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Impact of Digital Literacy Skills Among Post-Graduate Students In Periyar University: A Study

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Abstract:
Digital literacy has become an essential academic competency in higher education. It enables students to access, evaluate, create and communicate information through digital technologies. The present study examines the awareness, usage patterns and perceived academic impact of digital literacy skills among postgraduate students of Periyar University. A structured questionnaire was distributed to 130 students, of which 106 completed responses were used for analysis. Random sampling was adopted. The findings show that 95.2% of respondents are aware of digital literacy tools, while teachers and faculty members are the major source of learning (40.6%). Assignments are the main academic activity requiring digital tools (48.1%), and 46.2% spend one to two hours using digital tools for academic work. Microsoft Office is the most commonly used skill (67.0%), and 88.7% reported improved use of library e-resources. The chi-square test showed a significant relationship between gender and use of digital tools (p=0.017), whereas the t-test and one-way ANOVA showed no significant differences in the respective comparisons. The study recommends regular digital literacy training, library-led orientation programmers and stronger digital infrastructure.

Key Word*: Digital literacy, Postgraduate students, Academic performance, E-resources, University libraries, Communication.*

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I. Introduction

Digital technology has become an essential part of higher education and has changed the way students' access, use, evaluate, and communicate information. Computers, smart phones, internet services, online learning platforms, digital libraries, e-books, e-journals, and databases provide postgraduate students with valuable academic resources. Digital literacy refers to the ability to use digital technologies effectively to search, access, evaluate, create, organize, and communicate information. It also includes critical thinking, problem-solving, information evaluation, communication, and responsible use of digital resources. The Dig Comp 2.2 framework emphasizes the knowledge, skills, and attitudes required for confident and safe use of digital technologies (Vuorikari, Kluzer, & Punie, 2022).Postgraduate students use digital tools for assignments, academic writing, presentations, online learning, research, communication, and accessing scholarly information. Academic libraries also provide electronic resources such as e-books, e-journals, online databases, and institutional repositories. Therefore, digital literacy is important for effective use of modern library resources. Students need appropriate skills to identify reliable information and evaluate its credibility, relevance, authority, and accuracy. However, differences in technical knowledge, confidence, internet connectivity, device availability, and familiarity with advanced digital tools may affect their effective use of technology. Academic libraries can support students through digital literacy programmers, database training, e-resource demonstrations, information-literacy sessions, and research-support services. In this context, the present study examines the impact of digital literacy skills among postgraduate students of Periyar University. It focuses on students' awareness, usage patterns, digital skills, academic applications, and the perceived impact of digital literacy on academic performance and library e-resource usage. Selected statistical tests are also used to examine relationships and differences among the study variables

II. Review of Literature

Ahammad, N., & Islam, M. S. (2025) studied the impact of digital literacy among university students in Bangladesh. The study collected data from 375 students through questionnaires and interviews. The findings showed that students mainly use the internet for academic learning and research activities. Poor internet connection and limited digital resources were identified as major problems. The study suggested improving digital facilities in universities to support better learning outcomes.

Bansal, N., & Choudhary, H. (2024) This research studied digital literacy training among marginalized communities in India and found that digital literacy significantly improved internet usage outcomes. Participants developed stronger digital confidence after structured training. The study showed that digital skills increased access to information, communication, and educational opportunities. It also revealed that digital literacy reduces technology barriers. The authors concluded that digital literacy has a positive social and educational impact. Training programmes were recommended for wider inclusion.

Agina-Obu, R., &Okwu, E. (2023) this survey reveals that digital literacy has become an essential skill for academic achievement and career development beyond basic reading and writing. Information and communication technology in higher education helps teachers and students effectively use digital learning resources and library services. However, inadequate infrastructure and limited technical confidence often restrict the effective use of digital tools. Studies show that digital competence improves information management, learning outcomes, and academic performance. Therefore, higher educational institutions should strengthen digital literacy training to prepare students for a technology-driven global society.

Sinha, P. (2022) This survey among students of the Central University of Tamil Nadu revealed that students possess good basic digital literacy. Most respondents preferred digital resources for quick information access, though printed books remained important. The study found that students frequently used mobile phones and laptops for learning. Digital reading habits were closely connected with academic performance. The authors suggested improving advanced digital skills for research purposes. Library guidance was considered essential.

Mohanan, N., &Thanuskodi, S. (2021) The study explained that students in higher education increasingly depend on digital platforms for academic work. Search engines, e resources, and online communication were common learning tools. Digital literacy was linked with independent learning ability. The author noted that students need training in evaluating information credibility. Academic libraries should regularly organize digital orientation sessions. The study emphasized digital literacy as a foundation for lifelong learning.

III. Material And Methods

The study was conducted among post-graduate students of Periyar University. A total of 130 questionnaires were distributed to the selected respondents for collecting the required information. Out of these, 106 completed questionnaires were received, which were considered for the final analysis of the study. The respondents were selected from different departments of post-graduate programs in the Periyar University.

Objectives of the study

1.To study the level of awareness of digital literacy skills among postgraduate students at Periyar University.

2.To identify the digital tools and technologies used for academic purposes.

3.To examine the frequency and duration of digital tool usage.

4.To analyse the perceived impact of digital literacy on academic performance, writing, research and library e-resource use.

5.To suggest measures for improving digital literacy skills among postgraduate students.

Hypotheses

- **$H0_1$:** There is no significant difference between digital literacy skills and the use of digital tools for academic activities.
- **$H0_2$:** There is no significant relationship between digital literacy tools for male and female students.
- **$H0_3$:** There is no significant relationship between the time spent and the use of digital literacy tools.

Study Location: The study was conducted among post-graduate students of Periyar University

Sample size: 130 Students

Sampling Methodology

Sampling is the process of selecting a small number of respondents from a large population for study. In this research, random sampling method was used to select postgraduate students from Periyar University. A total of 106 respondents were selected for collecting data through questionnaire method.

Data collection

The data for the present study was collected using a structured questionnaire. The questionnaire included questions related to student's awareness, usage, and impact of digital literacy skills in their academic activities.

The questionnaires were distributed to the post graduate students and the responses were collected directly from them. The collected responses were used only for academic research purposes.

IV. Result

Data analysis is the process of organizing and examining collected data using tables, percentages, and statistical methods. Interpretation explains the meaning of the analyzed data by identifying patterns and relationships. Together, they help researchers draw conclusions and answer research objectives**.**

Table: 1 Age group wise distribution of respondents

S. No	Age	Frequency	Percentage
1	Below 20	8	7.5
2	21-25	89	83.9
3	26-30	6	5.6
4	Above 30	3	2.8
	Total	106	100

Table 1The age wise distribution of respondents reveals that the majority of respondents 89 (83.9%) belong to the age group of 21–25 years, followed by 8 respondents (7.5%) below 20 years, 6 respondents (5.6%) aged 26–30 years, and 3 respondents (2.8%) above 30 years. This shows that most postgraduate students fall within the 21–25 age group, indicating that this age category dominates the study sample.

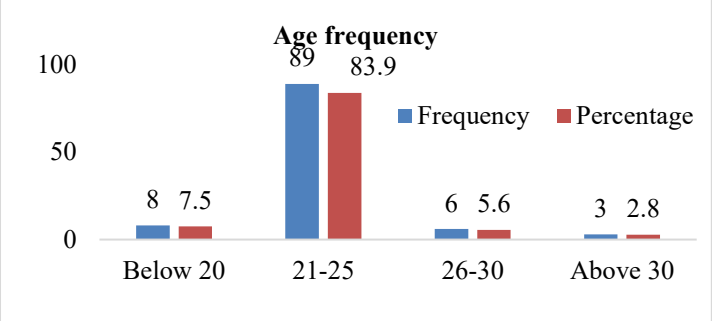


Fig: 1 Age group wise distribution of respondents

Table: 2 Gender wise distributions of respondents

S. No	Gender	No. of Respondents	Percentage
1	Male	33	31.1
2	Female	73	68.8
	Total	106	100

Table 2The gender-wise distribution of respondents shows that out of 106 respondents, 73 (68.8%) are female and 33 (31.1%) are male. This indicates that the majority of respondents participating in the study are female students. The data suggests that female postgraduate students constitute a larger proportion of the respondents in the survey.

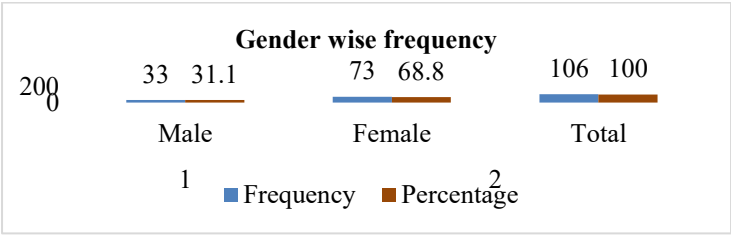


Fig: 2 Gender wise distributions of respondents

CHI SQUARE TEST

H_{01}: There is no significant relationship between gender and the use of digital tools for academic activities.

Table No 2.1 Relationship between gender wise distributions of respondents

Chi-Square Test				
	Value	**df**	**Sig.(2sided)**	**Result**
Pearson Chi-Square	10.237[a]	3	0.017	**Rejected**
Phi Cramer's V	0.311			

Table 2.1 shows that the Chi-square test was conducted to examine the relationship between gender and the use of digital tools for academic activities. The result indicates a Chi-square value of 10.237 with a significance value of 0.017, which is less than the 0.05 level of significance. Hence, the null hypothesis is rejected and the alternative hypothesis is accepted. It is concluded that there is a significant relationship between gender and the use of digital tools for academic activities.

T-TEST

H_{02}: There is no significant difference between the preferred digital literacy tools for male and female students.

Table: 2.2 Difference between the preferred digital literacy tools for male and female students

	Gender	**N**	**Mean**	**Std.Dev**	**df**	**T-value**	**P-value**
Preferred digital literacy tools	Male	33	2.42	1.250	104	0.415	0.217
	Female	73	2.31	1.256			

Table 4.2.2 the independent sample t-test was conducted to examine whether there is a significant difference in preferred digital literacy tools between male and female students. The results show a t-value of 0.415 with a significance value of 0.217, which is greater than the 0.05 level of significance. Hence, the null hypothesis is accepted, indicating that there is no significant difference between male and female students in their preferred digital literacy tools.

Table: 3 Awareness levels of Digital Literacy tools

S. No	**Type**	**No. of Respondents**	**Percentage**
1.	Yes	101	95.2
2	No	5	4.7
	Total	106	100

Table 3 the table indicates that 101 respondents (95.2%) are aware of digital literacy tools, while only 5 respondents (4.7%) are not aware. This clearly shows that a vast majority of postgraduate students possess awareness about digital literacy tools used for academic purposes.

Table: 4 Learn about digital literacy skills

S. No	**Source of Learning**	**No. of Respondents**	**Percentage**
1	Teachers / Faculty	43	40.60
2	Library Professionals	5	4.70
3	Online Courses	27	25.50
4	Friends	31	29.20
	Total	106	100

Table 4 the majority of respondents learned digital literacy skills through teachers / faculty (40.6%), followed by friends (29.2%) and online courses (25.5%). Only 4.7% learned through library professionals. This shows that classroom teaching plays the most important role in developing digital literacy skills among postgraduate students.

Table: 5 Frequency of using Digital Literacy tools

S. No	Frequency of Use	No. of Respondents	Percentage
1	Daily	30	28.3
2	Weekly	31	29.2
3	Monthly	19	17.9
4	Occasionally	26	24.5
	Total	106	100

Table 5 the table shows that 31 respondents (29.2%) use digital literacy tools weekly, followed closely by 30 respondents (28.3%) who use them daily. Additionally, 26 respondents (24.5%) use them occasionally, while 19 respondents (17.9%) use them monthly. This indicates that most students frequently utilize digital literacy tools in their academic activities.

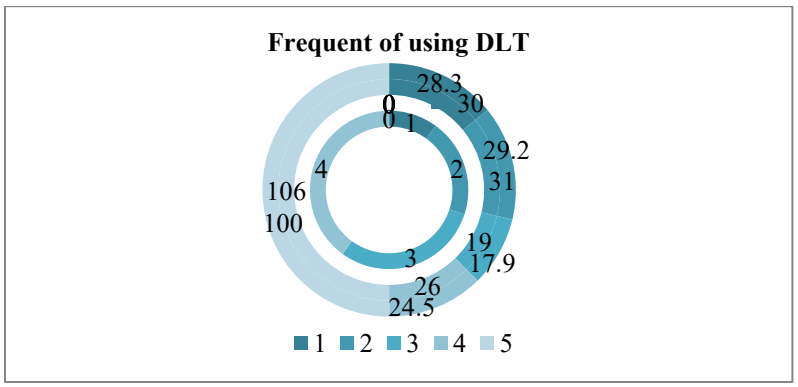


Fig: 5 Frequency of using Digital Literacy tools

Table: 6 Academic Activities Requiring Frequent Use of Digital Tools

S. No	Academic Activities	No. of Respondents	Percentage
1	Assignments	51	48.1
2	Research Work	26	24.5
3	Exams / Tests	12	11.3
4	Presentations	17	16.0
	Total	106	100

Table 6 the majority of respondents use digital tools for assignments (48.1%), followed by research work (24.5%), presentations (16.0%), and exams/tests (11.3%). This shows that digital tools are mainly used for routine academic preparation and research-related activities among postgraduate students.

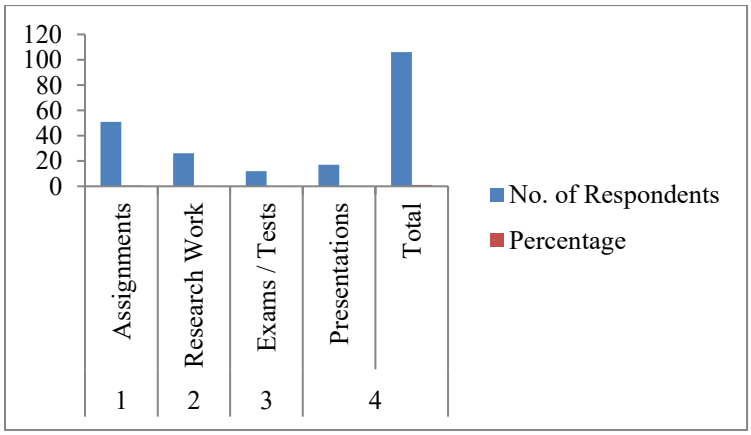


Figure: 6 Academic Activities Requiring Frequent Use of Digital Tools

Table: 7 time Spent Using Digital Tools

TIME				
Spend Time	**No. of Respondents**	**Percentage**	**Mean**	**Std. dev**
Less than 1 hour	22	20.8	2.179	.825
1-2 Hour	49	46.2		
2-4 Hour	29	27.4		
More than 4 Hour	6	5.7		
Total	106	100		

Table 7 The table indicates that 49 respondents (46.2%) spend 1–2 hours using digital tools, followed by 29 respondents (27.4%) who spend 2–4 hours, 22 respondents (20.8%) who spend less than 1 hour, and 6 respondents (5.7%) who spend more than 4 hours. The mean value of 2.179 suggests that on average students spend approximately 1–2 hours using digital tools for academic purposes.

ONE WAY ANOVA

H_{03}: There is no significant difference between the age of the respondents and the time spend for using digital literacy tools.

Table: 7.1Difference between the age of the respondents and the time spend for using digital literacy tools

	Sources of Variation	**Sum of Squares**	**df**	**Mean Square**	**F-value**	**P-value**
Time spends for using digital literacy tools	Between Groups	2.87	3	0.957	0.842	0.472
	Within Groups	116.05	102	0.138		
	Total	118.92	105			

Table 7.1 The One-Way ANOVA test was conducted to determine whether there is a significant difference between the age of respondents and the time spent using digital literacy tools. The results show an F-value of 0.842 with a significance value of 0.472, which is greater than the 0.05 level of significance. Therefore, the null hypothesis is accepted, indicating that there is no significant difference between the age of respondents and the time spent using digital literacy tools.

Table: 8 Usages of Digital Literacy Tools

S. No	**Tools**	**Always**	**Often**	**Sometimes**	**Rarely**	**Never**	**Total**
1	Google Workspace, Microsoft Office	38 35.8%	42 39.6%	18 17.0%	6 5.7%	2 1.9%	106 100%
2	Zoom, Google Meet, Microsoft Teams	24 22.6%	39 36.8%	27 25.5%	11 10.4%	5 4.7%	106 100%
3	Kahoot!,Quizlet, Nearpod, Gimkit	10 9.4%	21 19.8%	34 32.1%	24 22.6%	17 16.0%	106 100%
4	Canva, Storybird, Comic Master	15 14.2%	28 26.4%	31 29.2%	20 18.9%	12 11.3%	106 100%
5	Edpuzzle, VideoNot.es	8 7.5%	16 15.1%	29 27.4%	30 28.3%	23 21.7%	106 100%
6	Mote, BookTrack Classroom	5 4.7%	12 11.3%	26 24.5%	31 29.2%	32 30.2%	106 100%

The table 8 shows that Google WorkspaceandMicrosoft Office are the most regularly used digital tools, with most respondents selecting Always and Often. Communication platforms such as Zoom and GoogleMeet are also frequently used. Advanced instructional tools are comparatively less used by students.

Table: 8.1 Usage of Digital Literacy Tools (Mean Score)

S. No	**Tool**	**Mean**	**Std. Deviation**
1	Google Workspace / MS Office	3.21	1.21
2	Zoom / Google Meet / Teams	3.38	1.17
3	Kahoot / Quizlet / Nearpod	3.85	1.02
4	Canva / Storybird / Comic Master	3.24	1.26
5	Edpuzzle / VideoNot.es	3.11	1.29

Table 8.1 the mean score analysis shows that Kahoot, Quizlet, and Nearpod have the highest mean score (3.85), indicating that these tools are frequently used among respondents. This is followed by Zoom, Google Meet, and Microsoft Teams (3.38), Canva, Storybird, and Comic Master (3.24), Google Workspace and Microsoft Office (3.21), and Edpuzzle and VideoNot.es (3.11). This indicates that interactive learning tools and online meeting platforms are widely used by postgraduate students.

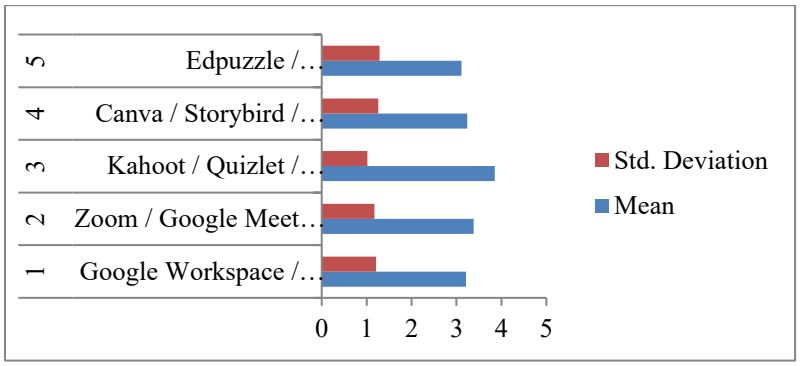


Fig 8.1 Usage of Digital Literacy Tools (Mean Score)

Table 9: digital literacy skills do you use for academic purposes

S. No	Digital Literacy Skills	No. of Respondents	Percentage
1	Microsoft Office	71	67.0
2	Online databases / e-resources	27	25.5
3	Learning Management Systems (LMS)	8	7.5
4	Reference management tools	0	0.0
	Total	106	100

Table 9 the table shows that 71 respondents(67.0%) use Microsoft Office for academic purposes, making it the most commonly used digital literacy skill. 27 respondents (25.5%) use online databases and e-resources, while only 8 respondents (7.5%) use LMS. This indicates that students mainly depend on basic digital tools for academic work.

Table 10:Purpose for Using Digital Literacy Skills

S. No	Purpose	No. of Respondents	Percentage
1	Document preparation	35	33.0
2	E-learning platforms	27	25.5
3	Completing assignments	22	20.8
4	Preparing presentations	17	16.0
5	Attending online classes	4	3.8
6	Others / No response	1	0.9
	Total	106	100

Table 10 the table indicates that document preparation (33.0%) is the main purpose for using digital literacy skills among respondents. It is followed by e-learning platforms (25.5%) and completing assignments (20.8%). This shows that digital literacy skills are mainly used for academic writing and online learning activities.

Table 11:Digital Literacy Skills Improve Academic Performance

S. No	Response	No. of Respondents	Percentage
1	Strongly Agree	32	30.2
2	Agree	59	55.7
3	Neutral	14	13.2
4	Disagree	1	0.9
5	Strongly Disagree	0	0.0
	Total	106	100

Table No 11 the majority of respondents agree (55.7%) that digital literacy skills improve academic performance, while 30.2% strongly agree. Only a very small number of respondents expressed neutral or disagree opinions. This indicates a positive view of digital literacy in supporting academic success.

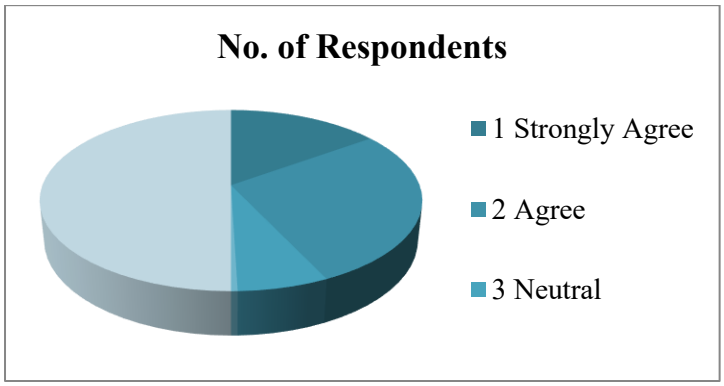


Fig 11:Digital Literacy Skills Improve Academic Performance

Table 12:Digital Literacy Skills save Academic Time

S. No	Response	No. of Respondents	Percentage
1	Strongly Agree	39	36.8
2	Agree	52	49.1
3	Neutral	15	14.2
4	Disagree	0	0.0
5	Strongly Disagree	0	0.0
	Total	106	100

Table No 12 the table shows that 49.1% agree and 36.8% strongly agree that digital literacy skills help save academic time. A small percentage remained neutral, and no respondents disagreed. This suggests that digital tools help students complete academic tasks more efficiently.

Table 13: Digital Literacy Improved Ability to Use Library e-Resources

S. No	Response	No. of Respondents	Percentage
1	Yes	94	88.7
2	No	12	11.3
	Total	106	100

The table No 13 shows that 94 respondents (88.7%) stated that digital literacy has improved their ability to effectively use library e-resources such as e-journals, e-books, and databases. Only 12 respondents (11.3%) reported that digital literacy has not improved their usage. This indicates that digital literacy plays an important role in accessing digital library resources.

Testing of Hypothesis

S.No	Hypothesis	Test	Value	Result
1	(H_0): There is no significant relationship between gender and the use of digital tools for academic activities.	Chi-Square Test	0.017	Rejected
2	(H_0): There is no significant difference between the preferred digital literacy tools for male and female students.	T-Test	0.217	Accepted
3	(H_0): There is no significant difference between the age of respondents and the time spent using digital literacy tools.	One-way ANOVA	0.472	Accepted

V. Conclusion

The present study examined the impact of digital literacy skills among postgraduate students of Periyar University based on 106 valid responses. The findings show that 95.2% of respondents were aware of digital literacy tools, indicating a high level of awareness.Students regularly used digital tools for academic activities, particularly assignments, research work, presentations, and examinations. Microsoft Office was the most commonly used digital skill, while online databases and e-resources were also used. Document preparation, e-learning, and assignment completion were major purposes of digital technology use.A majority of respondents perceived digital literacy as useful for improving academic performance and saving academic time. The Chi-square test showed a significant relationship between gender and the use of digital tools for academic activities ($p = 0.017$). However, the t-test showed no significant difference between male and female students in preferred digital literacy tools ($p = 0.217$). The One-Way ANOVA also showed no significant difference between age and time spent using digital tools ($p = 0.472$).Importantly, 88.7% of respondents reported that digital literacy improved their ability to use library e-resources such as e-journals, e-books, and databases. This highlights the importance of digital literacy in effective utilization of academic library resources. The study suggests that

universities and libraries should provide regular digital literacy training, database orientation, e-resource demonstrations, and research-support programmers'. Continuous training, suitable digital infrastructure, and library guidance can help postgraduate students strengthen their digital competencies and use digital resources effectively for academic learning and research.

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