

A Description and Evaluation of Hot Potatoes Web-authoring Software in Educational Settings

Nabiollah Sadeghi

Payam Noor University, Tehran, Iran

Hassan Soleimani

Payam Noor University, Tehran, Iran

Abstract—In the late twentieth century, information and communication technologies (ICTs) came to the service of education in order to change and facilitate the learning process in pedagogical settings. In order to support the learning process of children and/or students, teachers –along with implying effective teaching principles and techniques in their classrooms –may benefit the potential of the computer and the web-based programs. The educational program Hot Potatoes, innovated by Half-Baked Software, Inc., was designed to allow educators to create interactive, Web-based exercises that can be used by learners at any Internet terminal with a standard Web browser. The software favors six different applications, namely: J Quiz, J Cloze, J Match, J Mix, J Cross and Masher; Moreover, Hot Potatoes program has also the capability to create interactive Web exercises without programming knowledge. With the help of the above mentioned six modules, educators are able to create different interactive web-based exercises and to combine them into one unit and publish them as Web Page. As such, the current study sheds more light on the use and application of Hot Potatoes software and discusses the strengths and weaknesses of this interactive, Web authoring, pedagogical program.

Index Terms—information and communication technologies (ICTs), internet terminal, modules, Hot Potatoes program

I. INTRODUCTION

The invention and dispersion of new and advanced knowledge and technologies for a long time has been considered as a main contributor to productivity and economic development and growth. While developed countries move toward economic activities that are mostly knowledge-based, Information and technology play increasingly important roles in learning process.

Meanwhile, preparing learners for lifelong learning needs a new look to education that incorporates technologies dramatically as a part of learners' everyday lives. As the importance of reading, writing, and other learning skills still comes true, teachers require to look at these and other subject areas in new ways, employing new educational technologies web-based activities in order to involve learners to take an part and role in the process of learning.

Further, it's now accepted by scholars and educators that a well-rounded education is a path to personal success. Also, the technology based education moves students on a path to a sort of learning that enables learners to succeed in the changing world. Through technology-based education, individuals can expand their minds as wide as the world in which they are living in and embrace new opinions and opportunities, and at the same time, make better lives for themselves and their societies. More, in a world where geographic boundaries are being blurred and the global village is being formed, learners require flexibility and change in order to connect and cooperate with people anywhere at any time.

Furthermore, the role and effect that education plays in developing and competitive economies –where local firms and industries compete on a universal scale– should be taken into consideration. The growth of the present educational system in developed countries dates back to the Industrial Revolution, when farm workers required to be educated in order to be prepared for factory jobs. Former rigid and monotonous educational and teaching principles no longer allow students to compete and confirm with the today's world growth. The change in technology equipment and educational technology required teachers to update themselves and their students in a way that they can both make use of these technologies and get benefit from this technology in the educational settings. If present students are going to be future's experts and leaders in their field of study or science generally, they need to become familiar with new educational technologies and how to make use of these tools. As the technology improves for personal and commercial use, educational devises evolved so as to enable educators to enhance learners' learning capabilities.

By looking at the technological changes as a chance to enhance students' learning—especially when an educational technology is widely accepted by students—teachers have the opportunity to engage learners deeper in the learning process and supply them with a stronger foundation for continued and long-lasting learning.

In the late twentieth century, the Internet was considered as a new learning tool to initiate online learning programs and interactive Web exercises. Further, modern technology has supplied language teachers with a plenty of possible ways in which its components, especially computers, may be applied to support the students' learning process and to enable both teachers and learners to benefit from multimedia learning. Multimedia learning is a cognitive theory of learning which was popularized by Mayer (2009) and others; Multimedia learning occurs when learners build mental representations from both words and pictures. Mayer (2010) maintains that meaningful learning occurs when learners learn from both words and pictures.

Computer Assisted Language Learning (CALL), as an approach to the applications of this modern technology-based learning (i.e., multimedia learning) is an innovation which provides many advantages to the job of teaching especially second and/or foreign language teaching.

A. *Definition and History of CALL*

Computer Assisted Language Learning (CALL) and Computer Assisted Language Instruction are defined as approaches characterized by employing computer hardware's and software's capabilities in the process of language learning and teaching. At the present time, Computer Assisted Language Learning (CALL) has been closely associated with the use of multimedia and Internet based programs in language learning. Computer Assisted Language Learning assists both educators and their learners in a sense that computer can be employed by a language teacher and/or expert to provide a more varied set of lessons for students or to allow their students to have more time and creativity to practice during a lesson unit. Also, computer can be used by an individual student in order to get an additional chance to continue language learning process without the aid or supervision of a teacher. CALL as a new approach to language learning has continued the path of evolution and development throughout the years and decades and is currently being used and accepted by a large number of language educators in all parts of the world.

Defining CALL, Levy (1997) maintains that "Computer Assisted Language Learning (CALL) may be defined as 'the search for and study of applications of the computer in language teaching and learning (p.1)'" Levy's definition does not define all activities embedded in CALL approach and, therefore, such definition allows for lots of variations within the characteristics of CALL approach. However, Levy's definition is widely acknowledged and ratified by some international associations such as European Association for Computer Assisted Language Learning (EUROCALL), the Computer Assisted Language Instruction Consortium (CALICO), Information and Communications Technology for Teachers (ICT4L), and The International Association for Language Learning Technology (IALLT).

So, CALL, as defined by Levy (1997), not only needs the practitioner of the approach (i.e., the teacher) to use the computer to supply a learner with information and testing that sort of information in a more developed and specialized testing system – but also CALL develops academic research in the field of computer usage in the process of learning.

B. *The Origin of CALL*

The term Computer Assisted Language Learning (CALL) came out in the late 1980s and derived from the earlier motioned term of Computer Assisted Language Instruction. Davies (2002) maintains that the rationale for such a change was the close relation of CALL and the outdated teacher- centered approaches which drew heavily on behaviorism rather than on developing learner -centered approaches.

While Computer Assisted Language Learning was considered as an approach including "repetitive language drills" and was referred to as 'drill and Practice" (Warschauer, 1996), CALL could also widened its scope so as to embrace the communicative Approaches and a range of modern technologies. In the late 1980s, the new term 'CALL' was emerged which was considered to describe and include all the activities, tasks, and issues related with computerized language learning in a vivid and detailed way.

C. *Phases of CALL*

The history of CALL as shown by Warschauer (1996) separates the whole period of development of CALL approach into three different phases: Behavioristic CALL (later referred to as Structural CALL), Communicative CALL and Integrative CALL. The evolution and existence of these three phases was mainly dependent on the technology, paradigm of teaching/learning languages as well as the overall view toward languages.

1. Structural (Behavioristic) CALL

The first approach to CALL emerged in 1950s in a form of concept that can be presented with the phrase "drill and practice" (Warschauer, 1996). Moreover, Warschauer (1996) maintains that the application of such a structural approach includes software based on the model of computer as tutor (Taylor, 1980) and focuses on employing the behaviorist theories of language learning which dominated language learning theories of that era. The role of the computer therefore was to present instruction to the student and do language practices in a form of drills. Another feature of this period was that "the computer was viewed as a mechanical tutor that never grew tired or judgmental and allowed students to work at an individual pace" (Warschauer & Healey, 1998, p.57).

2. Communicative CALL

As mentioned by Warschauer (1996), it was John Underwood who in 1984 presented a series of 'Premises for 'Communicative CALL' (Underwood, 1984) that led to a new approach to CALL in the late 1970s and into the 1980s. These premises, according to Underwood (1984), consist of:

- 1). Focusing more on using forms rather than on the forms themselves;
- 2). Teaching grammar implicitly rather than explicitly;
- 3). Allowing and encouraging students to generate original utterances rather than just manipulating prefabricated language;
- 4). Not judging or evaluating everything the students nor rewarding them with congratulatory messages, lights, or bells;
- 5). Avoiding telling students they are wrong and is flexible to a variety of student responses;
- 6). Using the target language exclusively and creating an environment in which using the target language feels natural, both on and off the screen;
- 7). Never trying to do anything that a book can do just as well.

Proponents of communicative approach thought that the drill and practice programs of the previous decade couldn't consider authentic communication as a value in process of language learning. Another critic of behavioristic CALL, Vance Stevens, asserts that all CALL courseware, activities, and practices ought to build on intrinsic motivation and should foster interactivity of both learner-computer and learner-learner (Stevens 1989).

3. Integrative CALL

Dramatic development of computer multimedia and the availability of the Web all over the world provided the possibility of inventing a new Web-based approach to CALL namely integrative CALL (Warschauer & Healey, 1998). Integrative approaches to CALL are formed based on two main technological developments of the last decade - multimedia computers and the Internet. Multimedia technology - presented today by the CD-ROM - permits a variety of media (text, graphics, sound, animation, and video) to be accessed on a single Web-based machine (Kazemi & Narafshan, 2014). Further, Warschauer (1996) asserts that what makes multimedia more powerful is that it also entails hypermedia in a sense that the multimedia resources are all connected together and that students may navigate their path simply by pointing and clicking a mouse.

Furthermore, Hypermedia offers a number of advantages for language learners and learning. First, Hypermedia creates a more authentic learning environment for language learners meaning that listening activity is combined with seeing, just like what happens in real world. Second, language learning skills namely listening, speaking, reading, and writing skills are easily integrated in a sense that the diversity of media make it natural to integrate reading, writing, speaking and listening in a single activity. Third, learners have much control over their learning process because students may not only go at their own pace but also on their own individual path, moving forward and backwards to different sections of the program. Lastly, the major privilege of hypermedia is that it facilitates the principle focus on the content without removing the secondary focus on language forms and/or language learning strategies. As an example, at the time that the main lesson is in the foreground, learners can have access to a variety of background links that allow them fast access to structural explanations or exercises, vocabulary glosses, pronunciation drills, questions or prompts which motivate language learners to take an appropriate learning strategy.

For the first time in history of CALL the student was also able to receive high quality images and sounds through their computers. Internet access has proven to be advantageous in the ways of enabling students' actual communication with other students or native speakers around the world, using either synchronous communication devices, like chat rooms or online communicators, or asynchronous ones such as the email.

The ability to provide web searches and other student oriented network activities has also changed the face of CALL.

Furthermore, as long as modern technology is being incorporated in classroom settings new educational principles and innovative pedagogical techniques may be proposed by language planners or technology users (i.e., teachers and/or learners). As a result, the efficiency of both teachers and learners will be increased and the educational environment will be changed to a more interactive, socialized one.

The current literature on computer-based Learning highlights that one of the major problems in the field of Computer Assisted Language Learning (CALL) is the usage difficulty of the technology for teachers; as such, many teachers still need the help and guide of experts for planning, design, evaluating, and delivery of web based learning programs and exercises. Simply put, many teachers still have limited experience in working with CALL software and many others are voices in utilizing technology in their classrooms.

Among the varied CALL software that are being used in language learning classrooms, Hot Potatoes is a Web authoring software that creates easily interactive Web exercises for language learning purposes. Accordingly, the current study aims to show the use of hot potatoes and to discuss the strengths and weaknesses of this software.

II. THE DESCRIPTION AND USE OF HOT POTATOES

The program 'Hot Potatoes', produced by Half-Baked Software, Inc., was designed to let instructors make interactive, Web-based exercises that can be easily accessed by learners at any place through connection with internet with any standard Web browsers. Hot Potatoes makes use of both HTML and JavaScript; however, learners and/or instructors do not need to be familiar with these languages to make the Web-based exercises. Instead, tutors employ the Hot Potatoes program's exercise templates to create exercises on Web pages which may be uploaded to a server where students have access to them. Hot Potatoes has the capability of producing six different kinds of Web-based exercises which can stand alone or be connected to other exercises or activities to create a sequence of tasks. Further, thanks to the capabilities of

the program (i.e., Hot Potatoes) Students can correct and/or edit their own assignment based on the clues and feedback set up in advance by the tutor. Furthermore, by using Hot Potatoes software, teachers have a chance to specify an e-mail address to which scores are to be sent. Hot Potatoes is actually a software suite consisted of six different programs, referred to as modules in the present study (Winke, 2001). Each module can be used to create a different type of interactive, Web-based exercise; the six different modules are named as "potatoes," and include: JBC, J Quiz, J Mix, J Cross, J Cloze, and J Match, with each name referring to the type of exercise the module produces (Winke, 2001) (Figure 1).



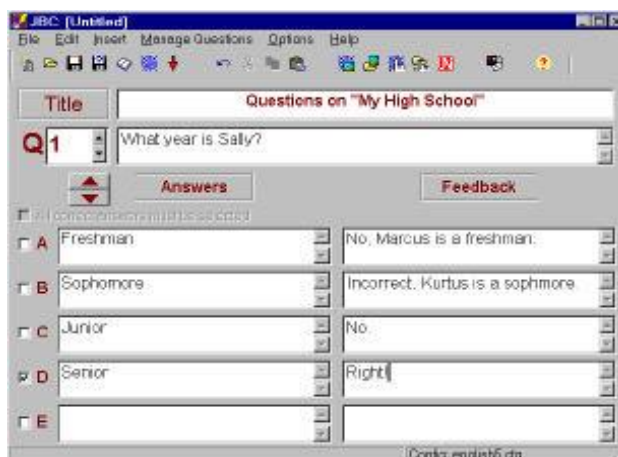
(Fig.1 Screenshot of Hot Potatoes)

A summary of the types of exercises that can be done with each module and the links to online interactive examples are presented in Table 1.

Module	Exercise type	What students do	Interactive example
1. JBC	multiple-choice quiz	choose the correct answer for each question	http://epsilon3.georgetown.edu/~pmw2/hotpot/JBCSample.htm
2. J Quiz	text-entry quiz	type in words, phrases or even sentences (open-ended)	http://epsilon3.georgetown.edu/~pmw2/hotpot/JQuizSample.htm
3. J Mix	jumbled-word exercise	arrange jumbled words into phrases or sentences	http://epsilon3.georgetown.edu/~pmw2/hotpot/JMixSample.htm
4. J Cross	crossword	fill in the blanks to complete the crossword puzzle	http://epsilon3.georgetown.edu/~pmw2/hotpot/JCrossSample.htm
5. J Cloze	fill-in-the-blank exercise	enter the words that are missing	http://epsilon3.georgetown.edu/~pmw2/hotpot/JClozeSample.htm
6. J Match	matching exercise	match items in the 1st column with those in the 2nd	http://epsilon3.georgetown.edu/~pmw2/hotpot/JMatchSample.htm

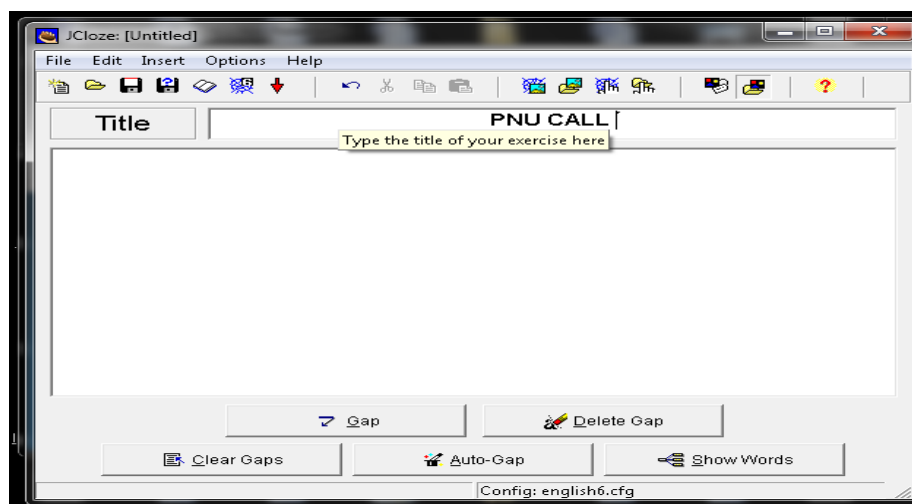
Table adapted from Winke (2001)

JBC module permits tutors to create multiple-choice questions with as many answer choices as they need.



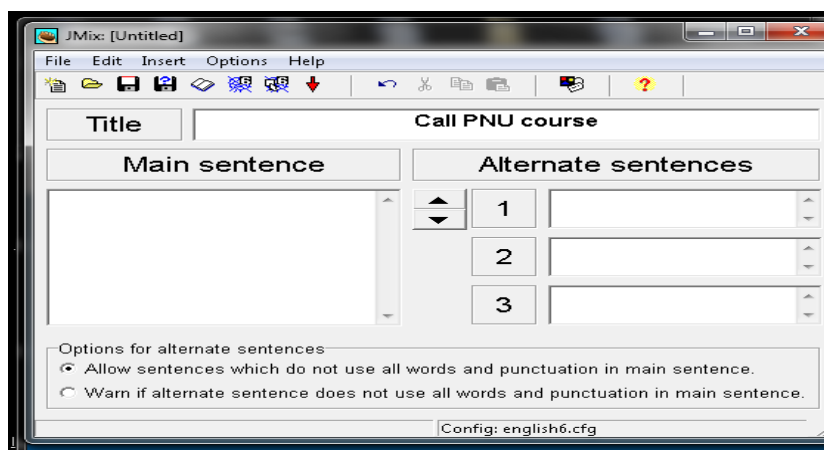
(Fig. 2 JBC module)

J Quiz module is being employed for creating open-ended questions, which differ from multiple-choice questions in a sense that the learner types the answer in a text-field, rather than selecting from a list of options (Winke, 2001). JBC and J Quiz modules both allow exercises to be programmed with an unlimited number of correct answers. For instance, for the question "What is the capital of the United States?" the teacher can specify "DC," "D.C.," "Washington," and other versions and/or forms of the name as correct answers. Hot Potatoes software also gives teachers the option of making answers case-sensitive and of allowing learners to view all true answers by having a "Show Answer" button showed.



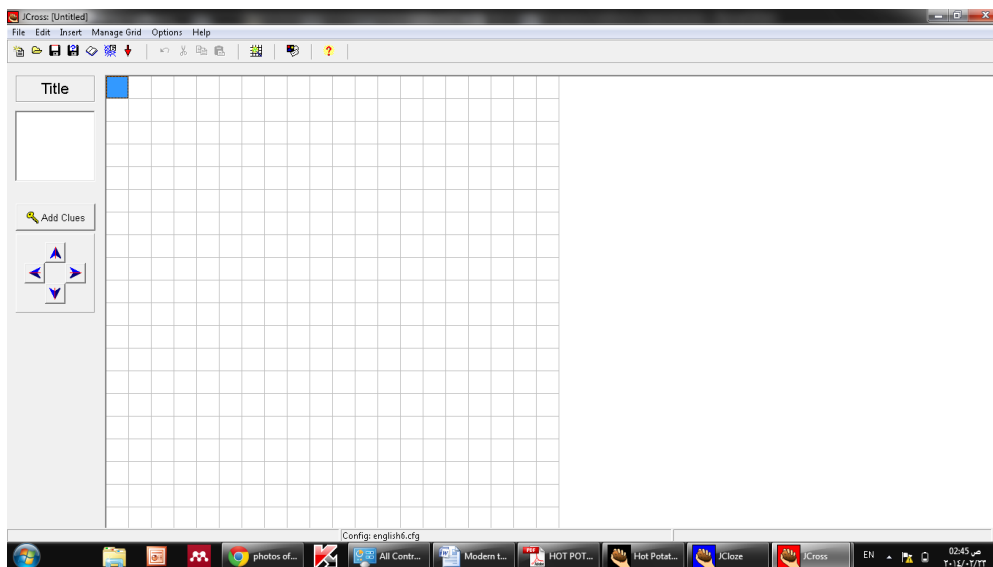
(Fig. 3 J Cloze module)

J Mix module is used for creating exercises of scrambled sentences, paragraphs, or stories (Winke, 2001). Also, learners can drag and drop the sentence fragments to arrange them, or students can click on the fragments in sequence to put the written material together. Further, the teachers are able to add an unlimited amount of additional, supplementary, and grammatically accepted sentences, and may set up a warning note or sign to be displayed on the computer screen if the alternate sentence attached together– by the learner– does not include all the words or punctuation of the main, preferred sentence (Winke, 2001).



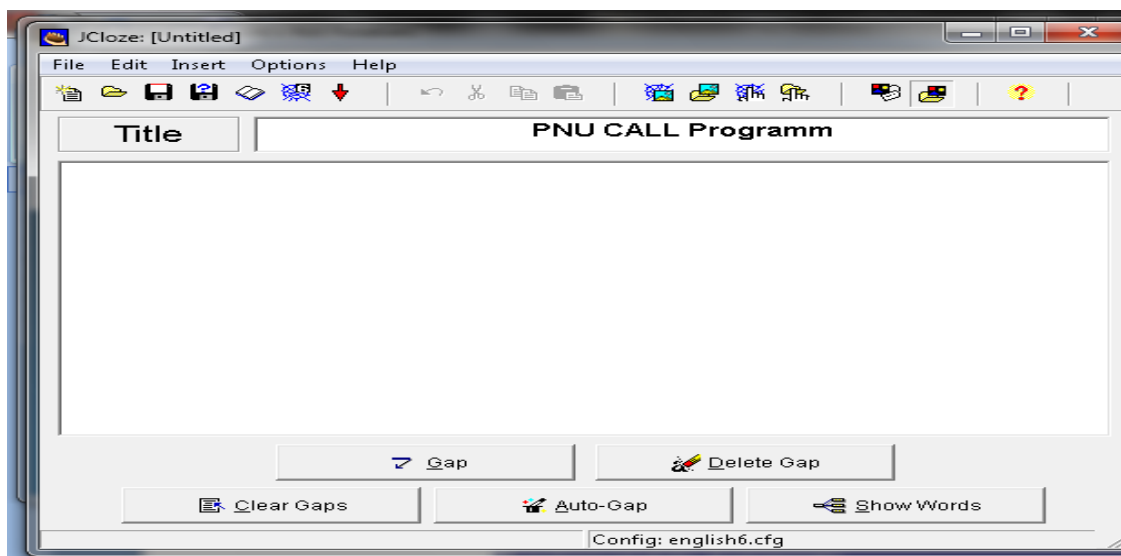
(Fig. 4 J Mix module)

J Quiz module is utilized to design crossword puzzles with adapted puzzle layout and available hints for each word or phrase (Winke, 2001). To do so, the module starts with a blank grid template, and the educator can design the puzzle by entering the words into the grid, or simply by providing a list of words. Then, the words can be arranged in the order of left to right or top to bottom; as this stage completed, the module automatically cuts and reshapes the grid into a crossword puzzle and automatically determines a number to each word. Further, in order to view the clue for each word, the learner clicks on the number in the crossword puzzle where the word starts (Winke, 2001).



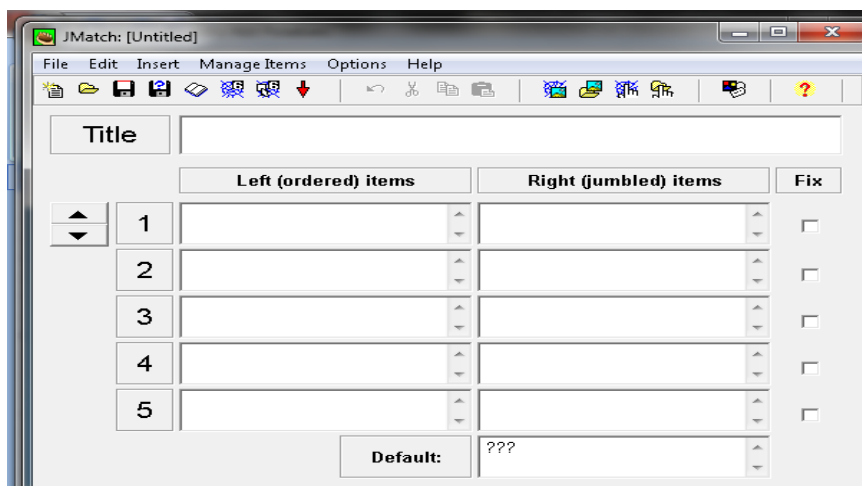
(Fig. 5 J Cross module)

J Cloze module is considered as a traditional cloze or fill-in-the-blank exercise template which permits the educator to type in a text of any sort (e.g., paragraph, ordered- sentences, etc.), and then select the words which are left blank for learners to complete (Winke, 2001). Moreover, a different reading text can be entered (manually or from an HTML file) upon which the cloze-type questions are based on.



(Fig. 6 J Cloze module)

J Match module, allows the tutor to produce matching and arranging activities based on two columns of items (Winke, 2001). Further, J Match module allows the students for easy inclusion of pictures, graphics, and images, so that the matching exercise consists of pairing vocabulary words with the relevant pictures (Winke, 2001).



(Fig. 7 J Match module)

On the whole, all six modules of the 'Hot Potatoes' software have some useful options that allow teachers to adapt exercises and/or tasks within the limits of the basic templates. As an example, in the process of creating exercises, the teacher may adapt the feedback in a way that students get a different message if they have chosen an incorrect answer. Further, the teacher may provide students with access to a "Clue," such as the first letter of a word in a crossword puzzle. Furthermore, some of the modules also permit the teacher to enter a reading text upon which the questions are based. Moreover, the reading texts can be arranged to disappear after a pre-determined amount of time so as to add a timed component to the exercise; however, students may click a button to view the text again. Also, all the modules except J Cross allow the teacher to easily include graphics, sounds, and video into exercises.

III. HOT POTATOES EVALUATION: STRENGTHS AND WEAKNESSES

The evaluation of Hot Potatoes can be based on the following three questions: 1) how does the program allow the creation of second language learning exercises that are congruent with second language learning theory? 2) How well is the software user friendly? And lastly, 3) is the program suitable for language testing?

Employing technology by EFL/ESL teachers has its own privileges. One of these benefits is the tremendous increase in the extent of exposure to and interaction with the target language outside of the classroom environment. Hot Potatoes exercises have such advantageous technological use when they are accessed by learners as a complementary classroom assignment whether within or outside of the classroom settings.

Further, Hot Potatoes web-based exercises may be shared with teachers all over the world as long as they have access to the internet. Accordingly, Hot Potatoes Interactive Web exercises can increase the interaction and motivate among learners and teachers especially in second/foreign language learning classes. With regard to the Hot Potatoes exercises, another benefit is that displaying and summarizing results is done automatically and the students may see the outcome of their work on the screen. Furthermore, learners may have the evaluation of their learning progress by a score (%); also, by clicking on a button, students can see the lists of all questions and answers given with their appropriate labels "correct" or "false".

Moreover, Hot Potatoes activities follows the principles of 'task-based learning activities'; learners can benefit from task-based teaching in which they are involved in doing the tasks and/or activities with a primary attention on content rather than language and form (Long, 1996). Also, good task based activities mainly focus on meaning, prepare a communication problem to work out, have a connection to real-world activities, and do not care about language display (Skehan, 1998). However, the effectiveness of the Hot Potatoes tasks heavily depends on how the teacher makes use of the program. More, Hot Potatoes exercises can be completed at any time or any places, and even they may be done previously to the first lesson or as a homework assignment.

An example of Hot Potatoes task based activities is that students— who are new to the school — share a computer terminal and in cooperation with each other they accomplish a 'J Match' activity in which they should locate all the buildings and/or colleges on campus.

Another strength of Hot Potatoes Web-authoring software is that young learners mostly prefer to fill in electronic forms rather than paper forms in a sense that pupils are more motivated to use Web-based devices (e.g., computers, laptops, tablets, and so on). But, with regard to Hot Potatoes activities and the amount of interaction in such activities, it can be mentioned that the 'interaction' is limited to interaction between the user and the pre-scripted feedback prepared by the creator of the activity (Winke, 2001). As such, Hot Potatoes activities can be considered interactive in the narrowest sense. However, it ought to be asserted that the inventors of Hot Potatoes program did not consider the software as a test-design package; so it should not be used for this purpose. Overall, the six modules of Hot Potatoes

seem logical and easy to use; they do not need programming knowledge. But, Hot Potatoes is a tool, and, like any other tools, managing to work with it efficiently largely depends on the knowledge, skill, and the creativity of the user.

Several disadvantages can be taken into consideration concerning Web exercises. First, the necessary infrastructure for installing and using the software must be available and affordable. Second, the access to necessary computer equipment may be a problem for teachers and students; also, limited bandwidth brings about slower performance for sound, video, and large graphics. Third, there are no possibilities to prevent the software users from cheating, and no security measures are considered.

And finally, as Bradin (1999) maintains, “Language teachers who are not accustomed to looking at CALL software may perceive its purpose very differently than those who are more experienced” (p. 159). As such, all of the above mentioned factors— that is advantages and disadvantages of the software— combine to make Hot Potatoes (and in general CALL) software evaluation a unique but difficult task.

IV. CONCLUSION

The Hot Potatoes pedagogical Web-based software,—which is comprised of different modules for creating six different types of activities— is a valued program for designing and producing on-line, interactive language learning activities that may be utilized inside or outside of the classroom or any other learning environment. These sorts of activities and/or exercises are especially efficient in language learning laboratories (labs) equipped with Internet access, or for distance learning. Moreover, if Hot Potatoes exercises are matched with both appropriate content and motivated learners, second language learning will be highly promoted and facilitated. Also, Hot Potatoes' user-friendly modules let proficient tutors to design and produce complex, interactive web-based exercises. It is to be crystallized that Hot Potatoes program is not created for the purpose of testing affairs. To this end, it should not be employed as such. Nevertheless, the Hot Potatoes web-based software provides teachers with flexible, easy-to-use modules for making Web- based language exercises that learners can work on while getting feedback from the software that will direct and/or guide them towards true answers. Overall, the evaluation of computerized pedagogical programs such as Hot Potatoes software seems a complicated and time consuming procedure that needs both the Web and language knowledge.

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Nabiollah Sadeghi was born on February 2nd 1976 in Zarand, Iran. He is a Ph.D. candidate at Tehran Payam Noor University, Iran. He has authored some articles and has presented several papers in international language conferences. His special interests are in SLA issues in general and learner individual differences, intelligence, learning styles and strategies in particular. He is presently teaching EFL related subjects at Payam Noor University of Sirjan, Iran.



Hassan Soleimani is an assistant professor of applied linguistics at Payame Noor University, Iran. Dr. Soleimani received his Ph. D. in applied linguistics from Isfahan University in 2008. He has authored several books including *Non-parametric Statistics for Applied Linguistics Research* in 2010. He is the author of several articles and has presented some papers in international conferences. His special interests are SLA issues in general and research and statistics in particular. He is presently teaching CALL, EFL methodology, and EFL curriculum at PNU post graduate school.