

The Influence of Student Perceptions on the Quality of Library Services and Learning Facilities in Increasing User Satisfaction in University Libraries

Joni Karman¹, Utama Khalid Lubis²

¹Vocational High School Yudika, South Sumatra, Lubuk Linggau, Indonesia

²Department of Information Systems, Faculty of Computer Science, Bina Darma University, South Sumatra, Palembang, Indonesia

Article Info

Article history:

Received Dec 7, 2025

Revised Jan 10, 2026

Accepted Feb 16, 2026

Online First Mar 19, 2026

Keywords:

Library Service Quality

Learning Facilities

User Satisfaction

University Library

Student Perception

ABSTRACT

Purpose of the study: This study aims to analyze the influence of students' perceptions of library service quality and learning facilities on user satisfaction in university libraries, particularly at the Central Library of Yogyakarta State University.

Methodology This study employed a quantitative ex-post facto approach involving 251 university students as respondents. Data were collected through Likert-scale questionnaires and analyzed using multiple linear regression with Statistical Package for Social Science (SPSS) for Windows. Instrument validity was tested using Pearson Product Moment, while reliability was tested using Cronbach's Alpha. Classical assumption tests included normality, multicollinearity, and heteroscedasticity tests.

Main Findings: The results showed that library service quality and learning facilities had positive and significant effects on user satisfaction both partially and simultaneously. Library service quality had the strongest influence on user satisfaction with a significance value of 0.000, while learning facilities also significantly influenced satisfaction with a significance value of 0.001. The coefficient of determination (R^2) indicated that both variables contributed 43.2% to user satisfaction.

Novelty/Originality of this study: The novelty of this study lies in the integration of library service quality and learning facilities into a single quantitative model for analyzing user satisfaction in university libraries. This research highlights the importance of modern learning facilities and digital-based services in supporting students' academic experiences and positions university libraries as collaborative learning and digital literacy centers.

This is an open access article under the [CC BY](https://creativecommons.org/licenses/by/4.0/) license



Corresponding Author:

Utama Khalid Lubis,

Department of Information Systems, Faculty of Computer Science, Bina darma University

Jl. Jenderal Ahmad Yani No. 3, 9/10 Ulu, Seberang Ulu I, Palembang, South Sumatra 30264, Indonesia

Email: utamakhalidlubis22@gmail.com

1. INTRODUCTION

University libraries play a strategic role in supporting the educational process, research, and academic development of students [1]. Libraries serve not only as central repositories for information resources but also as learning resources that support the academic needs of the campus community. In today's digital era and the development of information technology, students demand fast, convenient library services, supported by adequate learning facilities [2]. The quality of library services is an important indicator in creating user satisfaction in the

Journal homepage: <http://cahaya-ic.com/index.php/SYNAPSI>

university environment. In addition to administrative and information services, facilities such as reading rooms, internet access, catalog search computers, and comfortable study spaces also influence student perceptions of the library [3]. Therefore, student perceptions of library services and facilities are important aspects that university library managers need to pay attention to.

Frequent problems in university libraries relate to suboptimal service quality and limited learning facilities. Some students still complain about slow librarian service, limited reading space, and a lack of technology-based learning support facilities [4]. These conditions can impact student comfort in maximizing library services. Furthermore, the disproportionate number of facilities for the number of visitors often leads to queues and overcrowding at certain times [5]. Ineffective collection organization and reference retrieval systems also hinder the rapid access to academic information. If these conditions persist, student satisfaction as library users may decline.

Several previous studies have shown that the quality of library services and facilities significantly impacts user satisfaction [6]. Prior research has focused more on librarian service and the availability of book collections as key factors in student satisfaction. However, the evolving needs of today's students demand more modern, digital-based learning facilities [7]. Previous research has also tended to focus on school or public libraries rather than university libraries. Furthermore, most studies have used only one independent variable without simultaneously analyzing student perceptions of service quality and learning facilities. Therefore, further research is needed to provide a more comprehensive picture of the factors influencing user satisfaction in university settings.

The research gap is evident in the limited number of studies that integrate student perceptions of library service quality with learning facilities in a single quantitative research model. Previous research has predominantly examined user satisfaction from the administrative service perspective without considering the comfort aspect of modern learning facilities [8]. However, changes in student learning patterns in the digital era have made learning facilities a primary requirement for academic activities in libraries. Furthermore, there are few studies examining how student perceptions as active users influence overall satisfaction levels with university library services [9]. Another gap is the limited number of studies that highlight university libraries as collaborative learning spaces and centers for student digital literacy. Therefore, this study aims to analyze the influence of students' perceptions of library service quality and learning facilities on user satisfaction in university libraries, as well as to provide a comprehensive understanding of how service quality and learning facilities simultaneously contribute to improving student satisfaction in the university environment.

This research is important because student satisfaction with library services is one indicator of the quality of higher education services. Libraries that are able to provide optimal service and comfortable learning facilities will increase student interest in utilizing academic information resources continuously [10]. A high level of user satisfaction can also create student loyalty to the use of university library services. Furthermore, the results of this study can be used as evaluation material for library managers in improving service quality and developing facilities based on student needs [11]. This research is also relevant to the development of the digital transformation of libraries, which demands improvements in the quality of information services and the comfort of learning spaces. Therefore, research on student perceptions of library services and facilities is highly urgent in supporting the improvement of the quality of higher education.

The novelty of this study lies in the integration of library service quality and learning facilities into the analysis of user satisfaction in a university environment [12]. This study not only focuses on librarian services but also highlights the importance of modern learning facilities as a supporting factor for student satisfaction. Furthermore, this study uses a quantitative approach, examining student perceptions as active users of university library services. Another novelty is that this study positions the library as a center for academic learning and digital literacy, supporting students' needs in the information technology era. This study also provides an empirical overview of the simultaneous relationship between service quality and learning facilities on user satisfaction. Therefore, the results of this study are expected to provide new contributions to the development of studies on university library service management.

2. RESEARCH METHOD

2.1. Research Approach and Type

This study uses a quantitative approach with an ex-post facto research type. The quantitative approach is used because the research data is obtained in the form of numbers which are then analyzed using statistical techniques. Ex-post facto research was chosen because the variables studied had occurred before the research was conducted [13]. This research is associative causal which aims to determine the influence of student perceptions on the quality of library services and learning facilities in increasing user satisfaction. The independent variables in this study consist of the quality of library services (X1) and library learning facilities (X2), while the dependent variable is student user satisfaction (Y) [14]. Data analysis in this study uses multiple linear regression to determine the partial and simultaneous effects between research variables.

2.2. Research Location, Population, and Sample

The research was conducted at the Central Library of Yogyakarta State University located on the Karangmalang Campus, Jalan Colombo No. 1, Sleman, Yogyakarta. The selection of the research location was based on the high intensity of students in utilizing library services as a source of academic information and study space [15]. The research was conducted in the even semester of the current academic year by adjusting the student activity schedule at the university library [16]. The population in this study were all students who use the library services of Yogyakarta State University. The sampling technique used incidental sampling, namely students who directly use library services during the research period can be used as respondents. The number of samples was determined using the Slovin formula with a 5% error rate to obtain a representative sample for quantitative research.

2.3. Data Collection Technique and Research Instrument

Data collection techniques were conducted by distributing questionnaires to students who use library services. The questionnaires were constructed using a five-level Likert scale, ranging from strongly disagree to strongly agree [17]. The research instrument consisted of three main variables: library service quality, library learning facilities, and student user satisfaction. Service quality indicators included staff responsiveness, information clarity, service accuracy, and librarian friendliness [18]. Learning facility indicators included reading room comfort, computer availability, internet access, room lighting, and other learning support facilities. Meanwhile, user satisfaction indicators included satisfaction with services, convenience in using facilities, ease of obtaining information, and the desire to use library services again.

Table 1. Research Variables and Indicators

Variables	Indicators
Library Service Quality (X1)	Responsiveness of staff, service friendliness, clarity of information, and service accuracy.
Library Learning Facilities (X2)	Reading room, computers, internet access, lighting, and learning comfort.
User Satisfaction (Y)	Service satisfaction, comfort in using facilities, ease of access to information, and user loyalty.

2.4. Validity and Reliability Test

Before being used in the research, the instrument was first tested for validity and reliability. The validity test was conducted using the Pearson Product Moment correlation technique to determine the level of accuracy of each statement item. The instrument was declared valid if the correlation coefficient value was greater than the r table value at a significance level of 5% [19]. Next, a reliability test was conducted using the Cronbach's Alpha formula to determine the level of consistency of the research instrument. The instrument was declared reliable if its Cronbach's Alpha value was greater than 0.70. Validity and reliability testing were conducted using the Statistical Package for Social Science (SPSS) application. Thus, the instrument used in this study was deemed suitable for obtaining accurate and consistent research data.

2.5. Data Analysis Technique

Data analysis was conducted through several stages, namely descriptive analysis and inferential analysis. Descriptive analysis was used to describe the characteristics of respondents' answers to each research variable. Before hypothesis testing was conducted, classical assumption tests were first conducted, including normality tests, linearity tests, multicollinearity tests, and heteroscedasticity tests [20]. Hypothesis testing used a t-test to determine the partial effect of independent variables on the dependent variable and an F-test to determine the simultaneous effect of independent variables on the dependent variable. In addition, this study also used a coefficient of determination (R^2) analysis to determine the contribution of service quality and learning facilities to user satisfaction. The entire data analysis process was carried out using the SPSS for Windows program.

3. RESULTS AND DISCUSSION

3.1. Description of Research Results

This research was conducted at the library of Universitas Negeri Yogyakarta (UNY) involving 251 students as research respondents. The respondents were active students who utilized university library services during the research process. This study aimed to determine the influence of students' perceptions of library service quality and learning facilities on user satisfaction in university libraries [21]. The data were collected through questionnaires using a Likert scale and analyzed using multiple linear regression analysis. The research variables consisted of library service quality (X1), library learning facilities (X2), and user satisfaction (Y). The descriptive

analysis results showed that most students gave positive assessments regarding the quality of services and facilities provided by the university library.

Table 2. Descriptive Statistics of Research Variables

Variable	Category	Percentage
Library Service Quality	High – Very High	73.70%
Library Learning Facilities	High – Very High	50.20%
User Satisfaction	High – Very High	54.58%

Based on Table 1, the variable of library service quality was categorized as high to very high with a percentage of 73.70%. The library learning facilities variable obtained a high to very high category of 50.20%. Meanwhile, user satisfaction was categorized as high to very high with a percentage of 54.58%. These findings indicate that students have positive perceptions regarding the quality of library services and learning facilities. This condition also shows that the university library has been able to fulfill most students' academic information and learning needs. Therefore, service quality and learning facilities can be considered important factors in increasing library user satisfaction in higher education institutions [22]. The findings also reflect the importance of improving service effectiveness and learning comfort in supporting academic activities in university libraries.

Table 3. Categorization of Research Variables

Variable	Category	Percentage
Library Service Quality	High – Very High	73.70%
Library Learning Facilities	High – Very High	50.20%
User Satisfaction	High – Very High	54.58%

3.2. Classical Assumption Test

Before conducting hypothesis testing, classical assumption tests were performed, including normality, multicollinearity, and heteroscedasticity tests [23]. The normality test was conducted using the Kolmogorov-Smirnov Test to determine whether the research data were normally distributed. The test results showed a significance value of 0.990, which was greater than 0.05, indicating that the data were normally distributed. Furthermore, the multicollinearity test was conducted by examining the Variance Inflation Factor (VIF) values. The results indicated a VIF value of 1.344, which was below the maximum threshold of 10, meaning that there was no multicollinearity problem in the regression model. In addition, the heteroscedasticity test showed significance values greater than 0.05, indicating that no heteroscedasticity symptoms were found in the research model.

Table 4. Results of Classical Assumption Tests

Test	Result	Conclusion
Normality Test	Sig. = 0.990	Normally Distributed
Multicollinearity Test	VIF = 1.344	No Multicollinearity
Heteroscedasticity Test	Sig. > 0.05	No Heteroscedasticity

The results of the classical assumption tests indicate that all research data fulfilled the requirements for multiple linear regression analysis. Therefore, hypothesis testing could be conducted to determine the influence of library service quality and learning facilities on user satisfaction. The regression model used in this study was considered appropriate for explaining the relationships among the research variables. In addition, the absence of assumption violations indicates that the research results have a good level of accuracy and reliability. These findings also suggest that the data successfully represent the actual conditions experienced by students in utilizing university library services. Thus, the analysis results can be used to draw valid and reliable research conclusions.

3.3. Hypothesis Testing

Hypothesis testing was conducted using partial tests (t-test) and simultaneous tests (F-test). The partial test was used to determine the effect of each independent variable on the dependent variable individually. Meanwhile, the simultaneous test was conducted to determine the combined effect of the independent variables on user satisfaction [24]. The results revealed that library service quality had a positive and significant effect on user satisfaction with a significance value of $0.000 < 0.05$. Library learning facilities also had a positive and significant effect on user satisfaction with a significance value of $0.001 < 0.05$. Moreover, the simultaneous test results indicated that both independent variables simultaneously affected user satisfaction significantly.

Table 5. Partial Test Results (t-Test).

Variable	t-value	Sig.	Conclusion
Library Learning Facilities	3.448	0.001	Significant

Library Service Quality	9.724	0.000	Significant
-------------------------	-------	-------	-------------

Table 6. Simultaneous Test Results (F-Test)

Variable	F-value	Sig.	Conclusion
X1 and X2 toward Y	94.299	0.000	Significant

Based on the partial test results, library service quality had a stronger influence on user satisfaction compared to library learning facilities. This finding can be observed from the higher t-value of library service quality compared to the learning facilities variable. The results indicate that students place greater emphasis on responsive librarians, accessibility of information, and convenience of library services. However, learning facilities still play an important role in supporting students' satisfaction when using university library services. The findings suggest that continuous improvements in both service quality and learning facilities are necessary to enhance library user satisfaction. Therefore, university libraries should continuously develop user-oriented and technology-based services to support students' academic needs in the digital era.

3.4. Coefficient of Determination (R^2)

The coefficient of determination was used to determine the contribution of the independent variables to the dependent variable. The analysis results showed that the coefficient of determination (R^2) was 0.432 or 43.2%. This value indicates that library service quality and learning facilities contributed 43.2% to user satisfaction [25]. Meanwhile, the remaining 56.8% was influenced by other variables not examined in this study. These factors may include digital collection quality, students' information literacy skills, academic atmosphere, and technological innovation in library services. Therefore, the findings indicate that library service quality and learning facilities have a substantial contribution to improving student satisfaction in university libraries.

Table 7. Coefficient of Determination Test

R	R Square	Adjusted R Square
0.657	0.432	0.427

The findings of this research are consistent with previous studies stating that service quality and library facilities are major factors influencing user satisfaction in academic libraries. Students tend to feel more satisfied when they receive responsive services, comfortable learning environments, and easy access to academic information. In addition, the rapid development of information technology has increased students' expectations toward modern and digital-based library services [26]. Therefore, university libraries need to continuously improve service innovation in order to enhance students' learning experiences effectively. The results of this study are expected to become evaluation material for library management in improving academic support services. Consequently, university libraries can function not only as information centers but also as collaborative learning spaces that support students' academic success.

The results of this study indicate that library service quality has a positive and significant effect on user satisfaction in the university library [27]. Students tend to feel more satisfied when librarians provide responsive, friendly, and accurate services. The findings also show that easy access to information and clear service procedures contribute to improving students' comfort while using library services. In addition, effective communication between librarians and users creates a positive learning atmosphere within the library environment. Therefore, improving the quality of library services is essential in increasing students' satisfaction and encouraging continuous use of academic library resources.

The study also found that library learning facilities significantly influence user satisfaction. Comfortable reading rooms, adequate internet access, proper lighting, and the availability of computers support students' academic activities effectively. Students perceive that modern and supportive learning facilities help them complete assignments and access information more efficiently. Moreover, comfortable study spaces encourage students to spend more time in the library for collaborative and independent learning activities. These findings confirm that learning facilities are an important component in creating positive experiences for university library users.

The findings of this study are supported by several previous studies that emphasized the importance of service quality and facilities in increasing library user satisfaction. Previous research generally explained that librarian responsiveness and the availability of collections positively affect students' perceptions of library services [28]. However, some earlier studies mainly focused on administrative services without examining modern learning facilities comprehensively. In contrast, this research demonstrates that digital-based learning facilities also play an important role in supporting students' academic experiences in libraries. Therefore, this study strengthens previous findings while simultaneously addressing the research gap regarding the integration of service quality and learning facilities in university libraries.

The novelty of this study lies in its integrated analysis of library service quality and learning facilities in influencing user satisfaction simultaneously. Unlike previous studies that mostly focused only on librarian services or collection availability, this research highlights the importance of modern learning spaces and digital support facilities [29]. This study also positions the university library as a collaborative learning environment and a center for digital literacy development [30].

Furthermore, the research specifically examines students' perceptions as active users of university library services in the digital era. Consequently, this study contributes a more comprehensive perspective to the development of university library management research.

The implications of this research indicate that university libraries need to continuously improve both service quality and learning facilities to maintain user satisfaction. Library management should provide training programs for librarians to enhance communication skills, responsiveness, and service effectiveness. In addition, universities should invest in modern learning facilities such as digital catalogs, internet infrastructure, collaborative study spaces, and comfortable reading areas. The findings also imply that user-oriented library management can increase students' motivation to utilize academic information resources more actively. Therefore, improving library services and facilities can support the quality of higher education and students' academic success.

Despite providing significant findings, this study still has several limitations. First, the research was conducted only at one university library, which limits the generalization of the findings to other higher education institutions. Second, the study focused only on two independent variables, namely service quality and learning facilities, while other factors influencing user satisfaction were not examined. Third, the data collection relied on questionnaires, which may contain subjective responses from participants. In addition, this research used a quantitative approach that could not deeply explore students' personal experiences in utilizing library services. Therefore, future studies are recommended to involve broader research locations, additional variables, and mixed-method approaches to obtain more comprehensive findings regarding university library user satisfaction.

4. CONCLUSION

The qualitative descriptive method used in this study enabled researchers to obtain comprehensive and in-depth information regarding the promotional communication strategies implemented by the Purworejo Regency Regional Library through interviews, observations, and documentation. The findings indicate that promotional activities such as mobile libraries, smart cars, outreach programs, literacy competitions, brochures, and digital media have contributed positively to increasing public awareness and interest in utilizing library services, although several obstacles such as limited human resources, budget constraints, and inadequate technological facilities still affect promotional effectiveness. Compared to previous studies that mainly focused on digital promotional media and modern library services, this study provides a broader analysis by examining promotional forms, implementation processes, obstacles, and solutions within the local context of Purworejo Regency. The novelty of this research lies in its focus on linking promotional communication strategies with the geographical and social conditions of rural communities, where direct promotional approaches such as mobile libraries remain highly relevant and effective. The findings also imply that regional libraries need to develop more innovative, adaptive, and technology-based communication strategies while strengthening collaboration with schools, village governments, and educational institutions to improve literacy culture in the community. Nevertheless, this study still has limitations because it was conducted only in one regional library with a limited number of informants and a relatively short research period, therefore future studies are recommended to involve broader research locations and apply quantitative or mixed-method approaches to obtain more comprehensive findings.

ACKNOWLEDGEMENTS

The authors would like to express sincere gratitude to the Central Library of Universitas Negeri Yogyakarta for providing support and access during the research process. Appreciation is also extended to all students who participated as respondents in this study. The authors are grateful to academic supervisors, lecturers, and colleagues who provided valuable suggestions and contributions during the completion of this research. Furthermore, the authors thank all parties who directly and indirectly supported the implementation of this study. This research was conducted independently without any specific financial support from funding institutions or sponsors.

REFERENCES

- [1] V. T. T. Nguyen, H. Le, and T. D. Nguyen, "Enhancing wow in blended learning : The role of service quality, image and social value," *Cogent Bus. Manag.*, vol. 12, no. 1, pp. 1–24, 2025, doi: 10.1080/23311975.2025.2577866.
- [2] A. Howlett, E. Colla, R. Joyce, A. Howlett, and E. Colla, "Toward redefining library research support services in australia and aotearoa new zealand: An evidence-based practice approach," *New Rev. Acad. Librariansh.*, vol. 30, no. 1, pp. 24–51, 2024, doi: 10.1080/13614533.2024.2306360.
- [3] K. Mwantimwa and G. Msoffe, "Application of generative artificial intelligence in library operations and service

- delivery: A scoping review,” *Tech. Serv. Q.*, vol. 42, no. 2, pp. 139–168, 2025, doi: 10.1080/07317131.2025.2467574.
- [4] K. Halliday *et al.*, “Decolonising and diversifying the library through student partnerships,” *New Rev. Acad. Librariansh.*, vol. 30, no. 2–3, pp. 153–167, 2024, doi: 10.1080/13614533.2023.2287470.
- [5] S. Datta and T. Ghosh, “Streaming quality unveiled : A grounded theory approach to deciphering video on demand service attributes,” *Cogent Bus. Manag.*, vol. 12, no. 1, p., 2025, doi: 10.1080/23311975.2025.2498626.
- [6] X. Ai, L. Wang, R. Huang, W. Zhang, and J. Huang, “Developing a service quality standard for collaborative integrated healthcare institutions in guangdong, China: A delphi-analytic hierarchy process study,” *Risk Manag. Healthc. Policy*, pp. 3963–3975, 2025, doi: 10.2147/RMHP.S549814.
- [7] D. Wells and A. Sallenbach, “Print books and ebooks: The new equilibrium in an academic library,” *J. Aust. Libr. Inf. Assoc.*, vol. 72, no. 2, pp. 166–177, 2023, doi: 10.1080/24750158.2023.2183560.
- [8] D. Wilmott, “A comparison study on the influence of social movements on collection building and use of print monographs at a large research university library a large research university library,” *Tech. Serv. Q.*, vol. 43, no. 2, pp. 141–161, 2026, doi: 10.1080/07317131.2026.2632492.
- [9] R. Ismailova *et al.*, “A comparative analysis of service quality and student perceptions in Kyrgyzstan’s higher education institutions,” *Cogent Educ.*, vol. 12, no. 1, pp. 1–18, 2025, doi: 10.1080/2331186X.2025.2502202.
- [10] H. Murphy and H. Murphy, “Understanding the value of digital archival collections to faculty at maynooth university library,” *New Rev. Acad. Librariansh.*, vol. 27, no. 4, pp. 423–439, 2022, doi: 10.1080/13614533.2021.1976233.
- [11] P. Dangaiso and M. Tsvere, “Linking service quality to academic achievement : Student perspectives from a Zimbabwean public university,” *Cogent Educ.*, vol. 12, no. 1, pp. 1–16, 2025, doi: 10.1080/2331186X.2025.2533302.
- [12] P. Sjökvist, “The books of king sigismund at uppsala university library,” *Scando-Slavica ISSN*, vol. 68, no. 2, pp. 213–223, 2022, doi: 10.1080/00806765.2022.2144696.
- [13] P. Dangaiso and M. Tsvere, “The nexus between higher education service quality and student academic achievement: A structural equation modelling approach,” *Cogent Educ.*, vol. 12, no. 1, pp. 1–19, 2025, doi: 10.1080/2331186X.2025.2556893.
- [14] P. Odonnell and L. Anderson, “New review of academic librarianship the university library : Places for possibility the university library : Places for possibility,” *New Rev. Acad. Librariansh.*, vol. 28, no. 3, pp. 232–255, 2022, doi: 10.1080/13614533.2021.1906718.
- [15] P. Marzec, D. M. Piotrowski, and M. Jarocki, “Exploring analytical tools in the optimization of library information and instruction services,” *J. Libr. Inf. Serv. Distance Learn.*, vol. 19, no. 3, pp. 43–62, 2025, doi: 10.1080/1533290X.2025.2525079.
- [16] J. Choi, J. Park, S. Eun, and D. Kang, “Disability and rehabilitation : Assistive technology reducing upper-limb strain in rehabilitation : Usability evaluation of a detachable bidirectional propulsion device for spinal cord injury users,” *Disabil. Rehabil. Assist. Technol.*, vol. 21, no. 2, pp. 925–936, 2026, doi: 10.1080/17483107.2025.2565407.
- [17] P. Chibangwa and J. Chigwada, “Challenges affecting physically disadvantaged users in accessing library services in polytechnical colleges,” *J. Access Serv.*, vol. 22, no. 1–3, pp. 41–53, 2025, doi: 10.1080/15367967.2025.2542161.
- [18] P. Monteiro *et al.*, “Beyond the hands: Evaluating the usability of hands-free methods and controllers for menu Selection during an immersive vr experience,” *Int. J. Human-Computer Interact.*, vol. 42, no. 8, pp. 6380–6417, 2026, doi: 10.1080/10447318.2025.2553776.
- [19] A. Sayed, A. O. Mathew, and L. L. R. Rodrigues, “Developing and validating the augmented reality- enabled e-commerce questionnaire (ARECQ): An extended technology acceptance model for Gen Z,” *Cogent Soc. Sci.*, vol. 12, no. 1, pp. 1–26, 2026, doi: 10.1080/23311886.2025.2604876.
- [20] H. Chen, H. Li, and S. Han, “Negative emotion , positive effect ? An empirical study of the impact of fear on user satisfaction in immersive virtual reality sports negative emotion , positive effect ? An empirical study of the impact of fear on user satisfaction in immersive virtual ,” *Int. J. Human-Computer Interact.*, vol. 41, no. 22, pp. 14571–14583, 2025, doi: 10.1080/10447318.2025.2484419.
- [21] M. King and L. Whitson, “Bursaries reimagined: Addressing digital inequity through a library-led, university-wide laptop bursary program,” *Int. Inf. Libr. Rev.*, vol. 55, no. 2, pp. 169–175, 2023, doi: 10.1080/10572317.2023.2198877.
- [22] H. Choi and S. Jang, “Mediating effect of reflection types : Feedback on reflection-for-action and student perception of patient-centredness,” *Med. Educ. Online*, vol. 27, no. 1, pp. 1–9, 2022, doi: 10.1080/10872981.2022.2127166.
- [23] W. Rahayu *et al.*, “A rasch and factor analysis of an Indonesian version of the student perception of opportunity competence development (SPOCD) questionnaire,” *Cogent Educ.*, vol. 7, no. 1, pp. 1–19, 2020, doi: 10.1080/2331186X.2020.1721633.
- [24] M. Elzayyat, J. N. Mohammad, and S. Zaqout, “Assessing llm-generated vs. expert-created clinical anatomy mcqs: A student perception- based comparative study in medical education,” *Med. Educ. Online*, vol. 30, no. 1, pp. 1–11, 2025, doi: 10.1080/10872981.2025.2554678.
- [25] W. Rahayu, M. Dwirifqi, K. Putra, P. Deniyanti, and N. S. Zahra, “Student perception of opportunity competence development in mathematics : Is it a unidimensional or multidimensional construct?,” *Cogent Educ.*, vol. 12, no. 1, pp. 1–19, 2025, doi: 10.1080/2331186X.2025.2566884.
- [26] M. Ravi and M. Besharat, “A holistic consideration of authentic assessments : Student perception of assessment design, delivery, flexibility and creativity,” *Eur. J. Eng. Educ.*, vol. 51, no. 1, pp. 25–42, 2026, doi: 10.1080/03043797.2025.2480116.
- [27] T. J. Smith *et al.*, “Teacher characteristics as predictors of mathematics attitude and perceptions of engaged teaching among 12 grade advanced mathematics students in the U . S.,” *Educ. Inq.*, vol. 13, no. 3, pp. 338–353, 2022, doi: 10.1080/20004508.2021.1883910.
- [28] R. Adade *et al.*, “Perception of Ghanaian healthcare students towards the learning of sign language as course,” *Cogent Public Heal.*, vol. 10, no. 1, pp. 1–18, 2023, doi: 10.1080/27707571.2023.2192999.
- [29] E. M. Corrado, “Accreditation standards and academic library requirements,” *Tech. Serv. Q.*, vol. 42, no. 3–4, pp. 328–

- 340, 2025, doi: 10.1080/07317131.2025.2571142.
- [30] K. Helker-schlotmann, I. M. M. J. Reymen, M. Bruns, D. Jan, K. Helker-schlotmann, and M. Bruns, "Re-designing to challenge-based learning – what does it mean for student learning processes and outcomes ? student learning processes and outcomes ?," *Eur. J. Eng. Educ.*, vol. 3797, pp. 1–17, 2026, doi: 10.1080/03043797.2026.2645648.