UDK: 004:377
Paper received: May 30, 2019
Paper accepted: August 27, 2019

Journal of Entrepreneurship
and Business Resilience
Year II • Vol 2, No 2.
pp. 14-26

ORIGINAL SCIENTIFIC PAPER

AN EXPERIMENTAL STUDY ON CANVAS LMS PLATFORM WITH BLENDED LEARNING APPROACH IN COMPUTER ENGINEERING & INFORMATION TECHNOLOGY: AN EVIDENCE OF RK UNIVERSITY

Patel Kamlesh
Associate Professor, Computer Engineering, RK University (INDIA)
Email: chetan.patel@rku.ac.in
Patel Chetankumar
Associate Professor, Mechanical Engineering, RK University (INDIA)
Email: kamlesh.patel@rku.ac.in

ABSTRACT

In 21st century, social networking is widely accepted online as 24x7 platforms by youngsters and teachers to share/discuss ideas, stories, experiences, instructions etc. in their life and they are quite comfortable to use this platform and also expect others to use the same for almost all communications. In higher education, teacher and students can integrate this platform for teaching learning process in their regular teaching which help to extend the learning even outside the classroom too. With this objective, RK University has setup & established in-house Canvas LMS server, prepared a strong team structure across university, trained each of them for server administrative tasks, trained each staff member across university, designed uniform course template to publish their e-course and trained every student with mentor for dealing with e-courses, as a result 100% courses are on Canvas LMS @RK University. All e-courses are designed with relevant active learning strategies, study materials, online assessments, announcements, online discussions etc., which are 24x7 accessible by students & teacher via internet to extend their learning beyond classroom teaching, the same platform can be used as blended learning where the teacher combined some practical activities in the classroom with extended activities and project works in the virtual class (e-course). Ninety-eight students undergone through subjects "Fundamental of Computer Programming" & "Object Oriented Programming with C++" course in this study. Observations of co-teachers & students and questionnaires were used to collect data regarding the use of e-course with integration of Edpuzzle video platform on Canvas LMS in assisting students learning process. Also, analysed the results of these subjects with past year results to measure the level of learning. The results and analysis show that students' learning has increased have a positive impression towards the use

of LMS platform and felt comfortable while online interaction with classmates and teachers.

Keywords: *ICT, Canvas LMS, Blended Learning, Edpuzzle Video Platform Innovation, technology, research projects, etc.*

JEL: *A20, D80*

INTRODUCTION

In the beginning of the 21st century, rapid technological development of the globalized world and due to IT innovations, there are few challenges faced in the field of educational system. [1] In the last two decades, students are digital natives and teachers are digital migrants. [2]

Due to this digital gap, effectiveness of traditional classroom activities is reduced. Today's students' demand is to have educational activities online on digital devices via the internet, so they can access it anytime, anywhere. [1] It also enhances critical thinking, successful behaviours, and academic and organizational skills. [3] At the same time, the traditional methodologies of teaching have its own advantages. So, blended learning is needed to strengthen the overall teaching learning experiences as it mixes the traditional teaching learning that includes classroom interactive strategies along with the online mode. Especially, when the student mass is less motivated to work, the teacher is needed in the close proximity.

Online mode of learning with LMS tools alone may not be helpful in such situations. Yet, due to enormous advantages of the LMS as described in the subsequent paragraphs, it is required to be adopt learning platforms i.e., LMS, video platforms, social media etc. In the blended learning, the instructor has a greater role to help the students that the see the values of learning through blended discussions and blend how the face to face mode of teaching and online learning is connected. [4]

For the effective implementation of LMS, training teachers, students & staff to utilize these platforms is most important. Teacher's professional development and online blended learning needs to clarify the roles of the students & teachers along with teachers' professional identities and educational beliefs [8, 9]. Unless empower teachers and students about these digital platforms, it's difficult to take benefits of online opportunities in higher education. [6]

Learning Management System (LMS) and ICT tools provide tremendous features in higher education that make the teaching-learning

process more effective and comfortable. Benefits of LMS is as mentioned below:

- Organizes eLearning content in one location.
- Provides unlimited access to eLearning materials.
- Provides a personalised approach.
- Easily track learner progress and performance.
- Reduces Learning and Development costs & time.
- Provide effective communications.
- Effective online assessment.
- Keeps organizations up-to-date with compliance regulations.
- Quickly and conveniently expands eLearning courses.
- Integrates social learning experiences.

Higher educational institutions are adopting online learning tools more and more as it increases the opportunity for students, instructors and administrators to work in a team for teaching-learning activity, as a result, it has been observed a drastic change in the engagement of students with the teacher. [3]

LMS tools greatly helps in the qualitative assessment as well. Teacher, student and parent can track and check the progress of the student. LMS tools are very useful to predict the performance of the student. Leah and Shane have discussed about the early warning system which will prompt the teacher and student for the future success of a student. [7]

The present paper describes a case of blended learning where Canvas LMS along with edpuzzle is adopted for a group of 98 students of 1st & 2nd year BTech Computer Engineering & Information Technology.

Whole methodology of conduction of blended learning approach and its implementation is described in this research paper. This research also includes students' feedback, comparison of subject results with blended learning approach with past results data of the same subject and analysis of survey & results.

At RK University, Gujarat, India, had choose Canvas LMS after undergone through different platforms due to their user-friendly user interface, better & effective features that meet the requirements in the university. Canvas LMS also provide facility to integrate many 3rd party plugins which allow us to design and implement blended learning approach. Canvas LMS also enough competent to design MOOC course and flipped classroom.

METHODOLOGY

Research Method

At RK University, a team had undergone through different ICT platforms i.e., Google Sites, Google Classroom, Edmodo, Moodle, etc. since 2012. In the year 2017, a team had undergone through a yearlong pilot project with Canvas LMS, compare with past experiences with other ICT platforms. With the experiences of pilot study in 2017 with Canvas LMS, design a team structure, prepare guidelines for each role in the team and execute a plan, therefore, 100% courses are on Canvas LMS at RK University in the beginning of academic year 2018-19. Apart from this, teachers are used Canvas LMS platform for different purpose in the university:

- as social media
- online assessment
- blended learning
- publish course content
- integrate video platform in Canvas LMS
- conferencing

In this research study, authors had used Canvas LMS & Edpuzzle in all possible ways in the last two years and finally integrated a video platform "Edpuzzle" in Canvas LMS in two courses of academic year 2018-19 to teach with blended learning mode where students had few pre/post online activities along with F2F teaching in the classroom. It was very important to measure the impact of these platforms in students' learning process; therefore, an author had conducted a research survey mentioned in the upcoming chapter.

RESEARCH PARTICIPANTS

In this research study, 98 students of B. Tech Computer Engineering & Information Technology who are studying in RK University, Rajkot, Gujarat, India, since academic year 2017-2018, who are undergone through four semesters till now and used Canvas LMS and Edpuzzle, either as alone or combine form, in different subjects as mentioned below:

Table 1. List of subjects with learning platforms used in respective academic year @RK University, Rajkot, India

Academic Year	Year / Semester	Subject	Platform	Enrolled Students	Remarks
2017-18	1st / Sem-I	CE106: Logic Building Techniques & Practices	Canvas LMS	106	-
2017-18	1st / Sem-II	CE202: Fundamental of Computer Programming	Canvas LMS Edpuzzle	106	Canvas & Edpuzzle introduced as separate tool
2018-19	2nd / Sem-III	CE308: Object Oriented Programming with C++	Canvas LMS Edpuzzle	98	Integrated Edpuzzle in Canvas LMS
2018-19	2nd / Sem-IV	CE421: Object Oriented Programming with JAVA	Canvas LMS Edpuzzle	98	Integrated Edpuzzle in Canvas LMS

DATA COLLECTION

To understand and measure the effectiveness of different learning platforms in T/L process, authors had conducted activities i.e., google form, written feedback, students' interview and peer discussion. In this research study, the authors had presented several survey questions, their comments and the statistics of google form responses and analysis in the next chapter.

Google form link is shared to 4th semester students of BTech, Computer Engineering & Information Technology, who are already undergone through different subjects along with LMS as mentioned in the Table-I. Also, authors had received past 3-7 years result data of subjects mentioned in the Table-I and analysed as shown in Table 2 and 3.

Also, authors had conducted 15 minutes activity i.e. "discussion on the effectiveness of learning platforms (Canvas LMS | Edpuzzle)" among students' groups while their 4th semester study. During the academic year 2017-18 & 2018-19, authors had conducted several meetings with Canvas LMS coordinators in different institutions and interviewed about the use of Canvas LMS platform as social media platform and for blended learning classroom at RK University, India. Beyond this, authors had also several formal discussions with colleagues while this research studies to measure the impact of platforms in students' learning process.

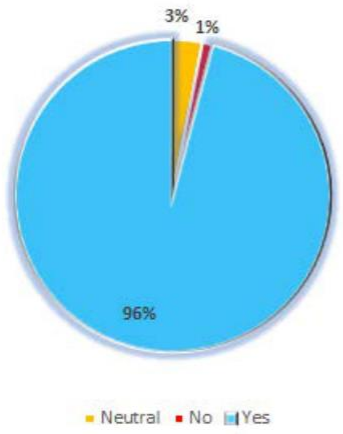
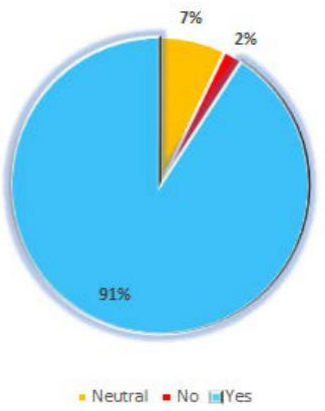
DATA ANALYSIS & RESULTS

In this research paper, the following questions were included in the survey to measure the effectiveness of Canvas LMS and Edpuzzle platform:

- Is Canvas LMS platform user friendly & easy to operate?
- Is Edpuzzle (video platform) platform user friendly & easy to operate?
- Is Canvas LMS benefits in your learning?
- Is video platform "Edpuzzle" helps in your learning process?
- Which platform among Canvas LMS and Edpuzzle is more effective learning platform?
- Is the integration of Edpuzzle video in Canvas LMS found better instead using two separate platform?

- How is your experience of learning with Canvas LMS & Edpuzzle platform?

The research survey was conducted among 98 students of B. Tech Computer Engineering and Information Technology who undergone through these platforms in academic year 2017-18 and 2018-19, where they had accessed the platforms for different online activities i.e., access of e-course, Edpuzzle video, online assignment submission, online MCQ quiz, peer discussion and group projects. After accessing all these features in Canvas LMS & Edpuzzle by 98 students in a year 2018-19, they had shared their experience in the form of google survey as mentioned in Fig. 1, which authors had described the responses received for all the above-mentioned questions. Apart from this, authors had conducted several meetings with Canvas LMS admins in different schools, interviewed with colleagues and students of other departments too and measure the impact of these platforms in students learning process. Also, authors have analysed result data of past 7 years 1st year students of BTech Computer Engineering & Information technology of subject "Fundamental of Computer Programming" as shown Table 2 and Fig. 2. Beyond this, authors have also analysed data of past 3 years of 2nd year students of BTech Computer Engineering & Information Technology of subject "Object Oriented Programming with C++" as shown in Table 3 and Fig. 3.

Is Canvas LMS platform user friendly & easy to operate?	Is Edpuzzle platform user friendly & easy to operate?
	

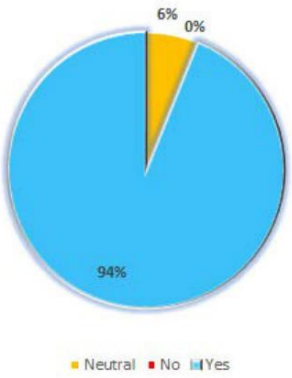
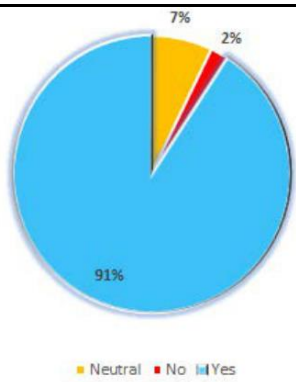
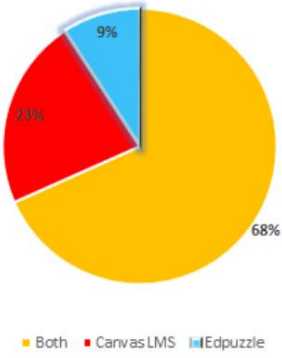
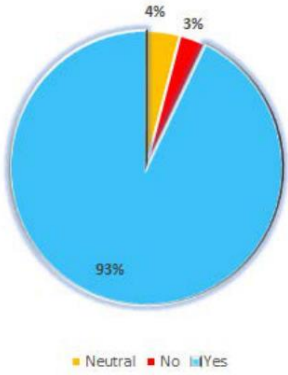
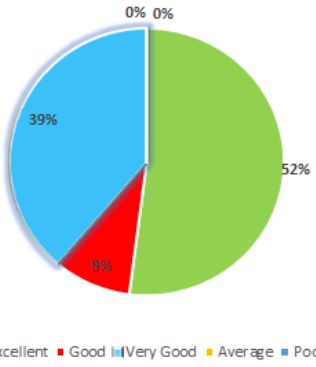
Is Canvas LMS benefits in your learning?	Is video platform "Edpuzzle" helps in your learning processes?
	
Which platform among Canvas LMS and Edpuzzle is more effective learning platform?	**Is the integration of Edpuzzle video in Canvas LMS found better instead using two separate platform?**
	
How is your experience of learning with Canvas LMS & Edpuzzle platform?	
	

Fig. 1. Survey responses of each question

Table 2. Comparison of Results of 1st Btech Computer Engineering Subject "Fundamental of Computer Programming"

Percentage	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
Students#	164	146	166	128	87	118	98
>=80%	0.00	0.68	0.00	0.00	2.30	5.08	42.86
>=60% & <80%	4.27	8.22	4.82	5.47	16.09	21.19	20.88
>=40% & <60%	20.12	21.23	14.46	35.16	32.18	49.15	21.98
Fail	78.66	72.60	87.95	59.38	52.87	32.20	21.98
LMS	-	-	-	-	-	Edmodo	Canvas
LMS	-	-	-	-	-	Edmodo	Canvas

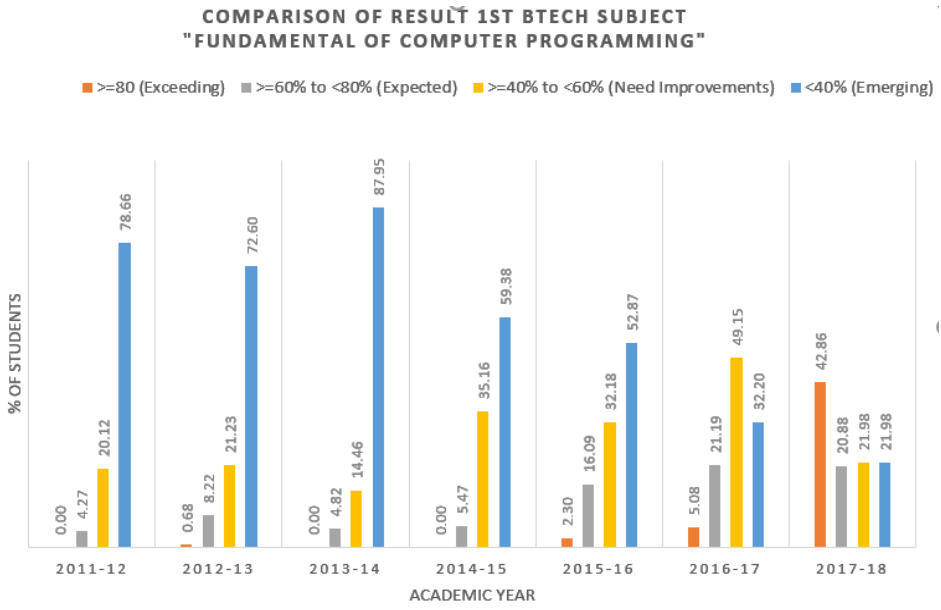


Fig. 2. Students performance analysis of 1st year subject "Fundamental of Computer Programming"

Table 3. Comparison of Results of 3rd Btech Subject "Object Oriented Programming with C++"

Percentage	2015-16	2017-18	2018-19
Students#	128	164	98
>=80%	0.00	20.34	25.00
>=60% & <80%	10.48	23.73	28.73
>=40% & <60%	30.15	37.29	30.27
Fail	59.37	18.64	16.00
LMS	Edmodo	Canvas	Canvas

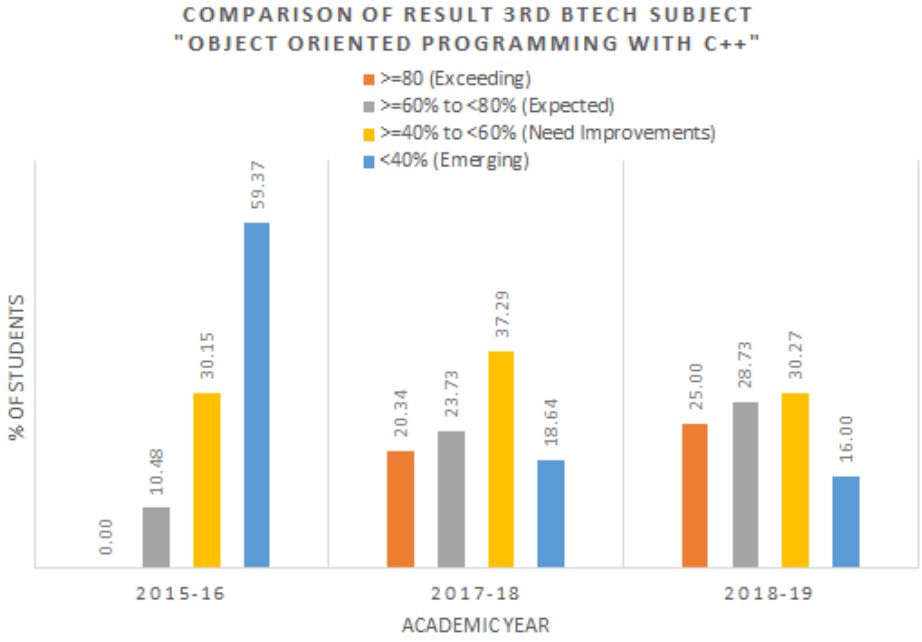


Fig. 3. Students performance analysis of 1st year subject "Fundamental of Computer Programming"

In order to measure impact of students' learning, author had compare result data of 98 students who undergone through subjects "Fundamental of Computer Programming" of academic year 2017-18 and 2018-19 as mentioned in Table-1, compared the results of academic year 2017-18 with all past academic year 2011-12 to 2016-17 of the same subjects as shown in Table 2. and Fig. 2 and found that students' performance in the examination has improved and failing ratio has decreased.

Similarly, the same group of students' results of subject "Object Oriented of Programming" undergone in academic year 2018-19 has compared with past 2 academic years 2016-17 & 2017-18 and found students' performance has improved in 2017-18 when authors had used Canvas LMS and even more improved in 2018-19 with integration of Edpuzzle video platform with Canvas LMS as shown in Table 3. & Fig. 3.

CONCLUSION

In this research, authors had used Epduzzle video platform as integral part in the Canvas LMS to design blended learning class with two courses in academic year 2018-19 at RK University, where ninety-eight, 2nd years of B.Tech. Students of Computer Engineering & Information Technology were enrolled. Also, conducted research survey, compare students results of the subject "Fundamental of Computer Programming" & "Object Oriented Programming with C++" mentioned in Table-1 with past year results, meetings with Canvas LMS admins, interviewed with colleagues and students of other departments too, and measure the impact of these platforms in students learning process. In the research analysis, it was observed students' performance has improved as shown in Fig. 2 & 3 and students also believes that these platforms helps a lot in students' learning as it is easy to operate due to better UI with compare to other LMS platforms, available to access these platforms 24x7 for different activities i.e., peer discussion, refer course materials, online submission, scheduled test, video lectures, etc. In the research analysis, you can observe there were all students at RK University had great experience with blended learning classroom with integration of Edpuzzle and Canvas LMS. Even, these platforms can motivate to design MOOC courses to implement flipped classroom in the university.

REFERENCES

1. Macfadyen, L., Dawson, S. (2010). *Mining LMS data to develop an "early warning system" for educators:* A proof of concept. Computers & Education, ISSN: 0360-1315, Vol: 54, Issue: 2, pp. 588-599.
2. Pransky, M. (2001), *Digital Natives, Digital Immigrants*, Educational Article, http://www.marcprensky.com.
3. Bligh, D. A. (2000). *What's the use of lectures?* San Francisco, CA: Jossey-Bass.
4. Han, F., Ellis, R. A. (2019). *Identifying consistent patterns of quality learning discussions in blended learning.* Internet and Higher Education, 40, pp. 12-19. https://doi.org/10.1016/j.iheduc.2018.09.002
5. Philipsen, B., Tondeur, J., Pareja Roblin, N. *et al*., (2019). *Improving teacher professional development for online and blended learning:* a systematic meta-aggregative review. Education Tech Research Dev. pp. 1-30. https://doi.org/10.1007/s11423-019-09645-8.
6. Baker, A. (2016). *Active Learning with Interactive Videos:* Creating Student-Guided Learning Materials, Journal of Library & Information Services in Distance Learning, 10:3-4, pp. 79-87.
7. Dawson, S. P., McWilliam, E. & Tan, J. (2008). *Teaching smarter: how mining ICT data can inform and improve learning and teaching practice.* Annual Conference of the Australasian Society for Computers in Learning in Tertiary Education. Melbourne, Australia: Deakin University, pp. 221-230.
8. Balázs, P. (2017). *Online Educational Environments and ICT Tools in Higher Education:* Teacher Survey, Andragoške studije, 1, jun 2017, pp. 145-181.
9. Farooq, S.M., Salam, M. Jaafar, N., Fayolle, A., Ayupp, K., Radović-Marković, M. and Sajid, A. (2017). *Acceptance and use of lecture capture system (LCS) in executive business studies:* Extending UTAUT2, *Interactive Technology and Smart Education,* Emerald Publishing Limited, pp. 329-348.