
Generic Software of e-Exam Package for Hearing Impaired Persons (Mathematics as Case Study)

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Abstract: This paper presents an applied Generic Software of multiple kinds of e-exam package; this package of e-exam is oriented to Hearing Impaired (HI) persons. Therefore the exam material of this package is translated into language of HI persons like sign language and finger spelling. The idea of the Generic software is to present an empty templates to the teacher who would like to develop his required e-exam for the needful topic (mathematics, language, science, etc) and desired set of exam kinds (multiple choices, matching between words, fill in blanks, etc). Also the teacher can select his required number of questions and the Generic software then controls score grade without errors. Effective coding of Visual Basic (enhanced by 3000 mpg video clips files of sign language and 42 gif picture files of alphabets of finger spelling) has been developed to allow Generic software in realizing its goals for teachers of HI students as well as for HI students. The package of e-exam is aimed and planned to be familiar with all requirements of teachers of HI students. A case study was applied in mathematics topic of real standard Indian schools then these experimental e-exams were showed/tried to experts to get valuable feedback from them. This Generic software presents empty templates, so it is considered as authoring tool or generic software for developing e-exam material for HI persons. Why multiple kinds of e-exam? It is to cover all requirements of teachers of HI students for reason of evaluating their HI students. Also scores are controlled by the package for all permeability's numbers of questions.

Why multiple modes of communication? It is to cover all categories of HI persons.

Kinds of e-exam and Scoring system

The package covers five kinds of e-exam

1. Multiple choices (1 to 8 questions)
2. Matching words in two columns (standard number 5 words in each column).
3. Yes or No (1 to 10 questions)
4. Fill in blanks (1 to 10 questions)
5. Answer in one word (1 to 10 questions)

The teacher can select his desired number of questions as shown above except matching between words fixed number in each column.

According to the number of questions selected by the teacher Scoring System will divide the score of that kind and give the accurate scores of each question of that kind. Ten marks have been assigned to each kind; the final score represents the total of marks of each kind.

Hence if the teacher chooses two kinds, his final score would be 20/20; if he chooses 5 kinds, the final score would be 50/50. The package processes scoring system successfully for any selected number of questions.

Mechanism of the Generic Software of e-Exam Package

The Generic software was designed to author e-exam modules for teachers of HI persons. Therefore there is two main projects, one for teacher to be used by the teacher in submitting his exam material. Second project for HI students to be used by HI student as e-exam module for the entered topic by teacher.

Such technique needs specific skills of visual programming because we have four main tasks for this package as shown:

1. Entry questions in the teacher project must be transferred to student project.
2. In student project, entry questions including correct answers must be reconstructed so as to be typical questions displayed on screen of HI student.
3. All the exam material which would be displayed for HI students must be translated into language of HI persons (sign language with lip movement and finger spelling)
4. In the student project, Scoring System must be controlled according to the desired number of teacher exam.

The following picture represents a sample form of teacher project in run window. The teacher selects any set of kinds of e-exam then he enters his required number of questions and the question and correct answer for each.

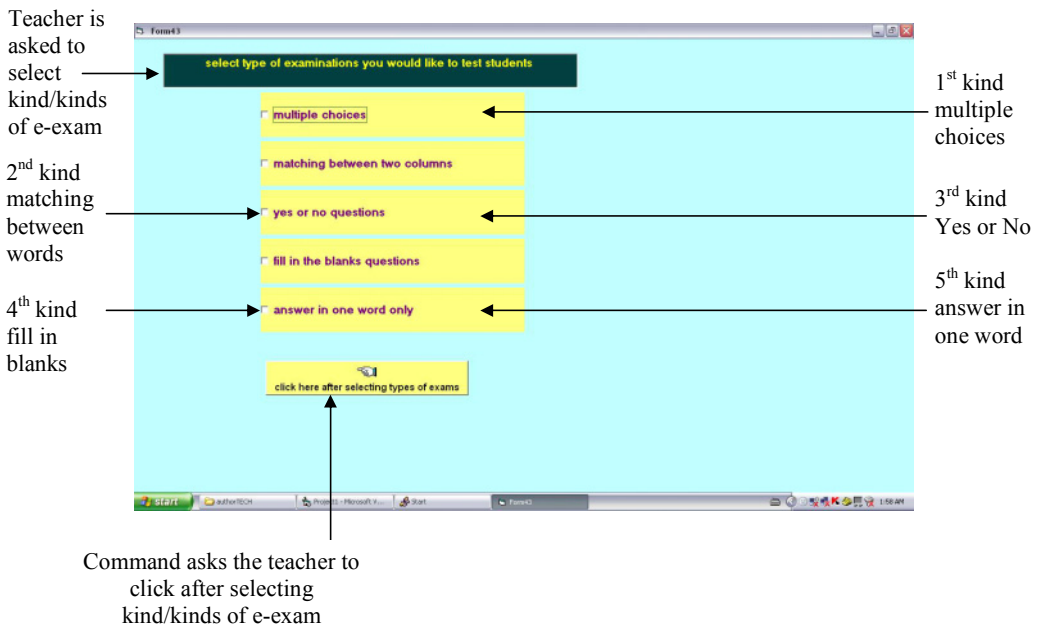


Figure.1 : Run out form of VB in Teacher Project, selecting kind/kinds of the required exam.

From the above picture it is clear that the Generic e-exam package was designed to be easily used by the teacher with simple basic skills in using windows, the teacher needs not to learn coding or multimedia technique.

For example the teacher would select multiple choices then he would be asked to enter number of questions (1 to 8) (suppose that the teacher selected 2 questions only) as shown

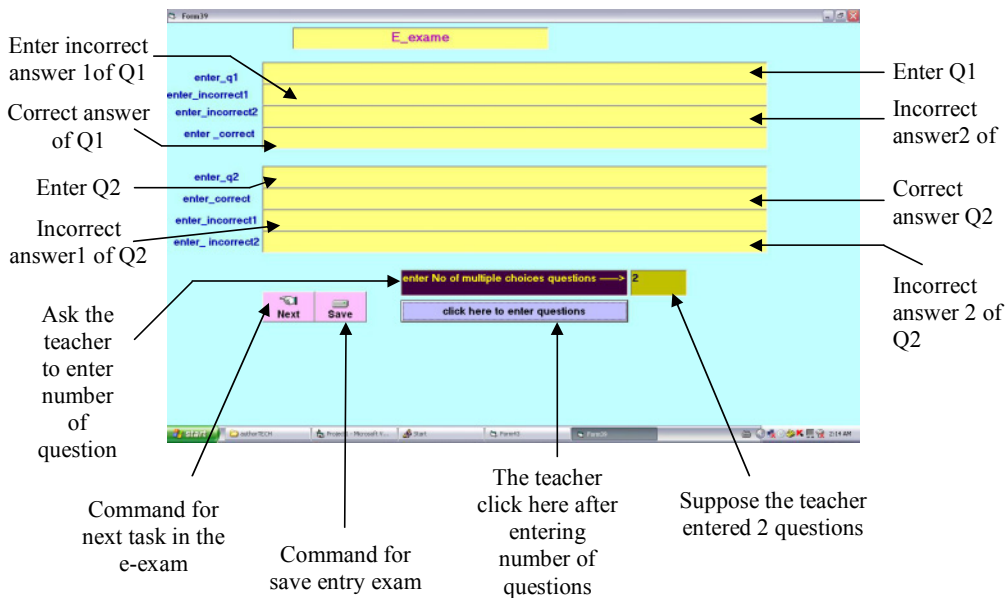


Figure.2 Run out form of VB in Teacher Project, enter questions and answers

From the above picture we can see the empty templates in the teacher project so the teacher (first user) can develop his exam for any topic besides that he can select any set of the five kinds and enter his needful number of questions.

Now we shall display the corresponding form in the student project, the student is final user. So the teacher has to use this e-exam package first then HI student can use the generated e-exam module by this package.

Therefore this Generic software of e-exam package is not oriented to specific topic or specific level of HI students but it is an authoring system for developing e-exam for HI students.

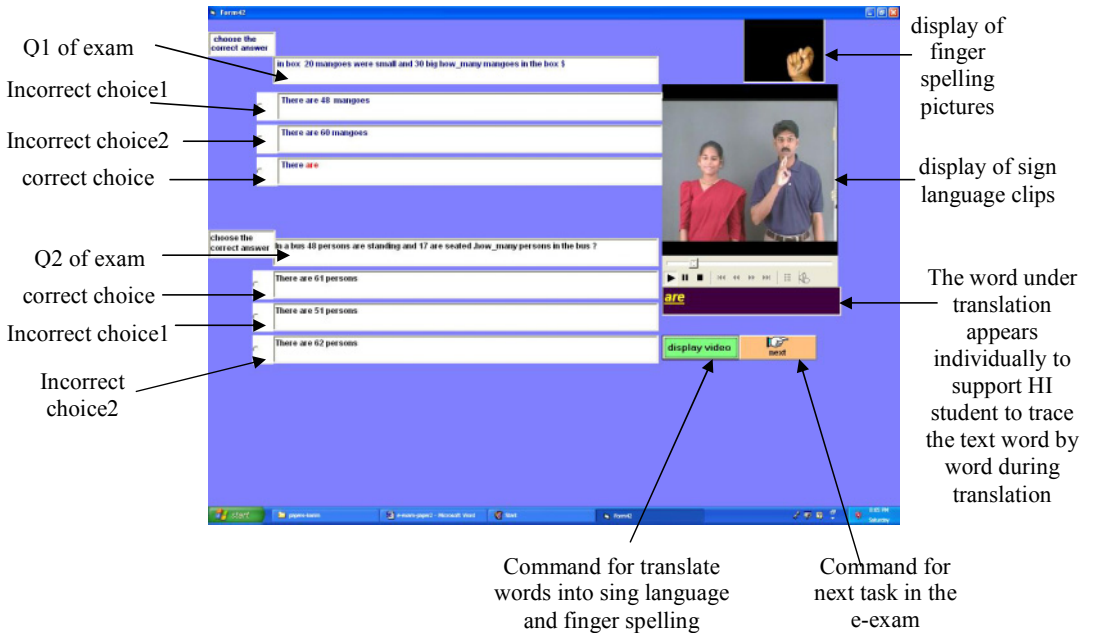


Figure.3 : Run out form of VB in Student Project (e-exam) corresponding to VB form in teacher project, picture 2

As per the above picture we can match between screen of teacher project (previous picture) and this screen(corresponding form of student picture). The researchers selected mathematics as case study (Mathematics 2nd Standard Indian Schools). Therefore the generated exam should be mathematics exam.

Multimedia technique.

- a- About 42gif picture files have been linked with the system.
- b- About 3000 mpg video files have been linked with the package
- c- Certain multimedia components and modules in VB software have been used, effective modules media player have been used.

Now we shall display block diagram of teacher project and student project

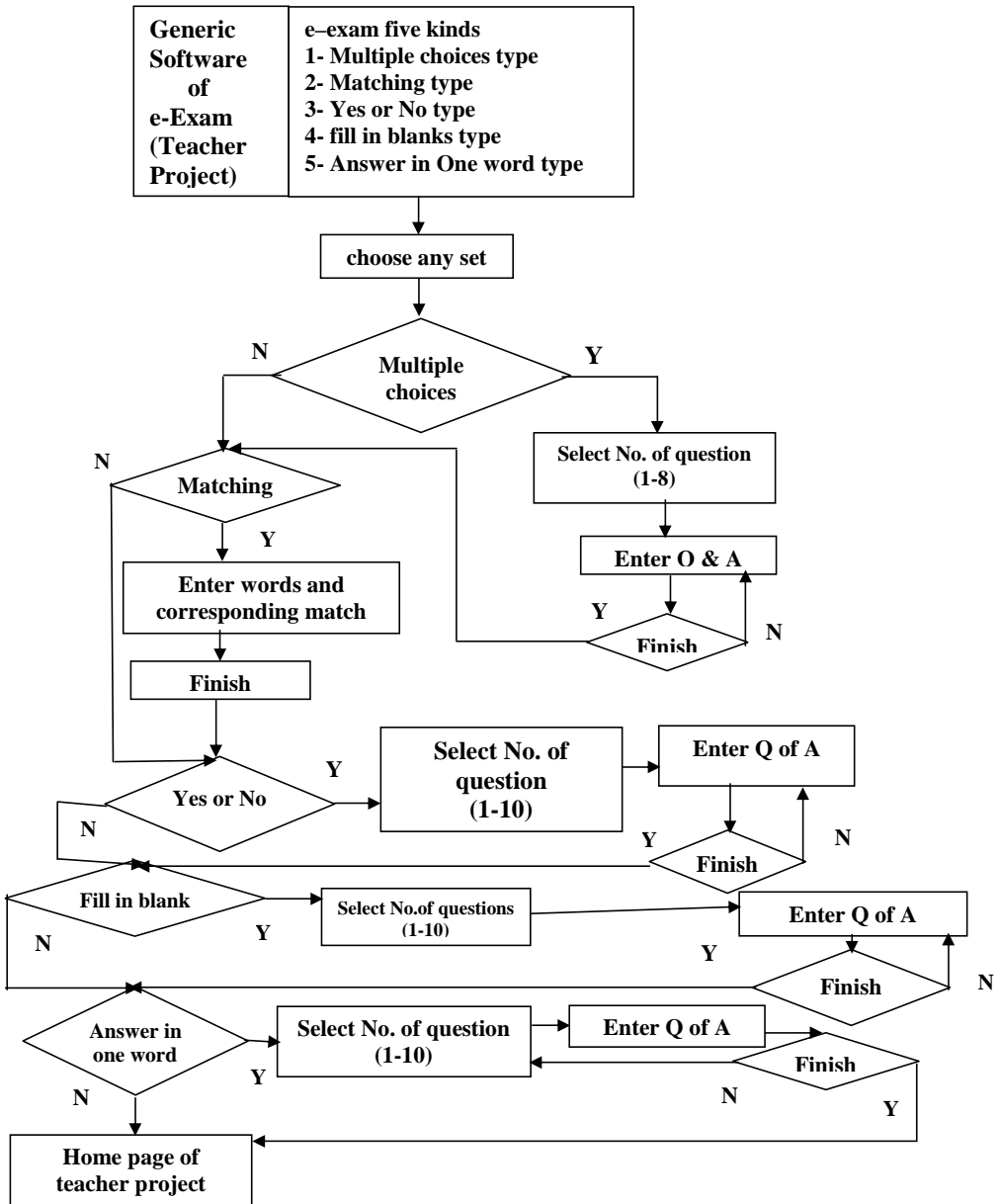


Figure.4 : Block Diagram of Teacher Project (e-exam)

From the above block diagram the teacher is allowable to develop his desired exam, he selects kinds and number of questions as well as his required topic.

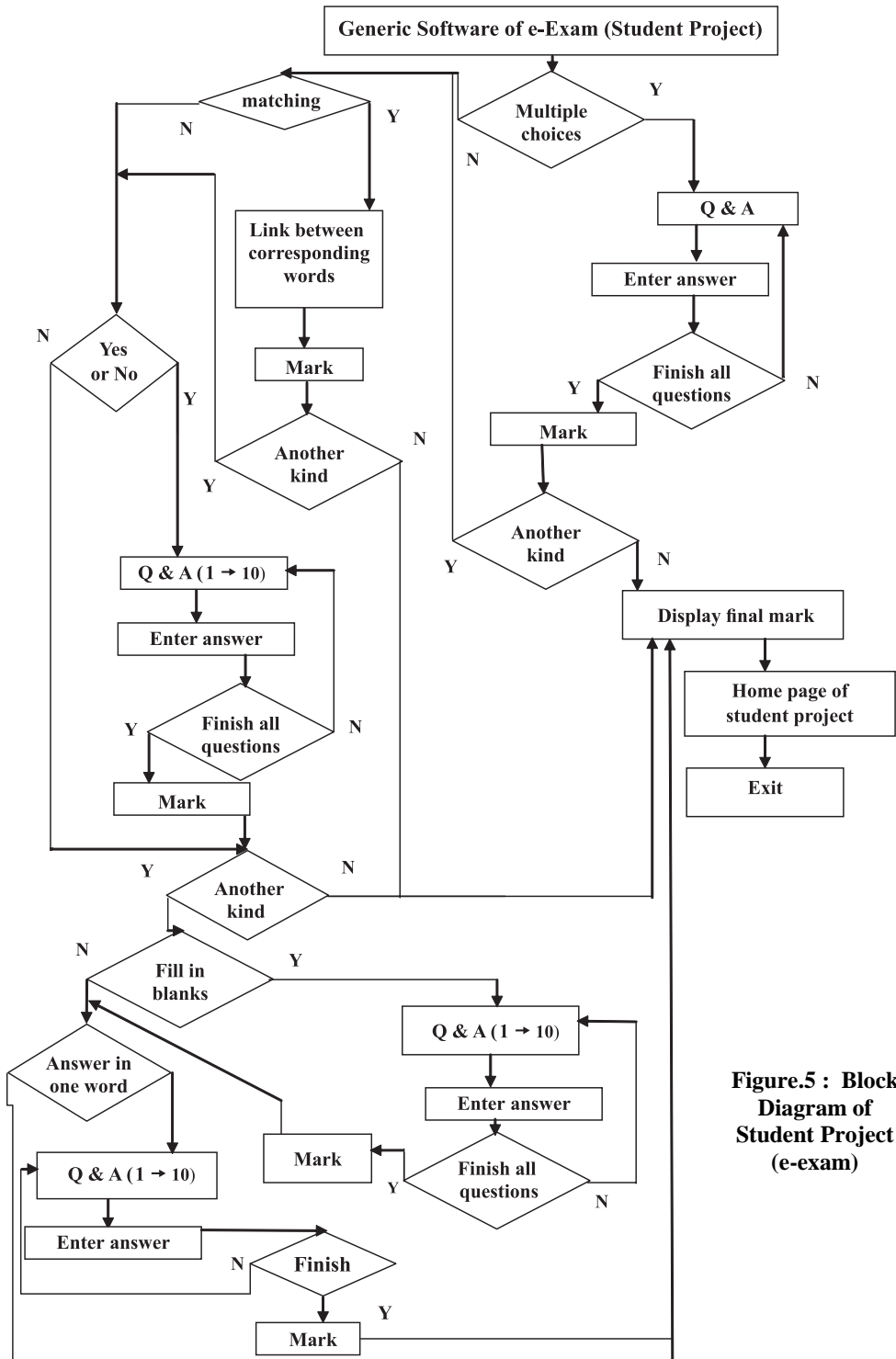


Figure.5 : Block Diagram of Student Project (e-exam)

Conclusion

The researchers summarized their conclusion as followed:

1. Teachers of HI persons can develop their desired e-exam modules of any topic for HI students even without knowledge in sign language or finger spelling or e-learning designing modules or Visual Programming and its multimedia technique.
2. Multiple kinds of e-exam helps teacher of HI students to evaluate his students in an accurate process and the teacher can develop his e-exam for any topic and for level of HI students.
3. As per the interview with some experts who tried the experimental e-exam modules, we can follow another set of main conclusion:
 - a) E-exam modules do not appeal to the HI students because of the tension caused by using e-exam besides the tension of the exam itself, so it is recommended not to examine the HI students of such a school level via computer. To reduce such tension, it is recommended to do the following suggestions:
 - i) Use fun and enjoyment in the e-exam modules. Such fun and enjoyment help in developing e-learning modules so as to be friendly learning tools for HI students even with examination process.
 - ii) According to Hearing Impairment teaching strategies, use common, clear, easy, short and simple words as well as sentences.
 - iii) give HI student enough time to read, trace translation of words and answer the questions.
 - iv) It is very important to enhance your scoring with reinforcement for HI students. Reinforcement is the key of learning (Skinner)
 - b) Procedure of displaying multimedia in translation is successfully developed, if the word is present in the vocabulary it should be displayed as sign language video clip and if it is not present it should be displayed as alphabets finger spelling and displaying word under translation in different color helps HI students in tracing his exam.
 - c) Experimental e-exam modules developed by the package are easy to be used by HI learner even with simple basic computer skills. HI students use only mouse with some keys, without complex steps to use the e-exam.
 - d) Scoring System is successfully works, particularly when the teacher selects his kind/kinds and his required number of questions for each kind of exam. But experts prefer and suggest that the teacher would be free to select his own scale of scores for each question (i.e not for each kind 10 marks but the teacher can choose his desired rate of marks for each kind of exam). Such controlling on the rate score of each question asks for complex coding but it is possible, and it is suggested as future work.

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This document was prepared by National Center to Improve the Tools of Education, U.S. office of Special Education Programs.
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