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Adaptation of Technology in Open Distance Learning: A Case Study of AIOU

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Abstract

The purpose of this study was to explore how AIOU is adapting technological innovations in their distance education programs and to what extent instructional design has been aligned with the technology-based online learning. A qualitative research design was adopted to collect data from key IT experts working behind the provision of online learning and the tutors who are using the online learning platform. A semi-structured interview protocol was designed to interview the participants. An interpretive data analysis approach was adopted to reach at the conclusions. The majority of the respondents acknowledged the need of the adaptation of technology in distance education and discussed different opportunities offered through LMS and other online resources. All is set to align the instructional design with online learning environment, but a lot can only be wished in all three areas of instruction design i.e. instructional objectives, instructional activities and assessment. This alignment can only be possible with the change in the mindset of the tutors and availability of easily accessible online resources throughout the country.

Keywords: online learning; technology in education; instructional design[1]

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Introduction

Technology advancements have brought a paradigm shift in distance education which took the distance out of distance learning. The immense gale of technology has redefined the distance education. Nowadays it has been blended with online/e-learning, which extends multiple options for instructors and learners in teaching-learning process (Courtney & Wilhoite-Mathews, 2015). The important benefit of online learning is that it can exterminate time and distance – with the help of technology, learning material can be accessed from anywhere at any time by just a single click.

Since its inception, distance education has altered the complete landscape of teaching and learning. Flexibility in time and space is the key element of distance education but at the expense of teacher-student intimate interaction. With the unprecedented advancements in virtual communication stimulated the policy makers to remove the barriers of teacher-student interaction in distance education. The new millennium brought an explosion in information and communication technologies and imparting education was no exception too. The online learning based on a complete synchronized interaction within a virtual environment (Ku & Chang, 2011) attracted students to opt for the online learning (Greenland & Moore, 2014). Simply it was a paradigm shift and each and every bit of distance education transformed, resulting in a complete renovation of instructional design.

The adoption of Learning Management Systems (LMS) and popularity of Massive Open Online Courses (MOOCs) has raised the profile of online learning (Kennedy, 2014). Such programs connected the instructors and learners in a virtual environment; the instructor prepared the course and related material e.g., audio-video lectures, tutorials, subject guides, assignments, test, quizzes, and other curricular activities, etc., and enabled students to have access to it along with teacher-student meeting in virtual classrooms (Scanlon, McAndrew & O'Shea, 2015). Furthermore, instructors can monitor all the learning abilities, activities and students' development. On the other end, students can be benefitted by studying course notes and related material on their computer and could also meet their teachers and classmates in the virtual classrooms anywhere in the world, and also prepare themselves for the assessment (Beaven, Comas-Quinn, Hauck, de los Arcos & Lewis, 2013).

In the present digital world, the focus is on maximizing facilitation and interaction in the open and distance learning environments. Thus, there is a need to expand our vision of pedagogy to make learners more

active rather than passive and enabling them to interact with their peers and instructors, organize discussions, post comments, share assignments, and create learning communities, etc. (Kennedy, 2014). During this process, a new instructional design emerged to involve both the students and teachers in the new settings.

The variety of ICT is grabbing the attention of wider academic community and policy makers to reshape the existing system of open and distance education and make it more effective and communicative for the learners. However, adaptation of these technological innovations mainly depends upon the institutional policy (vision, funds, and infrastructure and technology experts). The teachers, in this regard, are equally important as they have to implement the instructional design suited to technology.

Purpose of the Study

Considering that adaptation of technology-based online learning is the ultimate option especially for the institutions of distance education, this manuscript will discuss the current status of adopting technological innovations by Allama Iqbal Open University, Islamabad in its open distance learning mode. Furthermore, the study has also targeted how instructional design have been transformed and shifted to online learning after adopting technological innovations. So the guiding questions of the research were to:

- How AIOU is facilitating its students through the online learning environment?
- To what extent, AIOU is aligning instructional design with technological adaptation?

Theoretical Background

Distance to online learning. Over the year's massive transformations have been observed in distance education. Due to theses changing trends, the word distance education is now often used interchangeably with online learning and e-learning (Courtney & Wilhoite-Mathews, 2015). That means distance education has entered into a 'post-modern development' phase (see, Saba, 2011), further, Anderson and Simpson (2012) presented "subsequent generations" of distance education focusing variously on asynchronous computer conferencing and/or synchronous audio and video teleconferencing (p.2). Subsequently,

Courtney and Wilhoite-Mathews (2015) define online learning as the process where on-campus and off-campus learners can access course-related or training-related materials, resources, and communication via synchronous (live interactive) or asynchronous (anytime, anywhere) delivery methods through web conferencing, and/or a Learning Management System (LMS). Literature is evident that such initiatives starting from institutional level, thus evolution is linked to institutional policy and vision (Rogerson-Revell, 2015; Courtney & Wilhoite-Mathews, 2015).

Institutional approach to adopt online learning. A key factor in adopting online learning mode is to analyze the current practices and issues and to compare these with the future institutional needs (Price, Kirkwood & Richardson, 2016). This requires appropriate funds and infrastructure to meet the current and future needs of the institution. Price and Kirkwood (2014) stressed that these initiatives are entirely based on the availability of the funds. Once the institution allocates the adequate amount of funds for such initiatives, only then can develop their educational policies to adopt innovative technologies and develop their infrastructure accordingly. Price, Casanova and Orwell (2016) also suggested the need for development of the digital resources and supporting infrastructure requires specialist input from Learning Technologists, Web Developers, Library Specialists and Information Technology experts. Thus, any advancement in preparing for a coherent and consistent Technology Enabled Learning (TEL) implementation should go beyond a focus on teachers and learners, should include technical and support staff, administrators, senior managers and policy makers (Allen & Seaman, 2013).

Next, the major purpose of the adaptation of technological advancements is to align the resources with instruction to facilitate maximum learners and instructors as well. This calls to prepare academic staff for these transformations. Institutions also needs to invest in teacher's professional development. Professional development of teachers in adaptation of ICTs means to prepare them to design their courses incorporating technology aligning with educational objectives and institutional policy. Moreover, instructional activities and assessment should also be linked to learning outcomes (Chetwynd & Dobbyn, 2011). The successful implementation of these initiatives linked to prepare the stakeholders to adapt the new vision and policies of the institution. Attwell and Hughes (2010) suggested that if organization motivates its faculty towards technology adaptation, they will more likely to accept it. Next to teachers, students are equally important to prepare and to adopt

technology since they are the ultimate beneficiaries. However, students need support to adapt new practices and this requires training to shift to technological practices.

To conclude, adapting online learning medium, policy makers should synchronize both physical and virtual spaces. Similarly, policy makers should also consider the balance between traditional face-to-face learning and the online learning because the imbalance may impact the physical infrastructure (Price, Casanova & Orwell, 2016).

Aligning technology with pedagogy. Technology has been playing a key role in changing the dynamics of instructional design in distance education. However, technologies will work best if it completely aligned with course design rather than attached as a supplementary element (Armellini & Aiyegbayo, 2010; Rogerson-Revell, 2015). In this sense, it is harder to introduce technologies into an existing distance program than designing a new technology integrated course (Kirkwood & Price, 2014). This means just providing web resources and online communication tools in an existing distance program is not enough to achieve the learning outcomes.

As mentioned earlier, if the institutional policy is supporting for technology integration in the distance education that means educational objectives and instructional design should also aligned with the institutional policy. Integrated course design of this kind is what Biggs (2003) referred to "constructive alignment." where "a good teaching system aligns teaching methods and assessment to the learning activities stated in the objectives so that all aspects of the system are in line and supporting appropriate students' learning" (p.11).

Thus, when the blue print of instructions will be clear to teachers that the course is aligned to the online learning and will be facilitative through instructional framework then instructor and learners will be able to use the integrated technology more efficiently (Kirkwood & Price, 2016). Figure 1, explains the connection of learning objectives, learning activities and assessment. All the three components are linked together. Anything beyond and outside the rectangle will be considered unconnected with the learning objectives. So, integration within the rectangle will be beneficial for both instructors and learners. On the other hand if the underlying pedagogical approach is based on traditional teaching-and-learning model then students may get limited benefits of online resources and activities (Paran, Furneaux & Sumner, 2004).

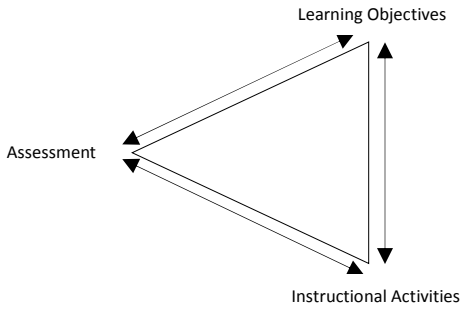

Figure 1: Instructional design

The prime component of reforming asynchronous to synchronous learning is to adopt learner-centered approaches. The transformation in distance education changed the outdated practices that no longer serve the need of learners. In contrast the emerging technologies in relation to online learning foster interaction that deliberately integrated into the instructional design to promote student-centered learning. Software companies are creating user-friendly applications that are an asset for distance education stakeholders. The first and second generation Web tools including: email, chat rooms, Blogs (Weblogs), wikis, and podcasts (also called vlogs if they use video; or audio-blogs if only audio is used) can be implemented alone or in conjunction with other applications such as OER, LMS, Moodle, MOOCs to involve students in learning environments (Bartolomé-Pina & Steffens, 2015).

Distance/online learning approaches in Pakistan. There is a paradigm shift in higher education in Pakistan. Universities are expanding their programs and campuses to accommodate maximum number of students. During the recent years, many universities start offering distance education programs to target outreached students across the country. There are two universities in Pakistan which are dedicated for distance and online learning i.e. Allama Iqbal Open University and the Virtual University. AIOU – one of the pioneer universities in the world in distance education, is on top to offer distance education in the country (Bibi & Khan, 2018). AIOU was established in 1974 and distance mode of learning was adopted to educate the people from the outreached areas but now shifting towards online technologies. Like other modern distance education universities in the world, AIOU is also investing to introduce online learning services to facilitate its students at maximum level (AIOU shifts traditional ODL to e-Learning, 2018). In this context, AIOU has been investing a lot to develop their technological

infrastructure and services, e.g., installed the latest software and machinery to make distance learning more interactive and facilitative for students and teachers; they are also investing to train their teachers and students to use these technologies proficiently (Sangi, 2009). On the other hand, the Virtual University (VU) was established after the online learning systems had been introduced. VU has been using these online learning tools since its inception. Online audio/video lectures are available for the students. These lectures are also available in the form of CDs on university online bookshop (Arfeen & Noor, 2017). These two i.e. AIOU and VU are the universities in Pakistan which were established specifically for distance learning. Some other general universities also offer distance education programs e.g. Bahauddin Zakariya University Multan. But they are limited to some of their programs. LMS is being used for online interaction between teachers and students. But majority of the students of distance and online education systems are enrolled in AIOU and VU and the lion's share belongs to AIOU. With an enrolment of 1.3 million students, AIOU is the 6th largest university in the world by enrolment. That is why we delimited our study to AIOU only.

Research Methodology

The purpose of this study is two-fold. To identify the adaptation of online learning environment by Allama Iqbal Open University and its provision to its students; and to explore how AIOU is aligning instructional design with the online learning environment. A qualitative research design was adopted to collect data. We involved two kinds of personnel i) the experts who are responsible to manage the online learning environment – the technological team; and ii) the teachers who are making the online learning environment aligned with the technology. Four respondents were selected from each category. The technology experts were taken from Directorate of E-learning representing all tiers with multiple responsibilities while four of the faculty members were purposefully selected from the tutors who are already using online mode i.e. Learning Management System.

A semi-structured interview protocol was designed after a through literature review to collect data from the participants. The interview protocol helped us to know about the technological innovations adopted by the AIOU and aligning its delivery mechanism to these technological advancements. The interview protocol comprises on multiple questions, targeting the key areas where AIOU is offering online learning, e.g., (a) to know about the latest technologies using by AIOU, (b) learning

objectives in view of incorporating technology in the courses, (c) how instructional activities are being planned with the help of technology and (d) how technology facilitates in assessment. Within instructional activities we also focus on how instructors and learners are interacting with each other. Each interview lasted for 20 to 30 minutes.

Themes were already identified and predetermined so deductive approach of data analysis was applied. All the relevant responses in relation to their questions were highlighted and clustered. Later, all the clustered responses in view of each questions were examined thoroughly for data reduction. The deducted data was reported according to the key questions of this study.

Results

Since, the purpose of this study is twofold, we will first report the findings in relation to first research question: How AIOU is adopting the online learning environment? After that we will report the findings related to next research questions: To what extent AIOU is aligning instructional designs with technological adaptations?

AIOU – paradigm shift from distance to online learning

Before coming to the core questions, need and demand of the paradigm shift in distance education was discussed with the participants. Different innovations round the globe in this regard were also discussed. The respondents were also asked about the institutional mission regarding shifting to online mode from distance education

All the participants stressed the significance of the technology in distance education to facilitate students at maximum level and told that slowly but gradually AIOU is trying to shift to online learning mode (though we could not find this mission in the official documents and reports published by the university). One of the participants said:

> Like other countries we are also shifting to online learning. Thus, the modes of provisions of knowledge have been changing. Though slowly, yet the sense is prevailing everywhere that shifting our paradigm, I mean – shifting to online modes is the ultimate option to continue with the mission of educating the outreached populace, otherwise we can't survive.

Another respondent said:

> We are offering just a few programs through complete online mode. However, following the advancements in education, the

> goal is to completely adopt online learning environment. But this is quite challenging and will take time.

We emphasized on the other part of the question: what technologies are being used to create an online learning environment?

> Currently, we are using Moodle based LMS. Our experts have also developed OLIVE, it provides some extra features to LMS. The other is virtual classrooms, and both LMS and Virtual Classroom are integrated within the same interface – the OLIVE. These soft wares provided Video recorded lecture, online lectures, assignments and feedback on assignments through online learning tools. Few of our programs are completely online including assessment. But so far these programs are specific for foreign students only.

Participants acknowledged the benefits of online learning and called it 'need of the day' but they also highlighted some challenges and hurdles in adapting online learning.

A respondent said:

> Online is our future, technologically we are sound and we have enough resources but we cannot change the mindset of teachers and students within short period of time; it will take time to bring a shift in mindset. We need to prepare our teachers and students for this shift. It might take many years to set the institutional vision to complete online learning.

Another suggested in the following way:

> What I believe, your leader should realize the importance of ICTs, and if your leader is interested in shifting to online learning, then the process will speed up. University can involve telecommunication companies to facilitate students in outreach areas. These companies can make sure the availability of the internet connection and efficient connectivity. Comparing with traditional learning, we can provide cheaper solutions to our students. We can provide them with soft copies of relevant books and resources in tablets. Later, we can provide fully loaded tablets to students in nominal price and they can use those resources throughout their degree programs.

To sum up findings in view of the first research question. The respondents stressed the need of online learning in distance education. Though the mission of transforming distance education to online learning is hardly visible in official documents yet the university is equipped with the latest technology and ready for the transformation. Some of the programs are offered through online resources but partially only. Even in these programs, both students and teachers are facing problems.

Aligning technology with pedagogy

We gather responses in relation to our next research question: to what extent AIOU is aligning pedagogical adaptations with online learning to facilitate instructors and learners? This research question further divided into three key questions, how technology incorporates in instructional objectives? How technology helps in instructional activities and how it assists in assessment?

Learning objectives. We asked participants, how technology is incorporated in designing learning objectives. We almost received similar responses from all the participants. First, they stressed on 'paradigm shift' shifting from the distance to online learning. Thus, shifting to complete online learning is not completed yet. Instructional objectives are almost the same as were before the adaptation of technology. One of the participants reported:

> The ultimate mission is to align everything through technology, from instructional objectives to assessment. But, presently we are on our way to achieve this objective, our key objective is to equip students with learning material whatever the mode we use.

Another respondent reported:

> As to inculcate technology in instructional objectives, the blue print of our instructional design limited to use technology in providing recorded lectures, in some programs we use virtual classrooms but only for overseas students. However most of the time use of technology is limited to submitting and marking assignments online.

Instructional activities. Next, we asked, how are instructional activities designed to align learning with online resources?

One IT expert explained:

> We are in pursuit of minimizing the traditional correspondence method to online learning environment. For example, e-tutor upload the recommended readings and assignments, and students

> are also able to upload their assignment online. Later they can also receive their scores/feedback online. We are following blended learning approach, so students also get the opportunity to interact with each other through workshops.

Another person from IT explained the instructional activities in a following way:

> LMS environment facilitates us to interact with our students. For example, in virtual classroom, teacher teaches online, students can see his teacher in one window and in other window they can see the slides of his teacher. They can also ask questions either using microphone or in written form.

One of the respondent said:

> In LMS environment, video lectures are available and students can download them anytime, anywhere. Students can ask their questions in chat rooms and also create blogs to discuss with their peers; quizzes can also be conducted through LMS.

One tutor was of the opinion that:

> What I feel, every student cannot use LMS effectively and there could be many reasons. What, I suggest we should develop some mobile apps to get connected with students. That would be more efficient and interactive. Specially, those students who are living in rural areas, they cannot afford latest technology and fast speed internet connections. But everyone can afford android cell phone. Thus, interactive apps can facilitate students to get connected with their instructors and peers.

Assessment. The majority of the respondents centered on a point that we are using LMS only for assessing assignments. Respondents explained in the following way:

> Exams are conducting using traditional methods. But, MCQs type assessment and quizzes can be possible through LMS. For example, in USA, we have signed MOU with an organization Bait-ul-Eman academy. In Dars-e-Nazai program we conduct online exam with the help of this academy. Students go to that academy for exam, we have collaboration with the invigilating staff, and they facilitate the students in assessment. We can monitor their exam through our computers here in Pakistan. But they have to come to an examination center anyhow. For the

> students of Middle East, examination centers are made in Pakistan embassy schools but no monitoring is done through cameras.

Another respondent shed light on the local context:

> To conduct assessment in a local context is still crucial, for example if we are conducting assessment with huge number of students, we cannot monitor everyone in the examination hall. If we take exams of individual students sitting in their homes, then the reliability of such exams will be suspected. Assessment across the world is being conducted through different organizations, they facilitate students for assessment through these virtual technologies and to assure the reliability of the assessment.

Discussion and Conclusion

The study designed to investigate the current status of provision of online learning in Allama Iqbal Open University, and the way AIOU is incorporating technology in pedagogy.

As to providing online services to students, AIOU is committed to shift towards the online learning environment. AIOU is technologically sound and have enough resources to shift to online learning mode. However, our findings explored that teachers and students are not ready for such transformations, it might take years to transfer all the programs to online learning mode. Presently, they are facing some challenges which are creating hurdles for this shift. However, AIOU was successful to transfer a few programs completely to online learning mode.

The top universities like MIT, Utrecht and The Open University, UK, etc., are rapidly shifting to online learning since it is more convenient for teachers and students (Kirkwood & Price, 2014). If we compare our situation within Asia, we are far behind than Malaysia, Indonesia and Japan. Indeed, software engineers at AIOU are developing and updating their software according to the latest developments but the use and adaptation of these ICTs in distance education is still to be enhanced.

Next to technology infrastructure, teachers' professional development is also crucial. To change the mind set of people and to motivate them to adapt technology in instruction are observed quite crucial. Next, thousands of students of AIOU belongs to far flung rural

areas, it might be the greatest challenge for AIOU to equip them with all the required technologies and give them training to use these ICTs.

As to aligning instructional design with technology, we could not explore comprehensive and responses. The respondents remain focused on the opportunities OLIVE offers but the actual practices were not reported in detail. Actually, to align the course design according to the available instructional technology is the responsibility of the teachers. As mentioned earlier, teachers are not yet ready for the transformations. Most of the respondents just focusing on online assignments and their scoring. If this is the case then why the university is investing a huge portion of funds on online learning to manage the Learning Management System and OLIVE? This raised questions in view of instructional objectives, instructional activities and assessment. Neither has the focus been transformed to student-centered learning nor are the activities interactive. As far as, online assessment is concerned, there are many hurdles especially the creditability of assessment (Sangi, 2009).

Comparing these crucial results with international distance/open education universities, we could see that instructional design is the key to online learning (Rogerson-Revell, 2015). The main purpose of this transformation in the distance to online learning is to reduce the distance and to provide student-centered learning environment. This is in line what Bartolomé-Pina and Steffens (2015) identified in their research findings, distance education is being transformed, moving from traditional learning approaches to students-centered approaches. That means a teacher should be able to design such activities for students and motivate their students to use these services for better learning. LMS is a fully equipped program to integrate the online pedagogy and learner-centered support services, however, we are not getting the complete benefits of LMS. In contrast to our findings Jankowski and Marshall (2015) explored in their research, a successful learning model can be built to ensure transparency, accountability, quality assurance and maintaining consistency from the degree program and the course learning outcomes.

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