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# **ICT in Education: A Study of Public Health Education**

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## **Abstract**

Modern technologies such as Information Communication Technologies have helped many of the development sectors. One of the sectors it has lot of scope to develop is the Education. It is also evident from the experience that the benefits of these technologies have contributed much in the area of healthcare. However, these benefits come with few limitations. A technology is useful only if (a) the systems are designed keeping the user perspective mind, (b) if the users are trained on those systems, (c) users recognize the need for a system and (d) users feel there is a need for such system. Developing a system for an application does not necessarily lead to usage. Many developments ended without giving any benefit to society. For the better usage and the benefits, one has to have a commitment to promote the system among the appropriate users by demonstrating the benefits of such systems. This further discouraged by the restrictions imposed by the IPR regime. There is some relief now due to the popularization of the free software movements. This paper is an effort to highlight the benefits of such systems in public health education with special reference to the open source online tools. Author is a faculty of a Public Health school teaching health management course to the students of public health. The paper addresses the importance of ICT systems in training the public health professionals. It also discusses the benefits and limitations of such system. The present system is a complementary teaching method to the existing classroom teaching.

## **Introduction**

Health Technology Assessment is a study of the broader aspects of the implications of health technology diffusion by assessing social, ethical and psychological issues. The general criticism is that the HTA is not focusing on the citizen/patient issues. The current paper is about the HTA for the trainees who will ultimately work for the public health professions. This will ultimately help them improve the quality of delivery.

## **Development of course contents**

AMCHSS, at SCTIMST along with the author prepared guidelines and detailed curriculum for health management specialty for the Public Health curriculum. The curriculum was developed by a committee consisted of the Head of the centre, course faculty and a specialist from an external agency.

The purpose of the exercise was to develop an information base and a capacity to support the development of the content with guidelines, detailed schedule with the topics and sessions, references and so on.

The method adopted for the course development was based on the experience in using an online tool for teaching post graduate students. Author who is the course faculty an information specialist and health management specialist was scouting for a tool which is freely available and feasible for online support and administration. Then he did a systematic searches and identified a tool called Atutor and presented to its faculty member after piloting the tool for a fortnight. He has also guided other faculty members to use the tool for other courses. Members attended the presentation looked at issues like backup and other sustainability problems. It was considered as a novel approach to teaching.

The outcome of the above exercise was an online course management system using Atutor was developed and all the students were enrolled and trained how to use the tool. It was appraised after a week of its launch. Working professionals were given support to use the tool effectively. The methods followed include:

The tool has the following features:

- a) Resources, b) File storage, c) Links, Glossary, d) Reading list, e) Forums, g) Groups, h) Mail, h) Chat, i) Polls, j) Quiz & surveys, and k) FAQ .

The features were adapted for a specific purpose as explained below.

Subsystems of the online support is,

1. Resources- Files on case studies, Course materials, links, references for books, journal articles, class room presentations, spread sheets with templates for some formulae, - They are all stored in file storage, Links, Glossary and reading list

2. Community - activities on interaction with fellow students, faculty student interaction, group interaction for group activities, announcements, corrections, and modifications, and so on - They are all done in Forums, groups, mail (Inbox) and Chat

3. a. Monitoring - Testing the knowledge for understanding, asking for feedback through polls, introducing the pattern of the questions and annotations - They are done using the features, quiz & surveys and Polls

b. Policy - the course administration, attendance, other regulations are specified - they are found in FAQ.

Based on the above the online support using the Learning Management System using Atutor can be classified in to three subsystems

1. The Resources, 2. Community and 3. Policy and Monitoring

This looks similar to the elements of distance education which consists of

### **Policy, Technology and People**

In the present context Atutor was used as a supportive tool for enhancing learning outside classroom in addition to the class room teaching. This is a hybrid methodology adopted for teaching the Public Health students.

The early identification, prioritization and assessment of emerging health technologies are essential for Health Technology Assessment. This is done to assess the technology and make policy decisions.

The present exercise is done to identify, prioritize and assess the online tool for the Health Management course for Public Health students. This will help in health technology assessment and policy decision-making process in public health education.

This was an effort to provide a hands-on experience for the public health students who were interested but not experienced in online tools, at the same time there were people who shown interest to learn more about the process. Participants were also given an opportunity to work in small groups to facilitate group activities.

The broad area I would like to address is "health technology assessment". The paper addresses the specific application of ICT use in Public Health teaching for the Post Graduate students. The students comprised predominantly of medical graduates. This paper addresses the problems and policy issues related to adapting a technology enhanced learning culture in health sciences.

### **The methodology**

There are few steps followed for introducing the online tool to the students. They are given in detail below.

First the students were introduced with an email environment for establishing the communication on the courses in general. This was followed by an introduction of an online calendar for the scheduling the classes was introduced. This created a habit of checking the email and calendar for new events. This further enhanced by a web page with the basic information on the course was created. The students then were using internet for their day to day classes. Next a group on Yahoo Groups was created. This helped the students to see the messages and some exchanged thoughts some used it for communication. The group was also used for uploading course related files. The group was a utility when a course was completed; the poll feature was used for taking the feedback for courses. This was also used for the uploading of assignments in the files. This helped the students to understand the web based tools and their benefits. Next, the author introduced the online learning management tool called Atutor. He first enrolled the students and

asked everyone to check their access. Initially students struggled to get in to the system. Slowly, they were used to it. When the LMS was introduced, the students were already familiar with the computer commands such as login and other basics to access the web features. This helped the author to focus only on the introduction of the tool and its benefits. During the initial days the students were given a free hand to play with all features. Before introducing the Atutor, author has conducted an online examination with a demo version software work on flash technology. This has created seriousness among the students on the utility of online tools. This has also helped the students to understand the limitations of such tools such as spelling mistakes can be a problem while they were evaluated and so on. On the real evaluation students were ignored of their spelling mistakes and were given marks for their answers.

During the initial period the tool was not used much. It took a few weeks to become popular. Author also ensured to upload at least five questions immediately after every class. This increased the usage of the students. These quizzes were not evaluated for the course. In addition he also uploaded the lecture materials, polls to get the feedback on a specific topic, blog to discuss about the doubts, and created the quizzes to know the level of understanding. . This was highly appreciated as the questions were testing the knowledge of the students on specific topics on a daily basis. This helped the students to expertise on each one of the topic. This has helped the instructor to create a question bank on the subject. This will help him to prepare questions for the future.

There were also other features which have been appreciated by the students. They are the forum similar to blog, chat, file storage and glossary.

### **Training**

There was no formal training on how to use the system. But there was a hands on session on the Learning Management System was arranged for the volunteer students. The orientation included information sources, accessing information, security features, and operational difficulties, working with an online environment, the assignment submission, accessing the course materials, glossary, discussion forums, group discussions, quiz, and polls.

### **Profile of the users**

**Table 1 Students profile**

Students	Male	Female	Total
Working Professionals doing DPH	17	1	18
Students doing 2 year MPH	8	7	15
Total	25	8	33

Table 1 shows the profile of the students. There were 18 working professionals who are sponsored for doing their one year DPH program. All of them were sponsored by a government department. Among the sponsored DPH students 17 were males and 1 was female student.

There were also 15 students who were not sponsored but doing two year MPH program. Among the MPH 8 males and 7 were female students.

**Table 2 Qualifications of the students**

	MBBS	BDS	Social Sciences	Nutrition	Total
DPH	18				18
MPH	8	4	2	1	15
Total	26	4	2	1	33

Table 2 presents the qualifications of the students doing health management course as a part of public health program. All the 18 DPH students were medical students who have MBBS degree. Among the 15 MPH students, 8 were medical graduates with MBBS degree, 4 were dentists who have completed BDS, 2 were from social science background and 1 with a nutritional science background. There was also three post graduate level qualified who are doing this program.

The Table 3 is the usage pattern of Forum features of the students. From the above it is clear on the all postings in Forum 1 Thread 1 and Forum 1 and Thread 2 Female students were the predominant users. And in the Forum 2 Thread 1 the Male students were equally participative.

**Table 3 Usage pattern of Forum features by the students**

Forums	Threads	Instructor	DPH			MPH			Grand Total
			Male	Female	Total	Male	Female	Total	
Forum 1	Thread 1	3	8	2	10	0	3	3	16
	Thread 2	2	1	1	2	0	3	3	7
Forum 2	Thread 1	11	5	1	6	2	2	4	21
	Thread 2	5	7	3	10	3	2	5	20
Total	4	21	21	7	28	5	10	15	64

In Forum 2 Thread 2 the Male students outnumbered the Female students. This is a new trend which shows more women tend to use online sources compared to Male. This may be due to their immobility or due to safety and security concerns they have. While the Male students were more mobile and used less of this feature. Another reason could be Female in general are good communicators. There are also instance that the students who were more talkative in the class room have restrained from the discussion forum. This shows their confidence on the arguments. This may also be due to their concern over some contradictory statements which will be documented. This has also increased the transparency between the instructor and the students and among students themselves. Female students tend to stay in the room and thereby use the online facilities. Male students use to spend more time on the other activities which reduced their use the online tools. It is also found that the students who are doing DPH are the working professionals, older than the MPH students tend to spend more time on the online tools. The MPH students who are relatively younger group were busy spending time on other unrelated activities. More number of postings by the instructor suggests the efforts put in by the instructor to popularize this tool among the students. Only after 21 postings made by the instructor the number of threads posted by students increased to 43.

**Table 4 The number of students taken online quizzes.**

Online Quizzes	DPH			MPH			Grand Total
	Male	Female	Total	Male	Female	Total	
First Quiz	4	1	5	0	1	1	6
Second Quiz	5	0	5	0	1	1	6
Third Quiz	6	0	6	1	0	1	7
Fourth Quiz	6	0	6	1	0	1	7
Fifth Quiz	10	1	11	1	2	3	14
Sixth Quiz	3	0	3	1	0	1	4
Seventh quiz	13	1	14	3	3	6	20
Eighth quiz	10	1	11	3	3	6	17
Ninth quiz	15	1	16	5	3	8	24
Tenth quiz	13	1	14	5	4	9	23
Eleventh quiz	17	1	18	5	3	8	26

Twelfth quiz	14	1	15	2	4	6	21
Thirteenth quiz	17	1	18	6	5	11	29

Refer the Table 4 and Figures 1 to 3 showing number of students appeared in online exams. Figure 1 shows an increasing trend in DPH students attempting the online quizzes from the first quiz to thirteenth quiz. There was only one Female student. Who was appearing regularly excepting a few quizzes? Overall the it shows an increasing trend over a period of time. During the thirteenth quiz all the students have taken the quiz. This shows their familiarity of using the tool.

**Figure 1 The number of DPH students appeared in online quizzes**

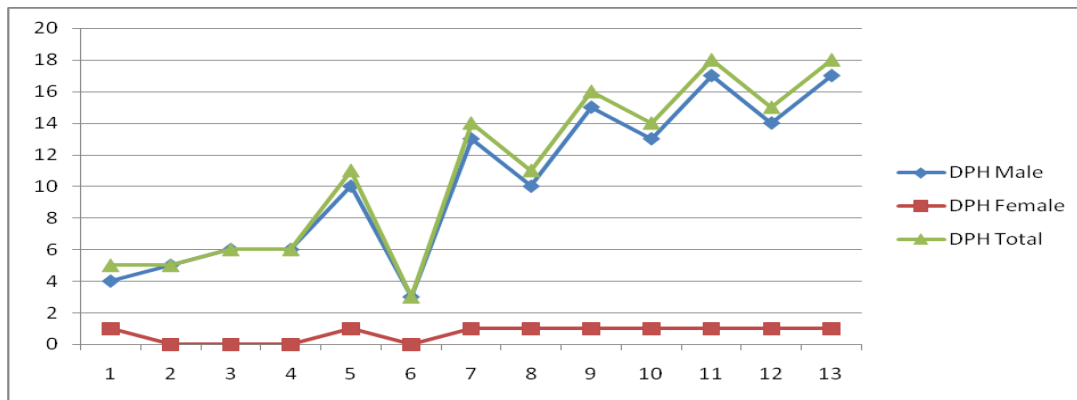
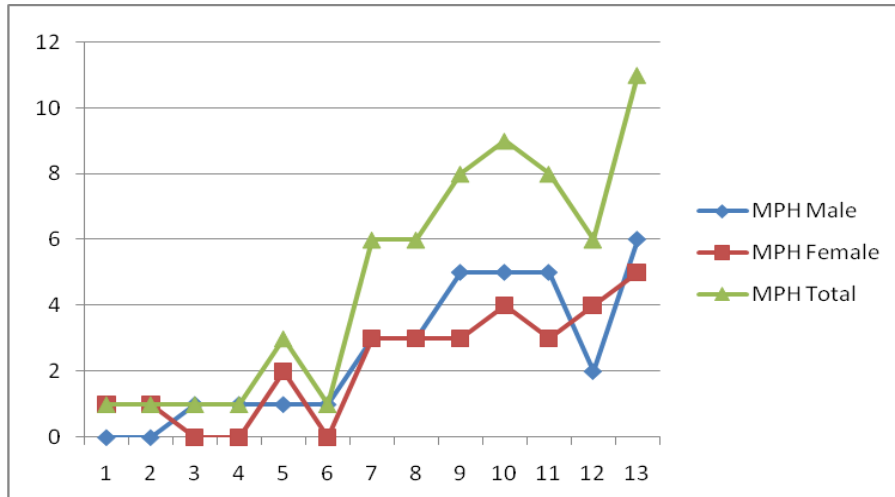


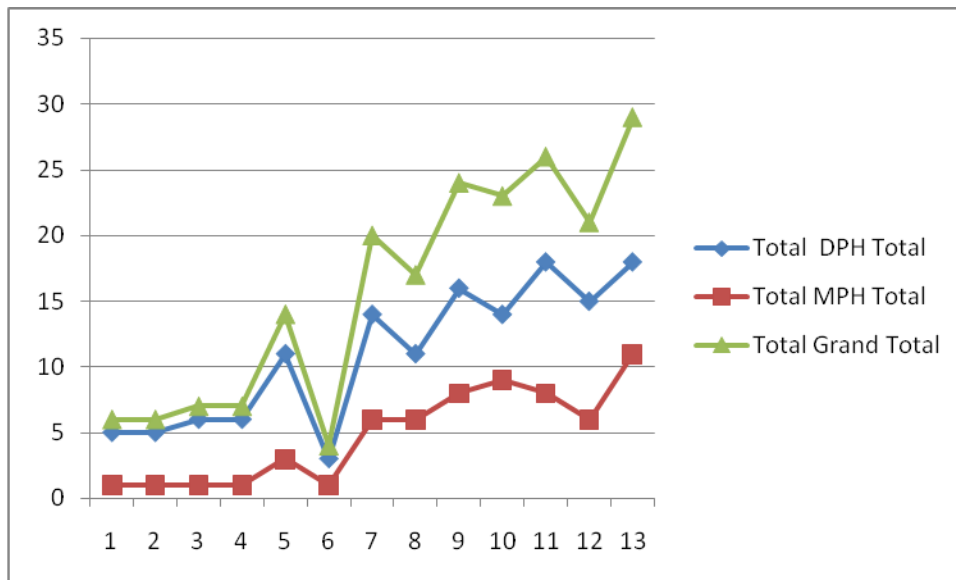
Figure 2 shows the number of MPH students attempted the quizzes. Compared to DPH students the MPH students were not regularly appearing in the quizzes. They are relatively younger students. There was more female students participation compared to male students in the quizzes. Among all the 7 female students at least 5 have taken one quiz. Among the 8 Male students at least 1 quiz was taken by 6 students. The participation of male students have suddenly increased during the mid phase and increased. In total maximum of 11 students have taken at least one quiz out 15 students. While all the DPH students taken at least one quiz. This shows higher participation among the working professionals in such features than the younger fresh less experienced graduate students.



**Figure 2 The number of MPH students appeared in online quizzes**



**Figure 3 Total number of students appeared in online quizzes**



The total number of students taken the quizzes is shown in Figure 3. The figure represents the total of all students in both DPH and MPH program. This clearly shows the better participation of DPH students in online quizzes compared to MPH students. The DPH students who are sponsored and working in a government service doing their course after long break. They recognized the importance of putting more efforts in learning to compete with the younger fresh graduates. This shows their participation in all the features of the online tool.

## Discussion

From the analysis it is clear that usage of online tools such as Atutor is becoming popular over the time. It is also found that the older people tend to use the tool compared to the younger

counter part. This shows the importance recognized by the professionals and the understanding on the utility of the tool. More usage by the female students suggests their familiarity in using such tools. It is also evident from the fact that they are the ones first to use tool before even their male counter parts started to use the tool. This is also clear from the analysis that the students who are predominantly from the medical education are more familiar with the tools and use it to the larger extends for their learning.

### **Conclusion:**

The health management course used the Atutor for teaching the students is a specialized course and some of the methodologies of teaching evolved over the period after taking the regular feedback on the online tool. The processes were created with the time. It has emerged as a process which facilitated the course effectively. The method used for the teaching has emerged with the rigorous of scientific method and references and the membership for the students was purely voluntary. This proved to be an effective tool to complement the regular class room teaching. It also reduces the burden of discussions, references, quizzes and so on and the instructor can concentrate much on the regular classes. There are literatures discussing only on the use of online tool for distant education. This paper showed the utility of such tools on the regular class room teaching.

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