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Understanding Student Engagement in Higher Education: The Contribution of Academic Library Spaces

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Abstract: This study has been designed to analyze the role of academic library spaces to foster participation of students in learning at tertiary level. Academic library spaces have been providing facilitative environment to the students for their learning. The study has been based on quantitative study design and conducted at a public sector university. The students of sociology and economics constitute the population of the study. A sample of 212 students has been selected through proportionate random sampling technique by using sampling frame. A cross-section survey has been conducted using structured questionnaire. The questionnaire has been based on different sections and an attitudinal scale of (dis)agreement has been used to measure the response of the students. A pilot testing has been done to check the reliability of the tool, and the data analysis include Chi-Square, and regression analysis to draw results and conclusion. The study findings point out that silent zone spaces, creative learning, and collaborative learning have favorable effects on engagement of students in learning. Similarly, communication skills learning, active learning, and effective learning have also predicted participation of students in learning at tertiary level. The study findings indicate that academic library spaces have contributed towards the engagement of students in learning process in higher education. Further, the study also indicates that engagement of students in learning has been linked with the academic library spaces in higher education.

Keywords: Library Spaces, Students Learning, Engagement, Academic Library, Higher Education

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Introduction

It is evident that academic library spaces play a pivotal role to provide friendly learning environment to the students at school, college and university level (Childrey, 2025; Donkai, Atsushi, & Mizoue, 2011; Riehman-Murphy & Mross, 2019; Shoaib, Tariq, Shahzadi, & Ali, 2022). It has been observed that these spaces are divided into different sections. Such as curricular section, silent zone, computer desk, group study area, cataloging circulation section and acquisition area (Andrews, & Raskin, 2016; Keisling, & Fox, 2021; Tevaniemi, Jenni, & Lahdemaki, 2015). Libraries of the universities have specifically designed these sections in which research thesis and dissertation from student of the specific department are saved and accessible for references (Shoaib, Fatima, & Jamil, 2021). These areas in academic library encourage the student in effective learning (Dall'Alba & Bengtsen, 2019; Murphy, 2017; Owusu-Agyeman & Fourie-Malherbe, 2019). Universities arrange numerous resources for students in academic libraries. Libraries have a significant role to provide resources (Shoaib, Shehzadi, & Abbas, 2024b). As well as the aims of library patrons has been facilitating to study and learn assignments (Holmes, 2015; Kamarudin, Mohammad, Yussra, Muhammad, & Mohammadi, 2023; Todd & Todd, 1979). It also supports collaborative learning among students at higher educational

level. It also creates a habit of analyzing and learning (Shoaib, Ali, & Akbar, 2021). Many extracurricular activities are also organized in libraries like book discussions, debates, trainings and seminars (Ahmad, Shoaib, & Shaukat, 2021). These activities engage students in learning higher education by enhancing the self-confidence of the students (Ahmad, Ahmad, Shoaib, & Shaukat, 2021). Hence, this study has been intended to examine the role of academic library spaces to foster participation of students in learning at tertiary level.

Review of Literature

The existing body of literature pointed out that recent research highlights the importance of academic library spaces greatly in engaging students learning at higher education (Puaca, 2021). As mentioned in the study findings indicated that collaboration in critical thinking and sustained academic attention had been promoted by the impacts of special use spaces (Atkinson, 2017). Similarly, the study asserted that controlling noise in silent zone spaces had a direct impact on students' focus, productivity, and happiness during long study periods (Appleton, 2020; Arshad, Anwar, & Shoaib, 2024). Likewise, the crux of the study clinched that when libraries efficiently facilitated collaborative learning through peer exchanges and independent study, academic engagement rises (Donkai et al., 2011). Moreover, the analysis of the study revealed that libraries that successfully facilitated both individual study and discussion spaces saw an increase in academic engagement (Rakhmatullaev & Hedrich, 2023). In the same token, the study findings articulated that students overall academic performance had been positively impacted by natural illumination, which enhanced mood, attentiveness, and cognitive engagement (Shin, Sally, Carolyn, & Bardyn, 2022). Moreover, the research revealed that longer study sessions were consistently linked to comfortable user setting spaces and more creative learning interactions (Ali, Zaman, & Shoaib, 2024; Cerbo, 2012). The study conducted in the past reported that lack of illumination had impacted effective learning by reducing concentration and leading to eye strain and disinterest (Lopez, Veronica, & Taveras, 2023).

The existing body of literature pointed out that user setting spaces in library had a significant impact on how people connect emotionally and become motivated to pursue academic goals for future (Chau & Cheung, 2018). As mentioned in the study findings indicated that design of discussion spaces must take into account current theories of learning as well as trends in student behavior (Owusu et al., 2024; Shoaib, Zaman, & Abbas, 2024). Similarly, the study asserted that special use spaces in library enable users to customize spaces, improving each student's academic success and happiness (Mubofu & Mambo, 2022). Likewise, the crux of the study clinched that deeper learning experiences and cognitive engagement were said to be facilitated by effects of student-centered design (Cox, Tim, & Keating, 2012). Moreover, the analysis of the study revealed that academic confidence and collaborative learning were directly impacted by access and that librarians mediate (Brine & Knight, 2021; Naseer, Shoaib, & Naseer, 2022). In the same token, the study findings articulated that spatial crowding causes and impacted their cognitive overload and lowers academic productivity with several factors (Roberts, 2018). Moreover, the research revealed that students with disabilities were guaranteed to feel included, encouraged, and academically proficient thanks to inclusive and accessible design (Kleckner & Butz, 2021). The study conducted in the past reported that audio\video spaces and research writing resources made possible by technology integration in libraries greatly impacts to encourage greater participation (Shoaib, Shehzadi, & Abbas, 2024a; White et al., 2016).

The existing body of literature pointed out that through multimedia learning resources and research writing, technology integration in libraries promotes greater involvement (Shoaib, Shehzadi, & Abbas, 2023; White et al., 2016). As mentioned in the study findings indicated that outdated technical tools, particularly in tech-heavy subjects, limit academic discovery and lower participation (Harland, Glenn, & Bruce, 2018; Shoaib, Mehmood, & Butt, 2022). Similarly, the study asserted that academic libraries that concurrently provide quiet and collaboration spaces were more praised by students (Bowden, 2022; Shoaib, Usmani, & Abdullah, 2023). Likewise, the crux of the study clinched that libraries community were encouraging participation and create peer support networks outside of official academic settings (Schippling & Abrantes, 2024; Shoaib, Abdullah, Naqvi, & Ditta, 2024). Moreover, the analysis of the study revealed that insufficient power sources impair device usability that in turn reduces the effectiveness and engagement of digital learning (Shoaib, Naseer, & Naseer, 2023; Yumnam & Charoibam, 2024). In the same token, the study findings articulated that library workshops and skill-building activities greatly impacts to boost students' self-efficacy and academic confidence (Jach & Trolian, 2022; Shoaib, 2023c). Moreover, the research revealed that shorter study

sessions and greater distraction in classroom settings were frequently associated with uncomfortable furniture (Shoaib & Abdullah, 2021; Sputore & Fitzgibbons, 2017). The study conducted in the past reported that color schemes and visual components that promote long-term intellectual connection improve emotional involvement at higher education level (Lim, 2024; Shoaib, 2024e).

The existing body of literature pointed out that according to peer-reviewed research, spatial clarity is essential for locating and using academic library materials (Karunarathne & Calma, 2024; Shoaib, 2024c). As mentioned in the study findings indicated that pedagogically trained librarians improve academic instruction and enable students to use information efficiently (Boud & Bearman, 2024; Shoaib & Zaman, 2025). Similarly, the study asserted that negative staff interactions reduce library visits, that in turn reduced students' exposure to academic resources and assistance at university level (McNicholl, Deirdre, & Gallagher, 2023; Shoaib, 2024d). Likewise, the crux of the study clinched that quiet zones were essential for deep concentration and were consistently preferred by serious learners in developing countries (Ngoc Hoi, 2023; Shoaib, 2024b). Moreover, the analysis of the study revealed that informal seating was support stress relief and promote cognitive relaxation during academic pressure periods at tertiary level (Børte, Katrine, & Lillejord, 2023; Shoaib, 2024a). In the same token, the study findings articulated that positive student feedback is correlated with the presence of private study carrels and noise-controlled environments with several factors (Brooks et al., 2020; Shoaib, 2023b). Moreover, the research revealed that digital resources must be easy to use and accessible to improve information literacy among contemporary students (Howe, 2011; Shoaib, 2023a). The study conducted in the past reported that library accessibility after hours accommodates a range of schedules and significantly impacts to boosts student engagement across demographics (Shoaib, 2021; Whitchurch, 2008).

The Data and Methods

This study has been conducted using quantitative study approach in a public sector university of Pakistan. The students of the Department of Sociology and Economics constitute the population enrolled in BS (4 Years) program. A sample of 212 students has been sampled using stratified random sampling technique. A cross-sectional survey has been conducted and structured questionnaire has been used for data collection consisting of different parts (see Appendix-A). A pilot testing has also been done from 25 randomly selected students to check the reliability as mentioned in Table 1. Further, Chi-Square and regression analysis has been done to draw results.

Table 1

Reliability Test

S No.	Variables names	Items	Alpha Values
i	Collection Spaces	8	.749
ii	Special Use Spaces	8	.735
iii	User Setting Spaces	8	.738
iv	Discussion Spaces	8	.731
v	Silent Zone Spaces	7	.729
vi	Audio\Video Spaces	8	.784
vii	Staff Work Spaces	8	.769
viii	Academic Library Spaces (i+ ii+ iii+ iv+ v+ vi+ vii)	55	.879
ix	Creative Learning	8	.721
x	Collaborative Learning	8	.799
xi	Communication Skill Learning	8	.747
xii	Active Learning	8	.742
xiii	Cognitive Engagement	8	.747
xiv	Effective Learning	8	.793
xv	Job Oriented Learning	8	.719
xvi	Engagement of Students in Learning (ix+ x+ xi+ xii+ xiii+ xiv+ xv)	56	.826
	Total	111	.971

Results and Discussion

This section of the study has been based on the presentation of results based of Chi-Square and regression analysis as followings;

Table 2
Chi-Square Statistical Test (Dependent Variables= Engagement of Students in Learning, n=212)

Independent Variables	Value	df	Sig. (2-sided)
Collection Spaces	1511.804[a]	1276	.000
Special Use Spaces	1370.780[a]	1102	.000
User Setting Spaces	1420.926[a]	1160	.000
Discussion Spaces	1442.283[a]	1218	.000
Silent Zone Spaces	1346.391[a]	986	.000
Audio\Video Spaces	1466.596[a]	1276	.000
Independent Variables	Value	df	Sig. (2-sided)
Collection Spaces	1511.804[a]	1276	.000
Special Use Spaces	1370.780[a]	1102	.000
User Setting Spaces	1420.926[a]	1160	.000
Discussion Spaces	1442.283[a]	1218	.000
Silent Zone Spaces	1346.391[a]	986	.000
Audio\Video Spaces	1466.596[a]	1276	.000
Independent Variables	Value	df	Sig. (2-sided)
Collection Spaces	1511.804[a]	1276	.000

The statistical data asserted the results of statistical tests that association (Chi-square = 1511.804, df1276, p = .000) between collection spaces and participation of students in learning at tertiary level. The results of statistical tests indicated the association (Chi-square = 1370.780, df1102, p = .000) between special use spaces and participation of students in learning at tertiary level. The data analysis pointed out that association (Chi-square = 1420.926, df1160, p = .000) between user setting spaces and participation of students in learning at tertiary level. The results of the study clinched the association (Chi-square = 1442.283, df1218, p = .000) between discussion spaces and participation of students in learning at tertiary level. The statistical analysis asserted the association (Chi-square = 1346.391, df986, p = .000) between silent zone spaces and participation of students in learning at tertiary level.

The results of statistical tests outlined the association (Chi-square = 1466.596, df1276, p = .000) between audio/video spaces and participation of students in learning at tertiary level. The study findings asserted the association (Chi-square = 1181.718, df1044, p = .002) between staff work spaces and participation of students in learning at tertiary level. The results of the study revealed the association (Chi-square = 1519.663, df1160, p = .000) between creative learning and participation of students in learning at tertiary level. The statistical results indicated the association (Chi-square = 1330.925, df1044, p = .000) between collaborative learning and participation of students in learning at tertiary level. The analysis of the study provided the association (Chi-square = 1536.869, df1102, p = .000) between communication skill learning and participation of students in learning at tertiary level. The statistical tests claimed the association (Chi-square = 1816.525, df1160, p = .000) between active learning and participation of students in learning at tertiary level.

The statistical analysis indicated the association (Chi-square = 1558.333, df1044, p = .000) between cognitive engagement and participation of students in learning at tertiary level. The study findings pointed out that association (Chi-square = 1360.073, df1044, p = .000) between effective learning and participation of students in learning at tertiary level. The study findings asserted the association (Chi-square = 1527.657, df1102, p = .000) between job oriented learning and participation of students in learning at tertiary level. The study resulted the association (Chi-square = 5298.865, df4640, p = .000) between academic library spaces and participation of students in learning at tertiary level.

Table 3

OLS Multiple Regression Analysis Predicting Engagement of Students in Learning (Standards Errors and Parameter Estimates)

Predictors	Unstandardized Coefficients		Standardized Coefficient	T	Sig.
	B	Std. Error	Beta		
Silent Zone Spaces	.284	.092	.067	3.093	.002
Creative Learning	1.073	.088	.287	12.238	.000
Collaborative Learning	1.122	.093	.290	12.048	.000
Communication Skill Learning	1.094	.089	.297	12.295	.000
Active Learning	.719	.104	.175	6.940	.000
Effective Learning	.602	.101	.146	5.977	.000
(Constant)	3.110	2.267		1.372	.172

R=.967, R Square=.935, Adjusted R Square=.933, F=489.715, Sig.=.000, n=212

The results of regression analysis pointed out that silent zone spaces, creative learning, and collaborative learning had favorable effects on engagement of students in learning. Similarly, communication skill learning, active learning, and effective learning had also predicting participation of students in learning at tertiary level.

Figure 1

Histogram
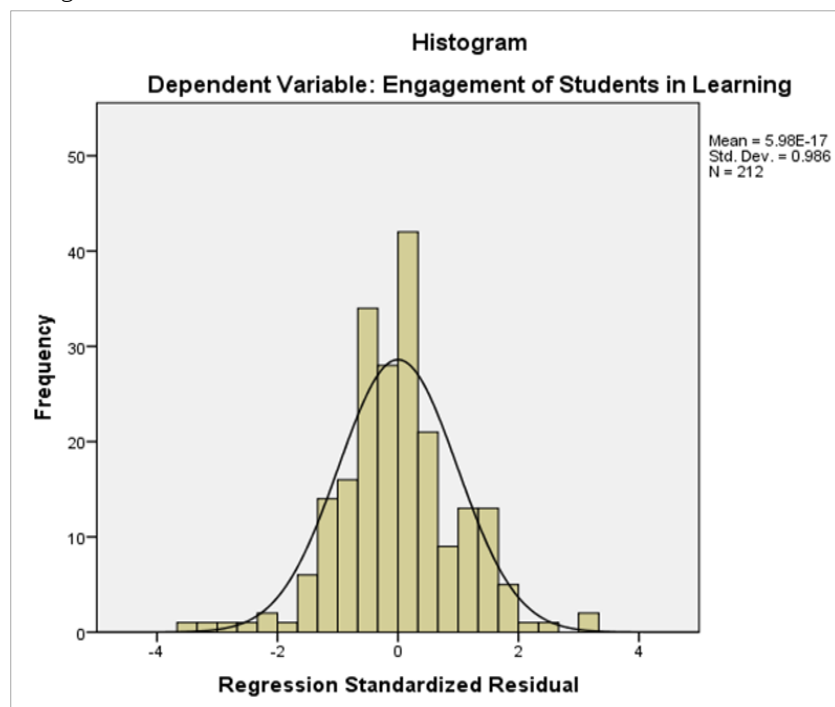
The results indicated that there was an association between collection spaces and participation of students in learning at tertiary level. The primary data analysis pointed out that there was an association between special use spaces and participation of students in learning at tertiary level. The statistical analysis indicated that there was an association between user setting spaces and participation of students in learning at tertiary level. The results indicated that there was an association between discussion spaces and participation of students in learning at tertiary level. The statistical analysis indicated that there was an association between silent zone spaces and participation of students in learning at tertiary level. The study findings indicated that there was an association between audio/video spaces and participation of students in learning at tertiary level. The analysis indicated that there was an association between staff work spaces and participation of students in learning at tertiary level. The analysis of primary data indicated that there was an association between creative learning and participation of students in learning at tertiary level. The study

indicated that there was an association between collaborative learning and participation of students in learning at tertiary level. The statistical analysis indicated that there was an association between communication skill learning and participation of students in learning at tertiary level. The analysis indicated that there was an association between active learning and participation of students in learning at tertiary level. The statistical analysis indicated that there was an association between cognitive engagement and participation of students in learning at tertiary level. The results indicated that there was an association between effective learning and participation of students in learning at tertiary level. The statistical analysis indicated that there was an association between job oriented learning and participation of students in learning at tertiary level. The field data indicated that there was an association between academic library spaces and participation of students in learning at tertiary level. The results of regression analysis pointed out that silent zone spaces, creative learning, and collaborative learning had favorable effects on engagement of students in learning. Similarly, communication skill learning, active learning, and effective learning had also predicting participation of students in learning at tertiary level.

Conclusion

The study concluded that silent zone spaces, creative learning, and collaborative learning had favorable effects on engagement of students in learning. Similarly, communication skills learning, active learning, and effective learning had also predicting participation of students in learning at tertiary level. The study finding indicated that academic library spaces had contributed towards the engagement of students in learning process in higher education. These spaces included collection spaces, special use spaces, user setting spaces, discussion spaces, silent zone spaces, audio\video spaces, and staff work spaces. However, engagement of student had also been linked with creative learning, collaborative learning, communication skill learning, active learning, cognitive learning, effective learning, and job oriented learning. The overall, conclusion of the study indicated that engagement of students in learning has been linked with the academic library spaces in higher education.

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Appendix-A
Understanding Student Engagement in Higher Education: The Contribution of Academic Library Spaces (Questionnaire)

A) Identification of the Students

(i) Semester _____ (ii) Program_____ (iii) Subject_____ (iv) Faculty _____

B) Socio-demographic Characteristics of the Students

Q.1 Gender	a) Male b) Female
Q.2 Age in completed year's	
Q.3 Father's Education	
Q.4 Mother's Education	
Q.5 Family Income	
Q.6 Family Size	
Q.7 Family Type	
Q.8 Residential Area	a) Rural b) Urban

C) Academic Library Spaces

Strongly Agree = SA to Strongly Disagree = SD

S. No.	Statement	SA	A	D	SD
C.1	Collection Spaces				
i)	You have your relevant book in the library	4	3	2	1
ii)	You have your relevant audio material in the library	4	3	2	1
iii)	You have your relevant video material in the library	4	3	2	1
iv)	You have your relevant textbooks in the library	4	3	2	1
v)	You have your relevant history books in the library	4	3	2	1
vi)	You have your relevant magazine in the library	4	3	2	1
vii)	Rare material has available in your library	4	3	2	1
viii)	Your subject related books are placed in the library	4	3	2	1
C.2	Special Use Spaces				
i)	You have washrooms facilities in the library	4	3	2	1
ii)	You have silent zones in the library	4	3	2	1
iii)	You have special spaces for disable students	4	3	2	1
iv)	You have group study rooms in the library	4	3	2	1
v)	You have multimedia rooms for study	4	3	2	1
vi)	You have nursing rooms in the library	4	3	2	1
vii)	You have language labs in the library	4	3	2	1
viii)	You have tutoring spaces in the library	4	3	2	1
C.3	User Setting Spaces				
i)	Library provides you variety of study spaces	4	3	2	1
ii)	You have focused environment in the library	4	3	2	1
iii)	You have interactive learning spaces for study	4	3	2	1
iv)	You have relaxation spaces in the library	4	3	2	1
v)	Library arrangement suits your study needs	4	3	2	1
vi)	You have special organized space in the library	4	3	2	1
vii)	You have special workshop spaces in the library	4	3	2	1
viii)	You have special event spaces in the library	4	3	2	1
C.4	Discussion Spaces				
i)	You have video conference spaces in the library	4	3	2	1
ii)	Group study is easier in the library	4	3	2	1
iii)	You prefer to sit in library discussion rooms	4	3	2	1
iv)	You have soundproof spaces in the library for discussions	4	3	2	1
v)	Group work improves your learning in the library	4	3	2	1
vi)	Discussion spaces enhance your engagement	4	3	2	1
vii)	Library provided you to discuss your study with others	4	3	2	1

viii)	Library has designated space for discussion	4	3	2	1
C.5	**Silent Zone Spaces**				
i)	You think silent zone improves your focus of study	4	3	2	1
ii)	You prefer studying in quiet areas in the library	4	3	2	1
iii)	You think noise–free space helps you in productivity	4	3	2	1
iv)	You use silent zone for exams preparations	4	3	2	1
v)	Your learning improves from the silent zone	4	3	2	1
vi)	You have visited silent zone regularly in the library	4	3	2	1
vii)	You feel comfortable sitting in silent zone in the library	4	3	2	1
C.6	**Audio/Video Spaces**				
i)	You have audio listening room for study in the library	4	3	2	1
ii)	You have effective sound system for study in the library	4	3	2	1
iii)	You have video conference room in the library	4	3	2	1
iv)	You have recording space in the library	4	3	2	1
v)	You have editing devices in the library	4	3	2	1
vi)	You have audio/video resources in the library	4	3	2	1
vii)	You think audio/video space is booking easy	4	3	2	1
viii)	Audio/video spaces enhance your learning	4	3	2	1
C.7	**Staff Work Spaces**				
i)	Staff training rooms in the library are available	4	3	2	1
ii)	Staff meeting rooms in the library are sufficient	4	3	2	1
iii)	Library staff has privacy in the library	4	3	2	1
iv)	Library staff facilitates you as per available space	4	3	2	1
v)	Staff feel comfortable in the library	4	3	2	1
vi)	Gender spaces are available for staff in the library	4	3	2	1
vii)	Library staff helps you in searching your books	4	3	2	1
viii)	You are comfortable with the efficiency of library staff	4	3	2	1

D)   Engagement of Students in Learning

D.1	**Creative Learning**				
i)	Library resources help you in generating news ideas	4	3	2	1
ii)	Library environment encourages your creativity	4	3	2	1
iii)	Open- ended projects in library helps in creativity	4	3	2	1
iv)	Exploring different resources improves your creativity	4	3	2	1
v)	You prefer creative methods in your academic tasks	4	3	2	1
vi)	You have used new approaches during studies	4	3	2	1
vii)	You analyze phenomena critically	4	3	2	1
viii)	You have unique solutions of study issues	4	3	2	1
D.2	**Collaborative Learning**				
i)	Collaborative learning strengthen your communication skills	4	3	2	1
ii)	You easily understand topic better in library in front of others	4	3	2	1
iii)	You participate actively in group discussions	4	3	2	1
iv)	You learn more through collaboration	4	3	2	1
v)	Group work improves your problem-solving-skills	4	3	2	1
vi)	You feel support from peers in collaborative learning	4	3	2	1
vii)	Collaborative learning is essential for your studies	4	3	2	1
viii)	Group projects enhance you learning experiences	4	3	2	1
D.3	**Communication Skill Learning**				
i)	You practice communication skills during your study	4	3	2	1
ii)	You feel confident during discussions in front of others	4	3	2	1
iii)	You present your ideas in front of students	4	3	2	1
iv)	You work on improving your communication skills	4	3	2	1
v)	Library resources help you in improving communication	4	3	2	1

vi)	You communicate your ideas clearly in group activities	4	3	2	1
vii)	You received feedback on your communication skills	4	3	2	1
viii)	Effective communication is the key to learn effectively	4	3	2	1
D.4	**Active Learning**				
i)	You actively participate in your class activities	4	3	2	1
ii)	You prefer interactive learning experiences	4	3	2	1
iii)	You have enjoyed hands-on –activities during your studies	4	3	2	1
iv)	You are engaged in learning with material actively	4	3	2	1
v)	You stay engaged during interactive lessons	4	3	2	1
vi)	Active learning encourages you to think critically	4	3	2	1
vii)	Active learning is more effective for your study	4	3	2	1
viii)	You have enjoyed learning during your study	4	3	2	1
D.5	**Cognitive Engagement**				
i)	You prefer cognitive challenges in your learning	4	3	2	1
ii)	You think critically about your leaning	4	3	2	1
iii)	You make connections between different subjects	4	3	2	1
iv)	You enjoy deep thinking during your lessons	4	3	2	1
v)	You easily engage in complex topics for study	4	3	2	1
vi)	Cognitive engagement helps you to retain information	4	3	2	1
vii)	You analyze material in depth easily	4	3	2	1
viii)	You try to understand concepts for your studies	4	3	2	1
D.6	**Effective Learning**				
i)	You use effective study strategies to enhance your competence	4	3	2	1
ii)	Your learning methods help you to achieve good results	4	3	2	1
iii)	You are confident about your academic performance	4	3	2	1
iv)	You prefer notes for remembering lessons during study	4	3	2	1
v)	You prefer to share new ideas in front of others	4	3	2	1
vi)	You think about your learning actively	4	3	2	1
vii)	You manage your time effectively for your learning process	4	3	2	1
viii)	Efficient learning helps you to excel in exams	4	3	2	1
D.7	**Job Oriented Learning**				
i)	You are enrolled in your subject for job	4	3	2	1
ii)	You focus to study for future	4	3	2	1
iii)	Your concentrate on your study to achieve tough goals	4	3	2	1
iv)	You have bright future after study	4	3	2	1
v)	You are linked with organization for job	4	3	2	1
vi)	You easily get job after completion of degree	4	3	2	1
vii)	You are target oriented for future	4	3	2	1
viii)	Your main focuses is on your future job	4	3	2	1

Suggestion to improve library spaces

_____

Suggestion to improve engagement of students in learning

_____

Date _____   Name (optional) _____