

Mobile Application as a Learner Support Service

The use of new technology for educational purposes has always been in the forefront of Open and Distance Learning (ODL) system in India. And in this context, we can say that in the 21st century mobile learning plays a significant developmental role in the field of higher education. This seems to be a new trend of learning among the learners. The ODL system is passing through the fifth generation of learning where there is a felt need to apply the Intelligent Flexible Learning Model for our learners. Intelligent learning mode shall reciprocate the delivery modes like internet sources, interactive multimedia model and also mobile learning. The Krishna Kanta Handiqui State Open University (KKHSOU) has developed an innovative mobile application (app) to support learning in the state of Assam as well as in the whole of India. The innovation and its distinctive features are presented in this article.

Introduction

The use of new technology for educational purposes has always been in the forefront of the most cutting-edge open distance learning (ODL) systems. Technology-supported teaching and learning has helped enormously in overcoming the physical distances between teachers and students, enabling the flexible delivery of education at a distance, anywhere and anytime.

Mobile learning is a kind of learning that takes place via a portable handheld electronic device. It also refers to learning through other mobile devices such as tablet computers, netbooks and digital readers. It is the ability to obtain or provide educational content on personal pocket devices. Most researchers and educators probably view mobile learning as the immediate descendant of e-learning. For example, e-learning has been defined as 'learning supported by digital "electronic" tools and media', and by analogy, mobile learning as 'e-learning that uses mobile devices and wireless transmission'. Mobile technology actually offers the appropriate educational environment to assist learning activities both inside and outside the classroom.

Desmond Keegan, the eminent expert in distance education, on the other hand, viewed the growth of distance education on the basis of technological developments in information and communication technologies (ICT). According to Keegan, the evaluation in distance education is characterised as a move from distance learning (d-Learning), to electronic learning (e-Learning), to mobile learning (m-Learning), a phenomenon that he suggests corresponds to the 'societal evolution' from the Industrial Revolution, to the Electronic Revolution of 1980s, to the Mobile Revolution at the close of the 21st Century.

The Krishna Kanta Handiqui State Open University (KKHSOU), realising the increasing use of mobile devices by the learners to access information, designed a mobile application for supporting its learners.

Background of the Innovation

Due to the recent development of technology, the education system has also upgraded itself and helped the learners to get their best at their finger tips. We know that the website of any organisation plays a very important role in its functioning. The website of a University reflects its

image and helps anybody to have a basic knowledge about the organisation. Now-a-days, along with the website, mobile application is also playing a crucial role.

The analysis of the website of the KKHSOU (www.kkhsou.in) using Google analytics revealed that 78 per cent of the users are using their mobile phones to view information on the website (Table 1).

Table 1. Google Analytics report of September 2017.

Devices used to view the KKHSOU website	Total number of users (%)
Mobile	75,544 (78.00)
Desktop	20,578 (21.25)
Tablet	724 (0.75)

A survey done by www.statista.com, showed that by 2019, approximately 813 million users will use their mobile in the various activities of their day to day life (Fig. 1). So, keeping this in mind, I have developed a mobile application for helping the learners get the desired information at their fingertips at any point of time. Till the time of writing this, more than 5600 users have used the android application having a rating of 4.51 in the Google Play Store.

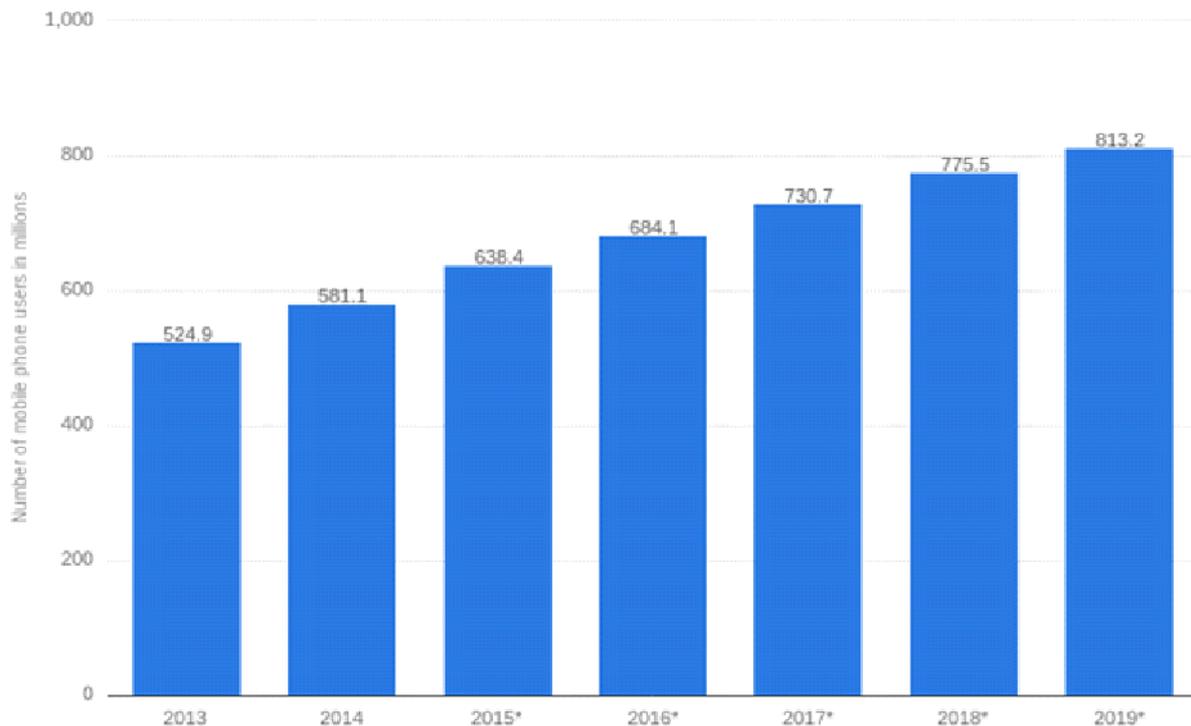


Figure 1. Number of mobile users from 2013 to 2019.

Source: www.statista.com; <https://www.statista.com/statistics/274658/forecast-of-mobile-phone-users-in-India/>

The Creative Process

Most of the people now-a-days are using mobile phones in their daily lives. The expectations of people from their mobile phones are increasing day by day. Keeping this in mind, we have designed a mobile application for all types of mobile users and are continuously trying to provide as much information as possible at their fingertips. The application is available in Google Play Store. We have customised it keeping in mind the learners' needs. Rather than focusing on a specific mobile operating system, we have generalised the application so that it can be used in any device by any user. For using the features of the application, we just need an internet connection and a browser.

The working principle of the mobile application is shown below :



Both the mobile application and KKHSOU webs are synchronised with the server. While developing the application, we kept in mind the following information :

User devices may not be equipped with high processor and storage capacity.

Users always have the minimum internet bandwidth.

For front end development of the mobile application, JAVA, JQUERY is used. For the back-end PHP, MYSQL is used. The application was developed in two phases. In the first phase, the application was linked specific web pages of the website and some information was provided for offline to viewing. In the second phase, we integrated most of the information in the application itself and made the application work using the Internet so that the information is always up to date, and now-a-days Internet connection is easily available with very low cost.

About the Innovation

a. Description

The mobile application is android based. The application helps the users, who are associated with the university, to get continuously updated information from the university. The download link is available on the University website (<http://m.kkhsou.in>), which can be accessed either by clicking on the link or scanning the Quick Response (QR) code available on the KKHSOU website. It can also be downloaded from the Google Play Store. For the users of iOS, Blackberry and Windows, it has the same look and functionality as the mobile based web application, which can be easily accessed from the university website. The users who are trying to access the KKHSOU website from their mobile devices are automatically redirected to mobile based web application. Rather than searching for information on the website, the user can get information by just clicking on the application installed on their mobile devices.

The mobile application is compatible with existing MYSQL database and PHP based file, which is also linked to the KKHSOU website. The mobile application will work on all Android devices independent of their operating system as well as the mobile manufacturing company.

The functionalities have been assigned in the mobile application as per the convenience of the learners. The basic functionalities of the application are as follows :

Latest news, announcement, etc. is provided.

Examination routine, results and any kind of news available category wise and these information are available in mobile friendly readable format.

Frequently Asked Questions related to the university with answers are available.

Admission procedures, course information along with fee details are provided.

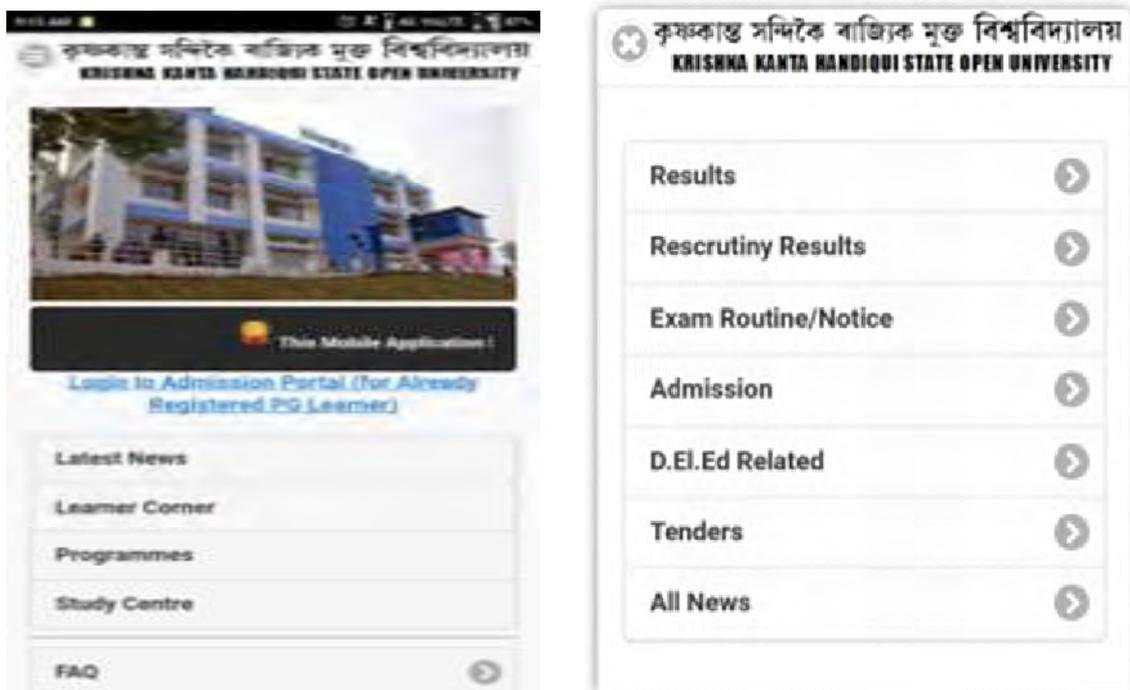
Assignments, previous years' question papers, etc. are available.

Self Learning Materials (SLM) and the University newsletter are available in e-format.

Send/Call feedback facility to the University/University officials, etc. are available.

In addition to the above, audio-visual lectures are also made available. Anyone can locate the study centres according to their location or course offerings. All contacts and addresses of study centres are also made available.

A few snapshots of the android application are shown in Figure 2.



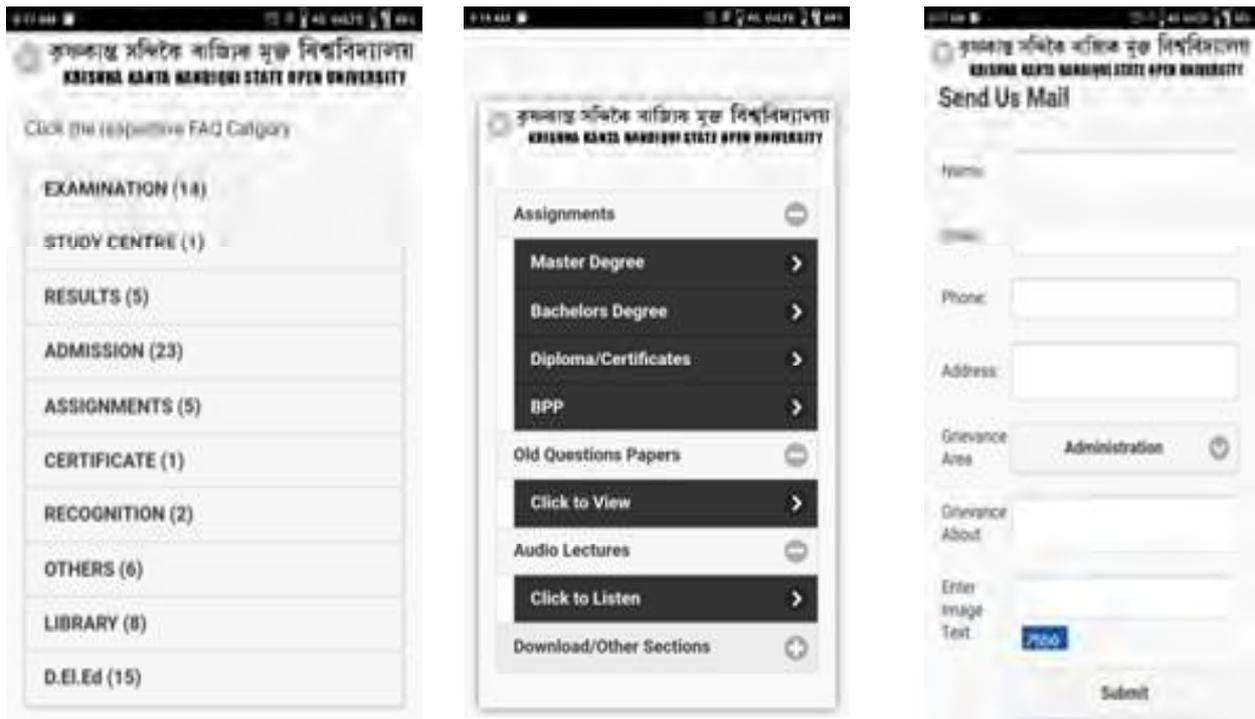
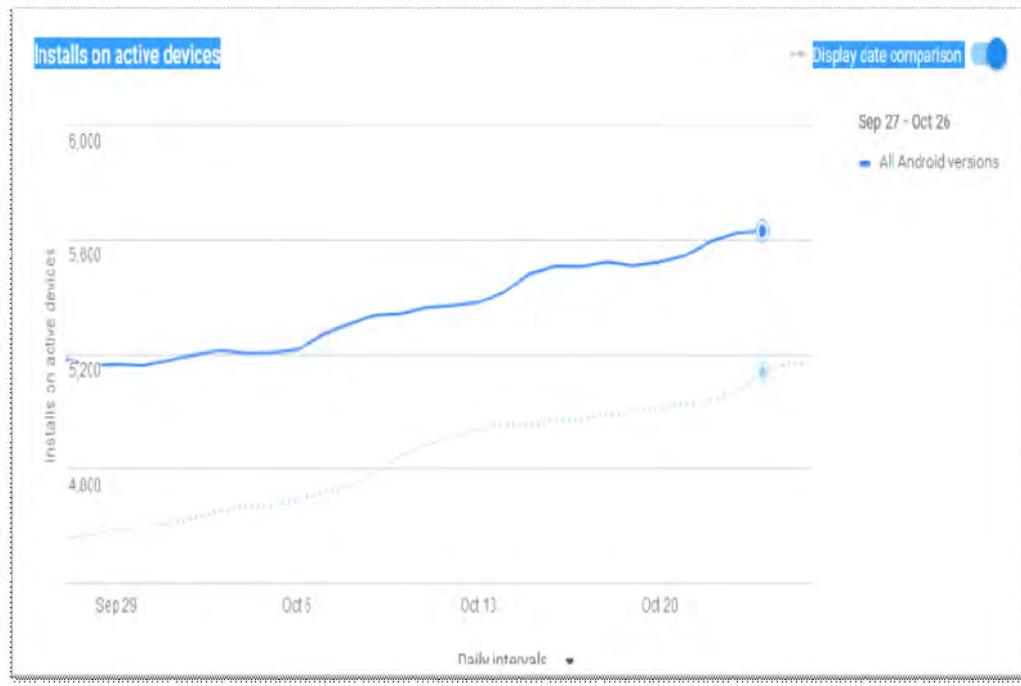


Figure 2. Snapshots of the android application.

To measure the efficiency and quality of the application, Google Play Store provides the rating and comments from the users who have downloaded the application. The data related to ratings and downloads collected from Google Play Store is presented in Figure 3 (a) and (b).



(a)



(b)

Figure 3. Data related to (a) rating and (b) downloads.

b. Novelty

The first and most important thing about the application is that, the application can be used in the non-android devices (iOS, Windows, etc.) as well, in addition to the android devices.

Keeping in mind the different types of operating systems (OS) in mobile devices or other devices, the application was designed in such a way that it will work on all devices independent of the OS on the devices or the device manufacture company. In case of non-android devices, one needs to just type m.kkhsou.in to get the same features available in the application. The look and feel of the application for other devices is kept as the same so that the user does not feel the difference when s/he changes devices.

The size of the application is 1.33 MB which is very small and can easily fit in the devices having less storage space.

Another important point about the application is that the user can easily locate their nearest study centre based on the district or course they are interested in. In addition, they get the contact information, whether it is of study centre or of the university officials just by clicking on the phone/e-mail icon. The respective application will automatically open to operate the function (e.g., in the case of phone numbers, the phone dialer will open when the phone number is selected. When the e-mail icon is selected, the e-mail application will open for sending e-mail to the contact person).

Learners can also download e-SLM, or audio/video lectures from the application for offline viewing later. Another feature of the application is that it is always synchronised with the university

website. If any learner sends a message via the application to the university official, the message is automatically transferred to the concerned department of the university and later, both the learner and the official can independently communicate with each other.

c. Usefulness

The use of the application has already been discussed in the section above. The main and basic purpose of this application is to provide the user useful information on their mobile phones in a very easy manner, and at the same time make it interesting by introducing interactivity in the application.

Before the development of this mobile application, the users who are related to this university mainly relied on the website as well as on telephonic support, which is not suitable for all the users. Generally the website (desktop based) is viewed either from a laptop or a desktop. Due to enormous usage of smart phones in India, people now-a-days are more familiar with mobile apps than the website. It does not mean that the website does not play any important role. The website renders the same function, but with respect to user feasibility and technical feasibility, mobile application has won the game. The mobile application is always synchronised with the website, and helps users get the same kind of information.

d. Reach

Anyone with a smart phone can use this application to access the university website and obtain the necessary information or interact with the university officials. The learners residing in remote areas, but having a smart phone can easily avail of this facility. The reach of this application is indeed wide.

e. Cost effectiveness

The existing application is freely available and can be downloaded from the Google Play store. All the information in the mobile application is retrieved from the server dynamically and it costs around 5-10 Kilobytes (KB) per retrieval, which is very cheap as compared to the today's internet bandwidth value.

The application has a repository of soft copies of previous year questions paper and e-materials that can be read/download for offline viewing at a later time. This reduces their printing cost and the material carrying cost and at the same time, the e-materials are also available on their mobile phone anytime and at any location.

f. Scalability

The application can be used by any number of users at the same time, as in the background, the Virtual Private Server (VPS) is used to handle huge traffic. The VPS configuration can be increased if the number of users increases. The software code will not only work on the existing VPS but also on the new configuration of VPS. There are provisions for the modification of existing application without affecting the existing users as per the requirement.

g. Sustainability

The application is developed using an Open Source technology. These technologies are likely to be used in the future also. The application can be modified anytime without affecting the existing functionality. In addition, the functionality provided in the application will not only help the users to get information related to the results, schedules, etc. but also will provide the updated information and the latest news of the university. As e-materials are available in the form of PDF, html, audio and visual materials, the application can also be used by other university students. With respect to technology and functionality perspective, the application will sustain over a period of time.

h. Implementation and impact

As shown in Table 1, the total number of mobile phone users is more than the desktop users. The total number of KKHSOU android application users is more than 5600 till date and the number is increasing day by day. From this, we can say that there is an increasing need for mobile based applications so that the users will be benefited and remain informed about the latest news of KKHSOU on the go.

Future Application

In the future, we have plans to make it compatible for the differently-abled learners. In addition to this, information will be provided to the learners as per their requirement. For example, at times the learner may not be interested in information other than the examination dates of the university. For making the application more user friendly, only the customised information is provided to the learner. Also, we have a plan to alert each learner before the assignment submission/examination date through this application. To test the learner's ability to use the application, there will be an online examination facility to evaluate the learners.

The application is open to all the people on the Internet. By providing e-materials, guidelines related to the course, KKHSOU shall not only help the learners, but shall also help the users from different colleges/universities.

An important aspect

Such an application shall play an important role in the education sector. In the past, the student had to come to the *Guru's* home and spend many years to earn knowledge. However, with the use of such digital technologies, the required information goes to the learners' hands with the click of their fingertips. It also makes the relation between a teacher and the student stronger.

About the Innovator

Mr. Binod Deka is presently working as System Analyst at the Krishna Kanta Handiqui State Open University, Guwahati, Assam. He is an M. Tech in Computer Science and Engineering from the Indian Institute of Technology, Guwahati. He has a work experience of eight years in his field.

E-mail: binoddeka@gmail.com, binoddeka@kkhsou.in

