A COMPUTER - ASSISTED - LEARNING STRATEGY FOR COMPUTER LITERACY PROGRAMMES

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ABSTRACT:

Current problems of inadequate resources for computer literacy programmes are discussed. It is proposed that specially capable students can be identified by semiautomatic methods. A games-oriented self-instructional strategy for elementary nonformal instruction is described. Expected results of such a strategy are discussed.

*This document was scanned from the original, typed, document and converted to text using an OCR system in 2004*INTRODUCTION

It is generally understood that the use of computers in education is limited, at the present time, to methods of

assisting in the work of human teachers. In most instances, it is also generally observed that the replacement of a human teacher by a computer is not possible. The reasons why such a replacement is not possible can be attributed to the following major factors:

- Incomplete understanding of a human teacher's methods of operation, i.e., incomplete analysis of human teaching algorithms.   ."

- Inability of present day computers to accept natural language inputs or produce natural language outputs.

- Inability of present day computers to accept voice inputs, particularly from simultaneous sources.

- Inability of organisations to provide one full-time computer per student.

It is, therefore, considered impractical to attempt emulation, and in most cases, even simulation of the human teaching process. On the other hand, present-day computers can be used extensively for drill –and- practice type instruction as well as for laboratory simulation and the replacement of books, films, transparencies etc.

In general, one may contend that the "clerical" aspects of teaching can be, and are being, replaced by automatic methods while the "intellectual" aspects appear to be at present beyond the scope of automation.

Moreover, in India, there are severe constraints on the availability of computers in schools and even greater constraints on the availability of trained manpower to utilise such technology. Such a situation has resulted in a certain lack of clarity regarding the objectives for installing computers in schools. The problem, naturally, is even more acute in the semi-urban and rural areas.

In recent times, considerable anxiety has been expressed over the resulting non-achievement of objectives in the computer-literacy area.

Long term solutions to these problems are being actively sought by the Government and others.

In this paper, we are proposing a short term strategy by which a limited set of objectives may be fulfilled. In effect we will attempt to bypass the larger problems to arrive at an intermediate solution.

ASSUMPTIONS

In order to arrive at a strategy which would result in higher rates of achievements of computer literacy objectives, we assume the following: .

1. There exists students in urban, semi-urban and rural areas who are capable of achieving limited computer literacy objectives through self-instruction, with minimal (external) human inputs.

1. There exists personality-types within all student communities of India who are capable of concentrated one-on-one interaction with a computer for long periods of time.

2. Computer games are mildly "addictive" and are an extremely strong motivating factor for understanding computer operation for certain student types.

3. Students to whom assumptions 1, 2 and 3 above are applicable would demonstrate maximum achievement of computer literacy objectives with minimum available resources.

In general, it is assumed that there exists a set of students who, with the existing resources, are capable of high achievement in the area of computer literacy. However, there does not exist any standard and reliable method for isolating this set of students, particularly in the indian context where the universe of students is extremely large.

A PROPOSED STRATEGY

It is proposed that computers in schools, particularly in semi-urban or disadvantaged areas be used to automatically isolate a target group of students to whom assumptions 1, 2, 3 and 4 above are applicable. Limited resources for good quality training which are currently available in the country should then be employed only for such groups of students to ensure high achievement of computer literacy objectives. Methods for automatic isolation of receptive students are proposed below.

OBJECTIVES OF THE PROPOSED STRATEGY

The objectives of the proposed strategy is to identify students who can:

1. Find and activate games on a computer.

2. Read, understand and follow instructions which results in high game scores.

3. Utilise fixed time-slots for maximum machine utilisation.

4. Recover from simple "disaster" situations such as disk corruption, hardware non-operation, power outages, system hang, etc.

METHODOLOGY

1. The program should start with a single lecture-demonstration session where the following is explained:

   θ   Power-on/off procedures.
   θ   Simple precautions for operation.
   θ   Interconnection of hardware.
   θ   Listing the contents of a directory.
   θ   Changing to another directory.
   θ   Calling up a game.
   θ   Playing two predetermined games.

The session is expected to last for three hours and should be conducted by a competent human teacher. Students above the age 8 years may participate.

1. Computer time is allocated to interested students on an availability basis. One computer should be used exclusively for this purpose. Hence, approximately 10 hours are available each day (say 8 A.M. to 6 P.M.). Depending on interested students, a student may obtain 1 hour per day (10 students), per week (70 students) or per month (300 students). The computer should be available on all days of the month irrespective of holidays etc. Each student is expected to indicate at the end of each session, whether he intends to utilise his next reserved session.

2. All sessions should be completely unsupervised. Students should be allowed to carry out all activities including connecting/disconnecting parts of the system. A simple but efficient logging software should record all key depressions for each session for future analysis. This file should be printed out at the end of each session and erased to save disk space. Not more than one student should sit at a terminal.

3. The program should continue for one year with interventions from a human teacher for 2 hours, once every four months. The human teacher would do the following:

   θ   Study the system log printouts to find out which students have succeeded in:
   θ   Recording high scores on introduced games.
   θ   Discovering and operating new games.

   θ   Introduce two new games.
   θ   Discuss problems with interested students.

EXPECTED OUTCOMES

On the basis of the authors experience with students using computers without any supervision, the following is expected:

1. The number of interested students would decrease rapidly to one group of "hackers". These students would, naturally, have access to more computer time.

2. Those students who are unable to discover new games and activities would try to obtain procedures from their peers. Those who are unable to Implement these procedures would tire of the repetitive activity and drop out or use less time.

3. Those students who are able to discover new activities or to discover new facets of existing activities would spend more time with the machine. They would also have many question for the human teacher. Some will answer these questions from books, if these are available.

4. A smaller group of dedicated and successful innovators will emerge within 8 months. They will have strong interactions with each other and will reinforce each others learning and experimenting abilities.

5. At the end of the year, a human teacher can isolate this receptive group easily through simple testing and interviewing. With appropriate software, much of this process of selection can be   automated.

Once such a group is identified, a more structured training period can be started. Such training can be in the parent school, in a central location or through distance education. This second phase "conventional" training is not discussed here.

DISCUSSION

As mentioned earlier, this strategy outlined above is proposed as a short-term measure to counter

some of the major problems of computer literacy education. Table 1 summarises the approach and also compares long and short term objectives.

Software required for this approach is minimal as computer games ranging from the very simple to extremely complex are easily available at low cost. The only customised software required is a memory resident module to record each session's history. Subsequently such a module can also be programmed to recognise exceptional abilities.

This strategy is based on the premise that in a situation where equal opportunity can not be available to all, the gifted should not be deprived. However, what is essential is to ensure that as large a base group as is possible has the opportunity to qualify as "gifted".

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