Design and Development of Blended Learning Course: A Pilot Study

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Abstract: Blended learning is a mix of classroom, self-directed, synchronous, and asynchronous approaches designed to optimise learning outcomes. Hence, it is a combination of online learning and traditional classroom learning intended to deliver educational contents in a personalised nature. It has changed the teacher-centered approach to student-centered approach and has restructured the learner’s role, thereby re-conceptualising and revitalising learning styles. This study provides a comprehensive picture of the short online course developed and delivered while pursuing a Post Graduate Diploma in E-learning Programme of IGNOU and tries to assess the course in terms of planning, development and delivery to support the theoretical postulations. Further, the study also tries to summarise the results of the course offered in the blended mode.

Keywords: Blended learning, Effectiveness, Online learning, SPSS, Online delivery

Introduction

E-learning is shaping the future of a tomorrow that uses electronic media and Information and Communication Technologies in education. The Oxford Dictionary defines e-learning as “a learning conducted via electronic media; typically on the internet”. Online learning has been exhaustively defined by Mohammed Ally as “the use of the internet to access learning materials; to interact with the content, instructor, and other learners; and to obtain support during the learning process, in order to acquire knowledge, to construct personal meaning, and to grow from the learning experience”. E-learning is a lot more than online learning, virtual learning, distributed learning, networked learning or web based learning. It includes all activities that are carried out by individuals or groups working online or offline via networks or stand-alone computers or other electronic devices (Naidu, 2006). Further, e-learning technologies cause massive, intensive, immediate and disruptive transformations to the education system. (Archer, Garrison and Anderson, 1999 as cited in Anderson Terry, 2008). These e-learning technologies have facilitated the adoption of a flexible, constructivist, learner friendly and multi-perspective approach to teaching-learning processes.

Therefore, e-learning has potential benefits as it provides a platform for student inquest, analysis and creation of new information. A new facet that has been added to e-learning is blended learning which attempts to seek the advantages of online learning and traditional learning simultaneously. It is simply linking e-learning with traditional
classroom learning. Blended learning is a mix of classroom, self-directed, synchronous, and asynchronous approaches designed to optimise the learning of the subject matter and learners. (Online Education Glossary). Thus, it is technology mediated learning that can support classroom learning effectively. Staker and Horn define it as a “formal education programme in which a student learns at least in part through online delivery of contents and instructions with some element of student’s control over time, place, path, and/or pace and at least in part at a supervised brick-and-mortar location away from home”. (Staker and Horn, 2012).

Hence, it is a combination of online learning and traditional classroom learning intended to deliver educational contents in a personalised manner.

This paper provides a comprehensive picture of the blended course designed and developed by IGNOU i.e. Post Graduate Diploma in E-learning (PGDEL) and tries to assess the course in terms of planning, development and delivery to support the theoretical postulations. The study also tries to summarise the results of the course offered in the blended mode.

**Review of Literature**

Online learning is an innovative medium of creating and sharing knowledge which are adopted by the schools, institutions, colleges and universities across the globe for teaching, learning, training and development. Online learning can harness and provide a rich educational experience to the learner and can enable learners and teachers in synchronous and asynchronous interactions across space, time and pace. Accordingly, review of many studies endorsed the significance of online learning in achieving notable learning outcomes.

Patricia, Kevin, and Don (2008) and Naidu (2006) emphasised that e-learning can deliver significant advantages and can be an effective educational tool if learner-centered opportunities are developed. Sasikumar M. (2008) explains that effective use of e-learning is not simply an add-on rather it impacts all the facets of the teaching-learning environment. Rhona Sharpe et al., stated that students make regular and frequent use of electronic resources with few reported problems of access, and they value particularly flexible access both from home and the campus (Rhona et al., 2006). Further, e-learning courses have the potential to be effectively crafted and implemented for research students. Wattakiecharoen and Nilsook found that Ph.D. students are ready for e-learning and are keen to accept e-learning technologies (Wattakiecharoen and Nilsook, 2013). Therefore, it can be inferred from the above discussion that e-learning can bring significant and effective transformations in the teaching-learning process.

Further, many studies have proved that not only e-learning but also blended learning has brought significant results in terms of delivery of programmes and learning-outcomes. Dzuiban et al., (2004) assessed it as a method that has proven to be not only effective in terms of learning outcomes, but ranks high on ratings of satisfaction with students and instructors. Hence, it may be inferred that the growth of blended learning is directly related to the delivery of high quality contents with increased access to Information and Communication Technology at substantially lower cost. Chen and Jones (2007) assessed
it as the method which offers greater flexibility to the instructors thereby freeing up commuting time and giving them opportunity to pursue research and other pursuits. This has changed the traditional teacher-centered approach to a student-centered approach and has restructured the learner’s role, thereby reconceptualising and revitalising learning styles. Hirtz (2008) postulates that using both online and in-person methodologies allows instructions to be designed to address diverse learning styles, as well as to meet the learning objectives of the course. It can be summed up that a lot of studies has been conducted across the globe that has revealed that blended or hybrid learning is successful in transformative learning. Hirata Yoko and Hirata Yoshihiro (2008) identified that most of the students preferred online learning to the traditional English as a Foreign Language (EFL) classes and they felt that the combination of online learning and face-to-face learning was advantageous for learners. The study identified some instructional factors, such as flexibility, goal-focused approach, as well as closely connected relationships between in-class and online instructions as indispensable for students to acquire a set of skills and strategies for successful language learners in hybrid learning environments. In a nutshell, a perusal of the extant studies revealed that blended learning allows for a range of teaching and learning practices to be combined for a customised learning experience and also to address diverse learning needs and different formats.

**Uses and benefits of blended learning**

1) Interactive online learning with limited classroom teaching can produce enhanced learning outcomes.

2) The teacher provides guidance and facilitates learners in chalking out decisions in respect to learning processes, methodology and content selection, and hence, transfers authority over the programme.

3) Active participation of learners with the facilitators during face-to-face classes and in a synchronous learning environment can enhance more interactivity in the virtual environment.

4) Blended learning can customise teaching-learning processes as per the requirements of the learner.

5) Blended learning environments have the potential to augment instructor-student and student-student connectivity and helps in building relationships as compared to traditional or online courses.

6) Programmes delivered via blended learning require less development cost as compared to online learning.

7) It provides flexibility in terms of place, pace and duration of study.

8) Blended learning can also inculcate cognitive, intellectual, rational, critical and writing skills among the learners. Hence knowledge not only gets disseminated effectively but it can also be constructed with interactivity among learners and tutors.

9) It is quite suitable to programmes that require practical or hands-on trainings.

10) Blended learning can overcome the problem of limited classroom spaces, well qualified and experienced faculties and infrastructure.

From the above discussion it can be inferred that blended learning is the most plausible solution to problems that hinder the growth of online programmes as it combines on
interactive online learning environment with limited classroom teaching to produce ideal learning outcomes. It has a special significance in professional and technical courses where blended learning can provide a win-win situation. Therefore, blended learning was adopted for the SPSS course which is quite practical in nature and which requires imparting of practical, analytical and decision making skills among the learners.

Objectives

Main objectives of the present study were:

• to describe the process of designing and implementing a blended learning course of a professional and practical nature;

• to gain practical insights in identifying significant features for designing, developing and implementing a blended learning course;

• to assess the learner’s experiences of a blended learning course; and

• to reflect and discuss the lessons learnt from the design and delivery of a blended learning course.

Description of the Course

The course developed was ‘Introduction to SPSS for Beginners’ of two credits and was a part of the Research Programme. SPSS (Statistical Product and Service Solutions) in the 21st century plays a crucial role in shaping the new architecture of research in an environment dominated by large volume of data and ever changing global economic scenario. It has emerged as a power-tool to analyse data and to understand the complexities of research in identifying strengths or otherwise. Accordingly, the contents of the course intended to equip learners with the knowledge on the introduction and description of data and to explore the very basic descriptive and inferential statistical analyses possible with SPSS. Hence, it was a hands-on computer based research oriented course which assumed some knowledge of the windows environment and statistical knowledge on the part of the learners.

Characteristics of the target group

This course was designed particularly for research scholars enrolled in the research programme of the Uttarakhand Open University. Since, this course requires substantial grounding in statistical techniques it was to be opted for after the learners gained an understanding of statistical terms, concepts, tools and techniques. Therefore, the participants for the course were:

• Research scholars of the Ph.D. programme across various disciplines.

• Faculty members of different disciplines who were interested in learning SPSS.

Developing clear, logical and readable report is a major objective of conducting any research. Further, with the abundance and easy availability of information it is a huge burden on the researchers to analyse information and derive meaningful interpretations. Further, many of us are traumatised by statistical and mathematical computations especially
when statistics is not our major subject. Integrating SPSS into all aspects of an introductory statistics helps researchers in not only computation but also in interpreting results. Use of statistical software is an integral part of learning statistics. With this background, the needs of the researchers were assessed by two categories i.e. ‘Learning the Basics’ to ‘Applying the Concepts’. Further, it was inferred that there are a number of the psychological and social variables that need to be understood while analysing the characteristics of adult learners for instance their cognitive, social, personality and interpersonal characteristics which should be considered while developing any course of study.

Further, this course was designed for learners with basic knowledge of statistical pedagogy, techniques and methods. Further, it was expected that the learners would also have basic knowledge of the concepts of quantitative analysis. The following characteristics were identified:

- an aptitude for and interest in statistics;
- ability to think logically, organise projects and carry them out;
- ability to work alone as well as with others;
- ability to validate concepts before accepting any new set of knowledge;
- can synthesise data, apply statistical theories and methods; and
- can work with others to understand and solve problems.

Course Design and Implementation

The course attempted to follow four main theories in its design. They were mainly Behaviourism, Cognitivism, Constructivism and Connectivism. Further, Gordon’s (1997), Analyse, Designing, Developing, Implement and Evaluation (ADDIE) Model and the ICARE Model (Introduction, Connect, Apply, Reflect, Extend) were also referred to for the instructional design of the blended programme. Overall, the ADDIE Model was broadly referred to for designing the course as this model provides a comprehensive guide to Analysis, Designing, Developing, Implementing and Evaluating a Course. Hence, this model was useful in designing a course of a professional nature and has helped in meeting the expectations of the learners. Inferences on Learning Devices from the four main learning theories are presented in Figure 1.

Designing of the blended course

The course was designed using a concept map which identified the major areas of the course; these were Data Management, Statistical Analysis, Data Presentation and Report Writing. These were identified on the basis of the key learning objectives for research scholars and stakeholders. The two credit course was designed for a 60 hour duration that included virtual sessions, self study, discussion forums, and term end examination preparations along with assignments. Further, instructional design along with interactive elements, practice sessions, content and type of technologies for reinforcing learning outcomes for each unit was designed. The proportion of the online and face-to-face learning was finalised on the basis of conceptual knowledge and hands-on skills required
by a learner. However, online learning was an integral part of the teaching-learning process. The face-to-face workshop was included in the design for reaping the benefits of classroom learning and for clarifying doubts or problems pertaining to conceptual, pedagogic and practicality of the topics undertaken.

Development of the course
The course facilitator developed the self learning material as e-content for each unit, using the Educational Advisor model. Navigational tools were also embedded in each unit for meticulous learning. Further, learning objects in the form of pre-recorded video and audio lectures as well as power point presentations were provided to learners to reinforce learning outcomes. These learning objects depicted the procedure of using SPSS for data analysis. Practice exercises, self assessment exercises, quizzes, etc. were also developed as ‘Learn by doing’ activities to enhance the analysis skills and to fortify concepts. A Google Group and Blog were created for enhanced retention, active involvement and transformative learning. SPSS data file for practice was also developed to foster learning. Figure 2 shows the screen shot of the online course.
Implementation of the course

The course was delivered in the blended mode where face-to-face learning as well as online learning was adopted in the teaching-learning process. For effective course delivery, learners were given trial version of SPSS as a link so that they would have hands-on experience of the software. Online guest lecture was also provided to the learners. Virtual classes using Big Blue button were also conducted to explain the procedures for calculating data analysis in SPSS. Further, for interactions with the learners; google groups, blogs and emails were also used. To build collaborative and interactive learning, discussion forums were also incorporated in the Learning Management System (LMS) (PGDEL, IGNOU). Further, practice exercises were also provided to the learners to assess learning outcomes. For classroom delivery, a one day face-to-face workshop was organised for the learners to reinforce learning of SPSS. It also assisted learners in clarifying their doubts and hence, helped in improving their analytical and research skills. In the workshop, an expert on the topic was invited for sharing detailed insight and experiences with the learners.
Since this course was based on hands-on experience, therefore, there was an inevitable need of constantly motivating and encouraging learners to successfully pursue the programme and hence, constant interactivity with the learners was established using mails, announcements and blogs. Welcome Note, General Information and Guidelines about the course, navigating tools, technological support and the materials etc. were also given to the learners. Learner log-in ID and passwords were also generated. The course was implemented in a span of approximately one month in which virtual classes were also organised.

The programme was developed and implemented on the basis of the following sequential steps:

Evaluation of the course

Both formative and summative assessment was used for assessing the learning outcomes of the learners. The online threaded discussions in discussion forums (DFs), practice sessions, student-peer reviews were used as formative assessment tools by the instructor to guide improvements in the ongoing teaching and learning contexts. The quizzes, tutor marked assessment and mini project report as summative assessment tools were used to analyse the level of success and proficiency in using SPSS attained at the end of the instructional unit or after the completion of the delivery of content to the learners. The practice problems were also located within each section of a module. The aim of these problems was to give students the opportunity to practice their skills within that particular unit. The assessment strategy assigned 15 per cent weightage to participation in the discussion forums, 20 per cent weightage was given for the submission of tutor marked assignments, 20 per cent weightage was given to the computer marked assignments and remaining to the Mini-Project. After compiling the grades of the learners, it was assessed that out of six learners (in all eight learners were enrolled and out of these eight two learners were reported as drop-outs) four learners were active in submitting their assessment activities. However, frequent amendments were made towards the date for submitting assignments and mini-project. Overall, satisfactory progress towards expectations and goals was reported.
The evaluation of the course delivered was assessed with a questionnaire which was uploaded on the LMS. The online questionnaire was filled by all the learners and, the survey helped in gaining insights about the course.

**Effectiveness of Technological Aids**

In the course rendered, virtual classes were organised using Big Blue Button which was also recorded and a link was provided to the learners on LMS for clarifying their doubts and for the learners who missed their classes. The schedule of the entire course was uploaded on the LMS for students for future reference. Self Learning Material and reference links were also provided to the learners for stirring learning. Online Examination in the form of Computer Marked Assessments were also posted on the LMS through which learners were able to evaluate their own learning outcomes. Feedback on Peer review of Tutor Marked Assignment was also made available to the learners on their email IDs. Chat Sessions in Big Blue button with learners was also used for discussions. Blogs were used for discussions, for additional contents, and conveying latest news pertaining to SPSS. Table 1 reveals the details of the technological aids adopted and how they were utilised to make the course more effective for learners.

**Learner’s Experiences**

**Background of learners**

The learners of the programme were from diverse backgrounds. Two learners were from the Education discipline, one was from Management Studies, one learner was from Commerce, one learner from Social Sciences, and one was from the Computer Science discipline. A total of 6 students were enrolled in the course. A maximum number of learners were from the Education discipline so they constituted about 33.33 per cent of the learner community. There were two dropouts from the course.

![Figure 4. Background of the learners](image)
<table>
<thead>
<tr>
<th>Category</th>
<th>Technological aids</th>
<th>Purpose</th>
<th>Effectiveness inferred</th>
</tr>
</thead>
<tbody>
<tr>
<td>Statistical package</td>
<td>SPSS</td>
<td>For equipping learners with Statistical Computations for applying in their research work.</td>
<td>Highly professional software which is easy to use and interfer. Further, the results so generated in SPSS are reliable. Used highly for research and data analysis across the globe.</td>
</tr>
<tr>
<td>Web conferencing system for online learning</td>
<td>Big Blue Button</td>
<td>Used for delivering virtual classes. Further, it was used to record the lectures and helped in synchronous and asynchronous communication. Further, features like whiteboard, presenter, desktop sharing and webcam helped in effective delivery of the course.</td>
<td>Great experience to work with. It is high quality web conferencing system which is used for delivering virtual classes. It is an open source web conferencing system built on over fourteen open source components to create an integrated solution. Further, the screen sharing facility helped in making the entire working on SPSS visible and understandable to learners.</td>
</tr>
<tr>
<td>Screen recorder for developing videos</td>
<td>Screencast-o-matic</td>
<td>For creating and producing video lectures. It helps in explaining the steps to data analysis.</td>
<td>Very effective tool for recording video lectures without the help of any technical expert. Further, it is an ideal tool which can be used for delivering effective lectures.</td>
</tr>
<tr>
<td>Authoring tool</td>
<td>I-spring</td>
<td>Used for posting presentation in an .flv format.</td>
<td>It is a handy e-learning authoring solution for presenting content in an effective way.</td>
</tr>
<tr>
<td>Creating interactive exercises</td>
<td>Hot potatoes</td>
<td>Easy way of developing interactive quizzes.</td>
<td>Handy tool for developing interactive quizzes. Further, it is easy to upload the developed file using this technological aid.</td>
</tr>
<tr>
<td>Audio editor and recorder</td>
<td>Audacity</td>
<td>For developing audio lecture.</td>
<td>It is a trouble free software used for recording and editing sounds.</td>
</tr>
<tr>
<td>Learning management system</td>
<td>Moodle</td>
<td>It facilitated the following: Assignment submission, Organising Discussion Forums, File downloading, Grading, Online calendar, Online news and announcements, developing and posting Online quizzes and even conducting survey.</td>
<td>It is a centralised pool or integrated software which is a complete package that automates administration, tracking and reporting of online programmers. Academic and administrative functions were also included in the framework. It facilitates instructors in managing courses and communicating with the learners. Highly effective in course delivery.</td>
</tr>
<tr>
<td>Web search engine</td>
<td>Google</td>
<td>Internet aids like emails, groups and drive.</td>
<td>It provides varied tools used for online learning.</td>
</tr>
<tr>
<td>Content</td>
<td>YouTube</td>
<td>Was used to share link of larger files i.e. video lectures.</td>
<td>It was used for uploading videos.</td>
</tr>
<tr>
<td>Management system</td>
<td>Wiki</td>
<td>Reference links were given wherever required for further reading.</td>
<td>Relevant and updated information is available in Wiki this has brought information to the doorstep of the learners.</td>
</tr>
</tbody>
</table>
**Learning outcome**

Both formative and summative assessment was used for assessing the learning outcomes of the learners. The following formative assessment tools were used by the instructor to guide improvements in the ongoing teaching and learning contexts:

- Online threaded discussions in DFs
- Practice sessions
- Student-peer reviews

The following summative assessment tools were used to analyse the level of success and proficiency in using SPSS that was attained at the end of the instructional unit or after the content was delivered to the learners:

- Quizzes and tutor marked assessment
- Mini project report — for assessing application of concepts

All assessment marks were archived. The practice problems were also located within each section of a module. The aim of these practice-problems was to give students the opportunity to apply the skills gained from each unit.

After compiling the grades of the learners, it was assessed that out of six learners (in all eight learners had enrolled and out of these, two learners were reported as drop-outs) four learners were active in submitting their assessment activities and scored high in the overall performance. However, frequent amendments were made towards the last date for submitting the assignments and the mini project. Overall, satisfactory progress towards expectations and goals was reported, keeping in mind the limitation of their other pressing assignments.

**Learner’s experiences about the content and mode of delivery**

To assess the learning experiences of the learners with regard to the content and delivery of the online course, two surveys were administered on the learners. Six learners attempted the surveys posted in the LMS i.e. Moodle as well as survey which was developed in Google form and was sent to the learners on their Email-Id after the completion of the course.

**Data Analysis and Major Findings**

Analysis of the online survey-form sent to the learners using Google form about use, uptake and learning, 83 per cent of the respondents categorised themselves as competent enough to handle data analysis independently for their research study after completing this programme and 17 per cent of the respondents said that they would require the help of professional expert to analyse the data.

To know the level of interactivity among the learners while pursuing the course, learners were asked to submit their views. Around 67 per cent of the learners assessed that they were interactive during the programme and 33 per cent of the respondents considered that they were fairly interactive during the programme (Fig. 5).
In order to find out whether e-learning programmes would dominate traditional classroom teaching in the coming years, a question was asked in the survey and the response was mixed. Two learners believed that e-learning courses would somewhat dominate traditional classroom teaching in the near future; two learners felt that online learning would never dominate classroom teaching and two learners believed that e-learning would really dominate traditional classroom teaching in times to come (Fig. 6).

An attempt was made to assess the satisfaction level of the learners with respect to the course and it was assessed that 50 per cent learners were highly satisfied and the remaining 50 per cent were somewhat satisfied with the overall implementation of the course (Fig. 7). No respondent reported “dissatisfaction” or “somewhat dissatisfied”.
When asked about their interest in pursuing online programme in future, around 67 per cent respondents said that they are interested in pursuing online course for enriching their knowledge. However, around 33 per cent of the learners reported that they were not interested in pursuing e-learning programmes (Fig. 8).

The survey also required learners to express their opinion regarding the teaching-learning methodology, around 67 per cent of the respondents opined that the convergence of face-to-face workshop as well as online delivery of contents and instructions are a must for the course which required hands-on experience. Further, learners also shared, that the face-to-face workshop provided more depth to the course in terms of learning outcomes.
While analyzing the data it was also revealed that the 67 per cent of respondents strongly agreed that this course was effective in terms of learning outcomes; however 33 per cent of the respondents agreed that this course was effective in terms of desired outcomes. Further, no learner reported that the course was not effective in terms of learning outcomes.

### Outcome of the survey posted in Moodle

The Moodle template was adopted to present a holistic picture of learning outcomes in terms of relevance, reflective and critical thinking, interactivity, tutor support, peer support and interpretation. Learners were asked to submit their opinion in the LMS. Six respondents attempted the survey. Overall, it was assessed that the course scored high on its relevance for research studies and tutor support provided during the period of study. Further, the course achieved moderate outcomes in terms of reflective thinking and peer support. However, the survey reported that the course didn’t lend to interactivity among the learners (Fig. 10).
The course was assessed on the stated parameters individually and the results are presented in Table 2 and summarised as under:

- The course was assessed as useful for the professional career of the learners. The feedback showed that the learners were satisfied with the appropriateness and relevance of this activity.
- The survey also required learners to express their opinion regarding the development of their critical thinking while pursuing the course. Most of them assessed that the activity helped them to develop their critical thinking skills while analysing data for their research study.
- The survey also reported that majority of the respondents believed that they hardly interacted with each other during the period of study. However, only few learners reported that they had interacted quite often during the course of study.
- The survey assessed that the learners were satisfied with the tutoring along with the delivery of the content in terms of self-reflection, motivation, and encouragement.
- A majority of the students believed that peer support was taken positively during the course.
- Further, the survey assessed that there was a positive learning environment which helped learners in thinking optimistically. Learners also assessed that comments/messages posted by the tutor and other learners helped them in greater understanding of the statistical functions available in SPSS and their applications.

Table 2. Assessment of the course by the learners on the major aspects

<table>
<thead>
<tr>
<th>Course Contents</th>
<th>Almost Never</th>
<th>Seldom</th>
<th>Sometimes</th>
<th>Often</th>
<th>Almost Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relevance</td>
<td>0</td>
<td>0</td>
<td>13%</td>
<td>33%</td>
<td>54%</td>
</tr>
<tr>
<td>Reflective thinking</td>
<td>13%</td>
<td>17%</td>
<td>17%</td>
<td>38%</td>
<td>17%</td>
</tr>
<tr>
<td>Interactivity</td>
<td>4%</td>
<td>38%</td>
<td>33%</td>
<td>17%</td>
<td>8%</td>
</tr>
<tr>
<td>Tutor support</td>
<td>0</td>
<td>0</td>
<td>13%</td>
<td>33%</td>
<td>54%</td>
</tr>
<tr>
<td>Peer support</td>
<td>0</td>
<td>17%</td>
<td>33%</td>
<td>25%</td>
<td>25%</td>
</tr>
<tr>
<td>Interpretation</td>
<td>0</td>
<td>0</td>
<td>25%</td>
<td>21%</td>
<td>54%</td>
</tr>
</tbody>
</table>

Overall, it was found that Blended Learning has a tremendous potential to achieve learning goals. It has the possibility of combining different formats and technologies of delivery (Bersin, 2004; Garrison and Kanuka, 2004 as cited in Anderson Terry, 2008). Further, it was assessed that courses delivered through the blended mode requires an effective and realistic learning design that can be matched with diverse learning modes and mediums.

Ring and Matheieux (2002) suggested that online learning should have higher authenticity, higher interactivity and high collaboration. The same has been inferred from the study that blended learning courses especially of a professional nature require high degree of effort on the part of tutors in fostering interactivity and collaborative learning. Further, hyperlinks to relevant websites encourage learners to be actively involved and for self-learning to take place, thereby enhancing their research skills (Bose Kabita, 2003). Hence, learning objects and reference links provide deeper understanding of concepts and applicability. Components from various theories like Behaviorism, Cognitivism,
Constructivist and Connectivist models may be identified for customising as per the requirements of the course or the programme of study. Various instructional design and models should explore various components to assist designers in designing learning materials (Janicki and Liegle, 2001). Further, as suggested by Mason, 2005 (as cited in Waite Marion & Bingham Helen, 2008), the use of Google Groups, Blogs and Chats has the advantage of developing critical thinking and life-long learning. Induction or orientation sessions in the beginning of the Blended Learning course or programme may augment group cohesiveness thereby, steering high interactivity and creativity among the learners.

**Conclusion**

To sum up, blended learning emerged as a mode of successfully disseminating content and skills for technical and professional programmes among the learners. Further, it was assessed that suitable amendments in instructional design and content delivery mechanism should be made as per the nature and objectives of the programme. It was also observed that in blended learning, strong group cohesiveness may emerge during the interactions among the learners in the orientation or the induction sessions. Thus, in such types of initiatives, tutor, mentor and peer support can promote invaluable interactions among learners and thereby assist in achieving transformative learning (Panda and Juwah, 2006). Hence, facilitators need to explore motivational support strategies for bringing in vigour and self regulation in the learners. For the courses which require practical training, blended learning mode can be adopted as it has tremendous potential of achieving the desired learning outcomes when anchored with a face-to-face environment. It was also assessed that some flexibility is required while scheduling activities for the learners especially when the course is for adult learners.

Though the above results may vary in other higher education institutions as it depends upon the nature of the course, its design and delivery along with the number and profile of the learners, however, this study may serve to share experiences, and gained practical insights in identifying significant factors for developing and implementing a blended learning course.

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**References**


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