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WALCHAND INSTITUTE OF TECHNOLOGY

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- Accredited by **NAAC A+ Grade**
- Accredited by **NBA, New Delhi** for Civil Engineering., Mechanical Engineering. , Electronics Engineering , Electronics & Telecommunication Engineering.
- Winner of AICTE-CII Survey 2013 , 2014 & 2018 Award for Best Industry–Linked Institute.
- Recognized by **AICTE**, New Delhi and permanently affiliated to **P.A.H.Solapur University, Solapur**

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Best Practice in Teaching-Learning

‘Professional Learning Community (PLC) - A model incorporating ET Practices for continuous improvement in blended Teaching-Learning process.’

1. Objectives of the Practice

- To provide a platform for faculty members to share and exchange views/suggestions regarding Education Technology (ET) research & experiments, a way to improve Teaching-Learning (T-L) process continuously.
- To blend various learner centric strategies and ICT tools in T-L process to enhance learning outcomes, while addressing diverse students groups
- To review ET activities periodically & provide expertise/guidance through regular meetings & follow ups.
- To engage teachers in peer discussions and assessments of the resources created and to make available course contents in the form of videos, OER etc. and create Learner Centric MOOC (LCM).
- To facilitate students to learn anywhere, any times and many times.
- To facilitate faculty members to save some time due to creating e-contents & use of ICT for utilizing it efficiently for other academic activities.

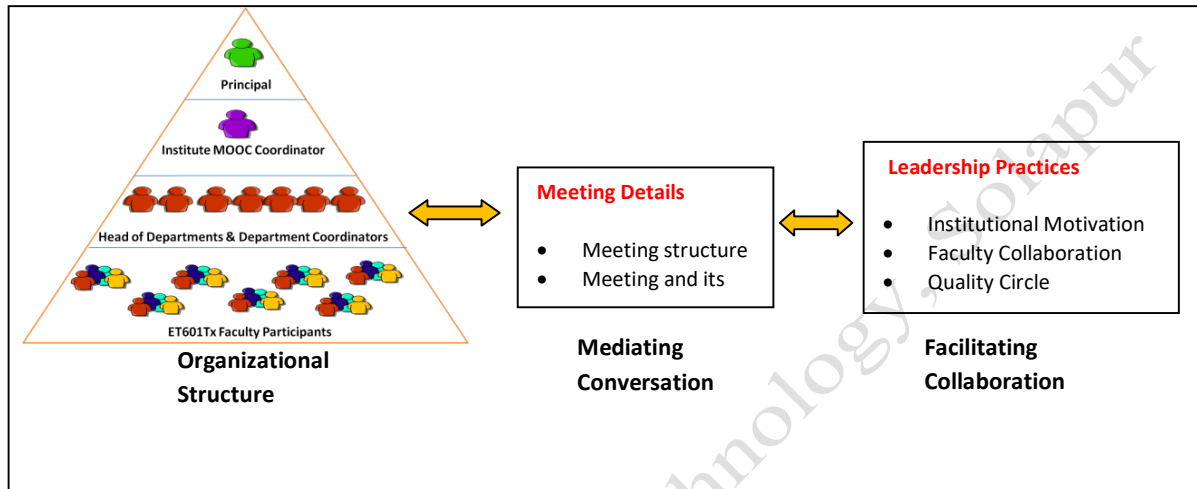
2. The Context

Sudden expansion in engineering education has led to paucity of faculty members. Delivery of engineering education through large number of untrained faculty members has suffered significantly due to lower quality course delivery & imparting poor skill set, leading to many fresh graduates remaining unemployed. However, for institution, it is possible to overcome such weaknesses & to ensure quality of T-L process, by empowering faculty members for quality course delivery through blended T-L process, while simultaneously bridging the industry-academia gap. With this objective, faculty members now have become proficient in ET practices and blending T-L Process. Such ET training and ET practices are further being strengthened through an idea of localizing ‘Professional Learning Community’ (PLC).

3. The Practice

PLC at our institute is constituted to continuously enhance T-L process, which is comprised of administrator, ET experts & ET researchers, departmental coordinators and novice learners.

PLC is constituted to attain above mentioned objectives with an organizational structure & functioning as shown below.



Regular meetings facilitate interaction through group dialogue to a significant extent; peer review and individual counseling, if required and connect through departmental coordinators for implementation. This Organizational structure and leadership practices served to create a foundation for intra and inter department collaboration. Through Local study groups, members actively get engaged in peer discussion and review of the resources created. Rubrics are developed for assessment employing collective wisdom of PLC.

This PLC served as the platform for Coordinated Faculty Professional Development Activity (CFPDA) model which found to be effective in making MOOC successful in education technology. In this institutional motivation, collaboration & structured system for monitoring are the key driving factors.

PLC focuses on disruptive innovations in T-L through:

1. Creation of e-contents and Learner Centric MOOCs
2. Continuous use of different Instructional Strategies and ICT tools during course delivery
3. Use of learning management system (LMS): MOODLE

For generating quality content, we have established recording studio titled '**E-Learning Centre**' at our institute. Through continuous monitoring, peer review, experimentation and counseling, the results have been achieved to empower teachers to create course content in form of videos for the benefit of student learners. Every semester every faculty member keeps on adding videos in a phased manner.

Every faculty member is creating Learner Centric MOOC (LCM) partially using these created videos on Institute MOODLE server. In addition to watching the videos, students also carry out activities based on the content of the videos and accordingly they are assessed.

Institute has set a well defined process for video creation & LCM implementation, use instructional strategies & ICT Tools as mentioned below:

A. Planning

1. Preparation of course content by course faculty
 - Identification of topics/units for creating Videos (from Single Unit / muddiest Points/ Problem solving etc.)
 - Content verification and authentication by departmental experts based on rubrics (Learning outcome, Content Quality, Reflection Spot, Duration, citations, presentation etc.) set by PLC.
2. Schedule for creation of video and posting on YouTube after department screening & approval
3. Implementation of LCM (Learning Dialogues (LeD), Learning by doing (LbD) followed by Assignment) on MOODLE spread over the semester for various courses.
4. Planning of Instructional Strategies/Tools/Innovations for every course in addition to LCM

B. Implementation

1. Schedule for the student for implementation & Assessment of LCM
2. On completion of LCM feedback by Feedback by student and course faculty on activity
3. Submission of departmental ET report
4. Review on completion of activities & further planning

Thus, 360⁰ feedback by stakeholders assists in overall improvement of the activity. Till date, we have created more than @3000 videos, which are published on WIT Solapur – Professional Learning Community YouTube Channel.

YouTube link: <https://www.youtube.com/channel/UCb9okJF6NGPDUGgAQxu3TcA>

Due to e-Learning Centre, the quality of e-content generation has improved to a remarkable level enabling disruptive innovation in higher education, while enabling students to learn **anywhere, anytime and many times** at their pace and convenience.

Students' learning has improved considerably which is also obvious from the utilization of e-contents by the stake holders.

Thus, this facility is benefitting both students as well as faculty members to a great extent heralding the dawn of disruptive innovation in T-L process.

Conventional T-L process is strengthened by blending following ET practices for active learning namely:

Instructional Strategies:

- Gamification
- Project-based Learning , Problem based Learning
- Role Play
- Jigsaws
- Visualization (Animation, Simulation, Live Coding etc.)
- Flipped Classroom
- Think-Pair-Share (T21S (Team-Pair-Individual-Share), Team-Pair-Solo, etc)
- Pair Programming and Peer Instruction
- Teaching by Example
- Collaborative Competitive Learning, Competitive Learning, Collaborative Learning

ICT Tools:

- Virtual Lab
- Virtual Programming Lab (VPL)
- BodhiTree
- Socrative, Kahoot
- Bubblino
- ModelSim
- Selenium
- LogicSim
- Weka
- Parsing emulator
- JFLAP, Visualization Tutor
- RapidMiner, Pentaho, JasperReports, Tableau
- Cassandra
- Wireshark, NS2
- Simulation Tools (8085, Keil, MPLab, Protous, VLSI Design etc.)

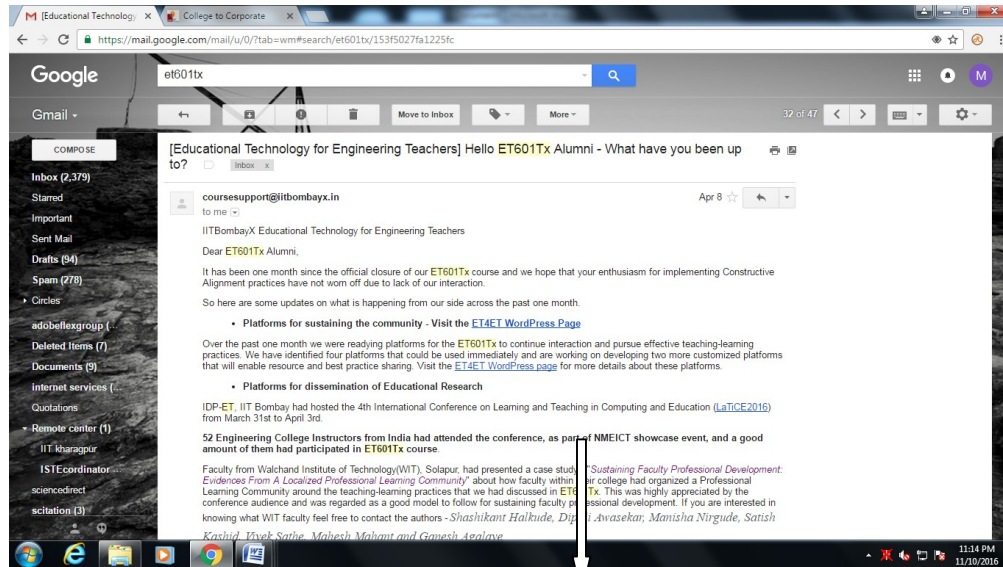
MOODLE platform is effectively used for Publishing of Courses and Assessments. Virtual Programming Lab (VPL) on MOODLE is effectively used for all programming languages benefitting both students and faculty. Students can run programs interactively. Also, Faculty members evaluate programming assignments by setting various test cases. VPL is also used for programming contests effectively.

4. Journey:

- During academic year 2015-16, handful faculty members (32) started pedagogy initiatives to improve T-L.
- Faculty members received training on ET during academic year 2016-17. They have created videos as a learner using Screencast Software. Nearly all faculty members started employing instructional Strategies & ICT tools during content delivery. In this year, @7 instructional strategies and @6 ICT tools were practiced.
- In Academic Year 2017-18, every faculty member created three videos using Screencast Software and implemented flipped classroom using these created videos. Also they continued to use instructional strategies and ICT tools.
- Institute established 'E-learning Centre', a recording studio for generating quality contents in the form of videos. In year 2018-19, faculty members created total 1041 videos. Every faculty has created Learner Centric MOOC (LCM) MOODLE platform using created videos. They continued to employ ET strategies and ICT tools. This year, @15 instructional strategies and @10 ICT tools were practiced.
- During 2019-20, total 1276 videos and 170 LCM created on MOODLE platform along with employing 15 instructional strategies and 10 ICT Tools. Various instructional strategies like Problem/Project Based Learning (PBL), Gamification, Jigsaw, Live Coding, Pair programming, Flipped Classroom, Visualization/Simulation, Think-Pair-Share, Peer Instruction, Group Discussion, Role Play etc were used during content delivery. For assessment as well content delivery, various tools like BodhiTree& SAFE, WEKA, Tableau, Bubblino (can create case studies for IoT), LogicSim Tool, JFLAP, VPL, Socrative, Virtual Labs, MATLAM toolbox etc. were used.
During lockdown period, e-content generation, LCM creation & implementation and flipped classroom are effectively implemented. @100 videos are created during this lockdown period. Online lectures and discussion happened through various platforms like Zoom, GoogleMeet, Webex, YouTube etc. Apart from institute MOODLE server, Google classroom, Gnomio, Google Forms, are used for communication, assessment and deployment for material.
- The practice of creating video and employing instructional strategies & ICT tools is continuous with improvisation on the basis of feedback. During 2020-21 Semester I, total videos created are 652 and no of LCM are 74.
- Faculty members are carrying out research in the field of ET and publishing their work in reputed journals and conferences.

5. Evidence of Success

- PLC activities were highly appreciated by gathering of the Fourth International Conference on Learning and Teaching in Computing and Engineering (**LaTiCE 2016**) at IIT Bombay and organizers have disseminated this success story to stakeholders for implementations as a **Role Model**.



Faculty from Walchand Institute of Technology (WIT), Solapur, had presented a case study - "*Sustaining Faculty Professional Development: Evidences from a Localized Professional Learning Community*" about how faculty within college had organized a Professional Learning Community around the teaching-learning practices that we had discussed in ET601Tx. This was highly appreciated by the conference audience and was regarded as a good model to follow for sustaining faculty

- As on date (29-01-2021) subscribers of this channel are 18260 and views are 26,11,338 for our WIT Solapur – Professional Learning Community YouTube Channel.
YouTube link: <https://www.youtube.com/channel/UCb9okJF6NGPDUGgAQxu3TCa>
- All faculty members are implementing various ET practices blended with ICT for their course delivery resulting improvement in students' performance. Out of this, substantial practices are emerging as some of the best practices after due iterations.
- Received grant of Rs.25,05,000/- for establishing **e-learning centre** from AICTE New, Delhi.
- Winners of Inspire-Infosys Campus-connect Award for Content Guru and Distinguished Facilitator Tracks every year since 2014.
- One faculty member is recipient of **IUCEE outstanding Engineering Educator Award** for the year 2016 amongst 5 from all over India. In all, 4 faculty members are recipient of **IUCEE Faculty Fellow Award** all over India continuously **over last two years**.

- Through Coordinated Faculty Professional Development Activity (CFPDA) model:
 1. 143 faculty members successfully completed ET601X MOOC (98.6% success rate against 24% completion rate in India)
 2. **Top Performing Remote Centre** in a four week FDP on "Use of ICT in Education for Online and Blended Learning" conducted by IIT Bombay at national level.
 3. 29 faculty members of our institute are amongst top 253 nationwide recipients of SAP Fellowship Award for Top Performers in a four week FDP on "Use of ICT in Education for Online and Blended Learning" conducted by IIT Bombay.
 4. 23 faculty members have worked as Associate Faculty of IIT Bombay for FDP on Foundation Program in ICT for Education and Pedagogy for Online and Blended T-L Process.
- Faculty members are recipient of various scholarships for presenting their ET research at international ET conferences in last 5 years.
- Total number of research publications in the journal and conferences in ET is 52 during last five years.

6. Problems Encountered and Resources Required

- Initially, majority of faculty members in our institute were novice and did not receive any formal training in education and pedagogy. In order to address this issue, training on ET was an essential factor.
- Mentoring for ET Research and training of ET practices to fresher was essential.
- Collaboration and peer assessment
- Regular follow-up & facilitation was required for the successful completion of activity

Resources required

- Infrastructure
 - i. Well equipped classrooms/smart class room
 - ii. Recording rooms with good audio and video setup
 - iii. Client server environment
 - iv. Adequate Internet Facility
 - v. e-resources
- Human Resources
 - i. Expertise in education technology

7. Notes

The main factors of PLC are: interaction with ET mentor and Departmental coordinators, regular meetings, peer review, and institutional support. Thus, Localizing PLC will provide a platform for faculty members for sharing and exchanging views and suggestions for enhancing each other's experiment. Using presented PLC; it is very much possible to enrich T-L process. Leveraging technology for education in traditional classroom will not only scale up and improve the T-L process but also help in effective course content generation. These generated contents will be useful in Indian scenario where there is a paucity of good qualified faculty due to scaling up of engineering education. Overall, it will be a joyous learning experience for both faculty members as well as students.

8. Contact Details:

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