

CONTENTS

- ① Message from the Chief Editor
- ② Using IT for Assessment
- ③ New! e-Books @ LIBRIS
- ⑤ A New Robot! Find out about the ADM at the LearningHub@LIBRIS
- ⑥ Lunch Time Talks at LearningHub@LIBRIS
- ⑥ NIE e-Festival Learners' Choice Awards

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Message from the Chief Editor

Welcome to the first issue for 2003! I hope all of you managed to have at least a short break during the December school holidays. We at ACIS had a wonderful Christmas Eve party, but not to worry, we have also been working throughout the term break!

In this issue, the Library and Information Services Centre (LIBRIS) presents news on electronic books (e-books) and our latest high-tech item, the Automated Disc-Dispensing Machine (ADM). The e-books is a pilot project to gauge whether users are interested in reading books online. E-books should be helpful for users who are unable to come to the campus as often as they wish. We are starting with a core collection of twenty-five titles which can be read online from any PC connected to the Internet. If strong interest is shown, we will naturally acquire more e-book titles, so give it a go!

The new ADM is meant to enable users to check out or borrow compact discs (CDs), video CDs, DVDs, etc. themselves, just as we have the self-check machines for books. The main difference is that you can also return CDs at this machine, whereas the self-check machines for books are for loans only. At the time of writing, the ADM has been taken away to have its storage capacity increased, but it will be back by the end of January 2003, and we hope you will try it out then.

What else can Information Technology (IT) be used for? A/P Tan Seng Chee and A/P Hu Chun from the Instructional Science (IS) Academic Group (AG) tell us how IT can be used in the assessment of learning, and especially in speeding up marking. Now doesn't that sound like good news!

Last but not least, we would like to congratulate the Science and Technology Education (STE) and the Natural Sciences (NS) Academic Groups for winning the Learners' Choice Awards with their booth displays. Ms Nenny Noorman brings you details of the ICT exhibition that was held in conjunction with the e-Festival in September 2002.

Best wishes for 2003!

Yvonne Yin
Chief Editor
Library and Information Services Centre (LIBRIS)

Using IT for Assessment

Tan Seng Chee and Hu Chun, Instructional Science

Assessment of learning is undeniably one of the most important tasks for teachers. Among many uses, it provides information about how much learning has actually taken place and what the areas for improvement in terms of instruction and learning are. Assessment, being such an important and high-stake process, demands a lot of attention, effort and energy from instructors. Educators have been looking for ways to improve the validity and reliability of assessment, but on the practical side, they are also finding ways to enhance the efficiency of assessment preparation and implementation. This article gives a brief introduction to some of the ways in which Information and Communications Technology (ICT) could be used to automate and enhance the assessment process in the following areas:

- Productivity tools
- Test development
- Test administration
- Scoring

Productivity Tools

As a productivity tool, ICT does not radically change the nature of the assessment, but acts as a tool to improve the process of preparation, computation and recording of results. Word processing programs such as MS Word™ are commonly used for preparing neat and legibly printed test papers which incorporate text and graphics. Many teachers use computational programs such as MS Excel™ to store students' particulars and test results, to analyse and create summary statistics for the assessment results, and to perform item analyses. These programs can also be used to generate summary reports as they can include different types of graphs generated from the data. A more recent productivity tool that could assist in classroom assessment is the anti-plagiarism programs. As alternative assessment, for example, project work and portfolio assessment, are increasingly being used in schools, anti-plagiarism tools are one of the ways to deter dishonest behaviour. One example is the EVE program (Essay Verification Engine, available on <http://www.canexus.com/eve/index.shtml>). Such programs work by comparing electronic copies of assignments with the documents in the World Wide Web and other text databases, from which a report of the degree of match with the existing documents will be generated.

Test Development

In the development phase, ICT can be used by teachers to prepare and categorise the test items. Usually the teacher will have to input the questions, decide on the format of the questions, decide on the responses, attach diagrams, and store the questions.

One of the strengths of using computer-based testing is item banking. An item bank or item pool is a collection of electronic copies of test items. The items are usually meta-tagged so that they can be searched and retrieved for future use. The meta-tag of an item refers to some important information pertaining to that item so that it can be categorised, searched and retrieved for future use. For more sophisticated testing systems, e.g. Computer-Adaptive Testing (CAT), item banking is a complex process which involves psychometric calibration of the items. In CAT, a candidate's ability is first assessed based on an administered item. Then the computer will determine the next best item to administer and, depending on the examinee's response, a new ability estimate is computed and the next best item is given. The process is repeated until the system has a reasonably consistent estimate of the examinee's ability level.

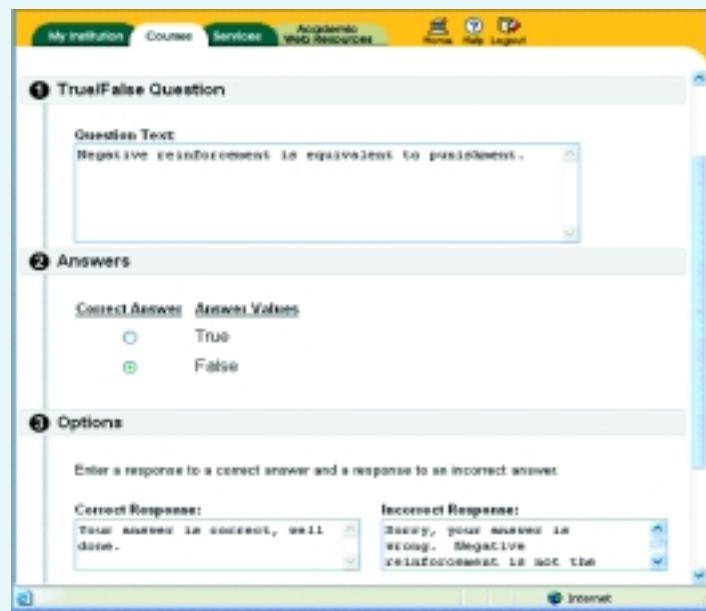


Figure 1. An example of item development using Blackboard®

In the past, computer-based testing has been limited to questions that are text-based, sometimes with static graphics. Recent advances in multimedia technology make it possible to include multimedia presentation of test questions, therefore extending the applications to assessment of other skills. One example is the testing of listening comprehension. The computer can replace the teacher in presenting the audio recording of a text, followed by administration of the online comprehension questions (Figure 2).

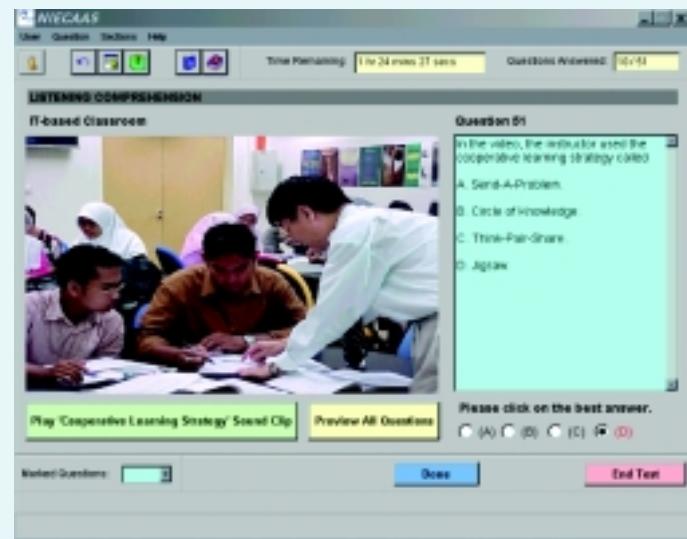


Figure 2. An example of multimedia question stimulus

[Picture from NIE Computer-Assisted Assessment System (2002), developed by Dr Anthony Seow, Dr Chew Lee Chin and Dr Luo Guanzhong with the support of Prof Koh Tai Ann, Dean/Academic, NIE]

Test Administration

ICT can effectively enhance the administrative process of an assessment. The items are stored and presented electronically, saving time and the cost of printing hard copies of the test papers. This will help to reduce the issue of security and transportation of test papers before the scheduled time of the test. When taking the test, only registered users with passwords can gain access to the assigned test. It reduces the tedious task of preparing the examination hall, assigning seats and distributing the correct papers

Using IT for Assessment (cont'd)

to the examinees. When taking the test, the examinees' answers are captured directly by the computer and can be scored online. Again, it reduces the hassle of collecting, transporting, and storing answer scripts, and all the related security issues. In the case of CAT of standardised tests, since the questions administered to individuals may not be the same, the candidates need not take the test at the same time and at the same location, which greatly reduces the administrative work of locating and preparing a location for the test, and drastically reduces the amount of manpower needed to administer the test.

Scoring

Many teachers will testify that grading or scoring a test is by no means an easy task. If you have a test containing 30 items, and you have 4 classes of 40 students each, that will work out to scoring of 4800 items! It is even tougher if you have to grade essays or extended-answer items.

In many schools, an optical mark reader device is greatly appreciated by teachers. Such a device is ideal for processing objective tests, surveys and questionnaires from a large number of participants. Its usage, however, is restricted to items that have fixed choices or responses, and it requires the respondents to shade the appropriate choice with pencils. Computer-based testing could further enhance the productivity of the scoring process as it captures the candidates' responses and automatically scores the answers. Likewise, such a scoring process is more easily done for objective test items. In addition to scoring, the computer can perform further test analyses, for example, item analysis. So, with a couple of clicks, teachers can see the facility indices and discrimination indices of the items. More importantly, computers can generate the summary statistics for the candidates. With such information produced in a drastically shorter time than in manual

computation, teachers can analyse the performance of the students and diagnose the possible areas for remedial action much more efficiently.

While in the past, scoring of tests by computers was largely limited to objective items, "essay marking" programs are emerging in the market. A simple program requires the teacher to key in some "model answers" and scores the students' answers by comparing them with the model answers. More sophisticated programs make use of recent advances in computational techniques such as Latent Semantic Analysis (LSA) (see <http://lsa.colorado.edu/>). Instead of superficial comparison of occurrences of words, LSA uses statistical computation to analyse the semantics (word meaning) in a text. It can be used to assess the quality of an essay by comparing it with some quality essays. One example of an essay marker using LSA is Intelligent Essay Assessor™ (see <http://www.knowledge-technologies.com/>).

Concluding Remarks

This article describes some of the ways in which ICT may be used to assist an instructor in the assessment process. A caveat is that one must not neglect the fundamental issues: the validity and reliability of the assessment. We also acknowledge that ICT cannot be employed in all situations, for instance, the quality judgement involved in some performance tasks such as drawing a picture cannot readily be handled by a computer. But if you dare to take the first step and give it a try, you will be rewarded with greater productivity in work. Perhaps one day your students might even thank you for making assessment a fun activity.

[Note: This article is an abstract of a chapter in the book *Teaching and Learning with Technology: Theory and Practice*, edited by Tan Seng Chee and Angela Wong (2003)]

New! e-Books @ LIBRIS

Yvonne Yin

The Library and Information Services Centre (LIBRIS) has started another new collection, and this time it is a collection with a difference, as the books cannot be physically viewed on the shelves. Instead, these electronic books (e-books) are only available online.

The initial start-up collection comprises 25 titles, mainly educational, which were chosen after consultation with the Heads of the various Academic Groups. Our first e-book subscription with the vendor netLibrary is made up of these 25 titles. All loans and returns are made via netLibrary and not through our library system.

If online reading takes off, we will naturally add to the collection. Instructions on creating your netLibrary account and how to search for e-books are given below. If you would like to have more details on borrowing and browsing e-books, etc., please refer to the following:

<http://libris.nie.edu.sg/E-Books/Netlib/netlibfaq.htm>

Do give this collection a try!

Instructions for accessing LIBRIS' e-Book Collection

Access to electronic books subscribed by LIBRIS is available via the Internet. These e-books can be accessed either through the LIBRIS catalogue (WebOPAC): <http://library.nie.edu.sg/webopac.htm> or directly at the netLibrary web site: <http://www.netlibrary.com>. You may browse an e-book online or check out and read online. Access is limited to staff & students of NIE. Users are required to create a netLibrary account in order to read and check out these resources.

The use of the e-books is subject to the Copyright Act. Users are liable for any infringements.

For first-time users, a one-time registration is required for titles subscribed from netlibrary. The registration must be done on campus. Subsequent logins can be done anywhere, anytime.

New! e-Books @ LIBRIS (cont'd)

- Go to netLibrary's HomePage: <http://www.netlibrary.com> using IE 4.01 or later.
- Click on "Create an account" on the right-hand side
- Input your library membership number as user name
(NIE staff: Please use your Staff Card ID Number as your user name.
NIE student: Please use your Matriculation Card Number as your user name.)
- Input a password
Please enter your NIE e-mail address as the e-mail contact and remember your user name and password for future use.
- Follow instructions on screen to complete the form and submit.
Note: Users who did not enter their Library membership number (NIE Staff Card ID Number/ Student Matriculation Card Number) as their user name are liable to have their user name deleted without prior notice

Please log in.

NIE
NATIONAL INSTITUTE OF EDUCATION

Current Members

User Name: _____

Password: _____

Log In

[Create an account](#)

[Athens Log in](#)

Instructions for Searching the e-Book Collection

To search the e-book collection, please refer to the screens on WebOPAC with the accompanying instructions as shown below:

WebOPAC

Exact Search [HELP]
Check only one of these:

Title Author Subject
 Call number ISBN ISSN

Enter your exact term below:
e-book **Exact Search** **Clear**

Add more information for search (optional)
Material Type: -All- Language: -All-

Publication date: _____

Reservation: Click here for Procedure of Reservation.

To view a list of e-books via the WebOPAC, do a subject search for "electronic books" or "e-book".

Keyword Search [HELP]

Enter your search words below. Using Boolean Operators -- AND, OR & NOT -- with your words may be more effective. Click HELP for more info.

science and e-book **Keyword Search** **Clear**

Display record format: Citation

Reservation: Click here for Procedure of Reservation.

Search Results

- (SCIENCE) AND (E BOOK) found in 2 records:
- [Children's informal science \[electronic resource\]. Taylor & Francis e-Library ed. London, New York, Basingstoke, 2002.](#)
Bibliographic record display
CALL NUMBER: Q181 @ NETLIBRARY -- EBOOK -- Available
 - [How people learn: brain, mind, experience, and school. \[electronic resource\] \[Expanded ed. Washington, D.C.: National Academy Press, 2000.\]](#)
Bibliographic record display
CALL NUMBER: LB1060 @ NETLIBRARY -- EBOOK -- Available

To connect to the "e-book summary" page, click on "Bibliographic record display".

Please note that the e-books will always be listed as "Available" in the library system even when someone has "borrowed" them as their checking-out (loaning) and checking-in (returning) are handled by the netLibrary system.

A New Robot! Find Out About the ADM at the LearningHub@LIBRIS

Yvonne Yin

Introduction

The LearningHub@LIBRIS on the 3rd level of the Library and Information Services Centre (LIBRIS) was officially launched on 28 September 2002, in conjunction with the NIE e-Festival held on that day.

Besides a demonstration on the use of the SMARTBoard and other facilities, visitors were also introduced to LIBRIS' latest addition, the Automated Disc-Dispensing Machine (ADM, not ATM).

This imposing green and grey machine stands outside the entrance to the LearningHub@LIBRIS and is meant to be used for the loan (check-out) and return (check-in) of materials in compact disc (CD) format.

Trainee teachers may borrow items for three days and staff for one week. Please note that not all CDs are stored in this machine. Although it can hold over 1,000 items, LIBRIS' collection far exceeds this! For this and other reasons too, many items are still retained in the Media Unit.

If you are searching WebOPAC, the location of the CD will be given as "DISCSTOR" if it is stored in the ADM, and "MEDIACTR" if the item is kept behind the Media Counter. If you are conducting your search at the ADM itself, only the titles stored in it will be listed, i.e. there will be no hits if the CD requested for is shelved in the Media Unit.

How to borrow the CDs in the ADM

Carrying out a search at the ADM is quite easy. You only have to make sure you bring your membership card along, as the machine will not do anything without it. After scanning or swiping your membership card, the screen is activated. From this point on, everything is touch screen-operated. For example, tapping the **Browse All CDs** button and then the **Title/Call No** button will bring you to the virtual keyboard. You can use the virtual keyboard to key in the title or call number, then double tap to select the item. Tap **Confirm** twice, and the machine will dispense the item. Collect the receipt after it has been cut (this is done automatically and may take a couple of seconds - please don't pull it out before that!)

If you feel there are too many steps, don't worry. Once you are at the machine it will all make sense and the Media Unit has also produced a handy search guide.

A list of Frequently Asked Questions (FAQ) concerning the ADM is also reprinted (see next column) for your information.

Please feel free to contact the Media staff at ext 6790 3628/6790 3635 should you have any further queries.



Returning your CDs is as easy as ABC...

Everything is touch screen-operated

Automated Disc-Dispensing Machine (ADM)

Frequently Asked Questions

Q1 What is the ADM for?

It is for Do-It-Yourself (DIY) borrowing and returning of items in CD format, e.g., music CDs, CD-ROMs, VCDs, and DVDs.

Q2 Who may use this machine?

All NIE staff, students and trainee teachers.

Q3 How many items can I borrow from the machine?

The number of items you can borrow depends on your loan privilege. If your loan privilege is 6 items, then the total number of items including books which you can borrow is 6. For example, if you are holding 3 library books, then you can only borrow a maximum of 3 items from the ADM.

Q4 What is the loan period for items borrowed from the ADM?

Academic and senior administrative staff may borrow the items for 7 days. All other categories of eligible users may borrow them for 3 days. All borrowers are reminded to observe copyright laws when using these items.

Q5 Can I renew items borrowed from the ADM through WebOPAC?

Renewal of ADM items is strongly discouraged so that other interested borrowers do not have to wait too long for these items. However, if you are unable to return the items on time due to unforeseen circumstances, then please renew them just once.

Q6 Can I reserve ADM items which are out on loan to someone else?

No, the system does not entertain reservations for ADM items whether they are borrowed out or physically in the machine.

Q7 Is there any overdue charge for the late return of CD items?

All borrowers, except for academic and senior administrative staff, are liable to pay overdue charges at the rate of 30 cts per day per item.

Q8 Can I return items borrowed from the ADM at the Media Counter (during office hours) or Loan Counter (after office hours)?

Items borrowed from the ADM should be returned to the ADM unless it is not in operation or you encounter problems in returning them to the machine.

Q9 What are the opening hours of the ADM?

You may use the ADM as long as the Library is open.

Q10 What kind of identification is accepted by the ADM?

Staff may use their staff card or NRIC while students can only use their matriculation cards.

Q11 How do I know which titles are stored in the ADM?

Use the various search options in OPAC to locate desired titles. Items in the ADM collection will have "DISCSTOR" displayed on the OPAC screen. It will have the status "Available/NonRequest" if it is physically in the machine and "Charge/NonRequest" if it has been borrowed by someone.

Announcement

Lunch Time Talks at LearningHub@LIBRIS

LIBRIS cordially invites you to a series of lunch time talks jointly organised by LIBRIS and the E-Learning Competency Centre (ECC) at the LearningHub@LIBRIS.

All sessions will be held from 1300 to 1400 hours. The talks for January to March 2003 have been scheduled as follows:

Date	Event	Organiser
20 Jan 2003 (Mon)	LearningHub@LIBRIS (Tour cum Demo)	LIBRIS
21 Jan 2003 (Tue)	LearningHub@LIBRIS (Tour cum Demo)	LIBRIS
22 Jan 2003 (Wed)	Labelling Learning Objects (Speaker: Goh Khee Teck)	ECC
23 Jan 2003 (Thur)	LearningHub@LIBRIS (Tour cum Demo)	LIBRIS
24 Jan 2003 (Fri)	LearningHub@LIBRIS (Tour cum Demo)	LIBRIS
05 Feb 2003 (Wed)	Packaging Learning Objects (Speaker: Chua Chet Shiu)	ECC
19 Feb 2003 (Wed)	MathML (Speaker: Lim Kin Chew)	ECC
05 Mar 2003 (Wed)	Creating standards-based question items using Flash (Speakers: Lau Sze Sze and Ong Peik Ying)	ECC
19 Mar 2003 (Wed)	Open Source Software (Speaker: Simon Lau)	ECC

For talks organised by ECC, please register through:

<http://www.ecc.org.sg/cocoon/ecc/website/presentation/register-talksLearningHub.presentation>.

For tours of the LearningHub@LIBRIS cum demonstration on the use of the Plasma Monitor/Smart Board, please

- a) send an email to libmedia@nie.edu.sg, giving us your choice of date, or
- b) register at the Media Counter, 3rd Level, Left Wing of LIBRIS building

Meeting place for the LearningHub@LIBRIS Tour cum Demo is the Media Resources Room.

Places are limited to the first 20 registrations. **Freebies will be given away for some talks.**

Hope to see you there!

NIE e-Festival Learners' Choice Awards

Nenny Noorman

At the e-Festival held on 28 September 2002, visitors to the ICT exhibition at the gymnasium took part in an online survey to vote for their favourite booth. Each visitor could only vote once. The winners of the Learners' Choice awards were the booths put up by the Science and Technology Education (STE) and Natural Sciences (NS) Academic Groups (AGs). A total of 230 visitors cast their votes. The winning booths were presented with Borders gift cards worth a total of \$100 each at the NIE Corporate Seminar in November 2002.

STE AG showcased how Information and Communications Technology (ICT) is integrated into their science and technology teacher education programmes. For instance, the booth featuring the machines in Home Economics education used software to create designs to be printed onto iron-ons which in turn can be used to decorate clothing and accessories. Visitors were given some samples of the designs to try for themselves when they returned home.

Visitors were also eager to see the display on Integration of Robotics in Design and Technology Education. The various robotics displays were not only interesting, they also illustrated the 'playful' side of Design and Technology Education.

NS AG, on the other hand, put up a booth featuring Wireless Technology, Education and Research in Natural Sciences. Wireless technology is applied creatively to convey information from the research laboratories to the classroom. The booth showed how information from real-time measurements could be transmitted via wireless computers to the classroom for effective teaching.

The various displays at the gymnasium were an eye-opener as they demonstrated how ICT can be used within lessons in a multitude of ways. Hopefully, the ICT exhibition at the e-Festival will provide encouragement for more staff to apply ICT in their lessons. Once again, congratulations to the winning booths!