

# ADAPTIVE ONLINE TEACHING MATERIALS FOR INTERNET, INTRANET AND MOBILE DEVICES FOR MCUC STUDENTS

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Abstract : Academicians in this Information age are trying different teaching methods for the effective learning by different background students. Online teaching method is not only effective for distance learning but also for teaching in a traditional method through intranet. Since MCUC has WLAN, allowing the students to access online materials through mobile devices with in college premises and also through internet it can be accessed anywhere and anytime. Since different program students are using laptops, PDA's and mobile phones to access these information's it is necessary to provide personalised experience for their convenience while learning through showing the frequently accessed links or arranging the links based on the accessibility or listing the links as per the students preference using Adaptive Navigation Support technique. We also tried to use different methods to improve the performance of the website and reduce the development cost.

## 1 INTRODUCTION

Recent survey with the students of MCUC from different programs, shows that 95% of the students are depending on the desktop and Laptop for browsing online teaching materials of their modules. Because of the limitations with the screen size of the mobile devices like PDA's or mobile phones only 5% of the students showing interest in using these devices for anytime and anywhere learning, even though these devices having more advantages compared to laptops. Hence it is important to use some methods to make the users browsing speed equal to browsing in laptop. We are discussing effective mobile device and user-models of browsing methods, for college students to browse their online teaching materials fast and effective. As researchers we are trying to design a website that can be personalised by the student while browsing anytime and anywhere using mobile device like PDA. Selecting the best mobile device is not in our scope; hence by assuming PDA as a best device we

conducted this research. Similarly discussing the WLAN structure will divert the main theme of this research paper and narrow down the concept to accessing the information via mobile devices in a campus network. Hence we did not get in to details of WLAN architecture. Even though it is applicable for the system which helps to access the information through campus wide network in the absence of internet, we are concentrating on the anywhere and anytime concept by including website which can be accessed by internet.

## 2 WEB PERSONALISATION

Browsing is an exciting experience for anyone. But this will not be the case for the students when they are browsing the college link for their subject information's with out any diversion in the navigation. This kind of approach can be called as goal directed browsing. PDA's can be used by the students for gaol directed browsing, then browsing

experience will be a tedious and tiring. When we have some idea about the intention of the people's who is visiting the website, it will be easy to improve the browsing experience. Improvement can be done by avoiding information overload and disorientation. Adaptive Navigation Support technique help students to personalise their browsing experience related to their program they are studying, semester they registered and the links they are usually interested. This facility also highlights the links of interested and not displaying the other links. Simply it can be done by sorting the links again based on the student's interest. Adaptive Navigation Support technique can be finding within Adaptive Hypermedia Systems. Due to the limitations in the mobile devices like smart phones and PDA's, it is important to improve the performance of the websites by personalising for the student's interest. Other wise it will be difficult to implement anytime and anywhere learning among the students using (wireless) mobile devices.

### 3 WHY M-LEARNING?

"Successful technologies are those that are in harmony with end-users needs"

- Ben Shneiderman (2002)

Recent surveys prove that mobile phones are no more going to be used only as a communication device. It can be used as a still digital camera, video recorder, storage device (up to 2 GB) and file

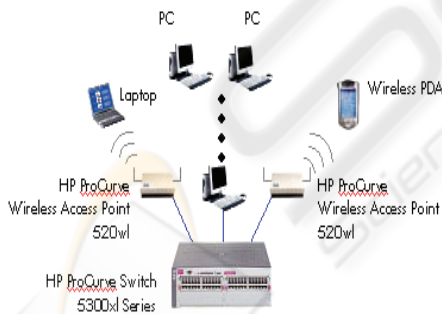


Figure 1: Simple WLAN Topology.

compiler. Apart from these all, it can be use along with computers. Computer and mobile phones can be use together and share information between them. However, other than technologies, now days, education is not only for the regular students (full time students). Awareness and necessity of education became unavoidable for all age group people and for any kind of people. People have to learn through out their lifetime (this is called life

long learning) to keep them competent and update with the recent developments in their field.

This is a great challenge to the academic institutes to provide service to these people as per their convenience. Since anytime and anywhere learning concept is very important for most of the students, we are going to select a technology for life long learning. Till today e-learning is the hot cake for the students who prefer to educate them through distance education. But e-learning helps students to study only from any place. But they cannot study anytime. Hence only alternate for this problem is m-learning. Since it help students to **learn anytime and anywhere** with advance features such as convenient, collaborative, portable, content and compatible. Hence m-learning may become a prime technology for any kind of education and most opting technology for all types of students.

### 4 M-LEARNING WITH PDA'S / SMART PHONES

Personal Digital Assistants are also called as pocket PCs or handheld PCs. The advantages of these devices are, they are very compatible (can fit into the hand), portable, can be taken with the people and it supports using these device on moving. Actually they were developed as electronic organizers to store addresses, tasks, text information and as a calculator. By the continuous up gradations in these devices, they were converted from ordinary organizers to mini PCs. Compared to normal PCs, it is very cheap, can be carry by the people (can be kept in one's pocket), and battery power is more than 10 hours. Features of these devices include word processing, spread sheet processing and web browsing via wireless connection to company network. It can transfer data across short distances, i.e. between units through infrared communication. Many PDAs come with docking stations in order for them to be connected to desktop computers, allowing data to be synchronized between the two devices. It is also coming with camera and MP3 capabilities. Smart phones are mobile phones combined with pocket PCs. These are coming with external keyboard (foldable) and with the touch sensitive screens with stylus pens. The communication between the devices can be done by SMS, MMS and infrared communications. Recent mobile phones are blue tooth enabled for the WAP communication. The advantages of using these devices as m-learning tools are it makes **just-in-time learning** possible, it

enables effective and fast communication between devices, it makes learning as a fun, and additional accessibilities make handling these devices easy and motivate personal commitment of learning. But compared to other PCs it has few disadvantages also.

## 5 ADAPTIVE HYPERMEDIA SYSTEMS

Adaptive Hypermedia Systems goals are "to build a model of the goals, preferences, and knowledge of each user, and use this model throughout the interaction with the user, in order to adapt to the needs of that user" (Brusilovsky, 2001). In MCUC system we are using typical AHS function in which we can find Adaptive Navigation System technique. It maintains a model of students or browsing users knowledge based on some attributes like the whether the user chosen the link before or not. This can be identified based on the observation while the end user or student browsing the site. It will be important for a user model to be applied for classifying the links into groups based on the interest and the information about the students registration. The system uses this user model to manipulate links to guide users towards interesting and relevant information using a technique which Brusilovsky calls as Adaptive Navigation Support (Brusilovsky, 1996). Depending on the class of the node a link leads to, the link could be specially annotated, ordered, disabled, or removed. The manipulation of links is done in the following ways within our system:

**Expected next link:** Listing the link with next or continue option, which is most appropriate for that user group predicted from the user model.

**Sorting the link:** Arranging the links based on the prediction and give priority for each link and list the links with high priority links at the top and the least priority links at the bottom. This model we can find in goal directed educational system usually.

**Hiding the link:** Links leading to inappropriate or non-relevant information are hidden.

## 6 USER MODELLING

The users can be categorising in to three types. They are beginner, intermediate or expert. This categorisation can be done based on the navigational behaviour of a user and the type of document they view when they are browsing. This modelling will

help us to build a model of the goals and preference of those users. This should be used throughout the interactions of the users with the website, to adapt to their needs. User models should be trained, so that when a usual visitor visits a specific part of the web page with a user model and has any one user type will predict about future navigation can be assumed with the help of the Markov model. But for the new user visiting a specific part of the web page and the flow will be recorded to train the user model and assign a user model. The Markov model comes from Markov chains, which are sequences of random variables in which the future variable is determined. A Markov model contains a single variable, the state, and specifies the probability of each state and of transiting from one state to another (Anderson, Domingos and Weld, 2002). With the help of this model the student's goal predicts and the index page of predicted link will be produced dynamically. This should be displayed in their mobile device in the way the students can access the information which they are looking for, fast and efficient way. At the same time this model is not always advantageous, particularly when a web designer needs to make changes in the model during special situations.

## 7 HYBRID SYSTEM

Hybrid system is the best system for the MCUC web page, since the web designer no needs to specify the models or optionally specify the changes in the models. Hybrid system will always generate personalisation automatically. The announcement from the college or new downloads or the assignments should go the students attention immediately. This can be achieved by change the popularity of the file. This will display in the index page of predicted links even though it has not been viewed before. Otherwise if a website was accessed by any student that will be in the index page of predicted links. Announcements like semester results of the students, important event in the college like graduation ceremony or open day and information about the event also can get the same high priority by changing the popularity of the files. Hence the automated approach may not have these advantages always.

## 8 CONCLUSION

This paper has presented the simple conceptual framework for a personalised website browsing experience through mobile system for the learner community who need to learn by anywhere and anytime. Even though there are many researches have been carried out by many organizations in the same field, this concept is very much new to Middle-East Asia and students are new to these types of tools for learning. Personalisation and adaptation in web browsing helps students to access the required information quickly and this advantage will compensate the limitations of the mobile devices. When the links are not misleading a student when they are looking for a specific set of information will save the student's time and effort, also increase the student satisfaction. Increased students satisfaction can lead to both increased faculty satisfaction and higher student retention.

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