IPSIT Model: An Indian Framework for Blended Learning (BL)

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Abstract - *The BL is a blend between online – and on – campus learning. The UGC encourages all HEIs to create such BL environment for all courses. The article proposes a broad framework for BL environments in Indian higher educational institutions. In this regard, the UGC has proposed IPSIT model. The details of the five phases of the model – Indentify, Provide, Scaffold, Identification and Test – are discussed in detail. In addition, the essential infrastructure and resources need for implementation of IPSIT model successfully are also presented. The UGC also proposes the essential components of teaching– learning activities for the implementation of IPSIT framework. The UGC concept paper on blended mode of teaching and learning provides detailed guidelines for effective implementation of BL mode in higher education through IPSIT framework. This mode of learning is to be used in a nation–wide in order to help learners to develop 21st century skills along with the effective learning and skill development in the respective subject–domain. This approach of learning will help to develop a multitude of real–world skills which are gradually translated into life skills.*

Key Words: Online and On-campus Modes, IPSIT Model, Infrastructure and Resources of IPSIT, Pedagogy for IPSIT

1. INTRODUCTION

The BL is a meaningful blend between Online and On–campus (Face–to–Face) learning environments. The UGC encourages teachers to create such BL environments for at least some or else for all courses being taught in the HEIs in India. Though such environments help HEIs in the development of 21st century learners, it will demand rigorous planning and implementation on the part of both teachers as well as institutions. This article proposes a broad framework for BL environments in Indian HEIs keeping in mind a minimum expectation from non–technology subjects, but with a goal to install a high–end technology infrastructure as well as resources for implementation of Science and Technology courses.

2. BLINDED LEARNING ENVIRONMENTS

Online and On–Campus (Face-to-Face) Modes

The UGC in its concept paper on Blended Mode of teaching and learning suggest the following activities under *Online mode* as well as **Face–to–Face mode**.

Online mode of learning refers to several synchronous and asynchronous learning activities such as-

- accessing e-Resources, mainly in the form of Open Educational Resources (such as text, graphics, animations, simulations, gaming, interactive multimedia, etc.) uploaded on LMS by the instructor

- accessing links, e-Resources, digital libraries suggested by the instructor as well as explored individually or in groups.

- studying MOOCs/ SMOCs, etc., by the learner as per guidelines of the instructor (e.g. Instructor may connect students to a successful ongoing MOOC, but plan several on-campus activities along with it.)

- attending online virtual sessions of the instructor

- performing individual or group activities using any ICT tool or platform

- participating in the workshops/webinars as suggested by the instructor related to the curriculum

- completing assignments, and uploading on LMS or submitting to the instructor using other ICT platforms

- attempting online tests/quizzes

- engaging in virtual labs, simulations, museums, etc.

- engaging in webinars, e-conferences, online short term training programmes, etc.

- engaging in online internships/ projects, etc.

- engaging in any activity directly related to the course curriculum for which learner is not needed to visit the classroom physically, but needs to use digital devices and internet connectivity.

Face-to-face (F2F) Mode refers to several activities to be performed by meeting in the classroom such as-

- attending instructor's short duration lectures for introducing or summarizing topics, understanding complex concepts

- resolving queries, based on self-learning or group-learning

- participating in group activities in the classroom with peers, mainly for analyzing and applying information sought through e-Resources,

- collaborating and co-creating new knowledge

- borrowing and accessing books and periodicals from the library,

- field visits, sports, etc.

- face-to-face training, physical training, apprenticeships, internships, etc.

- physical labs, hackathons, working in maker spaces, etc.

- appearing for periodical assessments, summative tests on-campus, etc.

- Any instructional activity for which students and teachers physically meet on the campus or else out of campus in the same geographical environments in the light of learning outcomes. (Source : UGC Concept Note)

3. IPSIT MODEL: AN INDIAN FRAMEWORK

UGC has proposed a IPSIT model for the HEIs in India. BL has been implemented across the world successfully. Several models are so far proposed and researched. However, IPSIT model with following phases is proposed in India.

IPSIT stands for : (i) Indentify resources and learner centered activities ; (ii) Provide resources and announce activities on LMS ; (iii) Scaffolding and support to learners ; (iv) Identification of learning gaps and feedback ; and (v) Testing. The details of each phase is as follows :

i. Identify Resources and Learner–Centered Activities

Learners need to be provided with essential learning resources. It should be ensured that required infrastructure for online systems, such as accessibility of internet, bandwidth hardware, space and other related resources be made available for smooth execution of blended teaching–learning process. Teachers planning to implement BL, therefore, will first identify resources and plan activities for online and on–campus environments. What is to be done in online mode and inside the classrooms or labs need to be planned in advance. Learners' collaboration and co-creation of knowledge be kept in mind while planning learning events.

ii. Provide Resources and Announce Activities on LMS

Implementation of BL plan requires a concrete digital environment. LMS, naturally, becomes an essential component of BL. LMS must be kept ready with all necessary e-Resources.   Syllabus, Learning Outcomes, Reading / Viewing resources, Instructions to learners, as well as to group activities, etc., has to be uploaded on LMS in advance. Teachers can announce various online activities on LMS, which can be further supported by other ICT tools.

iii . Scaffolding and Support to Learners

Teachers in HEIs will shift their role form a 'teacher' to a 'facilitator' when they implement BL. Although the learner is accessing resources and engaged in activities, continuous scaffolding is essential. Even classroom activities will revolve around solving queries ; analysis and application of gained knowledge ; and creative outputs under the supervision and guidance of the teacher. Training is to be provided for teachers and students in digital literacy to make the best use of various online platforms and ICT tools used in BL.

iv . Identification of Learning Gaps and Feedback

Awareness regarding the progress of each student on learning path is essential for effective learning. Learners be made aware about their progress at appropriate stages before they complete the course. Quizzes, presentations, formative assessments, assignments and projects will help to identify the gaps in learning. Timely corrective feedback on their work will enable the learners to achieve learning outcomes successfully.

v. Testing : Assessment and Evaluation

Testing of all levels of learning outcomes and skills need to be planned and executed. Continuous Comprehensive Evaluation (CCE) should be encouraged in all institutions of higher learning. Modular curriculum demands assessment at several intervals during and after achievement of learning outcomes specified for each module. Summative evaluation will not suffice the need of testing all levels of learning outcomes. Innovative evaluation strategies are to be used by teachers. Although the phases of the IPSIT model in BL environment are discussed in detail, considering the diversity in the institutional infrastructures, discipline and pedagogic practices the essential components of IPSIT framework are to be finalized.

4. ESSENTIAL INFRASTRUCTURE AND RESOURCES FOR IPSIT

The details of infrastructure related considerations for effective implementation of IPSIT model are given below:

i. Infrastructure

Availability of infrastructure must take into consideration both teacher as well as learners perspective into consideration. It must be ensured that essential infrastructure for online systems, such as accessibility of internet, bandwidth, hardware, space and other related resources are made easily available. The minimum requirements for a HEI are indicated below :

Aspects	Minimum Standards	Desirable Standards
1. LMS	LMS at least on a shared server for maximum 500 students and on dedicated server for maximum 1000 students	Cloud-based LMS with institutional domain name is recommended
2. ERP	Automation of student life cycle should be initiated	Fully Integrated (Admission to Placement) ERP should be in place. LMS should also be integrated in the ERP.
3. Bandwidth	1 Gbps	5 – 10 Gbps
4. Wi-Fi & Campus Intranet	Wi-Fi should be available for classes involved in BL. Necessary firewalls should be in place not restricting student access to ICT tools, and Social media being used by teachers	The entire campus should be fully connected. All teachers and students along with the admin staff should be able to use Wi-Fi. Necessary firewalls should be in place not restricting student access to ICT tools, and Social media being used by teachers.
5. Electronic Devices (Computer)	Devices (desktops/laptops) in the ratio of 1:2 for technology/professional programmes, and 1:4 for nontechnology programmes under BL Low-cost access devices and Computing solutions may be used for institutes with financial challenges	Fully Functional, Networked & Internet enabled Computer Labs with 1:1 ratio Integration of personalised devices should be provided Classrooms/labs equipped with desktops/laptops/ tablets are recommended for BL environments where integration of ICT can be possible during classroom sessions
6. Data Centre Services	Shared / Dedicated Secured Server with adequate Storage Space	Dedicate, Secured Cloud based Data Centre to support BL and storage of e-Portfolios
7. Smart Class Room	One shared infrastructure per 1000 students to start with is recommended.	Every Class room Connected with the Smart class

	All BL classes should have at least a projection facility with internet connectivity. Virtual classroom software with recording facility is a must for teachers involved in BL	
8. Studio Facility	One Studio with Pre & Post Production facilities for Cluster of minimum 10 neighbourhood HEIs on time & resource sharing basis Video and screen cast content development software with such as Camtasia, OBS and training to use the same is a must for teachers involved in BL	Each HEI should have a studio with Pre & Post Production facilities for Development & launching of professional courses
9. Software Support i) Plagiarism Check Software ii) Domain Specific Software for CAD, CAL etc.	At least one set Anti-Plagiarism Check Software [e.g. Urkund, Turn-it-in] Domain-Specific Software for specific subjects (ARC, SPSS, CAD etc.) are essential for launching BL in that subject. FOSS are recommended in all possible cases.	Institutes should be equipped with all necessary FOSS or a few Licensed versions (if FOSS is not adequate) related to the subjects being taught in that institute.

(Source : UGC Concept Note)

*Infrastructural requirements will vary as per the size and nature of the institutes as well as the nature of subjects and learning outcomes. Updated versions of hardware and software should be maintained.

ii. Resources

The pedagogy in BL must revolve around the availability of resources, especially online resources. These resources are to be organized according to the demands of the courses. In case of non-availability of online resources, new content has to be created keeping in mind the needs of the students. The minimum requirements of HEIs in terms of resources are as follows :

Aspects	Minimum Standards	Desirable Standards
1. MOOCs/ SMOCs	Teachers can explore and suggest students to subscribe [preferably Free] to various MOOCs. (e.g. SWAYAM/ Coursera /UDEMI) These MOOCs or SMOCs are to be used only as resources and not be replacing teaching-learning activities to 100%. Teacher scaffolding and face-to-face sessions are mandatory components along with MOOCs/SMOCs for BL.	Institutional MOOCs and SMOCs are recommended in the long run.
2. Virtual Lab	At least one VL per subject in the area of Science and Technology. Relevant virtual labs for Social Sciences could be explored.	More to be added as per requirement
3. Distance / Online		Distance / Online courses as per UGC approvals can be offered by the institute. Collaboration with such Course implementations would help in BL implementation of face-to-face formal programmes.
4. Training of Teachers/ Trainers	Teacher planning to use BL mode should have acquired himself/herself or provided training to others for at least 45-50 hour in BL / Online	Engagement of the teachers and institutional leaders in

/ Educators	Teaching within the last 3 years. The training from FDP/STTP/FIP scheme, ATAL, TLCs, HRDCs, NITTR, etc., is recommended.	National and International level training programmes in the areas of BL/ ICT enabled teaching learning/ Online learning, etc.

(Source: UGC Concept Note)

5. ESSENTIAL PEDAGOGY FOR IPSIT

The UGC proposes that, the essential components of teaching–learning activities for the implementation of IPSIT framework are as follows :

i. Teaching – Learning in BL

The practice of BL requires stage–wise planning and execution of innovative teaching–learning activities. Guidelines as mentioned in the UGC concept paper are as follows :

Essential Pedagogic Requirements for IPSIT

Aspects	Minimum Standards	Desirable Standards
1. Planning Online-Face-to-face Ratio of any course/syllabus of one semester	Minimum 30% face-to-face Minimum 30% online learning should be planned.	Maximum 70% online mode for a programme per semester (Less than 30% total face-to-face be disallowed for a programme)
2. Approval to offer BL	Approval of Academic Council or equivalent committee Approval to one single course or a single teacher should also be encouraged. Number of courses or teachers is not important for the initiative.	All programmes of particular institutes can be granted the approval by if minimum infrastructure conditions are fulfilled and teachers are competent to offer BL mode.
3. Nature of Online Mode	Combination of synchronous asynchronous ratio will help learners to study, collaborate and seek guidance from the instructor Considering hours allotted to online mode of BL, minimum 30% weightage for both synchronous and asynchronous mode should be given in online learning.	Considering hours allotted to online mode of BL, maximum 70% weightage for both synchronous and asynchronous mode should be given in online learning.
4. Synchronous Online Mode	Minimum 30% of the total synchronous time should be utilized in learner-centred synchronous activities. Synchronous sessions should be utilized for trouble-shooting, guidance, query-solving, demonstrations, synchronous collaborative activities of learners, Learner presentations, etc., rather than only lecturing during all synchronous classes. Lecturing may be replaced by pre-recorded videos.	Instructor's lecture 'talk' through virtual class should not exceed beyond 50% of the total synchronous time.
5. Asynchronous Online Mode	At least 30% of the total asynchronous time should be utilized in learner-centred activities.	Passive accessing e-Resources should not consume more than 50% of the total asynchronous time.

	Learning from various e-Resources and engagement in collaborative-cooperative activities are to be planned for engaging learners asynchronously. Asynchronous work is as important as online synchronous classes and instructors need to be planned for such activities. Activity time is to be considered as teaching-learning time.	
6. Face-to-face Time	At least 30% of the total face-to-face (classroom) time should be utilized for learner-centred activities rather than lecture method. Cooperative and collaborative activities need to be planned. The percentage of learner centred activities could be increased gradually with proper planning.	Not more than 40% of the total classroom time for instructor's lecture is recommended. Since resources are to be uploaded on LMS, classroom time need to be used for learner-centred activities.
7. Use of LMS	Resources for the topics to be dealt in online as well as on campus mode should be uploaded on LMS. Instructions for online activities can be posted on LMS. Online as well as face-to-face activities should be reflected on LMS.	All learning resources and activities would be reflected through LMS (direct uploads or else links to the processes and/or outputs). LMS would not only facilitate all teaching-learning activities but also prove as a face sheet of the BL mode.

(Source: UGC Concept Note)

ii. Assessment and Evaluation in BL

Continuous assessment and evaluation plays a major role in the BL teaching and learning process. Students can be informed about their performance in online assignments and Quizzes through technology. Learners may get constant access to their online reports to monitor their growth against their goals. Standard tools to assess the performance of the students be used. Objectivity and standardization should gain significance in the assessment of student's growth and accomplishments. This will also encourage students to participate in Self-assessment and peer–assessment activities. The minimum requirements for an HEI as suggested in UGC concept paper on BL are indicated below :

Essential Guidelines for Evaluation in IPSIT

Aspects	Minimum Standards	Desirable Standards
1. Online Assessment	Online assessment strategies should be introduced at least to some extent.	Online assessment strategies should be used at least partially for all subjects.
2. Product and Process evaluation	Analysis, Application and Create level learning outcomes should be defined for all subjects under BL. These higher level outcomes should be evaluated through internal evaluation. Process and product evaluation should be encouraged. At least 2 rubrics per course of 3-4 credit should be designed for subjects under BL	Rubrics should be developed for all courses. All possible cognitive learning processes and creative products are to be evaluated.

	Process evaluation through grading of synchronous group chats, discussion forum posts, collaborative infographs, etc. can be achieved. Grading of concept-maps, mind-maps, stories, infographs, etc. created by students can be used for product evaluation.	
3. Continuous Comprehensive Evaluation (CCE)	Modes of CCE should be innovative, learner centred and competency-based.	Necessary evaluation systems should be in place and all evidences of internal evaluations to be maintained. Paper-pencil tests, unit-end exams to be completely discouraged for CCE. Instead, other modes of evaluation should be used.
4. Open Book/Closed Book	Both models to be followed selectively for courses under BL.	Both models to be followed selectively for all courses under BL.
5. Group Examinations and Evaluation	At least one group-work activity should be evaluated per course of 3-4 credit under BL.	Group-work evaluation and Group Examinations should be encouraged for all subjects
6. Viva Voce	Viva-voce for at least 70% experiments, group-projects should be mandatory	Viva-voce for all experiments, research projects, group projects should be mandatory
7. Project Presentations	Presentations to be planned against evaluation of projects and dissertations at least 2 times per course.	Presentations to be planned for evaluation of projects and dissertations at least 3-4 times per course. Evaluation Rubrics to be developed for such presentations.
8. e-Portfolio	e-Portfolio in any easiest form should be encouraged for at least one subject, preferably for the professional subject.	e-Portfolio should be encouraged for all students.

(Source: UGC Concept Note)

iii. Guidelines for Feedback

In any teaching and learning process, continuous feedback and support are essential for effective learning. Apart from face–to–face feedback, online technologies and methods can be used to provide feedback. Instructors can use audio and video inputs, written texts or in-text comments to provide feedback. Constructive feedback for student's work will encourage all learners to achieve learning outcomes.

Students can also engage in providing peer feedback by reviewing each other's work and commenting on blogs or discussion forums. Similarly, students can also give feedback to the instructors. The minimum requirements for an HEI as indicated in the UGC document are given below :

Essential Guidelines for Feedback in IPSIT

Aspects	Minimum Standards	Desirable Standards
1. Self-Feedback	Course related feedback on monthly basis or unit-wise, primarily for teaching-learning plans and efficacy of classroom activities	Course related feedback on weekly basis
2. Peer Group Feedback	At least once in a Semester (preferably within the given department/ school in the middle of	360 Degree Feedback at least once in a

	the semester). Feedback from different levels of operations needs to be planned at least once in a year.	semester
3. Teaching-Learning Process, Learning Resources, and Instructor	Student Feedback regarding T-L processes, Learning Resources and the Instructor at least once a semester for every course under BL.	Student Feedback regarding T-L processes, Learning Resources and the Instructor at least 2-3 times a semester for every course under BL.
4. Learner activities/ outcomes	Corrective feedback on at least 50% of the learner activities and assignments.	Feedback on at least 75% learner work.

(Source: UGC Concept Note)

6. CONCLUSIONS

The UGC document on blended mode of teaching and learning provides detailed guidelines for effective implementation of BL mode in HEIs in India through IPSIT framework. The higher educational institutions and private bodies need to ensure the availability of essential requirements to begin with and then should monitor the successful implementation of BL. This mode should be carefully implemented and it should not replace classroom teaching as a privilege. The UGC reiterates that, every institute strive to be a model institute to demonstrate a successful implementation of BL in the higher education of our country.

Blended mode of learning in higher educational institutions is to be used in a nation-wide to help learners to develop 21st century skills along with the effective learning and skill-development related to the subject-domains. Blended learning helps to develop a multitude of real-world skills, such as computer literacy, self-learning, self-engagement, better decision making, offers a larger sense of responsibility, helps to develop a *self-driving force*, and also research skills. These skills among learners will be gradually translated into *life skills*.

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