

Mobile App for Orienting Open and Distance Learners

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Abstract

ICT is more of a modern day djinn- supernatural creatures in early Arabian and later Islamic mythology and theology who could do all we asked for. Like human beings, the djinn can be good, evil, or neutrally benevolent. Though its efficacy has been established without doubt in managing educational administration, its efficacy is being rigorously explored in teaching and learning especially in area of mobile learning.

Open and distance education is especially using ICT for reaching the learners who are physically separated from teachers. ICT has helped in their inclusion into the education system. Today the open and distance education learners are able to communicate with their teachers and counselors as frequently as they wish to, through the use of ICT. One of the most handy tools for communicating with the teachers is mobile. Mobiles are playing a big role in anywhere and everywhere teaching and learning. Mobile applications called apps are flooding the education sector. The app tsunami has taken the concept of learning and education to a new level. The present paper explored the use of mobile app for ODL learners: their perception and the efficacy of mobile app for Open and distance learning. The mobile app was designed and developed using MIT App inventor and the developed app was sent to learners and their feedback was taken. The results reflected on the use of mobile application for teaching and learning in Open and Distance Education Institutions. Most of learners supported the use of mobile app in ODL. The design and features of mobile app for its improved efficacy were analyzed through the feedback from learners.

Keywords: *ICT; Mobile App, ODL; Learners; Smartphone*

Introduction

ICT is more of a modern day djinn- supernatural creatures in early Arabian and later Islamic mythology and theology who could do all we asked for. Like human beings, the djinn can be good, evil, or neutrally benevolent. Similarly today ICT has become pervasive in modern day life and whether one likes it or not, it touches and influences everyone's life. Especially mobiles have become an inseparable part of our lives penetrating all domains of our lives like health, entertainment besides mere communication (Aitkenhead, Donnelly, Coull, & Hastings, 2014). This penetration has been revolutionised especially through the use of mobile apps (mobile applications) which are software designed for mobile devices with focus to facilitate the task at hand. Mobile applications are becoming popular across generations and purposes.

Mobile apps represent anytime and anywhere digital experience that resides in pockets, bags and has extraordinary untapped potential of being used in education both for educators and learners (Keegan, 2002). Mobile apps were efficient learning tools when integrated seamlessly and properly within the teaching learning in Universities (Khaddage & Knezek, 2011). Convenience, flexibility, engagement, and interactivity are all factors that make mobile learning more attractive for students. Ally & Prieto-Blázquez (2014) said that as the advent of new types of devices like mobile is disruptive to education, therefore, a thorough analysis, from a pedagogical and technological perspective, is key to ensuring appropriate usage and implementation of mobile learning. These mobile applications will add another layer to the learning and teaching processes. Many higher education organizations are implementing

mobile learning to provide flexibility in learning. Thus, they asserted that the future of learning is through mobile.

Due to the ever increasing penetration of Smartphone and mobile applications, educational institutions are taking up mobile application development as a means of facilitating learning among the learners. As open and distance education also aims to reach the learner anytime, anywhere, mobile apps are being looked upon as a great tool for ODL. Hence, mobile application is a potentially significant area of research and development (Pecherzewska & Knot, 2007). It contributes significantly to the dissemination of knowledge and learning among learners in easy, flexible and on demand access to learning context. (Khaddage & Hernandez, 2014). The use of mobile app as a learning resource is an important area of M-learning (Colorado, 2012; Friedel, Bos, Lee & Smith 2013). There has been steady rise in the mobile devices Smartphone and tablet use in all settings especially in the learning environment. It provides individualised learning space and opportunity. This has led to a tremendous interest in the acceptance behaviours related to M-learning users among the information systems researchers. It was found that user have acceptance for m learning (Sharma, Sarab & Al-Shihi, 2016).

Orientation to Open and Distance Learning (ODL) is required for the learners entering in the ODL system, who come from conventional education system and are unaware of the pedagogy and skills required for studying in ODL system. As mobile apps can be easily downloaded with one time connectivity and used as many times as needed, it will be beneficial to learners because of its reach and portability to its users. Once the application gets downloaded, the user doesn't require any internet connection in order to study the content which an app provides. So, it is an easier way to disseminate the information, especially to remote and rural areas.

As there is a growing demand for mobile applications among young people for various reasons from games to booking and ordering online, it was conceived that it can also be used to deliver learning material so that anytime and anywhere advantage is used for learning (Khaddage & Knezek, 2011; Khaddage & Lattemann, 2013). Further

Vázquez-Cano (2014) researched the use of smart phones and a specific subject-app used at the Spanish National University of Distance Education (UNED). He found that the use of apps developed specifically for university subjects was highly valued by students as a new format which both supports and enhances learning practices while also providing not only further opportunities to establish connections and relations with their subjects, but also fostering collaborative work among students and professors. Therefore, it is recommended that universities continue developing new didactic strategies to connect both formal-informal and face-to-face ubiquitous learning settings.

But researchers like Cochrane (2012) expressed that all m-learning projects in higher education have not shown significant difference in pedagogical outcomes.

Thus it is still an evolving dynamic area, the present study was undertaken. A mobile app 'ODE' for open and distance learners was designed and developed for anytime and anywhere digital experience for orienting learners to concept of open and distance education.

Objectives:

Mobile application 'ODE' for distance learners was developed and its effectiveness was explored. Thus following objectives were framed:

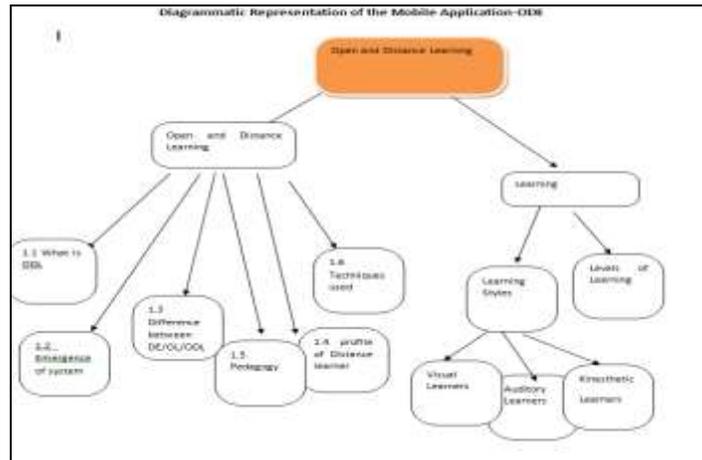
- to design and develop mobile application for learners of ODL system.
- to determine the effectiveness of the mobile application for the ODL learners as a learning resource.

Methodology:

In pursuance of objectives of the present study, there were two phases:

The first phase was to design and develop the mobile application "ODE" on the introduction to Open and Distance Education, using principles of Design and Development of a mobile application. The mobile application "ODE" was designed for learners of MADE based on the Module for learners of open and distance education. The concept map followed in ODE designing is given in the Figure-1.

Figure-1: Concept map in Mobile App-ODE:



Design of the Mobile App

The Mobile application was designed and developed using Open source Software MIT Appinventor (<http://appinventor.mit.edu/explore/content/w-hat-app-inventor.html>) which is online software

to develop Android OS based mobile applications. It is software which uses visual blocks in programming thus easing the process of development of a mobile application. Mobile application development was done through the following steps:



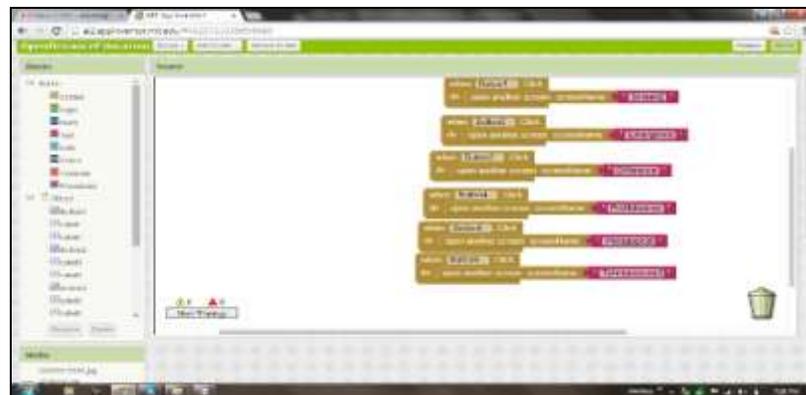
Development was followed by Testing of the mobile application on Android smart phones. The opening screen of the mobile app 'ODE' is

shown in Figure 2. The mobile application was developed using visual block for programming as shown in Figure 3.

Figure 2: Opening Screen of the Mobile Application



Figure 3: Visual Blocks depicting Programming of the Mobile App



The **second phase** of this study involved the analysis of the data using quantitative research method of survey. Jono et al. (2012) expressed that the study which requires analysis of the observations should employ survey or interview tool for collection of the data. The present study attempted to use the survey method to find out the effectiveness of developed Mobile Application. Thus the study employed a survey methodology for exploring the usability and effectiveness of the developed mobile application. The Questionnaire covered two broad areas-

- features of mobile application developed on Open and Distance education
- effectiveness of mobile application a means of delivering the content to learners of Open and Distance Education.

Sample: Sixty learners enrolled in MADE programme were selected at random. The web-link for downloading the mobile application – ODE and the questionnaire on the working and utility of the mobile application was sent to 60 learners. Thirty one learners responded. Feedback data obtained through questionnaire was analyzed using Microsoft Excel. The

purpose of analyzing the data was to measure the response of each participant and to draw conclusions from their answers. Data was analyzed and represented using frequency scores and percentages.

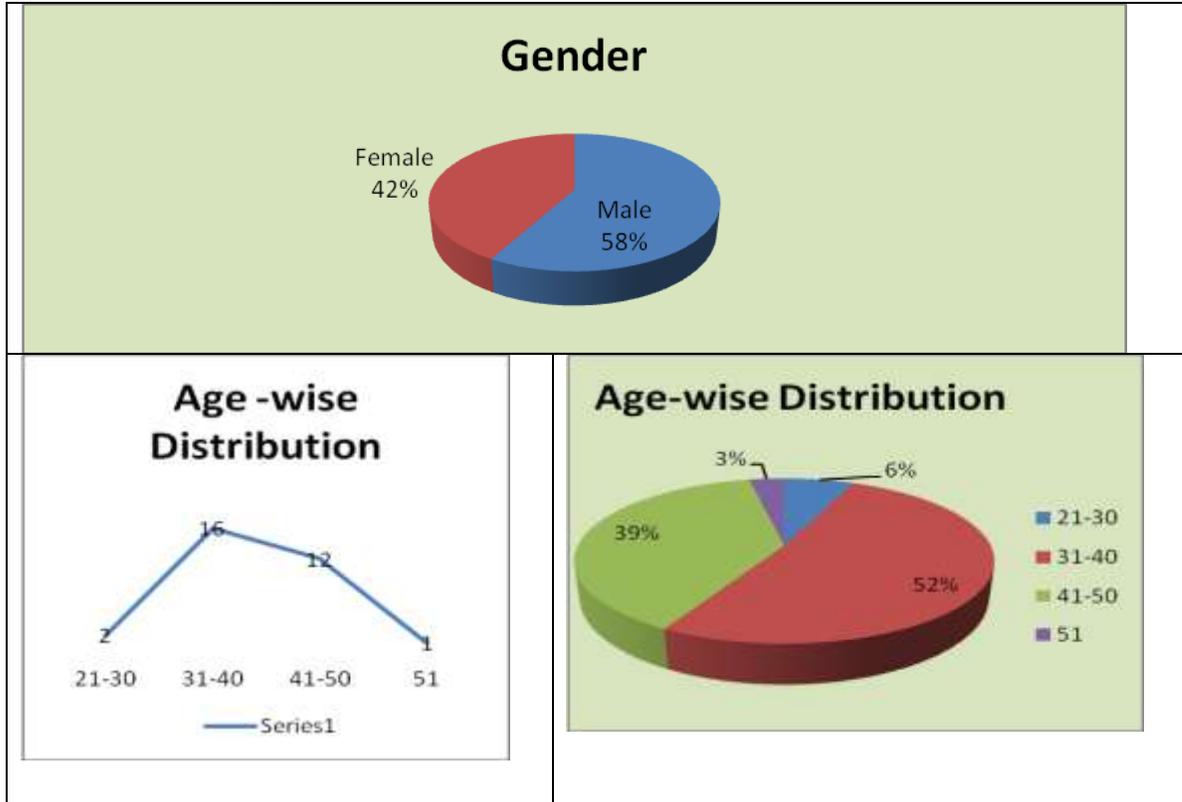
Major Findings:

The analysed data is presented below under three major headings:

- Profile:
- Feature related to Design of Mobile App 'ODE'
- Effectiveness of Mobile App 'ODE'

A. Profile:

Figure 4: Gender-wise and Age-wise Distribution



As can be seen in figure 4 above, the sample gender-wise consisted of 58% Men and 42% Women of the MADE Programme of IGNOU. The distribution of sample age-wise shows near normal distribution wherein most of respondents were in the age-group of 31-40 (52%) followed by 41-50 years (39%). Only 03 % of respondents fall above the age of 51 years and 06% respondents were between 21-30 years. The reason could be that in age group 21-30 years the person usually join service and were still settling in the area of work. The maximum learners (52%) were in 31-40 years bracket when they look for professional

development both horizontal and vertical. Following this is 39% in 41-50 years age group. Here this could be due to late decision by them or due to their pursuing open and distance education as a second area of development for them. Only 03% were in age group 51 years and above and could be due to individual interest or other reasons. As most of people in open and distance education pursue the courses/programmes for profession and self development. The age group entering the Open University is higher than conventional mode. Open and distance education caters to the

middle age segment more and that is reflected in the sample as well.

Figure 5: Mobile App Completion Time



As Mobile Applications are becoming very popular (Yu-Chang, H., Kerry, R., & Dawley, L., 2012), most (81%) of the respondents were able to complete it in less than one hour as shown in figure 5. Rest of the learners took higher than the stipulated time 1-2 hour and 2-3 hour by 6.45% each and only 03 % of respondents were in 3-4 and more than 4 hours each.

B. Design of Mobile App 'ODE': Its Features –

While designing any mobile app there were many features which need to be kept in mind. For the purpose of the present study, nine features were selected on which feedback was solicited from ODL learners.

Table 1 : Feedback on the Design Features of Mobile Application 'ODE'

S. No.	Features of Design of Mobile Application 'ODE'	Opinion									
		Very Good		Good		Average		Poor		Very poor	
		Score	%age	Score	%age	Score	%age	Score	%age	Score	%age
1	User Interface	11	35	17	55	3	10	0	0	0	0
2	Structure	6	19	21	68	4	13	0	0	0	0
3	Content	4	13	23	74	4	13	0	0	0	0
4	Language	8	26	22	71	1	3	0	0	0	0
5	Style	7	23	17	55	7	23	0	0	0	0
6	Interactivity	7	23	13	42	11	35	0	0	0	0
7	Length	6	19	17	55	7	23	1	3	0	0
8	Design	10	32	15	48	6	19	0	0	0	0
9	Quality	8	26	16	52	7	23	0	0	0	0

Figure 6: Feedback on the Design of Mobile Application 'ODE'

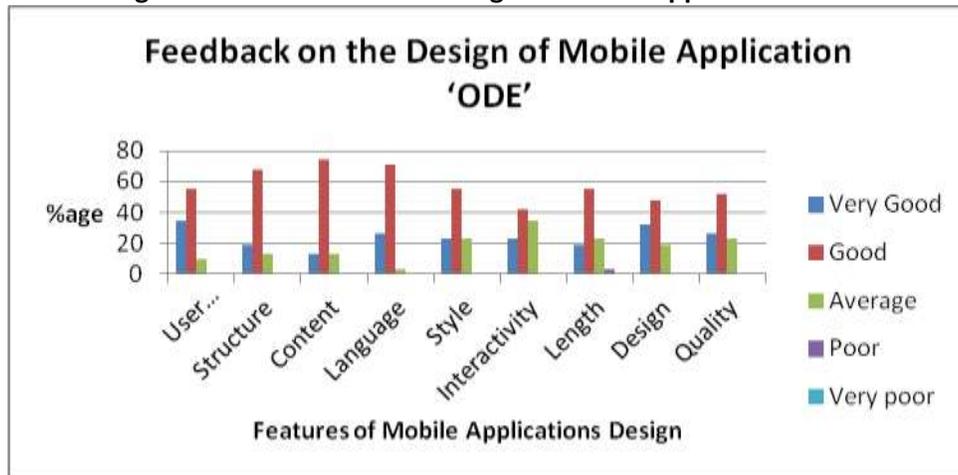


Table 1 shows feedback received by ODL learners on the mobile app 'ODE'. The feedback was solicited on nine features of the ODE. All the features of the ODE were found to be acceptable. Analysis of the design of ODE is presented below:

- i. **User interface of the Mobile Application "ODE"** was rated good by 55% and very good by 35%. Thus it can be concluded that the user interface of the Mobile Application was liked by most of the users and they found the screen and the interaction to be good. Users interface helps in motivating users to use the Mobile Application and, therefore, Mobile Application "ODE" was found user friendly and motivated learners to learn about ODE.
- ii. **Structure:-** Structure is very important with reference to the concept formation and facilitation of learning. 68% and 19% of learner of MADE found the Mobile Application 'ODE' to be the good and very good respectively.
- iii. **Content of Mobile App –ODE** was rated good by 74% of the learners whereas 13% rated it to very good. Thus, it may be concluded that the content of the Mobile Application was learner friendly and did not suffer from information overload as is true for most cases.

- iv. **Language** is the medium of communication and is very important in case of teaching learning resources. 71% and 26% of the learners rated the language of Mobile Application as good and very good respectively. Thus it can be assumed that language of Mobile Application was simple and learners were able to understand the message.
- v. **Style** refers to the overall look and feel of the Mobile Application and 55% of learners found it to be good. An equal number of learners (23%) found the Mobile Application to be very good and average.
- vi. **Interactivity** refers to the interaction between the learner and the Mobile Application for browsing through the Mobile Application content. The interactivity of the developed Mobile Application ODE was found good and very good by 42% and 23% learners respectively. As 65% learners found it good but 35% learners found it to be average, reflecting that more work needs to be done on the interactivity of the Mobile Application ODE. The level of interactivity was found to be simple and more options of choice and interaction needs to be incorporated in the Mobile Application ODE.
- vii. **Length** of the Mobile Application was found good by more than 70% of the

- learners. Length of Mobile Application affects the learning. Too lengthy or short learning resources affect learning adversely. The length of Mobile Application was found to be ok with most learners as 17 out of 31 found it to be ok. Only one learner (3%) found the length to be poor.
- viii. **Design** refers to overall look and feel and the architecture of the Mobile Application 48% rated to be good & 32% as very good, 19% found it to be average and thus it can be said that it met the approval of the learners in its architecture.

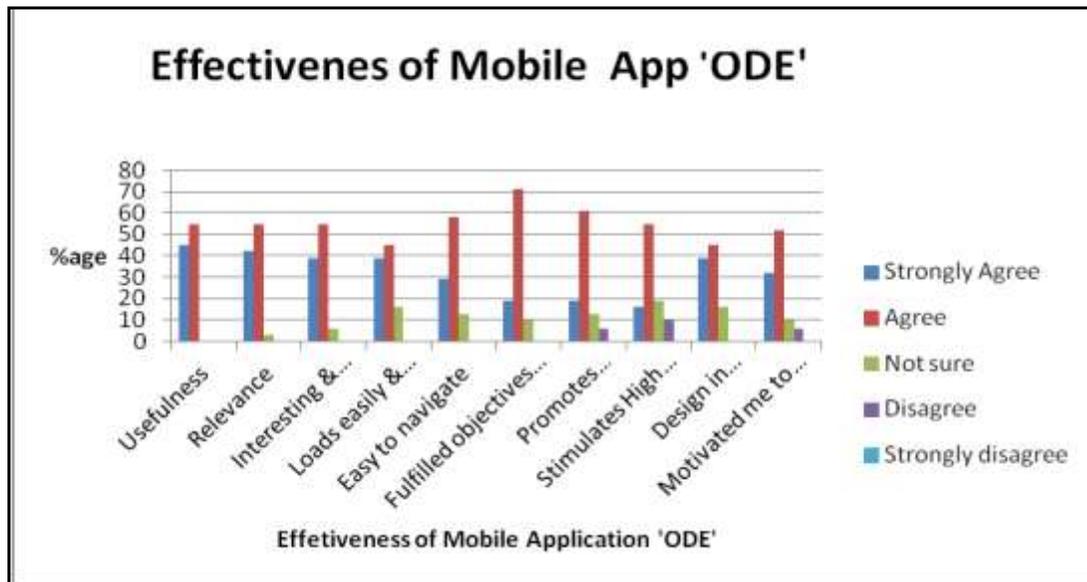
- ix. **Quality** of any teaching learning resource is very important and same applies for Mobile Application. The Mobile Application ODE was rated good & above by 78% of learners. 7 persons rated it to be average in its qualitative dimension and thus some improvement can still be made on its qualitative aspects.
- Thus it can be safely concluded that the mobile app 'ODE' was found to be 'good by most of the learners of the ODL.

C. Effectiveness of the Mobile Application was assessed on the ten parameters like usefulness; relevance, relevance, easy of navigation.

Table 2 : Effectiveness of the Mobile App 'ODE'

S. No.	Parameters of Mobile Applications Design	Opinion									
		Strongly Agree		Agree		Not sure		Disagree		Strongly disagree	
		Score	%age	Score	%age	Score	%age	Score	%age	Score	%age
1	Usefulness	14	45	17	55	0	0	0	0	0	0
2	Relevance	13	42	17	55	1	3	0	0	0	0
3	Interesting & Engaging	12	39	17	55	2	6	0	0	0	0
4	Loads easily & does not crash	12	39	14	45	5	16	0	0	0	0
5	Easy to navigate	9	29	18	58	4	13	0	0	0	0
6	Fulfilled objectives of module	6	19	22	71	3	10	0	0	0	0
7	Promotes creativity & imagination	6	19	19	61	4	13	2	6	0	0
8	Stimulates High Order Thinking Skills (HOTS)	5	16	17	55	6	19	3	10	0	0
9	Design in functional & visually stimulating	12	39	14	45	5	16	0	0	0	0
10	Motivated me to learn through ODE	10	32	16	52	3	10	2	6	0	0

Figure 7: Effectiveness of Mobile Application 'ODE'



All the learners found the Mobile Application to be a useful tool for learning especially in case of open and distance education. 45% & 55% learners expressed very strong and strong agreement to its usefulness respectively as we see the penetration of Mobile Applications have surpassed that of any other ICT tool. It has also been explored and preferred as teaching learning tool especially with reference to its 24x7x365 availability and ease of operation in terms of competence, cost and time. Thus even while waiting in queues one can read in small portions and learn and get benefitted. This is reflected in almost 100% agreement in the usefulness of the Mobile Application as a learning device in ODE.

Similarly 97% agreement was there on the relevance of Mobile Applications for the learners of open and Distance learning (ODL). Only one learner (3%) was not sure of its relevance in Open and Distance Education. Hjørland & Christensen (2002) refers to Relevance as "Something (A) is relevant to a task (T) if it increases the likelihood of accomplishing the goal (G) which is implied by T". According to Gorayska & Lindsay (1993) Theory of relevance says that relevance is goal dependent. An item is relevant to a goal if and only if it can be an essential element of some plan capable of achieving the desired goal. Therefore, Mobile Application ODE was relevant to the learners of open and distance education as it gave information in smaller portion which are easily understandable and thus remains in memory. Mobile has omnipresence in our lives and thus can be used as learning device as well.

A large percentage i.e. 95% learners found the Mobile Application interesting and engaging as a learning tool and only 02 learners were not sure of their opinion. The Mobile Application was interactive and had visual input-besides navigational interactivity. Video from YouTube was animated & thus interesting and thus learners found it engaging as well interesting. Multimedia components in learning devices help in eliciting more enjoyment and interest. As the Mobile Application ODE has multimedia component, it was enjoying and interesting for learners.

Another important feature of any Mobile Application is the ease with which it loads, opens and works. Also the processing should be sound and sturdy so that it does not crash while being run. The Mobile Application ODE was rated to load easily by 84% (26) Learners whereas only 16% (5) were not sure about this feature. The result analysis shows that the Mobile Application is easy to load and use which motivates end user, learner in this case, to play with it for learning. The Mobile Application is sturdy, and does not crash and hangs and thus was liked by most of learners.

The Navigation is very important in e-learning and designing of websites. If it is easy then learner does not feel intimidated whereas if it complex, the learner may get lost in the navigational nitty-gritty and may not reach the goal. 87% (27) learners found navigation easy and only 4 (13%) were not sure. The navigation is important in Mobile Application because of smaller user interface. The smoother the

movement back and forth, the more is the learning capacity of the tool.

The Mobile Application was designed to fulfil the objectives of the module of open and distance education for learners. The learners of ODE are new to the system as they mostly come from conventional face to face system; therefore, need to be oriented to ODE. The Mobile Application fulfilled its objectives of orienting the learners to ODE. The 28 learners out of total sample of 31 of MADE agreed that Mobile Application ODE does fulfill its objective of orienting the learners towards ODE learners.

Teaching and learning at all levels aspired to promote creativity and imagination among learners. Any teaching learning resources or tool is assessed on this parameter. Mobile Application ODE was rated highly on this parameter as 25 out of 31 learners agreed on this, 04 were not sure and 02 disagreed. As Mobile Application uses multimedia; there are more triggers to thinking process than a simple media learning resource. As the content of ODE was basic and in conversational style, it encouraged learners to thinking further and higher imagination.

HOTS are the higher order thinking skills which should be developed as a result of any teaching learning endeavor. 22 learners expressed that Mobile Application ODE stimulated HOTS.

The results as shown in table 2 on analysis show that few learners had expressed their disagreement on these two parameters of Mobile Application. Promotion of creativity and imagination (04) and HOTS (03). Though the number is small but this is also important as it reflects an angle of perception among learners. The disagreement may be due to the fact that the content is informative and interaction does not involve rhetorical or provocative questions. These can be incorporated in the Mobile Application. Also interactivity can be linked to the correct and incorrect answer and that would have been more helpful in stimulation of HOTS.

Only 05 Learners were not sure about the functional design and the visually stimulating feature of Mobile Application ODE. Designing is very important feature and visual appeal attracts learners to approach and use it. 26 learners found the Mobile Application ODE to be visually stimulating and enjoying. Most of learners are attracted towards visual appeal and only after that one goes through the content.

26 Learners also felt that the Mobile Application-ODE motivated learners to learn through ODE as it tells them about 'what is open and distance education'. Having knowledge/orientation is just a step towards its usage. Mobile Application ODE helps to build the concept of ODE and thus motivates one to be learn through ODE. Only 3 learners were not sure and 2 disagreed to this. This may be due to the difficulties in navigation, stimulation of creativity, imagination and HOTS as discussed earlier.

The number of learners who disagree remains same and thus this group is not convinced of the Mobile Application ODE's ability to stimulate higher thinking skills/processes. They found it only informative. Analysis of the comments received shows that few learners expressed that Mobile Application should be more interactive and more use of multimedia should be there.

Conclusion

The feedback provided reveals that the mobile app was found to be interactive, relevant and effective by most of the learners. All learners expressed it to be "good initiative" and "an appreciable effort". It was found to be quite motivating by most of learners as it gives content to be read offline in anyplace, anytime. It was found to be educative, useful and effective app for students of Distance Education who had no background of Open and Distance Education. Also this small, user friendly and crisp application can help fresher's clear their basics about the Open and Distance learning system at their own place and pace which contributes phenomenally to the expansion of the Higher Education system especially in India. This app can work as ice breaker for the learner of ODL wherein the learners can go through the initiation to ODL at any time in an interactive way. ODE will facilitate the learner to navigate through the content easily using multimedia. Therefore, 'ODE' motivates teachers to design mobile app for their own programmes also.

Though the ODE was found useful by most learners the design of the ODE needed some modifications as per the feedback received, like more images could be used wherever possible and more refinement was desired. The font style, color and formatting needs to be revisited. It will be better if a navigation manual of slides can be added in starting which will help learners to navigate more effectively. Module on app should start with module objectives which may motivate the learner to navigate through all pages. There is scope to improve interface, structure of content and navigational tool. Interactivity also

needs be increased. This mobile application is highly useful for learners and can be used as addition to or substitute for Self Learning Material (SLM). It generates interest and motivates learners. Since it is supported with audio/video files, it helps learners to understand content in better way.

The mobile app needs one time download and thus can be facilitated through the study or the regional centers of IGNOU. FAQ or discussion page where one can help another with doubts and raise questions would be helpful.

To conclude, the findings of the study revealed that the Mobile Application ODE for the orientation of the learners of Open and Distance Education was found to be effective by most of the learners and thus may be used as a learning resource to orient the learners towards the Open and Distance Education. The use of Mobile Application ODE's for teaching and learning will be a step towards M-learning wherein the latest theory of learning through Connectivism is used for learner's learning. Mobile Application ODE's will enable IGNOU learners to understand the importance of learning in ODL. The application can be hosted on IGNOU web server from where it can be easily downloaded.

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