

Exploring the Online Learning Methodologies Used and its Benefits to the LIS Postgraduate Students and Research Scholars in Universities in Karnataka State

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Abstract

Online education become more popular and almost all students of higher education are aware of online learning tools. This study mainly focuses on the various methodologies used in online learning by library and information science (LIS) research scholars and postgraduate students in the Karnataka state universities. Further, this study investigated the educational, cultural, and behavioural benefits perceived from online learning and how different universities benefited from student-teacher engagement in online learning. The study adopts a quantitative research design and uses a structured questionnaire. The researcher personally visited the university departments to collect data and Google Forms are also utilised. A total of 458 responses were received from research scholars (24%) and postgraduate students (76%). The study used appropriate statistical tests to analyse the collected data. Study results highlight that Google Meet is a highly preferred learning platform, followed by YouTube and Zoom. The use of presentations in online education is a highly used method (88.4%) and live classes and social media/email communication are highly utilised methods. Improved digital creativity and quality of presentation in online learning are the top educational benefits, communication and access to information are the top cultural benefits, and the use of common sense, muting audio and video are the top behavioural benefits. Skill enhancement and critical thinking improved through student-teacher engagement in online learning. Even though this study is limited to LIS learners, study results may be helpful for teachers, LIS departments, educational institutions, universities, and higher educational bodies to understand online learning needs.

Keywords: Education; LIS Departments; Teaching methods, Online Learning; e-Learning Benefits; AI Tools; Flipped Classroom; Infographics

INTRODUCTION

The origin and growth of the digital era have brought a new revolution in the education sector, and it has led to online learning evolution. Web technology creates several opportunities for students, as their way of learning and acquiring skills and knowledge has changed completely, and learners have benefited from this innovative method of learning and teaching (Tang et al., 2022). This flexibility in learning allows learners to be involved with the study or course material at any time and in their comfort zone, and working professionals who have family responsibilities greatly benefit (Saleh et al.,

2022). Furthermore, access to online learning empowers students to structure their studies alongside other commitments which usually may not be possible in a normal classroom environment (Shaikh & Asif, 2022).

In recent years to improve students' learning experience, the use of new techniques and methods has gained popularity in online education. A collaborative learning strategy is one key technique that can improve student's motivation to actively participate compared to the self-learning approach (Oye et al., 2012). Online learning initiatives have proven to be valuable from the student's perspective, as positive opinions were expressed by students about online learning (Sit et al., 2005). Student learning has been accessed by employing several techniques, which is a crucial component of online education. However, further studies need to be conducted to determine the best possible way to apply these techniques to overcome the issues associated with online assessment (Kearns, 2024). The growth of e-learning leads to create virtual classes, where learners can get support from teachers related to their studies instantly (Abed, 2019). As many methodologies are implemented and students' attitude is investigated, the merging of online learning with face-to-face traditional classroom methods has become more common. Students can get access to learning resources and the tools to revise their course through online learning tools such as SCHOLAR. The SCHOLAR is an online learning programme designed to support students learning (Condie & Livingston, 2007).

REVIEW OF LITERATURE

Techniques or methods used in online learning

Use of online learning tools to facilitate students learning has grown significantly in recent years and various strategies and methods have been utilised in online education. It is essential to understand the methodologies and techniques used in online learning instructional methods. To examine students' behaviour and activity patterns, the use of data mining techniques is an important key strategy in online learning. By examining student's interactions with course materials and online learning tools, educationalists can get valuable insights into students learning behaviours and it is helpful to identify the student's requirements if any further support is needed. For example, through data mining techniques teachers can better understand learner's characteristics and at-risk students can be identified based on patterns of engagement and participation, facilitating early intervention and support (Hung, 2008). Collaboration is another important component in online learning, where different techniques are utilised to motivate student participation and community building among students. Scaffolding techniques in the online learning setting can be utilised to support collaboration such as providing clear instructions, structuring the learning activities and providing guidelines. Additionally, group projects, discussions, and other dynamic educational techniques can be modified and adapted to motivate student engagement and student interaction (Pozzi & Persico, 2010). The use of tools like badges, leaderboards, points, and other gamification tools to boost student's motivation is gaining more popularity in online education in recent days. Graduate students generally perceive the use of gamification techniques in online learning favourably and perceive the way to make learning interactive and enjoyable in the online learning process (Alabbasi, 2017).

Use of AI tools in online learning

Extensive development of AI-powered education systems in institutions across Europe and America, allowing students a range of "teachers" to choose from. It shows that AI technologies can offer tailored learning experiences and increase access to online learning opportunities (Fitria, 2021). Even though the use of AI technologies has many advantages, there is evidence that the implementation of AI in online learning is not still accepted by universities. Only 27.5% of the National Open University of Nigeria students are well aware of AI-powered tools provided by their university, this shows the use of AI by the students is relatively low. This indicates that some learners may not have the abilities and knowledge to use AI to enhance their learning suggesting that there may be a digital divide in accessing these opportunities (Ezeanya et al., 2024). To inspire students in higher education institutions to use online learning and AI tools, the study highlights the significance of perceived usefulness. To encourage the use of AI and optimise their encouragement of student learning outcomes, the study emphasises the requirement for administrators and educators to demonstrate the usefulness and benefits of these technologies (Boubker, 2024).

Use of pre-recorded video lectures

The use of pre-recorded video lectures offers flexibility and convenience for the learners and it is a common practice in online learning. Pre-recorded video lectures allow students to learn and review study material at their own pace and convenience (Jayasinghe et al., 2018). However, there is an ongoing debate on the effects of pre-recorded video lectures on learners' satisfaction and learning outcomes. The impact of pre-recorded lectures and live classes on learner satisfaction and students' academic achievement was compared in a Malaysian private university and the effectiveness of live lectures versus pre-recorded video lectures depends on students individual

learning styles and their preferences (Lim et al., 2022). Students' preferences for live lectures through Zoom and pre-recorded video lectures and the students' preferences may differ based on factors such as convenience, flexibility, and effectiveness of education (Islam et al., 2020). Compared to live online lectures pre-recorded video lectures are better solutions for distance learning, especially when combined with live online discussions or in-person discussions. The approach to a flipped classroom allows students to study by watching pre-recorded video lectures and to actively engage in classroom discussions. (Le, 2022). There is a gap in research on students' engagement with pre-recorded video lectures in online learning, Jun (2023) examined the learning attitudes of students in practical as well as in theory classes with online pre-recorded video lectures and finding of the study underscores the need of further studies on students interaction with different forms of pre-recorded video contents in online learning settings.

Flipped classroom model

The flipped classroom model has been adopted for online learning, which includes instructional content delivery to students to study at home and active participation in classroom activities. Using a mobile application created an online learning community to support English as a Foreign Language (EFL) learners with a flipped learning model and this flipped learning approach enhanced the students' proficiency (Wu et al., 2017). Similarly, Erdemir & Yangın-Ekşi (2019) found that teachers and students positively perceived the use of Edmodo online educational tools in a flipped classroom. However, the efficiency of the online flipped classroom can differ, with some learners satisfied with this technique and some finding it as difficult. It is suggested that further research is required on how can support the learners who facing difficulties with self-directed learning in online flipped classrooms (Stöhr et al., 2020).

Online flipped classrooms commonly use online quizzes to promote active learning and to assess students understanding. Online quizzes are an effective tool in the blended learning model for formative assessment (Cohen & Sasson, 2016). Online quizzes were discovered to be helpful instruments for motivating students to finish previous tasks, increasing active learning (like classroom discussions), and being generally time-efficient based on the instructor's point of view (Cook & Babon, 2017). Bognár et al., (2021) discovered that student success in a web-based course was positively impacted by online quizzes. Salas-Morera et al., (2012) examined how effectively online quizzes work in a project-based learning environment as a teaching and assessment tool, highlighting how to successfully improve student learning.

Use of online quizzes and online polls

To promote active learning and engage students, online polls are another interactive tool utilized in online learning. Socrative online polls are used to bridge the gap between online learning and in-person learning in a remote classroom (Christianson, 2020). The real-time online polling reduced students' mind-wandering, which improved teaching and learning at universities (Price, 2022). Robertson (2023) highlights how real-time polling tools might enhance learning during and after the pandemic. Wells (2024) underlines the importance and use of online polls in comprehensive digital environments to support learning in higher education.

Use of infographics

Infographics are visual aids that are beneficial to convey information in a concise way and interesting method by combining graphic and text components. Gallagher et al., (2017) support the use of infographics by instructors as a design tool for online teaching. To enhance students learning infographics can be incorporated into online teaching (Yarbrough, 2019) According to Parveen & Husain (2021) the use of infographics in a virtual learning environment is endorsed by the cognitive theory of multimedia learning.

Use online learning methods in library and information science

Online learning has become more popular, mainly as a result of COVID-19 and LIS students were effectively equipped for online education this indicates that LIS learners might be good at adjusting to the use of AI tools in virtual learning environments (Rafique et al., 2021). Explored the opinions of LIS teachers related to the implementation of AI technologies in Nigerian library schools also research emphasises how AI and methods of instruction are always developing (Oyetola et al., 2024).

Technologies like AI have the capacity and power to transform the education system completely, especially the way that online courses are taught. The study presented an innovative theoretical context for digital conversion by using AI tools and applications in higher education. AI adoption in the LIS domain could assist as an interface using chatboxes (Okunlaya et al., 2022). Despite the possible advantages, LIS teachers may not be completely aware of utilising AI technology. The study showed various levels of awareness, availability, and application of AI tools among LIS educators in Ebonyi State. This suggests that more studies on professional development may be required to enable efficient integration of AI technologies into online learning for LIS students (Ahmed et al., 2023).

Benefits of online learning

Online education provides several opportunities as well as advantages for educational institutions, instructors, and students. Dumford & Miller (2018) explored the advantages of online education as it can offer flexibility in learning, convenience and easy accessibility to learning resources for students who are facing learning difficulties understanding the concept in traditional teaching. It can also provide many opportunities for teachers to be involved in innovative instructional practices. Online education supports educational institutions and universities to grasp a wider audience of students. Namysova et al. (2019) compared the online learning benefits with face-to-face learning and the excellence of education through online education can be enhanced by promoting active learning and engagement also results advise that each technique or method of instruction has its benefits and combination of face-to-face and online learning can offer the best of both worlds.

Online education can promote equality in education by providing underrepresented groups a greater avenue to higher education. The use of e-learning to increase access to education in universities and higher education institutions in underdeveloped nations is important (Arkoful & Abaidoo, 2015). During the Covid-19 pandemic, Weldon et al., (2021) investigated the perceived advantages and problems of online learning at a Hong Kong higher education institution.

Overall, the present literature specifies that online learning in higher education has numerous advantages which mainly include flexibility, increased accessibility and opportunities for innovation. However, there are a few issues as well such as expertise in instructional design, requirements for technical support, and limited access to online learning resources.

OBJECTIVES OF THE STUDY

- To find out the methodologies and techniques used in online learning by LIS Students.
- To know the preferred online learning platforms by LIS Students.
- To know the benefits to the LIS students through online learning.

MATERIALS AND METHODS

The present research utilised a structured questionnaire to gather data and the primary data was collected from the Library and Information Science (LIS) postgraduate students and research scholars from 10 universities in Karnataka State. This study adopts a quantitative research design, which allows to organized data gathering related to methodologies used in online learning and its benefits to the LIS learners. The study population comprises postgraduate students and research scholars from the LIS departments of the Karnataka state universities. A total of 458 responses were received from LIS research scholars (110) and postgraduate students (348). A Google Form survey was circulated through email and WhatsApp messenger, providing a convenient way for learners to participate in the survey. Additionally, in-person visits were made to ensure comprehensive coverage and increase the response rate. Collected data was analysed by applying descriptive statistics and independent t-tests using SPSS software. References are arranged in APA 7th edition of reference style.

ANALYSIS OF THE STUDY

Table-1
Demographic Details of the Respondents

Variables		%	N (458)
Gender	Male	50.9	233
	Female	49.1	225
Age	Above 36	3.1	14
	29-35	11.1	51
	26-28	14.2	65
	23-25	46.5	213
	Below 22	25.1	115
Level of Studying	Research Scholars	24	110
	Postgraduate Students	76	348
Area of Residence	Rural	54.1	248

Urban

45.9

210

Methods and techniques utilised in online learning among LIS postgraduate students and research scholars were analysed by applying descriptive statistics for each variable. Demographic data of the respondents was presented with numbers and percentages. The data is almost gender balanced with 49.1% female(225) and 50.9% male(233) respondents. The highest number (46.5%) of survey respondents belong to the 23-25 age group. 48.9% of the respondents belong to urban areas and 54.1% of the respondents belong to rural areas. 24% of research scholars and 76% of postgraduate students responded to the questionnaire (Table-1).

Out of 348 postgraduate students, 41.1% have 2-3 years and a smaller portion (16.1%) of postgraduate students have more than 3 years of experience with online learning. 54.5% of research scholars out of 110 have been actively engaged in online learning for more than 3 years. More than half of the research scholars have more than 3 years of experience with online learning, which is higher than postgraduate students(Figure-1).

Figure-1
Frequency of Time Actively Engaged in Online Learning

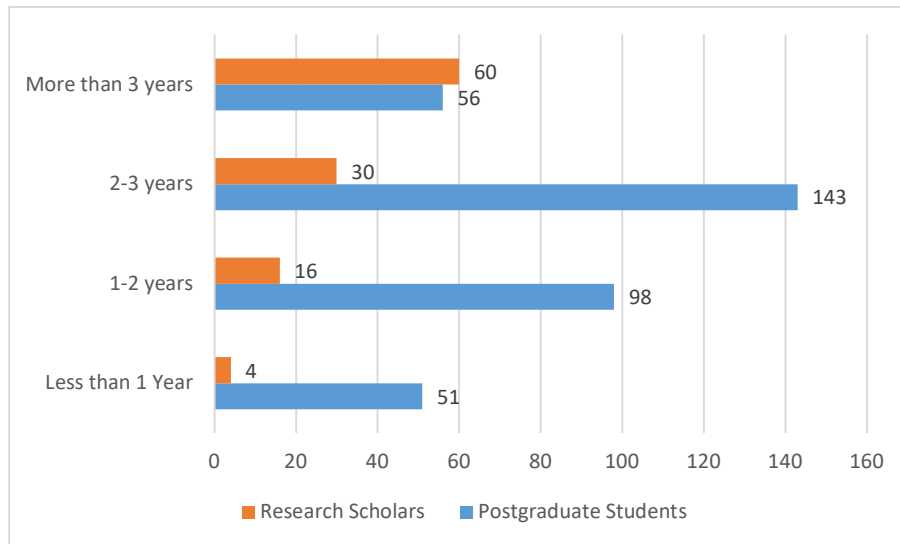
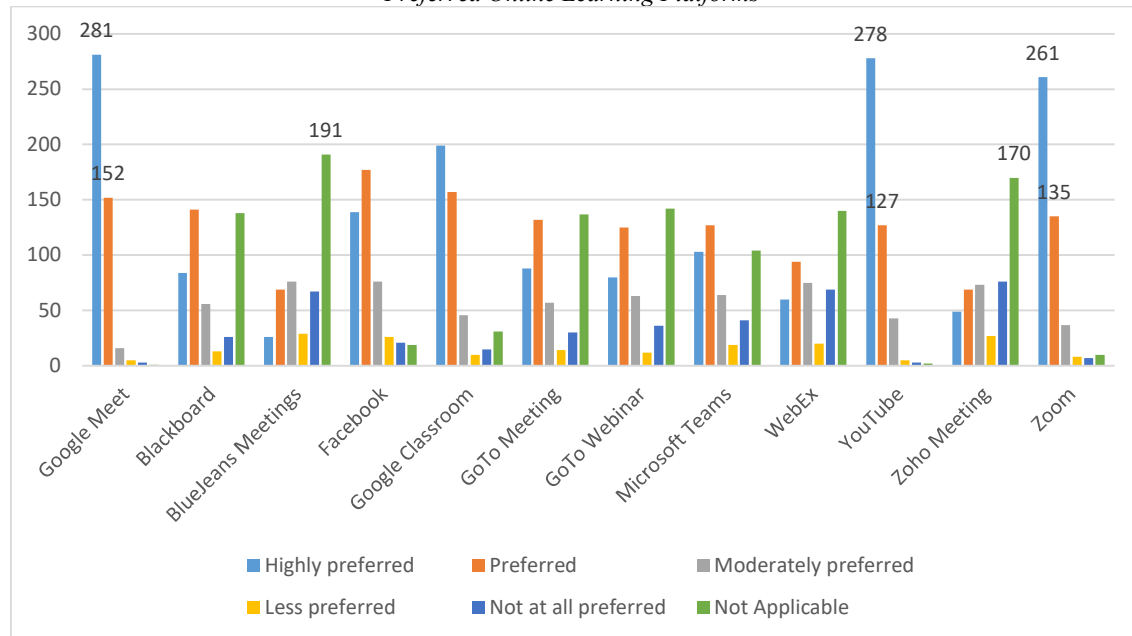


Figure-2
Preferred Online Learning Platforms



Google Meet is a highly preferred online learning platform, with over 94.6% of LIS learners rated as “highly preferred” and “preferred”, followed by YouTube(88.4%) and Zoom(86.5%). Google Classroom (77.7%) and Facebook (68.9%) are also generally used platforms but are slightly less preferred than the top three. BlueJeans Meetings(41.7%) and Zoho Meeting(37.1%) platforms have high "Not Applicable" responses, indicating that LIS learners are not aware of these platforms (Figure-2).

Table-2
Methods and Techniques Used in Online Learning

No	Item	Participants' responses* N (%)					p-value**				
		HU	UT	MU	SU	NU	Gender	Age	LoS _i	Area	OLE ²
1	Presentation mode.	207(45.2)	198(43.2)	46(10.0)	5(1.1)	2(0.4)	.623	.027	.131	.168	.596
2	Attended lectures in real-time through live online classes.	156(34.1)	238(52.0)	52(11.4)	7(1.5)	5(1.1)	.449	.000	.000	.042	.000
3	By watching pre-recorded video lectures.	151(33.0)	204(44.5)	81(17.7)	15(3.3)	7(1.5)	.026	.004	.000	.000	.019
4	Flipped Classroom (Online quizzes, Polls, Infographics).	137(29.9)	179(39.1)	87(19.0)	36(7.9)	19(4.1)	.081	.108	.007	.110	.383
5	Game-Based Learning.	123(26.9)	188(41.0)	79(17.2)	24(5.2)	44(9.6)	.111	.004	.153	.328	.746
6	Live chatting with teachers.	135(29.5)	195(42.6)	77(16.8)	25(5.5)	26(5.7)	.076	.008	.004	.540	.611
7	Discussion Boards and Forums.	125(27.3)	181(39.5)	95(20.7)	35(7.6)	22(4.8)	.100	.001	.001	.128	.782

8	Online Intelligence instructors.	Artificial (AI)	139(30.3)	185(40.4)	85(18.6)	27(5.9)	22(4.8)	.523	.010	.002	.045	.293
9	Google Drive and similar collaborative tools.		148(32.3)	201(43.9)	84(18.3)	18(3.9)	7(1.5)	.572	.027	.028	.005	.101
10	Social Media / Email communication.		180(39.3)	207(45.2)	48(10.5)	17(3.7)	6(1.3)	.382	.727	.088	.060	.018

¹Level of Studying, ²How long actively engaged in online learning

**derived from Chi-square test.

*HU= Highly utilised; UT= Utilised; MU= Moderately Utilised; SU= Slightly Utilised; NU = Not Utilised.

Note: Responses to used methods and techniques were assessed by giving 1 to NU, 2 to SU, 3 to MU, 4 to UT, and 5 to HU. A score of < 2 was taken as less utilised while ≥ 2 was more utilised. Total mean score 3.971 ± 0.16 .

Mean Score $\pm$ SD: ^a4.32 $\pm$ 0.73, ^b4.16 $\pm$ 0.77, ^c4.04 $\pm$ 0.88, ^d3.83 $\pm$ 1.07, ^e3.70 $\pm$ 1.20, ^f3.85 $\pm$ 1.08, ^g3.77 $\pm$ 1.08 ^h3.86 $\pm$ 1.07, ⁱ4.02 $\pm$ 0.90, ^j4.17 $\pm$ 0.86

Table-2 demonstrates the methods and techniques used by the respondents. Additionally, data provides the associations with demographic factors. Methods like Google Drive and similar collaborative tools p-value=.027 and watching pre-recorded video lectures p-value=.004 show significant variations related to age, indicating that age factors may influence accessibility or preferences. Pre-recorded video lectures(p = .000) and real-time live classes (p = .000) significantly vary with the level of study, suggesting that based on the academic needs research scholars and postgraduate students may have distinct preferences. Respondents with prior involvement with online learning showed a significant variance in their use of live online classes (p = .000), social media/email communication (p = .018), and pre-recorded lectures (p = .019), highlighting the influence of prior involvement on selecting the methods and techniques. The highest number of respondents rated the use of presentation mode in online learning as highly utilised(45.2%), with a combined 88.4% (Highly utilised and Utilised). With 39.3% Highly utilised and 45.2% utilised social media/email communication method ranks among the most used, underlining the importance of direct and accessible communication in online learning settings. Real-time live online classes method with 34.1% Highly utilised and 52.0% Utilised, also received high utilization ratings. It highlights a significant preference for real-time interaction learning among respondents. Game-based learning and the use of discussion boards and forums are less utilised methods.

Table-3
Educational Benefits through Online Learning

No.	Item	Mean	Std. Dev.
1	Improved digital creativity.	4.43	.685
2	Flexibility in learning.	4.22	.681
3	The interactive features.	4.15	.794
4	Quality presentation.	4.27	.720
5	Class discussions.	4.22	.813
6	Completing academic tasks.	4.12	.819
7	Easier to communicate.	4.16	.816
8	Enhancement of technical skills.	4.24	.772
9	Free of cost / Open availability / Reduction in cost (Saving Money).	4.20	.855
10	Better Time Management.	4.24	.804

Table-3 represents the respondents' opinions of the perceived educational benefits of online learning. Each item was evaluated on a scale, the standard deviation and mean scores indicate how strongly each benefit is perceived. Respondents feel online learning significantly enhances digital creativity as improved digital creativity revived the highest mean value(4.43) and low standard deviation (0.685) indicating a strong agreement among respondents. Quality of presentation with a mean score of 4.27 is highly valued and the standard deviation of 0.720 is comparatively low, indicating consistent agreement on the importance of quality presentation. Online learning significantly enhances technical skills (Mean = 4.24, SD = 0.772) and helps in building technical proficiency among postgraduate students and research scholars. Better time management through online learning rated similarly to the enhancement of technical skills with a mean score of 4.24. This suggests that online learning

is widely regarded as beneficial and successful with benefits being associated with adaptability, creativity, skill management and time management.

Table-4
Cultural Benefits of Online Learning

No.	Item	Mean	Std. Dev.
1	Encourages social interaction.	4.17	.849
2	Access to information.	4.26	.783
3	Information dissemination.	4.19	.812
4	Communication.	4.32	.802
5	Developing and maintaining social relations.	4.13	.863
6	Community formation and social organization.	4.06	.886

Table-4 shows the cultural benefits perceived through online learning. The mean score of all the benefits is above 4.0 on a scale ranging from 1 (Not at all Beneficial) to 5 (Very Beneficial). This shows generally respondents agree with cultural benefits. The highest mean score of 4.32 for communication, suggested that online learning enhances communication among students. Community formation and social organization (mean score: 4.06) may be viewed as slightly less impactful compared to other benefits. The standard deviations (ranging from 0.783 to 0.886) are relatively low, which indicates there is a moderate level of agreement among students with these benefits.

Table-5
Behavioural Benefits of Online Learning

No.	Item	Mean	Std. Dev.
1	Mute audio when presenting.	4.24	.789
2	Mute/Unmute video.	4.21	.744
3	Learnt how to behave online.	4.18	.866
4	Use of Common Sense.	4.21	.831

Table-5 shows the perceived behavioural benefits of online learning. The standard deviations (ranging from 0.744 to 0.866), signify moderate agreement among LIS postgraduate students and research scholars. Similar to educational and cultural benefits, behavioural benefits also indicate a high level of agreement among respondents.

Table-6
Independent Samples Test

			Levene's Test for Equality of Variances		t-test for Equality of Means		
			F	Sig.	t	df	Sig. (2-tailed)
Methods and techniques used in online learning	Equal variances assumed		6.010	.124	-3.489	456	0.003
	Equal variances not assumed				-3.896	224.761	0.001

Levene's Test for Equality of Variances test applied to test methods and techniques used in online learning among postgraduate students and research scholars. The significance level is 0.124 which is greater than 0.05, thus we can assume that the variance between postgraduate students and research scholars is equal in using the online learning methods. Since equal variances are assumed, a t-value of -3.489 indicates the degree and direction of the difference between groups. Sig. 2-tailed p-value is 0.003, which indicates that the difference in the means of the two groups is statistically significant (Table-6).

Table-6
University-wise: Benefits for Students from Student-Teacher Engagement

Sl. No.	Name of the University	Item 1		Item 2		Item 3		Item 4		Item 5	
		Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
1	Bangalore University (78)	4.18	.619	4.08	.660	4.22	.677	4.24	.706	4.12	.756
2	Gulbarga University (25)	4.36	.569	4.28	.614	4.36	.700	4.32	.627	4.24	.831
3	Karnatak University (56)	4.43	.657	4.16	.654	4.13	.764	3.84	.949	3.80	.999
4	Karnataka State Akkamahadevi Women's University (34)	4.35	.812	4.26	.618	4.21	.729	3.97	.627	4.44	.613
5	Kuvempu University (43)	4.37	.725	4.16	.485	3.95	.844	4.16	.652	4.37	.655
6	Mangalore University (17)	4.53	.514	4.41	.507	4.35	.606	4.29	.588	4.06	.556
7	Rani Channamma University (44)	4.25	.686	4.20	.734	4.30	.632	4.07	.789	4.05	.914
8	Tumkur University (62)	4.29	.733	4.00	.905	4.16	.909	4.05	.931	3.85	1.006
9	University of Mysore (71)	4.23	.741	3.83	.971	3.96	.869	3.90	.973	3.90	1.002
10	Vijayanagara Sri Krishnadevaraya University (28)	4.32	.548	4.07	.813	4.18	.723	3.93	.858	4.18	.772
Total (N=458)		4.30	.682	4.10	.754	4.15	.775	4.06	.824	4.06	.879

***Item 1:** Online learning tools enhance my skills; **Item 2:** Live classes improved my understanding of online topics. **Item 3:** Discussion boards enhance my critical thinking skills. **Item 4:** AI tools help me grasp complex concepts in online learning. **Item 5:** Game-based learning improves my retention and application of concepts.

Table-6 demonstrates the benefits the students perceived from student-teacher engagement in online learning. Positive opinions for various benefits perceived by the students from student-teacher engagement indicated by Mangalore University students also consistently high mean scores for all the benefits, particularly for skill augmentation (4.53), live classes (4.41), and AI-based learning (4.29). Karnatak University has a somewhat lower mean score (3.84) for AI-based learning and game-based learning methods, indicating that students perceive less benefit compared to other universities from student-teacher engagement in online learning. The University of Mysore has less mean values, especially for AI-based learning (3.90) and live classes (3.83) this indicates moderate benefits from student-teacher engagement in online learning. Karnataka State Akkamahadevi Women's University has rated high for game-based learning (4.44) suggesting that it is an effective tool. Overall mean scores show a positive opinion about the advantages of student-teacher engagement in online learning, especially in skill enhancement and critical thinking. Moderate standard deviations suggest consistent agreement among students on the benefits perceived from the students-teachers engagement in online learning, even though there is some variability, especially for "game-based learning improves my retention and application of concepts".

FINDINGS

A review of the data produced some interesting outcomes. All respondents, both research scholars and postgraduate students are engaged in online learning. Compared to postgraduate students, research scholars tend to have more lengthy experience, as 54.5% have more than 3 years of experience with online learning (Figure-1). Analysis of the study reveals that Google Meet (94.6%) platform is highly preferred by LIS research scholars and post-graduate students similarly YouTube (88.4%) and Zoom (86.5%) are also highly preferred learning platforms. The preferred platform most likely provides the quality content, essential features, and best user experience that meets the academic needs of the students (Figure-2). Related to methods and techniques used in online learning, the use of presentation in online learning is highly utilised (88.4%), followed by real-time live online classes (86.1%) and social media/email communication (84.5%) are more utilised methods in online learning by LIS postgraduate students and research scholars. The importance of collaborative resources in online learning is highlighted by the widespread use of Google Drive and Collaborative Tools (76.2%). Real-time methods and techniques, like social media/email communication, and live classes showed high utilization levels and these

highlight a preference for synchronous learning. Methods such as pre-recorded video lectures and discussion forums and boards offered flexibility but were less favoured (Table-2).

Overall, respondents believe that online learning is highly beneficial for education, especially for improving digital creativity, technical skills, and quality of presentation. The advantages with the lower mean values, completing academic tasks and interactive features, still have positive scores, signifying that all listed benefits are generally considered valuable. Data suggests that online learning is effective with the strongest advantages related to time management, flexibility, creativity, and skill enhancement (Table-3). Related to cultural benefits of online learning, particularly in enhancing cultural communication accessibility to cultural information. The high mean scores reflect that online learning is the best way to encourage community formation and promote social interaction (Table-4). The data indicate that online learning is effective in teaching necessary online behaviour, like applying common sense, muting audio and video, and practising online etiquette. These contribute and are helpful to learners' behavioural development (Table-4).

Analysis of students-teachers engagement in online learning suggests perceived benefits vary by university, particularly game-based and AI-based learning methods. The use of AI technologies in online learning is one topic that is quickly growing and it has the potential to transform the nature of education (Fitria, 2021). A similar study proposed that more studies are required on applying gamification in online learning and how it affects learning outcomes (Alabbasi, 2017). Respondents highly rated their critical thinking skills through discussions (Item 2) and their skills enhanced (Item 1) by student-teacher engagement in online learning. On the other hand, Mangalore University respondents perceived high benefits across all items. University of Mysore respondents rated scores show a moderate advantage, particularly toward AI-based learning and live classes. A study mentioned that the use of AI technologies is increasing interest in library and information science teaching (Oyetola et al., 2024). This examination indicates a generally positive opinion about the benefits of student-teacher engagement in online learning (Table-6).

CONCLUSION

Based on the outcomes of the study, use of various strategies and approaches have been developed in online education, as online education has grown significantly in recent years and to facilitate students learning. It is most important to understand the various methodologies used in online education to influence students' achievement by using instructional methods. Results specify that LIS students both research scholars and postgraduate students have positive views about techniques and methods used in online learning and its benefits. However, there are some differences in their level of study. Even though this study is limited to Karnataka State University's Department of Library and Information Science learners, the study highlights the methodologies used in online learning and its advantages which may be helpful for the teachers or instructors to know the learners' needs and may also utilise these methods while teaching online. The study is also beneficial for the library schools, educational institutions, university authorities, and other higher educational bodies to take necessary action while making policies related to online education and it is essential to provide essential training for both students and teachers towards quality of learning in online education. Online learning in LIS education can offer several benefits. Additionally, more research on the career impacts and learning outcomes of online LIS education is required.

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