEMIC RESEARCH, 6(10), 8711-8721.

[40] Alhabbash, M. I., Mahdi, A. O., & Abu Naser, S. S. (2016). An Intelligent Tutoring System for Teaching Grammar English Tenses. EUROPEAN ACADEMIC RESEARCH, 6(9), 7743-7757.

[41] Al-Hanjori, M. M., Shaath, M. Z., & Abu Naser, S. S. (2017). Learning computer networks using intelligent tutoring system. International Journal of Advanced Research and Development(2), 1.

[42] Almurshidi, S. H., & Abu Naser, S. S. (2017). Design and Development of Diabetes Intelligent Tutoring System. EUROPEAN ACADEMIC RESEARCH, 6(9), 8117-8128.

[43] Almurshidi, S. H., & Abu Naser, S. S. (2017). Stomach disease intelligent tutoring system. International Journal of Advanced Research and Development, 2(1), 26-30.

[44] Al-Nakhal, M. A., & Abu Naser, S. S. (2017). Adaptive Intelligent Tutoring System for learning Computer Theory. EUROPEAN ACADEMIC RESEARCH, 6(10), 8770-8782.

[45] Atallah, R. R., & Abu Naser, S. S. (2014). Data mining techniques in higher education an empirical study for the university of Palestine. IJMER, 4(4), 48-52.

[46] Atallah, R. R., & Abu Naser, S. S. (2014). Transformation of E-kanban to BPEL Using Information Retrieval Method For Searching. IOSR Journal of Engineering (IOSRJEN), 4(11).

[47] Bakeer, H., & Abu Naser, S. S. (2017). Photo Copier Maintenance Expert System V. 01 Using SL5 Object Language. International Journal of Engineering and Information Systems (IJEAIS), 1(4), 116-124.

[48] Chen, R.-S., Tsai, C.-H., Abu-Naser, S., Bishop, A., Bishop, C., Arbaugh, J., . . . Trent, B. (2008). Evaluating structural equation models with unobservable variables and measurement error. Information Technology Journal, 10(2), 1055-1060.

[49] El Agha, M. I., Jarghon, A. M., & Abu-Naser, S. S. (2018). SQL Tutor for Novice Students. International Journal of Academic Information Systems Research (IJAISR), 2(2), 1-7.

[50] El Haddad, I. A., & Abu Naser, S. S. (2017). ADO-Tutor: Intelligent Tutoring System for leaning ADO. NET. EUROPEAN ACADEMIC RESEARCH, 6(10), 8810-8821.

[51] Elnajjar, A. E. A., & Abu Naser, S. S. (2017). DES-Tutor: An Intelligent Tutoring System for Teaching DES Information Security Algorithm. International Journal of Advanced Research and Development, 2(1), 69-73.

[52] Hamed, M. A., & Abu Naser, S. S. (2017). An intelligent tutoring system for teaching the 7 characteristics for living things. International Journal of Advanced Research and Development, 2(1), 31-45.

[53] Hamed, M. A., Abu-Naser, S. S., & Abualhin, K. S. (2018). Intelligent Tutoring System Effectiveness for Water Knowledge and Awareness. International Journal of Academic Information Systems Research (IJAISR), 2(4), 18-34.

[54] Hasanein, H. A. A., & Abu-Naser, S. S. (2018). Developing Education in Israa University Using Intelligent Tutoring System. International Journal of Academic Pedagogical Research (IJAPR), 2(5), 1-16.

[55] Hilles, M. M., & Abu Naser, S. S. (2017). Knowledge-based Intelligent Tutoring System for Teaching Mongo Database. EUROPEAN ACADEMIC RESEARCH, 6(10), 8783-8794.

[56] Khella, R. A., & Abu-Naser, S. S. (2018). An Intelligent Tutoring System for Teaching French. International Journal of Academic Multidisciplinary Research (IJAMR), 2(2), 9-13.

[57] Li, D., Ghosh, M. M. A., Atallah, R. R., & Naser, S. S. A. (2016). A Novel Distributed Index Method for Cloud Computing. Issues(360).

[58] Li, L., Chen, N., He, C., Lang, F., Li, H., Wang, H., . . . Gong, P. (2011). Hybrid Quantum-inspired genetic algorithm for extracting association rule in data mining. Information Technology Journal, 12(4), 1437-1441.

[59] Mahdi, A. O., Alhabbash, M. I., & Abu Naser, S. S. (2016). An intelligent tutoring system for teaching advanced topics in information security. World Wide Journal of Multidisciplinary Research and Development, 2(12), 1-9.

[60] Marouf, A., Yousef, M. K. A., Mukhaimer, M. N., & Abu-Naser, S. S. (2018). AnIntelligent Tutoring System for Learning Introduction to Computer Science. International Journal of Academic Multidisciplinary Research (IJAMR), 2(2), 1-8.

[61] Mosa, M. J., Albatish, I., & Abu-Naser, S. S. (2018). ASP. NET-Tutor: Intelligent Tutoring System for leaning ASP. NET. International Journal of Academic Pedagogical Research (IJAPR), 2(2), 1-8.

[62] Naser, S. (2009). Evaluating the effectiveness of the CPP-Tutor an intelligent tutoring system for students learning to program in C++. Journal of Applied Sciences Research, 5(1), 109-114.

[63] Naser, S. S. A. (2016). ITSB: An Intelligent Tutoring System Authoring Tool. Journal of Scientific and Engineering Research, 3(5), 63-71.

[64] Ng, S., Wong, C., Lee, T., Lee, F., Abu-Naser, S., El-Hissi, H., . . . James, A. (2010). Ad hoc networks based on rough set distance learning method. Information Technology Journal, 10(9), 239-251.

[65] Owaied, H. H., Abu-Ara, M. M., Qasem, M. M., Fahmy, H., Douligeris, C., Aha, D., . . . Dillon, T. (2009). Using rules to support case-based reasoning for harmonizing melodies. Journal of Applied Sciences, 11(14), pp: 31-41.

[66] Qwaider, S. R., & Abu-Naser, S. S. (2018). Excel Intelligent Tutoring System. International Journal of Academic Information Systems Research (IJAISR), 2(2), 8-18.