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Exploring the Usability of Learning Management System in Higher Education: Students Perspective

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Abstract: ICT is regarded as the backbone of entire teaching learning process in 21st century. Learning Management System is a software application or web-based technology used to plan, implement and assess a specific learning process. The main objective of the study is to explore the usability of Google Classroom Learning Management System in Higher Education. The present study was conducted on Post Graduate Students of U. N. (Autonomous) College of Sc & Tech., Adaspur. The study was conducted by following Survey Method in which a sample of 241 students were selected through convenience sampling. Self - developed tool was used for data collection. The findings of the study highlight that students of aided higher education institutions possess positive perception on LMS tools and their usability. So, LMS has significant implications for enhancing the potentialities of the learners.

Keywords: Learning Management System (LMS), Usability, Google Classroom, ICT, Higher Education

1.0 BACKGROUND OF THE STUDY

Information and Communication Technology (ICT) has an integral part and significantly transformed the process of education in 21st century. It is widely used as improving the quality of teaching-learning in both schools and colleges (Livingstone, 2012). Teaching and learning with the help of ICT tools makes the learning process engaging and provides opportunities for interaction, collaboration and personalization (Groff, 2013). Universities and colleges offer learning environments which meets the unique needs, interests, abilities, capabilities, attitude and aptitude of the twenty-first century learners. With the help of ICT students and teachers can easily handle assignments and communicate across time and space (Chen, 2011). As per NEP 2020, an autonomous body, the National Educational Technology Forum (NETF) will be formed to supply a platform for the free exchange of ideas on the utilization of technology to reinforce learning, assessment, planning, administration in the field of Higher Education. Higher Education Institutions have realized the importance of virtual learning, blended learning, flipped classroom, Augmented Reality and Learning Management System in the field of teaching and learning. Out of these platforms, Google Classroom Learning Management System is one of the innovative and immersive technology which facilitates the teaching learning process.

1.1 Learning Management System (LMS): Theoretical Framework

In higher education, Learning Management System is one vital tool which meets the unique needs and requirements of 21st century learners. It is a digital platform used by universities and colleges to manage courses, creation of contents, delivery of courses, assess students learning progress and engage through communication and interaction. Motoh (2021) defined Learning Management System as a system designed to create, distribute and manage educational information such as delivery of e-learning materials, systems and applications. LMS is a software application or web-based technology used to plan, implement and assess a specific learning process (Georgouli et al., 2008). LMS is an information management system focusing on interaction, cooperation and instructional activities (Rosário et al., 2017). LMS platforms such as Google Classroom, Moodle, Blackboard, Canvas, Schoology etc. enhance the learning system by providing various opportunities to the users (Saidi et al., 2021).

1.2 Google Classroom (GC): An Overview

Google Classroom was introduced in 2014 as one of the features under G-Suite for education under Google Inc. (Gupta & Pathania, 2020). It is a learning management system which provides teaching materials and integrated assessment tools like e-mail, cloud storage, Google Docs, Google Slides, Google Sheet etc. (Thwe & Kálmán, 2023). It is a powerful tool for regulating and managing the teaching-learning experience. Its user-friendly interface makes the learning platform engaging, effective, interactive and successful. GC offers real-time feedback along with supportive diverse teaching methods to improve the overall academic activities. GC is one of the most popular platforms used by instructors and learners because it offers productive feedback (Tuffahati & Nugraha, 2021). The features available in GC platform as provided below.

1.2.1 Features of Google Classroom

The features of Google Classroom (LMS) are described as under.

- **Class creation:** Teachers can easily create and manage classes, invite students and organise course work.
- **Assignment:** Teachers can create, assign and track assignments and submit status report.
- **Announcement:** Class schedule and any other academic activities are announced by the teacher through this platform.
- **Communication and Interaction:** It offers communication and interaction facilities between teachers and students and between peers using tools like chat, forums etc.
- **Grading and Feedback:** Teachers can provide real-time feedback on assignment and grading options are available in GC platform.
- **Resources and Materials:** Teachers can post announcements, share learning materials and also share class links and other resources.
- **Integration with Google Workshop:** GC integrate with various Google tools like Docs, Drive, Sheets and slide which make it easy to collaborate and communicate.
- **Customization:** Classes can be customized with themes and teachers can organize materials as per the modules.
- **Privacy and security:** It ensures teachers and students data privacy and compliance with educational norms and standards.

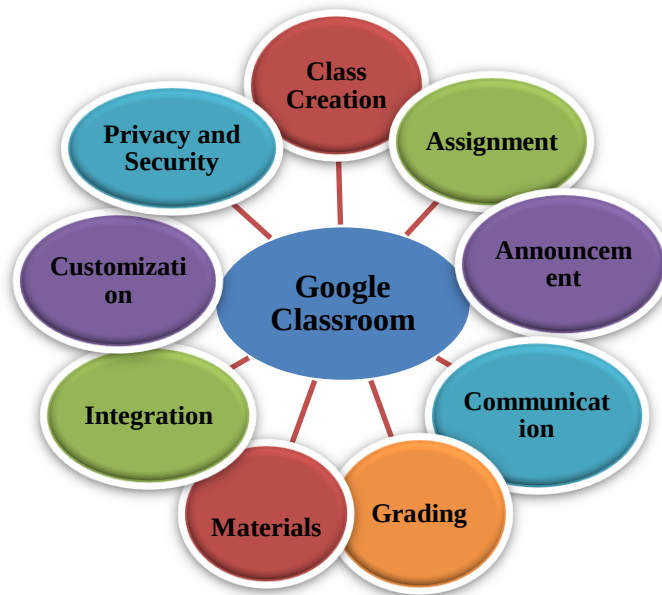


Figure-1.1 Features of Google Classroom

1.3 RESEARCH QUESTIONS

1. What is the Perception of Post Graduate students towards the use of Learning Management System?
2. What is the extent of usability of Learning Management System among Post Graduate students?

1.4 OBJECTIVES OF THE STUDY

1. To find out the Perception of Post Graduate Students towards the use of Learning Management system.
2. To find out the extent of Usability of Learning Management System among Post Graduate Students.

1.5 DELIMITATIONS OF THE STUDY

1. The study is delimited to U. N. Autonomous College of Sc. & Tech., Adaspur, Cuttack.
2. The study included only the Arts and Science Post Graduate students.
3. Google Classroom Learning Management System was used for the present study.

2.0 REVIEW OF RELATED LITERATURE

Review of related literature serves as a foundation for any academic research. It provides details procedure, design and strategy for conducting research. In order to gain better understanding of the problem, the investigator has reviewed extensively in the following areas:

- Perception of users towards Learning Management System
- Learning Management system and its usability

Table 2.1 Summary of the Review

Sl. No.	Name of the Author & Year	Prime Focus	Major Findings
1	Taufik et al., 2021	Effectiveness of Learning English Using LMS Google Classroom.	Students learn English in an effective way through Google Classroom. Teacher prepares adaptive materials and modern methods by using thing platform.
2	Ari. 2021	Students' Perception towards Google Classroom in Teaching and Learning	Students possess positive perception toward the use of Google Classroom in teaching & learning. However, some challenges were faced by students i.e., accessibility and connectivity while using Google Classroom during the pandemic situation.
3	Rukmana, 2021	Students' Perception toward the use of Google Classroom as Teaching and Learning English Media for EFL Students	Google Classroom assists students in learning through various ways such as save the file or access learning materials, submit assignments, quizzes etc. Teachers integrates Google form, Google Drive, Google maps, Google Docs etc. in teaching learning process.
4	Aufi & Naidu, 2020	Students' perception towards Learning Management System to Facilitate Flipped Learning Experience for English Language Teaching.	Flipped learning technology enhanced students individualized, experiential and life-long learning skills.
5	Rahmawati, 2020	Learning by Google Classroom in Students' Perception	Google Classroom is regarded as the effective for assignments whereas less effective for material discussion. It can be concluded that Google Classroom cannot substitute to face-to-face learning.
5	Koh & Kan, 2020	Learning Management System on quality, satisfaction and usage: students' perspective	Students perceive quality learning, through the use of LMS. Overall, they possess positive perception towards the usage of LMS.
6	Morquin, 2016	Teachers' Perceptions regarding the use of google classroom and google docs and their impact on student engagement	Google Apps for Education (GAPE) and Google Classroom as a cloud-based learning environment assist the teachers to reach ISTE Standards while classroom transaction.

2.1 Critical Appraisal

From the above reviews it was observed that majority of students possess positive perception towards Learning Management System (Ari, 2021; Koh & Kan, 2020; Rukmana, 2021). Google Classroom was found to be an effective Learning Management System for classroom transaction (Morquin, 2016; Rahmawati, 2020; Taufik et al., 2021). Flipped learning technology with the use of Google Classroom LMS enhanced students individualized, experiential and life-long learning skills (Aufi & Naidu, 2020). Teachers integrate various tools of Google like Google form, Google Drive, Google maps, Google Docs, Google Sheet for the holistic development of students through technology (Rukmana, 2021). Overall,

teachers and students were satisfied by using Google Classroom Learning Management System and it proved to an effective means of transacting curriculum in modern days.

3.0 METHODOLOGY

Research methodology describes the detailed procedure, design, population, sample and sampling techniques, tools used for collection of data, analysis and interpretation of data.

3.1 Research Design

As per the objectives, Survey method is adopted for the present study. It provides the numeric description of current practices, trends and attitudes under study.

3.2 Population

The investigator has selected one Autonomous College i.e., U. N. (Autonomous) College of Sc. & Tech., Adaspur) in Cuttack district purposively. All the students pursuing Post Graduate programme in U.N. (Auto) College of Sc. & Tech., Adaspur Cuttack (N= 640) constitute the population for the present study.

3.3 Sample

Total 20 Post Graduation departments are there in U.N. Autonomous College of Sc. &Tech., Adaspur, Cuttack. Out of 20 departments the investigator has selected 10 departments by using simple random sampling technique. The investigator has chosen 241 PG 1st year students for the session (2024-25) from the same college by using Raosoft Sample Calculator with 95% confidence level. So, the sample for the present study was 241 PG students.

Table-3.1 Distribution of Sample

U. N. (Autonomous) College of Sc. & Tech., Adaspur	
Subjects	Students
Education	28
Clinical Psychology	26
Economics	28
English	18
History	26
Chemistry	24
Mathematics	21
Physics	23
Botany	27
Zoology	20
Total	241

3.4 Tools used for the study:

In this study, two self-developed scales were used

Table-3.2 Objective-wise tools for data collection

Sl. No	Objectives	Data Source	Tools Used
1	To find out the Perception of Post Graduate Students towards the use of Learning Management system.	PG students	Perception Scale
2	To find out the extent of Usability of Learning Management System among Post Graduate Students.	PG students	Scale on Usability of LMS

3.5 Procedure of data collection

The researcher has collected the data by using Google Form.

3.6 Statistical techniques used

The investigator used simple percentage analysis as per the objectives of the study.

4.0 DATA ANALYSIS AND INTERPRETATION

4.1 Objective-1: Perception of Post Graduate Students towards the use of LMS

In order to get student's perception towards Learning Management System, the perception scale was developed by the researcher having 10 statements. In this scale 6 positive statement and 4 negative statements were provided with five alternatives like Strongly Agree (SA), Agree(A), Neutral(N), Disagree(D) and Strongly Disagree (SD). Before collecting data, the investigator has calculated Cronbach Alpha reliability coefficient by using Statistical Package for Social Science (SPSS-20). The reliability coefficient for the was found 0.879. Thus, the tool is highly reliable.

Table-4.1 Cronbach Alpha Reliability of Perception Scale

Reliability Statistics	
N (No. of statements)	Cronbach Alpha
10	0.879

Table-4.2 Perception of students towards Google Classroom (LMS)

Sl. No.	Statements	SA	A	N	D	SD
1.	Google Classroom platform is easy to use and compatible to work.	61(25.31%)	114(47.30%)	44(18.26%)	18(7.47%)	04(1.66%)
2.	Students got new experience in learning by using GC Platform.	57(23.66%)	109(45.23%)	41(17.01%)	16(6.64%)	18(7.46%)
3.	GC interface lacks clarity in instructions on how to use.	30(12.45%)	52(21.57%)	37(15.36%)	77(31.95%)	45(18.67%)
4.	Using GC Platform provides interactive learning environment.	49(20.33%)	78(32.37%)	41(17.01%)	45(18.67%)	28(11.62%)
5.	Students feel motivated to learn using GC Platform.	58(24.07%)	102(42.32%)	43(17.84%)	36(14.94%)	2(0.83%)
6.	I find difficult to understand materials presented in GC platform.	30(12.45%)	42 (17.43%)	35(14.52%)	91(37.76%)	43(17.84%)
7.	Technical instability sometimes discouraged me to use this platform.	52(21.58%)	93(38.59%)	36(14.94%)	50(20.75%)	10 (4.14%)
8.	GC platform provides quality teaching and learning as compared to traditional method.	73(30.29%)	109(45.22%)	37(15.36%)	14 (5.81%)	8(3.32%)
9	GC platform does not encourage active participation in learning activities.	23 (9.54%)	51 (21.16%)	37(15.36%)	87(36.09%)	43(17.85%)
10	I recommend other students or teachers to use GC.	67(27.80%)	112(46.47%)	24 (9.96%)	29(12.03%)	9 (3.74%)

Table 4.1 contains information regarding the perception of users towards Google Classroom (LMS). A majority of respondents (72.61%) agreed that Google Classroom is easy to use and compatible to work while only 18.26% respondents were remaining neutral and 9.13% disagree with the fact. Most of the students (68.89) were responded that they got new experience in learning by using GC while 17.01% students remain neutral and 14.1% students denied it. Approximately 50% respondents opined that GC Platform provides interactive and collaborative learning environment. Majority of students (66.39%) strongly agreed and agreed that they feel motivated through GC platform. Some students (45.22%) opined that GC platform provides quality learning as compared to conventional methods of learning while 9.13% students disagreed with the fact. It was observed that 74.27% students were recommended GC platform to other teachers and students while only 9.96% students were remaining neutral and only 15.77% students denied it.

However, it was revealed that GC platform has some negative features like clarity in instruction, technical instability and lack of active engagement between teachers and peers. Few students i.e., 21.57% agreed and 12.45% strongly agreed that GC Platform lack clarity in instruction while using. Sometimes

students discouraged due to network glitch, technical instability i.e., 38.59% students were agreed with the statement. A total of 30.7% students were responded that GC platform does not encourage them to actively participate in learning.

4.2 Objective-2: Usability of Learning Management System among Post Graduate Students

To know the extent of usability of Google Classroom LMS, the investigator has developed a scale having seven questions (four positive questions and three negative questions). The scale consists of five alternatives like Never, Rarely, Occasionally, frequently and always. The Cronbach alpha reliability of the scale was 0.843. Thus, the scale proved to be highly reliable.

Table-4.3 Usability of Google Classroom (LMS)

Sl. No.	Questions	Never	Rarely	Occasionally	Frequently	Always
1	How frequently do you use GC platform?	22(9.13%)	35(14.52%)	42(17.43%)	118(48.96%)	24(9.96%)
2	How frequently do you access and download lecture notes through GC platform?	19(7.89%)	21(8.71%)	45(18.67%)	144(59.75%)	12(4.98%)
3	Do you access other e-resources (such as data bases, Journals, Multimedia content etc.) for academic needs through this platform?	24(9.96%)	33(13.70%)	60(24.89%)	94(39%)	30(12.45%)
4	Do you found any difficulty to communicate with peers and instructors through GC platform?	21(8.71%)	27(11.20%)	89(36.93%)	68(28.22%)	36(14.94%)
5	Have you attended lectures or live classes through GC platform?	12(4.98%)	17(7.05%)	57(23.66%)	103(42.73%)	52(21.58%)
6	Do you found any difficulty while upload or submit assignment through GC platform?	48(19.92%)	33(13.69%)	96(39.83%)	37(15.35%)	27(11.21%)
7	Have you encounter any technical issues (e.g., slow loading, errors) while using GC?	17(7.05%)	28(11.62%)	77(31.95%)	92(38.17%)	27(11.21%)

Table 4.3 indicates that 48.96% students frequently use GC platform while only 17.43% used it as occasional basis. High percentage of students i.e., 59.75% were responded that they can access and download lecture notes, e-books, journals, multimedia content frequently whereas only 8.71% students rarely access it and only 7.89% students never access these materials. The students can also download other e-learning materials like journals, multimedia contents i.e., 51.45% students were always and frequently

access while 13.70% students rarely access it. Most of the students i.e., 87.97% were responded that they attend live classes on regular basis (occasionally, frequently and always) while 12.03% denied the fact.

However, students face some challenges while using GC platform like they face technical issues, take more time while uploading or submitting assignments and also face difficulty while communicating with instructors. Few students (38.17%) responded that they face technical issues while using this platform while 31.95% occasionally face the problem. Some of the students i.e., 28.22% were responded that they find frequently difficulty while communicating with teachers and peers. Few students (39.83%) occasionally face difficulty while submitting assignments and uploading documents.

5.0 MAJOR FINDINGS

The following findings were observed on the basis of data analysis and interpretation.

5.1 Findings on Perception of Post Graduate Students towards the use of LMS

- Based on the recapitulation of statement 1, 2, 4, 5, 8 and 10 it was found students possess positive response towards the use of LMS.
- Another dominant aspect that most of the students were disagree about the negative aspects of LMS like GC lacks clarity in instructions, technical instability and it does not offer active engagement in learning.
- Most of the students i.e., 72.61% responded that LMS platform is easy to use and compatible to work while 18.26% remain neutral and 9.13% disagree with the statement.
- Majority students (68.89%) were responded that they got new learning experience by using Google Classroom Platform.
- GC platform lacks clarity in instructions which was opined by 50.62% students while 34.02% agreed with it.
- Majority students responded that that LMS platform provides quality teaching and learning and they recommend it for using this platform to peers and teachers while few students were Neutral regarding this and only 15.77% students disagree with the fact.

5.2 Findings on Usability of Learning Management System among Post Graduate Students

- It was observed that 48.96% students frequently use GC platform whereas 14.52% used it rarely and 17.43% used it as occasional basis, only 9.13% students who never use and not aware about this platform.
- High percentage of students i.e., 59.75% were responded that they can access and download lecture notes, e-books, journals, multimedia content frequently whereas only 7.89% students never access these materials.
- The students i.e., 51.45% were always and frequently access other e-learning materials like journals, multimedia contents while 13.70% students rarely access it.
- Majority students i.e., 87.97% were responded that they attend live classes through GC platform on regular basis (occasionally, frequently and always) while 12.03% denied the fact.
- It was revealed that some of the students found difficulty while communicating with teachers and peers, submitting assignment and often face network glitches.
- Few students (38.17%) were responded that they face technical issues while using this platform while 31.95% occasionally face technical errors and only 11.62% agreed that they face these issues rarely.
- Some of the students i.e., 28.22% were responded that they find frequently difficulty while communicating with teachers and peers.
- Few students (39.83%) occasionally face difficulty while submitting assignments and uploading documents.

6.0 CONCLUSION

Learning Management System (LMS) has become an integral part of education in higher education. Now-a-days, Higher Education Institutions (HEIs) are using LMS to facilitate their teaching and learning processes. The study aimed to explore students' perception and usability on Learning Management System in Higher Education. As per the findings the study students can easily access online databases, lecture notes, study materials, E-Journals, E-Books etc. easily. To conclude this, most of the students have positive perception towards the use of LMS and majority students used this platform on regular basis.

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