The Nation's Health: An eModule on the Lessons Learnt from SARS at the National University of Singapore

Mr. Prasad Iyer
Centre for Instructional Technology, National University of Singapore, Singapore
citki@nus.edu.sg

Dr. David Koh
Department of Community, Occupational and Family Medicine, National University of Singapore, Singapore
cofkohd@nus.edu.sg

Mr. Ravi Chandran
Centre for Instructional Technology, National University of Singapore, Singapore
citravi@nus.edu.sg

Abstract: The efforts of the National University of Singapore in spreading the message of public health using the eLearning platform after the SARS epidemic in Singapore is the basis of this paper. The eModule was the first of its kind to be offered to around 30,000 students from various Faculties within the campus. We describe the planning, conceptualization and development process of building this solution. Issues involved and benefits in designing such an eLearning framework are explored. In addition the paper reports the performance of the project and the forthcoming eModule initiative.

Introduction

Public health, an issue that came into the forefront in Singapore after the recent outbreak of SARS in 2003, is critical in maintaining a safe and healthy community.

In its pursuit to make students aware of and to think through issues and events that affect our global landscape, NUS introduced for the first time a completely online interdisciplinary module called *"The Nation's Health: Lessons from SARS"*, to be read by around 30,000 students of the University during the 2003-04 academic year.

The aims and objectives of the module were to:
- explain the origin & transmission of infectious diseases in humans
- study the scientific principles in the approach to disease control
- recognize the broader implications (socio-economic, ethical and medico-legal) of epidemics

The lessons learnt from the SARS outbreak were used to illustrate these points and to convey important take-home messages.

Students were required to read through three important lessons within the module and submit declaration forms at the end of these lessons to indicate that they have audited the module as part of their graduation requirement. In addition, they could also undertake the assessments at the end of each lesson along with a final assessment in order to procure 1 Modular Credit (MC) on scoring satisfactorily.

How did we do it?

The Department of Community, Occupational and Family Medicine (COFM) had the responsibility of preparing this pioneering module and they approached the Centre for Instructional Technology (CIT) for technical assistance.

This module was to be launched at the start of the new academic year in 2003 and the team had around four weeks of development time. The module was to be totally online and accessible via the Integrated Virtual Learning Environment (IVLE), which is NUS' Learning Management System.

Under the supervision of Professor David Koh (Head, COFM), his team of lecturers designed the structure of the module consisting of six lessons that cover all aspects of the aims and objectives. Each lesson also has an assessment where the student needs to answer five True/False questions. On completing the six tests, the student can take the final assessment to try and get the 1 MC for this module. The final test has 20 Multiple Choice questions where the student should select all the right answers pertaining to a question in order to score correctly.

During the preliminary meetings, the approach was to develop PowerPoint presentations for each Lesson that would then be stored in the IVLE Workbin for this module. Students were expected to download these presentations and read through the lessons. However, the drawbacks in this method of delivery were the huge file sizes, lack of consistent content design and absence of a learning ambience.

Enter eModules!

CIT proposed to develop a customized website for this module using a Unified Learning Objects framework. When multiple self-contained Learning Objects are strung together, we get an eModule. Each Lesson within the eModule follows a Learning Object structure and consists of its objectives, synopsis, coverage, content pages, assessment and conclusion.
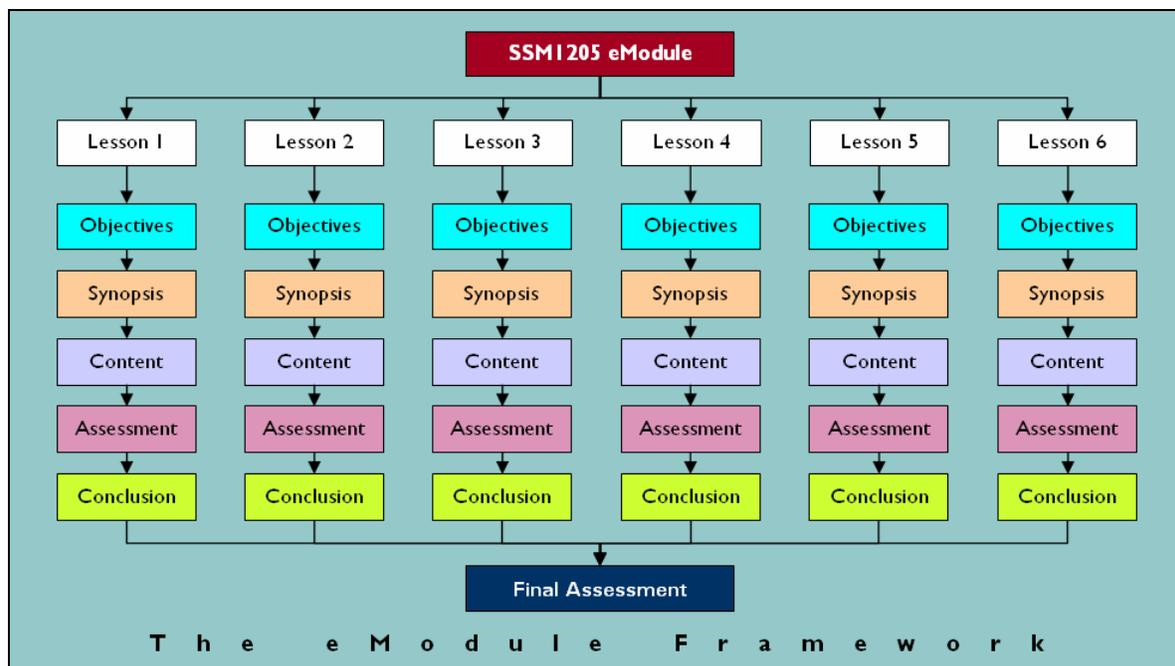

Figure 1: The eModule Framework for the module "The Nation's Health: Lessons from SARS"

The content of each Lesson comprises of granular Topics where along with the text and graphics, we also have a video of the lecturer highlighting important points about the subject.

In order to create the video segments, we utilized the facilities at the CIT Studio where the lecturers were recorded in front of a blue-screen and later superimposed on a white background. Since they were using a teleprompter to read out the narration, the lecturers could put more emphasis on the delivery rather than on speaking extempore.

These video footages were then digitized and after adding post-production quality enhancements in Adobe Premiere, they were converted into Windows Media Video and Audio files. Following this, each video clip was added to the

web pages using Macromedia Dreamweaver MX in such a way that it appears to be seamlessly integrated with the content.

Each lesson also has an accompanying IVLE Discussion Forum where students can exchange views with their peers and lecturers to facilitate asynchronous communication.
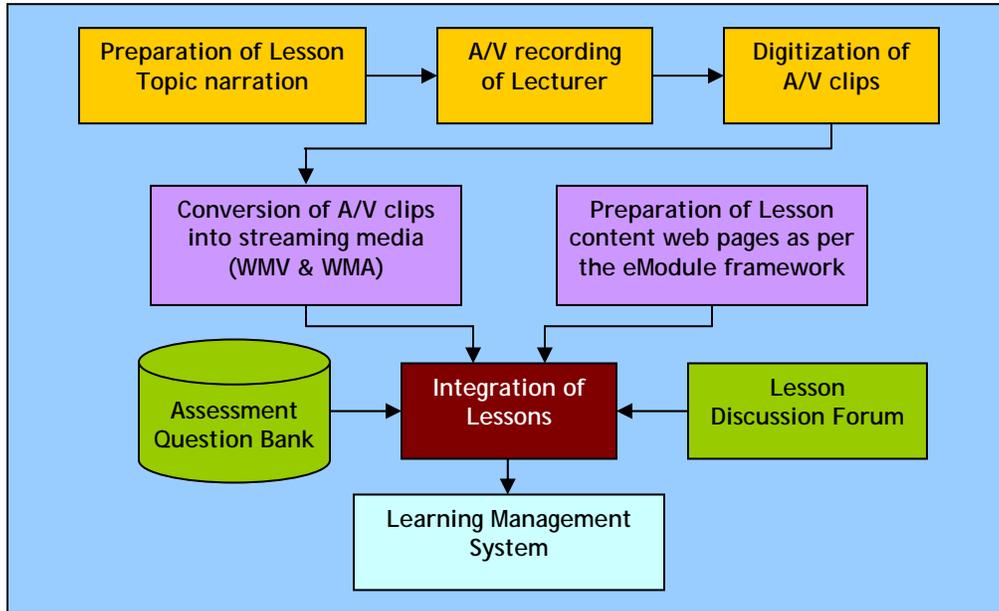
Figure 2: The eModule Production Workflow

The COFM team of lecturers readily accepted this engaging solution, which also answered many of the earlier concerns. Thus over the next few weeks: we scheduled video shooting dates, prepared lesson content, refined narration texts, edited and converted raw audio/video footage into streaming media formats, designed web pages, created assessments and forums in IVLE and linked them to the relevant lessons.

The eModule was ready for launch on 5 August 2003.

Figure 3: Screenshot of the eModule interface along with the Lesson contents

How has it fared?

As of May 2004, more than 29,000 students have completed the module. Given below are the results of some of the online surveys taken by our students on this module:

The contents of this module can BEST be learnt by: (Total responses - 1190)

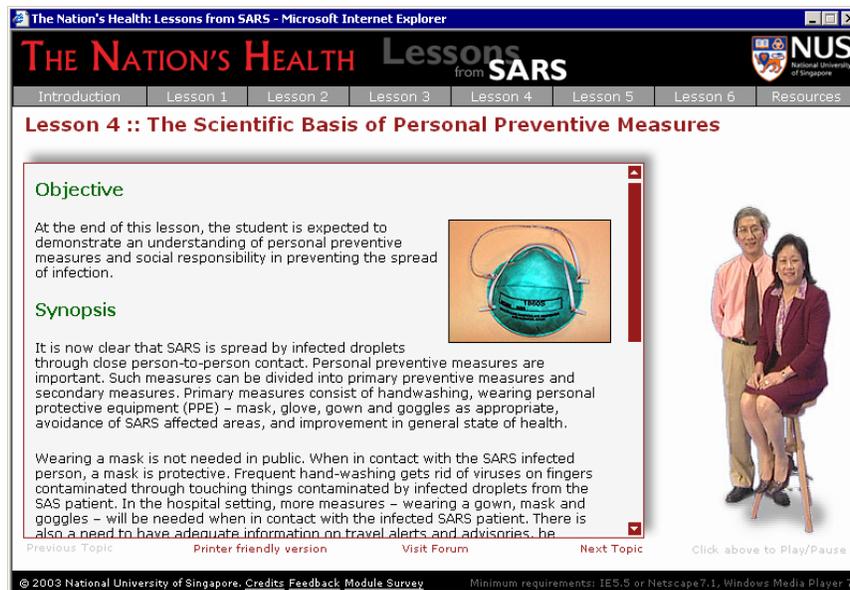|	
Attending lectures	(10.5%, 125)
Reading the lessons as currently presented in IVLE	(66.72%, 794)
Attending tutorials	(1.68%, 20)
Reading text books	(2.02%, 24)
Reading resource materials from the Library	(1.93%, 23)
Searching the Internet on my own for information	(17.14%, 204)

Overall rating of module:

1. This module is timely (1137)

Strongly Disagree	(3.61%, 41)
Disagree	(6.68%, 76)
Neutral	(30.52%, 347)
Agree	(47.67%, 542)
Strongly Agree	(11.52%, 131)

2. I find this module useful (1137)

Strongly Disagree	(2.73%, 31)
Disagree	(5.19%, 59)
Neutral	(24.89%, 283)
Agree	(54.18%, 616)
Strongly Agree	(13.02%, 148)

3. I find this module a waste of my time (1137)

Strongly Disagree	(10.91%, 124)
Disagree	(37.29%, 424)
Neutral	(34.92%, 397)
Agree	(12.75%, 145)
Strongly Agree	(4.13%, 47)

4. There are too many lessons in this module (1137)

Strongly Disagree	(3.87%, 44)
Disagree	(20.23%, 230)
Neutral	(44.06%, 501)
Agree	(27.09%, 308)
Strongly Agree	(4.75%, 54)

5. The narration by the lecturers makes the lesson interesting (1133)

Strongly Disagree	(2.29%, 26)
Disagree	(10.33%, 117)
Neutral	(40.42%, 458)
Agree	(39.28%, 445)
Strongly Agree	(7.68%, 87)

6. The narration by the lecturers is distracting (1133)

Strongly Disagree	(5.74%, 65)
Disagree	(33.1%, 375)
Neutral	(44.92%, 509)
Agree	(13.5%, 153)
Strongly Agree	(2.74%, 31)

7. The e-learning format is an effective medium for me to learn about SARS (1133)

Strongly Disagree	(1.94%, 22)
Disagree	(3.71%, 42)
Neutral	(24.62%, 279)
Agree	(54.19%, 614)
Strongly Agree	(15.53%, 176)

8. I prefer to learn about SARS through other means (1133)

Strongly Disagree	(4.77%, 54)
Disagree	(22.77%, 258)
Neutral	(47.04%, 533)
Agree	(20.92%, 237)
Strongly Agree	(4.5%, 51)

9. I would recommend this module to other University students (1133)

Strongly Disagree	(3.71%, 42)
Disagree	(8.56%, 97)
Neutral	(37.95%, 430)
Agree	(39.45%, 447)
Strongly Agree	(10.33%, 117)

10. I would like other modules to be offered in a similar format (818)

Strongly Disagree	(3.91%, 32)
Disagree	(13.69%, 112)
Neutral	(34.47%, 282)
Agree	(35.94%, 294)
Strongly Agree	(11.98%, 98)

Figure 4: Screenshot of the eModule's Student Survey statistics page

As we can see, it is promising to note that the eModule has performed well and has satisfied majority of the students. We are also encouraged that many students would like other modules to be offered in a similar format. This leads us to the NUS eModule Initiative.

What is the NUS eModule Initiative?

Firstly, it is not an alternative to teaching but a mechanism to disseminate information and thereby get more time for lecturer-student and student-student interaction where they will be able to discuss and participate on issues that they have become aware about in the subject.

Secondly, the eModule approach is best suited for those modules that do not require a significant amount of student engagement, for e.g. remedial modules; and not across the board for all modules. This is a mode of pedagogy for lecturers to relieve themselves from having to conduct physical lectures for transfer of factual knowledge and thereby creating more opportunities for interactive activities (such as lab sessions, workshops or tutorials). It will bring about improved meaningful, personal, student-centered learning and is one of the key benefits of this initiative.

There is also a crucial Knowledge Management aspect of such development that enables us to capture and retain a good amount of tacit and explicit data about the subject from the content expert. This information can then be revisited and reused infinitely by the learners without the lecturer having to take extra time in addressing factual data.

What are the benefits of eModules?

- ✓ Convenient access – anytime and anywhere
- ✓ Student can pause, replay and revise the content at their own pace of learning
- ✓ Lecturers can spend quality time engaging the students in face-to-face tutorials or discussions rather than delivering information
- ✓ Build once – Use forever
- ✓ Cost savings on allocating and running Lecture Theatres
- ✓ No timetable scheduling for conducting classes
- ✓ No quota requirements
- ✓ Maximize usage of current IT infrastructure

What's in the future?

We intend to extend this eLearning model to all lecturers in NUS and offer this service towards building more eModules in a variety of disciplines; especially modules on basic science, math and computing.

Content designed in this framework can be enhanced with instructional additions such as: software simulations, visualizations, audio/video case studies, discussion forums, surveys and direct links to resources from the lessons.

We are only limited by our imagination!

References

1. Schank, C. R. (2002). *Designing World-Class E-Learning*. New York: McGraw-Hill.
2. The eModule can be viewed at: http://emodule.nus.edu.sg/SSM1205/.
3. Live detailed statistics on the eModule can be seen at: http://ivle.nus.edu.sg/quiz/ssm1205/stats.asp.
(A guest username and password to view the eModule and statistics will be provided on request.)

Acknowledgements