Mobile Learning: Readiness and Perceptions of Teachers of Open Universities of Commonwealth Asia

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Abstract: Integration of 'Mobile Learning' (m-learning) in Open and Distance Learning (ODL) systems can play a crucial role in reducing the 'Digital Divide' and strengthening 'Democratization of Education' by providing quality educational opportunities and access to information quickly at affordable cost in Commonwealth Asian countries. Successful implementation of m-learning will be determined by readiness and positive perception of teachers towards it. This study examined the m-learning readiness and perception of the teachers of eighteen Open Universities spread across five Commonwealth Asian countries (Bangladesh, India, Malaysia, Pakistan and Sri Lanka). The analysis of responses obtained from 102 teachers indicates that they have the device and skill readiness to impart m-learning. The study also revealed the presence of positive perceptions for m-learning among them. They affirmed that m-learning has the potential to engage the learner to a greater extent. It enhances the collaboration and didactic conversation, thereby reducing the feeling of isolation for learners in an ODL system. However, teachers were still not sure, if m-learning can replace e-learning through conventional devices. Teachers were also aware of the possible applications of m-learning in ODL, pedagogies for which needs to be further explored.

Keywords: M-learning, Mobile Technology, Open and Distance Learning (ODL), Teachers, Readiness, Perception, Commonwealth-Asia

Introduction

The introduction of mobiles has given rise to a new era in the field of educational technology and is opening up innovative ways of learning and collaboration for the teaching – learning community, known as m-learning. m-Learning is defined as dissemination of learning resources and services to learners through any hand held portable device connected to wireless and mobile phone networks, independent of time and place (Hashemi, Azizinezhad, Najafi, & Nesari, 2011). It has the potential to provide educational opportunities and access to information quickly at an affordable cost. Integration of mobile technology in teaching and learning processes has been proven to enhance the performance of the learners and teachers. With these features, mobile technology can be more relevant in ODL systems, where the thrust is to provide access to quality education to the learners in a cost effective way irrespective of their location (Fozdar & Kumar, 2007).

The role of ODL systems is very significant in Commonwealth Asian countries, where the problems of access, equity and democratization of education are still a challenge. Commonwealth Asia, comprising Bangladesh, Brunei Darussalam, India, Malaysia, Pakistan and Sri Lanka are the fertile grounds, where mobile technology in ODL can be implemented. This is due to the increasing rate of mobile penetration in these countries. Moreover, implementation of mobile technology does not require elaborate physical infrastructure, thus making it a financially viable choice in developing countries (Valk, Rashid, & Elder, 2010). This was also supported by Motlik (2008) who articulated that dependence on e-learning in ODL may not be the best tool for developing nations in Asia. He further

stated that m-learning is a promising tool which can enable these countries to be global leaders in this field.

Implementation of m-learning in an ODL system can be successfully achieved through the coordinated efforts of its stakeholders, mainly learners, institutions and teachers. While many researchers have focused on learners' perspectives, very few studies exist focusing on teachers' perspectives. Hussin et al. (2012) and Ismail, Bokhare, Azizan, & Azman (2013) also emphasised that the success of m-learning will be determined by the awareness of suitable and effective pedagogical approaches, rather than merely possessing mobile phones. Hence it is important to understand the readiness and perceptions of the teachers, as they are the key players to effectively implement m-learning and engage their learners by using relevant pedagogy.

Therefore, there is a need for Open Universities to identify the readiness for and perception of m-learning among their teachers. This will help them to plan and implement m-learning strategies in the teaching-learning process. Looi, Seow, Zhang, So, Chen, & Wong (2010) has also emphasised that there is a need for research in the areas of pedagogy and professional development of educators to implement m-learning in a seamless manner. Through this study our effort has been to assess and evaluate readiness and perception towards m-learning of the teachers of Open Universities of Commonwealth Asian countries.

Literature Review

m-Learning has significantly penetrated Asian countries and holds tremendous potential in the future. Ford and Leinonen (2009) used a mobile audio-wikipedia that supported increased access to information in a region "where the access to information, both paper-based and electronic, is limited". Analysis of m-learning projects in Asian countries —the Philippines, Mongolia, Bangladesh Thailand, and India — has made it evident that usage of mobile phones has improved educational outcomes and facilitated increased access (Valk et al., 2010). Despite its huge potential, m-learning is still in its evolving generation and is yet to be fully established (Ally & Prieto-Blázquez, 2014; Sharples, 2013; Prieto, Migueláñez, & García-Peñalvo, 2013). Readiness can be defined as the availability of capabilities and resources to perform a particular task that needs specialized skills and infrastructure. It is very important to assess the readiness towards m- learning in order to enable institutions to strategize the implementation of m-learning.

Our literature review suggests that studies exist on e-learning readiness, covering various aspects such as psychological, sociological, environmental, financial, technological, etc. (Chapnick, 2000). Parasuraman (2000) proposed the "Technology Readiness Index" (TRI), which identifies the advanced users of any new technology-based services. Yun and Murad (2006) studied psychological and technical skill readiness for e-learning.

Early studies on m-learning readiness have identified some parameters affecting readiness for m-learning such as educational level (Nwagwu, 2001), gender (Trifonova, Georgieva, & Roncheii, 2006) and age (MacCallum & Jeffrey, 2009). Further studies have identified other factors that impact m-learning implementation such as technological feasibility, students' needs and pedagogical benefits (Cheung, Yuen, & Tsang, 2011; Alzaza & Yaakub, 2011).

The results of readiness based on m-learning studies (Alzaza & Yaakub, 2011; Attewell, 2005; Fozdar & Kumar, 2007; Maniar, 2008) on learners of higher education indicated that:

- learners perceived mobiles as an effective way to communicate, collaborate and learn
- learners were enthusiastic and looked forward to the integration of m-learning in their learning process
- learners had the requisite knowledge, necessary skills and awareness to utilize their mobile devices for m-learning
- mobile phones were found to be economical as compared to personal computers.

Similar to the learners it is also important for the teachers to have the readiness for m-learning to impart knowledge pedagogically. According to Alzaza (2012) and Mahamad, Ibrahim, & Taib (2010), the m-learning readiness of teachers was influenced by their level of technical knowledge, awareness and motivation. Ismail et al. (2013) found a low level of m-learning readiness among teachers; whereas a study conducted on trainee teachers by Mahat, Ayub, & Luan (2012) indicated their high level of readiness.

Perception studies on learners towards m-learning demonstrated that mobile phones help to increase the access to the information regardless of location (Valk et al., 2010, Gikas & Grant, 2013). Moreover m- learning motivated the learners and supplemented learning environment by making learning effective and interesting (Jacob & Isaac, 2008; Nordin, Embi, Yasin, Rahman, & Yunus, 2010). m-Learning provided opportunities for reinforcement of the course material. It also provided a platform where learners could collaborate and communicate informally (Looi et al., 2010). It also enhanced the flexibility in an ODL system if used with a blended approach (Hussin et al., 2012). Despite citing the potentials of m-learning and the positive perception towards the technology, the limitations of m-learning were also evident, and included fear of the technology, small mobile device keyboards making typing difficult and potential device distractions.

Moreover, gaps were also found in the perception of m-learning among learners and teachers. According to learners, some teachers were unwilling to effectively incorporate technology in their course and did not assist their students in interacting with the course content. These 'anti-technology instructors' did not want students to use mobile computing devices during class (Gikas & Grant, 2013). On the other hand, according to Mahat et al. (2012) teachers perceived that m-learning can save time and be a viable alternative to traditional teaching and e-learning.

Method and Sample

The purpose of this study was to identify the readiness and perceptions of the teachers of the Open Universities of Commonwealth Asian countries towards m-learning. A survey method was adopted in order to collect the data required for the study. The questionnaire was developed based on the literature review. It was reviewed for content validity by experts in the domain of education technology, ODL, e-learning, m-learning and psychology. After incorporating the comments and suggestions from the reviewers the questionnaire was tested for its reliability through the test-retest method.

The final questionnaire consisted of four sections covering 35 items to measure readiness and perceptions of teachers at Open Universities. Readiness towards m-learning was examined by

asking respondents about the availability of mobile devices and the activities they perform through them.

Perception towards m-learning and its possible applications was measured through a five-point Likert scale, ranging from 'Strongly Disagree' (1) to 'Strongly Agree' (5).

Items pertaining to Perception were measured for their internal consistency through Cronbach's Alpha, which shows how closely related a set of items is as a group. It is considered to be a measure of scale reliability. The internal consistency of items pertaining to Perception was measured through Cronbach's Alpha. It was found to be 0.94 and 0.92 for perception towards m-learning and its possible applications, respectively.

Online survey was conducted to collect the necessary data. The survey link was sent to 600 teachers from eighteen Open Universities of Bangladesh, India, Malaysia, Pakistan and Sri Lanka through e- mail. Table 1 presents a list of Open Universities by country. The sampling method was purposive sampling under a non-probability sampling method. Out of 600 surveys administered, a total of 126 responses (a response rate of 21%) were received, out of which 102 were used for analysis.

Table 1: List of Open Universities by Country (in alphabetical order)

#	Country	University	Web address
1.	**Bangladesh**	**Bangladesh Open University (BOU)**	www.bou.edu.bd/
2.		Dr. B.R.Ambedkar Open University (BRAOU)	www.braou.ac.in/
3.		Dr. Babasaheb Ambedkar Open University (BAOU)	www.baou.edu.in/
4.		Indira Gandhi National Open University (IGNOU)	www.ignou.ac.in/
5.		Karnataka State Open University (KSOU)	karnatakastateopenuniversity.in/
6.		Krishana Kanta Handiqui State Open University (KKHSOU)	www.kkhsou.in/
7.		M.P. Bhoj (Open) University (MPBOU)	www.bhojvirtualuniversity.com/
8.	**India**	Nalanda Open University (NOU)	www.nou.ac.in/
9.		Netaji Subhas Open University (NSOU)	www.wbnsou.ac.in/
10.		Pt. Sunderlal Sharma (Open) University (PSSOU)	pssou.ac.in/
11.		Tamil Nadu Open University (TNOU)	www.tnou.ac.in/
12.		U. P. Rajarshi Tandon Open University (UPRTOU)	www.uprtou.ac.in/
13.		Uttarakhand Open University (UOU)	www.uou.ac.in/
14.		Vardhman Mahaveer Open University (VMOU)	www.vmou.ac.in/
15.		Yashwantrao Chavan Maharashtra Open University (YCMOU)	www.ycmou.ac.in/
16.	**Malaysia**	Open University Malaysia (OUM)	www.oum.edu.my/
17.	**Pakistan**	*Allama Iqbal Open University (AIOU)*	www.aiou.edu.pk/
18.	**Sri Lanka**	The *Open University* of *Sri Lanka* (OUSL)	www.ou.ac.lk/

Results and Discussion

Demographic Profile

Table 2 summarises the demographic profiles of 102 respondents.

Table 2: Demographic Profile of Respondents

		Frequency	Percentage
Gender	Male	49	48
	Female	51	50
	Transgender	0	0
	Not Answered	2	2
Age Group	< 30 years	6	6
	31 -40 years	42	41
	41 -50 years	35	34
	51 -60 years	19	19
	61 and above	0	0
Experience			
	< 5 years	11	11
	5 -10 years	28	27
	11 -15 years	21	21
	16 -20 years	18	18
	21 - 25 years	8	8
	26 -30 years	12	12
	> 30 years	4	4
Subject Domain*	Education	22	22
	Science	19	19
	Social Sciences	16	16
	Distance Education	15	15
	Humanities	12	12
	Commerce and Management	9	9
	Computers and Information science	8	8
	Engineering & Technology	6	6
	Health Science	5	5
	Agriculture	5	5
	Gender/ Interdisciplinary Studies	2	2
	Any Other (Please specify)	12	12

*Respondents may select more than one option, so percentages may add up to more than 100%.

The table indicates that out of 102 respondents, 48% (n = 49) were male, while 50% (n = 51) were female. The ratio of male to female respondents was found to be equal. The average age of the respondents was found to be 41.9 years, and 75% of the respondents (n = 42+35) were from Education (22%) followed by the Sciences (19%), Social Sciences (16%), Distance Education (15%) and Humanities (12%).

Readiness

Readiness to engage in m-learning was categorized into (a) Device Readiness and (b) Skill Readiness. Device Readiness was assessed based on the availability of a mobile phone with Internet capability and an optimal screen size.

As indicated in Table 3, all the respondents (100%) had mobile phones. Out of a total of 102 respondents, 88 respondents (86%) had mobile phones with Internet capability. Moreover, 83% of the respondents had mobile phones with a screen size of more than 3 inches, which meets the criteria of optimum screen size. These devices were varied: smartphones, tablets, Phablets, iPads, etc. Small display screen devices (less than 3 inches) are not preferred for m-learning due to limited display capabilities and input limitations (Maniar, 2008), therefore, it can be inferred that majority of the teachers of Open Universities had device readiness to engage in teaching and learning through their mobile phones.

Table 3: Device Readiness

	Responses	
	YES	NO
Do you have mobile phone?	100% (n = 102)	0% (n = 0)
Do you have a mobile phone with internet capability?	86% (n = 88)	14% (n = 14)
Is the screen size of your mobile phone greater than 3 inches?	83% (n = 85)	17% (n = 17)

Skill Readiness was assessed based on the activities performed through mobile phones. Table 4 shows the list of activities and percentage of respondents performing them through their mobile phones.

As per Table 4, apart from mobile phone conventional usage (making phone calls and sending SMS messages), respondents used their mobile phones for Internet searches (71%), checking and sending e-mails (67%), sending and receiving instant messages (56%), downloading mobile apps (54%), social networking (53%) and sharing images/ audios/ videos (53%). This shows that these were the most common activities performed by the respondents. Higher usage patterns of these activities may be due to their utility and ease of use (Davis et al., 1989). Another reason for this may be the availability of these features in most smart phones in the form of mobile apps. We may consider these activities as *'Basic Skills'* required to execute some activities during m-learning, such as searching content, sending information, downloading-uploading and sharing information to a learning group.

The table further indicates that fewer respondents performed advanced activities, such as using online calendars/keeping appointments (38%), downloading and reading e-books (36%), watching online videos (30%), using e-commerce services (30%), and making video calls (28%). On the other hand, only 8% of the respondents were engaged in m-learning through LMSs like Moodle, WizIQ, etc. This shows that formalized m-learning is still in the nascent phase. There can be many reasons that contribute to the slow growth of m-learning and these can be further explored through research. Lower usage patterns of these activities may be due to the requirement for high processing speed, memory, storage capacity, bigger screen size, risk of transactional error, etc. (Wang, Wu, & Wang, 2009). As these activities require users to acquire some technological skills, we may consider these activities as

'Advanced Skills' required to execute some advanced activities during m-learning, such as organizing events, uploading and sharing multimedia e-content, managing data, making transactions, participating in online discussions, web conferencing and didactic interactions, reviewing assignments, providing online feedback, handling, hosting and managing online learning, engaging in game-based learning, etc.

Table 4: Usage Pattern of Mobile Phones

#	Activities performed through Mobile Phones	Responses*	%	Average %	Level
1	Making phone calls	102	98	98	
2	Sending text messages (SMS)	99	97		
3	Internet search	72	71	59	Basic Skills for M-Learning
4	Checking and sending e-mails	68	67		
5	Sending and receiving instant messages (IMs) like WhatsApp etc.	57	56		
6	Downloading mobile applications (apps)	55	54		
7	Social Networking (like Facebook etc.)	54	53		
8	Sharing image/ audio/ video	54	53		
9	Using online Calendar/keeping appointments)	38	37	21.5	Advanced Skills for M-Learning
10	Downloading and reading e-books	36	35		
11	Watching online videos (like YouTube etc.)	30	29		
12	Using e-commerce services (like Banking, Bill Payments, Ticket booking, online shopping etc.)	30	29		
13	Making video calls (like Skype etc.)	28	27		
14	Using as storage device (like Google Drive, DropBox etc.)	27	26		
15	Downloading audio podcast (like MP3)	18	18		
16	Using editing tools (like Quick Office, KingSoft Office etc.)	16	16		
17	Blogging (like Blogs etc.)	14	14		
18	Downloading offline games	12	12		
19	Undergoing/launching online programmes (Moodle, WizIQ etc.)	8	8		
20	Playing online interactive games	7	7		

Respondents may select more than one option, so percentages may add up to more than 100%.

The average percentage of respondents with Basic and Advanced skills for m-learning was found to be 59% and 21.5%, respectively, which shows that respondents are acquainted with

mobile technology. We can say that respondents have skill readiness to adapt m-learning and engage in it. Hence, they will find themselves familiar and comfortable with the activities required for m-learning (Hussin et al., 2012).

Perception

Perception was measured on a Likert scale, ranging from 'Strongly Disagree' to 'Strongly Agree'. Mean Scores (M) greater than three (M > 3) reflect positive perception, scores below three (M < 3) represent negative perception and scores equaling three (M = 3) represent neutral perception. The result of perception study concerning the advantages of m-learning is presented in Table 5.

A majority of respondents perceived that m-learning: (#1) provides learning opportunities irrespective of place, pace and time (M = 4.12); (#2) improves communication between learners and teachers (M = 4.05) and (#3) provides rich learning resources at one's finger tips (M = 4.01). The positive perception on the above items indicates that characteristics of m-learning (place, pace and time independence) are similar to that of ODL systems; therefore, m-leaning can become an integral part of an ODL system. m-Learning can enhance the communication and didactic conversation between tutor and learner, therefore reducing the feeling of isolation, which is one of the barriers in an ODL system for learners. Respondents also perceived that m-learning can open up the treasure trove of resources at one's finger tips whenever required.

A majority of respondents also positively recognized that m-learning (#4) provides access to ICT-based educational opportunities for everyone (M = 3.97). As the ODL system has been envisaged to provide access to equal educational opportunities to all sections of society. Including those previously unreached, hence, m-learning in ODL can play a crucial role in reducing the 'Digital Divide' and strengthening the 'Democratization of Education' (Brown, Campbell, & Ling, 2011; Srinuan, Srinuan, & Bohlin, 2012).

Respondents also agreed that m-learning (#5) supports a collaborative learning environment (M = 3.75). It indicates more frequent two-way communication between learner groups and teachers, therefore encouraging collaborative and informal learning (Looi et al., 2010; Gikas & Grant, 2013).

Respondents felt that m-learning may also be beneficial to learners as (#6) it can save their time and effort (M = 3.72) and (#7) engage them to a greater extent (M = 3.64) and, therefore (#8) will be well accepted by learners (M = 3.6). This means that teachers believe that learners are more tech-savvy and adaptable to changing technology. This statement was also endorsed by Awadhiya, Miglani, & Gowthaman (2014).

Respondents perceived that m-learning will also (#9) save the time and efforts of teachers (M = 3.6). However, we feel that due to the seamless connectivity of mobile phones, m-learning may also interfere with the private space of teachers, therefore, adequate policy is required to address this issue. Interestingly, respondents were neutral (M = 3.09) about the statement (#10) m-learning can replace e-learning through conventional devices like computers/ laptops. This may be due to limited display capabilities and the input interface in mobile devices. However, some studies shows that m- learning, can complement the learning process, by providing additional learning resources and cannot replace conventional methods (e-learning and classroom based training) (Kukulska-Humes, 2010; Hamat et al., 2012). Contrary to this, a study conducted by

Mahat et al. (2012) concluded that m-learning could replace traditional teaching as well as e-learning through a Learning Management System (LMS). This contradiction also opens up avenues for future research on substitution of e- learning with m-learning.

Table 5: Perception Regarding Mobile Learning

Mean = 3.7, Cronbach's Alpha = 0.94

#	According to you, "Mobile Learning"	SD	D	N	A	SA	M
1.	Provides learning opportunities irrespective of place, pace and time	2.9 (3)	5.9 (6)	8.8 (9)	41.2 (42)	41.2 (42)	**4.1**
2.	Improves communication between learners and teachers	2.9 (3)	2.0 (2)	17.6 (18)	42.2 (43)	35.3 (36)	**4.0**
3.	Provides rich learning resources at finger tips	2.9 (3)	3.9 (4)	17.6 (18)	40.2 (41)	35.3 (36)	**4.0**
4.	Provides access to ICT based educational opportunities to everyone	3.9 (4)	7.8 (8)	9.8 (10)	44.1 (45)	34.3 (35)	**3.9**
5.	Supports collaborative learning environment	2.9 (3)	2.9 (3)	21.6 (22)	46.1 (47)	26.5 (27)	**3.7**
6.	Saves efforts and time of learners	2.9 (3)	9.8 (10)	20.6 (21)	42.2 (43)	24.5 (25)	**3.7**
7.	Engages learners to a greater extent	4.9 (5)	3.9 (4)	28.4 (29)	40.2 (41)	22.5 (23)	**3.6**
8.	Will be accepted by learners	2.9 (3)	7.8 (8)	34.3 (35)	32.4 (33)	22.5 (23)	**3.6**
9.	Saves efforts and time of teachers	4.9 (5)	13.7 (14)	24.5 (25)	30.4 (31)	26.5 (27)	**3.6**
10.	Can replace e-learning through conventional devices like computers/ laptops	11.8 (12)	22.5 (23)	25.5 (26)	25.5 (26)	14.7 (15)	**3.0**

SD: Strongly Disagree; D: Disagree; N: Neutral; A: Agree; SA: Strongly Agree; M: Mean; St.Dv: Standard Deviation

Overall, data indicated that respondents have positive perception (Average of Mean of all perception statements = 3.72) towards various benefits of m-learning.

Perception was also studied in terms of the possible applications of mobile devices in ODL. The respondents were asked to give their opinion on six items, which mainly dealt with (a) academic and (b) administrative aspects of the ODL system. It reflects teachers' awareness of the potential applications of mobile devices in various areas of ODL. Its results are presented in Table 6.

According to the table, most respondents agree that mobile devices can be used for various academic activities like (#1) sharing course related pictures, audios, videos and links with

learners (M = 4.1); (#2) accessing syllabus and assignments by learners (M = 4.0); (#3) accessing course material, notes, etc. by learners (M = 3.8); (#4) performing activities like quizzes by learners (M = 3.8) and (#5) participating in discussions forums (M = 3.9). Mobile devices come with built-in features like digital displays, speakers, cameras with significant memory and processing speed which allows sound, text, pictures, and video files to be used, downloaded and uploaded. These features make the creation and delivery of multimedia content feasible using mobile devices. M-learning is also a practical choice since the users do not need much technological expertise to carry out m-learning.

However all learning cannot be imparted through m-learning. Despite fulfilling the technological requirements, m-learning can only be used as a tool to supplement existing teaching and learning models or for communicating small chunks of information quickly to the learners (Kukulska-Hulme, 2010).

Table 6: Perception regarding possible areas of application of Mobile Learning in ODL

Mean = 4.0, Cronbach's Alpha = 0.92

#	According to you, mobile devices may be used in ODL to	SD	D	N	A	SA	M
1.	Share any course related pictures, audios, videos, links with learners	2.0 (2)	2.9 (3)	13.7 (14)	50.0 (51)	31.4 (32)	**4.1**
2.	Access Syllabus and Assignments by learners	2.0 (2)	5.9 (6)	11.8 (12)	52.0 (53)	28.4 (29)	**4.0**
3.	Access Course material, Notes etc. by learners	4.9 (5)	5.9 (6)	16.7 (17)	49.0 (50)	23.5 (24)	**3.8**
4.	Perform activities like Quizzes by learners	2.9 (3)	3.9 (4)	22.5 (23)	49.0 (50)	21.6 (22)	**3.8**
5.	Participate in Discussions forums	2.9 (3)	4.9 (5)	19.6 (20)	49.0 (50)	23.5 (24)	**3.9**
6.	Provide Student Support Services to learners like Administrative Information	2.0 (2)	2.9 (3)	5.9 (6)	46.1 (47)	43.1 (44)	**4.3**

Figures in brackets ( ) indicate number of respondents
SD: *Strongly Disagree;* **D:** *Disagree;* **N:** *Neutral;* **A:** *Agree;* **SA:** *Strongly Agree;* **M:** *Mean*

Therefore, there is a need to re-purpose e-learning course content into m-learning content (m-content). This gives scope for the emergence of newer pedagogies suitable for m-learning (Kukulska- Hulme, 2010). Since the learners will be engaged in m-learning in a variety of different settings, with a variety of devices with varying screen sizes; m-learning pedagogies need to be more dynamic and, therefore, will be more complex in nature. Therefore, it is also

important to look into navigation and interactivity including social interactivity aspects as well as the subject matter.

It may be inferred that m-learning will be more suitable for accessing the syllabus and assignments, which are compact and modular. Learners may also share any course related pictures, audios, and videos, provided they are not large in size. Learners will also participate in interactive activities like quizzes or participating in social interactions like discussions forums. Course material, notes and so on may also be assessed by learners but to a limited extent, since it is not possible to deliver all the content via mobile device. Even if detailed content is provided, it cannot be assimilated conveniently using small screen sizes and thus may not work well with m-learning.

Further, respondents also agreed that mobile devices can also be used for (#6) providing student support services to learners (M = 4.3) like admission, enrollment, registration information; administrative assistance, status of delivery of study materials, tutoring and counseling dates, results, etc.

It is also evident from M values that use of mobiles for administrative activities (M = 4.3) is much more strongly agreed to by the respondents, as compared to other academic activities (where M varies from 3.8 to 4.1). Fozdar and Kumar (2007) have also described implications of mobile as a media in various operational activities of ODL like pre-admission information, the admission process, etc.

Overall, the data indicates that respondents are aware of the use of mobile devices and various possibilities and application areas in which mobiles can be used in ODL. However, pedagogical strategies need to be further identified for m-learning.

So far, studies in Asian contexts indicate that, though m-learning is successful in increasing access to educational opportunities, little evidence exists which indicate that it promotes new learning (Valk et al., 2010).

Conclusion

The introduction of m-learning can revolutionize an ODL system in Commonwealth Asian countries by providing quality education opportunities in a cost-effective way. M-learning will break the barrier between teachers and learners by providing 'Just in time' learning that will provide ready access to knowledge. The underlining driving force for successful implementation of m-learning is the teachers.

This study indicated that teachers of Open Universities have a readiness for m-learning in terms of the availability of mobile device and Internet connectivity. Also, a significant number of teachers have acquired the 'Basic skills' needed for m-learning, however, the percentage of teachers ready with 'Advanced skills' is less. As the technology is rapidly evolving, it is important to bring those with 'Basic Skills' technologically at par with those teachers who possess 'Advanced skills'. This is only possible through systematic workshops, training and re-training. It is recommended that teachers with 'Advanced skills' should be trained to become master trainers in order to impart higher skills to their colleagues. Apart from technological

skills, it is also important to deliver the content in a pedagogically relevant format. It is important to customize the framework and instructional design for m-learning.

Our study also demonstrates that the teachers are aware of the possible features and benefits of m- learning and its possible applications in ODL. Teachers at Open Universities have positive perceptions towards m-learning. However, respondents were neutral about the replacement of e-learning with m-learning. Many contradictions still exist in this area that need to be addressed in future research on the substitution of e-learning with m-learning and possible scenarios.

We also conclude that m-learning has significant potential for use in ODL systems both for academic as well as administrative purposes, provided it meets the criteria of short and 'to the point information'. However, this study neither covers how m-learning is being used for pedagogical means in the current scenario, nor does it identify pedagogical strategies which can be used to implement them. It could be a possible research topic for further studies.

Learners, institutions and teachers are the key pillars to implementation of m-learning in ODL systems. While many studies have previously established learners' readiness and positive perception towards m-learning, this study reflects upon the readiness and positive perceptions of teachers, who are the critical link in the broad framework of the delivery of knowledge.

Despite the readiness of both learners and teachers, m-learning is still in a nascent phase in the educational domain, despite its huge potential in Commonwealth Asian countries. A study conducted by Awadhiya and Miglani (2016) suggests that there exist several challenges for teachers of Open Universities, which need to be addressed before m-learning can be successfully implemented. These challenges were mainly institutional driven, i.e., (a) lack of support for instructional design for m-learning; (b) lack of institutional policy for m-learning and (c) lack of infrastructure/technological support.

Hence, it is time for Open Universities to look into modalities for providing m-learning, given the scenario that learners and teachers are both ready. For this, a top-down planning strategy should be adopted by these institutions in order to bring about significant, successful change at the institutional level. Future studies may focus on establishing a conceptual framework for the implementation of m- learning to help institutional policymakers make better decisions about prioritizing their goals and objectives that align with the institution's vision and mission.

Acknowledgement

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