

ICT Initiative and Teaching-Learning through MOODLE during Covid-19- A case study of premier Engineering Institute in Madhya Pradesh, India

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Abstract—Face to Face (F2F) teaching-learning (TL) is the simplest and most effective approach before covid-19. With the development of ICT tools, no matter of time and place for the learners to learn via online mode. Moodle (Modular Object-Oriented Dynamic Learning Environment) is the most useful platform to solve the various issues of learning during pandemic situation. This paper present a systematic study/approach and solution of teaching learning initiative taken/adopted through Moodle during covid-19 by Madhav Institute of Technology and Science, Gwalior, a premier institute for providing quality education in the state of Madhya Pradesh.

Index Terms— ICT-Information and communication Technology, MOODLE- Modular Object-Oriented Dynamic Learning Environment, TL-Teaching Learning

I. INTRODUCTION

Madhav Institute of Technology and Science, Gwalior was established in 1957 under open door policy of Govt of India. At present institute offer 18 undergraduate programme, 10 Post graduate programme and Doctoral Degree programme with more than 5000 students. The institute has 233 faculty members. The institute is also accredited by National Assessment and Accreditation Council (NAAC) for 5 years from September 2017. Many of the programmes are accredited by National Board of Accreditation (NBA). The institute has Internal Quality Assurance Cell (IQAC). The institute has successfully completed the Technical Education Quality Improvement Programme (TEQIP-II) and is going to be completed TEQIP-III in September 2021 of MHRD. The institute is recognised quality Improvement Programme (QIP) centre and also study centre of Indria Gandhi National Open University (IGNOU) and Nodal centre of Rajeev Gandhi Prodhogiki Viswavidhalya (RGPV), Bhopal.

The institute has been established NPTEL (National Programme on Technology Enhance Learning) local chapter on 2017. The institute started its own MOODLE server (Modular Object-Oriented Dynamic Learning Environment) from 2017 for open course management system to facilitate E-learning, Conduction quiz/ exam, Evaluation, and uploading assignments etc.

II. LITRATURE REVIEW

Indian education system was not aware about the different online plate-forms before COVID-19. Many ICT initiatives have been taken by education system and stakeholders well set of teaching learning pattern. There are many institutions which do not have facilities of e-teaching and e-learning. The faculty members, especially senior faculties are not tech-savvy and they have lack of e-teaching skills. For this Human Resource Development centre in the University initiate various online faculty development programs for the faculty members and online webinars for students to aware about the MOODLE platforms. Luckily pandemic has given us the opportunity to learn new tech-friendly environment during lockdown to use this time productivity. (Phurithat Singhasem et.al 2012) study the effectiveness of learning from video clips by using Moodle of undergrads and their satisfaction. (Jeuajan Wattakiecharoen, Prachyanun Nilsook 2012) develop an on-line instruction media and an administration system based on Moodle, create qualitative research design and also evaluate satisfaction and attitude of learners towards on-line instruction media. (Thanawan Phongsatha 2012) critically studies the student's perception towards learning experiences, curriculum and their satisfaction of an e-learning program for graduate course offered in Thai Institutions. (Prashant Barge, B R Londhe 2013) explore use and benefits of Moodle in their

institute specifically saving of time by comparing the without use of Moodle platform. (Vikrant Shaga et al. 2019) focus on Technological Pedagogy Content model, basically student centric for ICT and identify the gender wise opinions about the ICT tools and developed new model for teaching learning (e-Lab Manual).(N.E.Saleem, M.N.Al-Sqri, et.al 2016) examine the effects of performance expectancy, effort expectancy, social influence and facilitating conditions on the behavioural intention of SQU faculty members to employ Moodle in their instruction by employ the Unified Theory of Acceptance and Use of Technology (UTAUT). (Teresa Martin-Blas, et. Al 2009) implement the Moodle as teaching tools in teaching learning in physics course and help the students to reinforce their abilities and knowledge.(Lal Kumar Singh, et.al 2019) focus the globalization and advancement of technologies, at the current point of time integration of ICT are frequently used for interactive teaching-learning process in the area of education. (Mohinder Singh, et.al. 2020) explore the most educational institutions around the world have moved to remote learning and teaching in March, 2020 in an attempt to control the spread of corona virus.

III. OBJECTIVE

To study the ICT initiatives and teaching learning through MOODLE and its advantages

IV. ICT IMPLIMENTATION

ICT Initiations- Institute has started MOODLE platform in the year 2017 for teaching- learning activities to the students as well as faculty and staff members and become more effective after lockdown on March 22, 2020 in India, even though students, faculty and staff has been already familiar with this platform. Institute has more emphasis this platforms for T-L due to oblivious the situation of lockdown one by one since March 2020. Institute has taken important ICT initiative in three broad areas-

1. Apply all activity through Moodle
2. Virtual Lab
3. Online Examination

- Services at MOODLE (for students)
- Online attendance (Self recorded)
- Course material (ppt, pdf, video lectures etc.)
- Quizzes submission
- Assignments submission

- Question bank
- Feedback (Course outcome, course content curriculum, etc.)
- Post query

Services at MOODLE (for faculty & staff)

- Online attendance (self recorded)
- Student enrolment(group wise, section wise)
- Preparing online quizzes
- Providing online assignments
- Providing online course material
- Preparing question bank (multiple choice questions, matching, one word, fill in the blanks, true/false etc.)
- Forums
- Resources
- Feedback (course outcomes, course content curriculum, parents, alumni etc), responses and its analysis
- Notice Board (students, faculty, lost and found)
- Download grade-sheet in various format,
- Import/Export various reports

Virtual Lab

Virtual laboratory had been facilitated via latest video conferencing systems, where technician is demonstrated instruments, their ratings, connection diagram, and real time reading to perform practical's to the students. After performing the virtual lab, recorded video shall be stored in the drive so that students can access as per their convenience. One online workshop on virtual lab has been conducted in collaboration with DTU New Delhi for better understanding the various features.

Online Examination

During COVID-19 pandemic, institute has started online examination through two different modes. 1. Multiple Choice Questions (MCQ) mode 2. Pen and Paper (P/P) Mode

MCQ mode- Examination section is instructed to faculty members through confidential letter to make approximate 150 questions of the concern subject within specified time duration. Faculty members designed such question paper unit wise on their moodle account which has password protected and access to only enrol students, i.e specified group of

students. Random questions were set by the faculty so that each student has different questions at a time. After the submission of MCQ, faculty can easily download report and send it to the exam section. It saves time of valuation and also preparing of result. Pen and Paper Mode- In this pattern of examination, students can write the answer book from their home place of specified date and time in the presence of invigilator through google meet link. After the end of exam, students convert answer book to pdf format (extra 30 minutes is given for this purpose) and submit via google form. A receipt of submission is also sent to the student's mail for confirmation of successfully submission of answer book. Exam section assigns this answer book to the concern faculty for online evaluation. This makes easy and fast valuation and preparing of results. Challenges of P/P mode exams-

1. Few students have faced the difficulty in converting pdf file.
2. Some of the students upload the wrong answer book or other pdf file from their mobile.
3. Due to mistake in email address, some of the students have not received receipt of such mail after submission the answer book via google form.

Overall Examination Workflow



Students Workflow

Login to Moodle 2020
Go to Coordinator page
Join the google meet link enrolment number wise
Open the question paper (password protected)
Mark the self attendance on coordinator page and also give the attendance to the invigilator
Followed the instructions time to time by invigilator
After over the exam answer book will upload via google form <ul style="list-style-type: none"> • In case of PP/AO mode along with admit card • In case of MCQ mode, quiz automatically submitted
Make sure the answer book submitted successfully by reverting the mail received
After the mail confirmation, intimate to invigilator and leave from google meet

Invigilators Work and Responsibility

- Create the google meet link
- Enter only selected students in meet and also check their admit card
- Provide password of question paper at the commencement of the exam
- Take the attendance manually on excel sheet provided by coordinator
- Give the instructions time to time to the students during the exam
- Make sure all students on their meet leave successfully after submit their answer book

Coordinators Work

- Coordination between exam office and invigilators
- Provide attendance sheet to invigilators, shared password
- Observe all google meet link periodically
- Collect attendance sheet from invigilators and submit to the exam office

Exam office Workflow

- Arrange the question paper before 15 days of the commencement of the exam by the concern departments
- Provide data to coordinator <ul style="list-style-type: none"> • Shared list of eligible students • Shared password • Attendance sheet
- Upload question paper and check submission list <ul style="list-style-type: none"> • Upload question paper before the exam and send password to coordinator • Check list of submitted answer book and matched to the coordinator attendance list
- Solved the issues during and after the exams

MoodlePage

Coordinator List			
Final Year Coordinators list for Exam May-June 2021			
Ex students are also login in department final year coordinator's page			
If you are not able to login in coordinator's MOODLE page please contact to your class coordinator for the same.			
Branch	Click on coordinator for EXAM	Mobile No.	Official Email id
Civil Engineering 4 Year	Prof. Anil Kumar Saxena	9425341422	aksaxena@mitsgwalior.in
Civil Engineering ME/Mtech	Dr. S.K Jain	9479802595	sankjain@gmail.com
Electrical Engineering 4 Year	Dr. Himmat Singh/Dr. Vikram	9466500027	vikramsingh@mitsgwalior.in
Electronics Engineering 4 Year	Dr. R. P. Narwana	9301950530	rpnarwar@mitsgwalior.in
Electronics & Telecommunication Engg. 4 Year	Dr. Vikas Mahor	7354877010	vikas@mitsgwalior.in
Mechanical Engineering 4 Year	Dr Surendra Kumar Chourasiya	7409408995	sur26mech@mitsgwalior.in
Mechanical Engineering ME/Mtech	Mr Bhupendra Pandey	9174426657	bhupendrapandey@mitsgwalior.in
Automobile Engineering 4 Year	Dr Amit Aherwar	9826317058	amit.aherwar05@mitsgwalior.in
Computer Science & Engineering 4 Year	Mr Jamvant Kumre	8770742641	jamvantsingh@mitsgwalior.in
MCA	Dr Anshu Chaturvedi	9425337699	anshu_chaturvedi@mitsgwalior.in
Computer Science & Engineering ME/Mtech	Mr Mahesh Parmar	7987537703	maheshparmar@mitsgwalior.in
Information Technology 4 Year	Rajeev Kumar Singh	8269230075	rajeevkumar@mitsgwalior.in
Information Technology ME/Mtech	Rajeev Kumar Singh	8269230075	rajeevkumar@mitsgwalior.in
Chemical Engineering 4 Year	Dr. A.N.Sarve	9158668239, 8788862354	anant4u87@gmail.com
BioTech 4 Year	MR. Vishal Ranjan	7010934981	vishalbiotechnology2007@gmail.com
B. Architecture 4 Year	Prof Versha Sinha	8770194486	VERSHA.SINHA@mitsgwalior.in
MUP	Prof Apurva Tomar	6260587911	apurvatomar11@mitsgwalior.in

Coordinator Page

Exam-2021

Attendance
Restricted Not available unless: You belong to **B.Tech 8th Sem Examination**

Attendance
Hidden from students

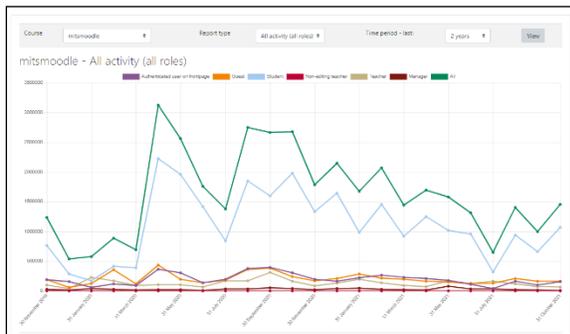
Google Meet Link for Exams May-June 2021

Dr. Vijay Bhuria	0901EE171001-0901EE171038	https://meet.google.com/wur-rcyt-nrja
Dr. Shishir Dixit	0901EE171039-0901EE171081	https://meet.google.com/mxh-jwxq-zhc
Prof. Ashish Patra	0901EE171082-0901EE171120	https://meet.google.com/inw-yxjq-bzr
Prof. Praveen Bansal	0901EE171121-0901EE171126, 0901EE183D01-0901EE183D20, 0901CM171005, 0901CM171055, 0901ET171014, 0901ET171041, 0901ET171046, 0901ET171060, 0901ME171088	https://meet.google.com/vfm-ukam-mcg
Dr. Vikram	All Ex Students	https://meet.google.com/ehd-txio-bxa

Researcher Moodle Page Activity during COVID-19



Institute Moodle Page during COVID-19



Major ICT initiatives taken during COVID-19 pandemic

1. All teaching-learning activities conducted through synchronous mode, asynchronous mode, online mode and semi off-line mode.
2. The extra/remedial classes for UG and PG students were conducted for those who were not able to attend the regular classes.
3. Online labs were conducted through modern ICT tools and demonstrate connections and to show performance of machines/simulation on real time basis.

4. Conducted online workshop on virtual labs in association with IIT Delhi for the students and technical staffs
5. All course material is provided through Moodle and online classroom video lectures are available at google drive of the concern faculty members.
6. e-journals (51nos) under e-shodh sindhu consortium to make openly available for the Indian faculty, researchers and for the students during the pandemic
7. Central library of the institute provide recommended e-books with PDF download link to all students and faculty members through Moodle.
8. Conducted students training on Future Skill Technologies through online mode by the faculty trained at IITs.
9. Conduction of online summer internship programme and finishing school programme for pre-final and final year students.
10. Organised mock drill for final examination (PP/MCQ based) through Moodle to ensure minimum difficulty face by the students.
11. Depute a permanent counsellor for solving the mental issues of the students during the pandemic.
12. The institute conducted a workshop on “e-learning tools” in collaboration with the Directorate of technical Education, (DTE), Bhopal, for over 1600 technical teachers of the state of Madhya Pradesh from 9th to 11th July 2020.
13. Class coordinator made a whatsapp group for effective and quick disseminating the information to the students.
14. Faculty members employ the various tools and techniques for online interactive teaching, e-content developments, effective delivery, peer group learning, various audio-visual aids and many other on-line tools ICT initiatives of MHRD
15. Conduction of online mid semester and end semester examination through MOODLE
Conduction of MOOC course through dedicated institute MOOC centre.

V. CONCLUSION

Study focus on various ICT initiatives taken by the institute during the covid-19 pandemic. Institute also encourages the faculty, staff and students to more use of Moodle platform for teaching learning activities. Institute timely cover up the academic session 2020-21 and announcement of exam results shows that teaching learning activities get successfully achieved.

At the end of semester various feedback has been collected from students, parents and alumni through Moodle and reports shows that all stockholders becomes satisfied from teaching learning processes.

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