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Influence of Learning Style to Academic Commitment of Library and Information Science Students as Mediated by their E-Learning-Related Attitude

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Abstract: This study investigated the influence of learning styles on the academic commitment of Library and Information Science (LIS) students, with e-learning-related attitudes examined as a mediating factor in the Davao Region. A non-experimental quantitative research design was adapted, employing a descriptive-correlational approach. Data were collected using modified, expert-validated questionnaires tailored to the study's objectives. A total of 168 students participated through complete enumeration, ensuring comprehensive respondent inclusion. Statistical analyses, including mean scores and Pearson's correlation coefficient, were employed to interpret the data. Surveys were administered in person by the researcher to ensure accuracy and minimize ambiguity. The results indicated that learning style had a direct influence on academic commitment and an indirect influence through e-learning-related attitudes. Students with positive or adaptive learning styles demonstrated more favorable attitudes toward online education, which, in turn, contributed to higher academic commitment. The mediation model suggested that cultivating positive attitudes toward e-learning could strengthen the relationship between learning styles and academic engagement.

Keywords*: Learning Style, Academic Commitment, E-Learning Attitude, Mediation, Library and Information Science, Quantitative Research SDG Indicator #**4** (Quality Education); #**5** (Gender Equality).*

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I. INTRODUCTION

One of the key concerns in the educational system has always been academic commitment. Despite the uniqueness of every student, maintaining a scholarly commitment to excellence remained a constant, and students who felt that their studies had purpose were more likely to show this commitment. Furthermore, it was discovered that meaningful commitment was predicted by satisfaction, quality alternatives, investment, and self-differentiation (Delfino, 2019).

Commitment had been defined as the readiness to devote time and effort to something one believed in, as well as a pledge or resolute choice (Joel & Prakash, 2019). Students' commitment to their academics might have been influenced by various factors, including internal motivation, instilled values, social and emotional maturity, necessity, timely reinforcement, parental support, and a supportive environment. When individuals felt compelled to accomplish a task or meet a standard, they were more likely to commit themselves to that endeavor. Higher achievement was often required in certain contexts; likewise, family circumstances could make academic success a necessity. A range of factors, therefore, contributed to academic devotion.

Additionally, a study found that increasing academic commitment and student success rates could enhance the overall quality of education provided by universities and colleges (Kumar & Rathmore, 2021). Such improvements might have led to a more educated and skilled workforce, potentially yielding positive outcomes for both the economy and society. Interventions to support this goal might have included academic mentoring, coaching, or the establishment of support groups.

Moreover, greater alignment between teaching styles and students' preferred learning styles had been associated with increased engagement and academic commitment (Hodges, 2022). When students were more committed to their

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studies, they tended to actively seek learning opportunities that aligned with their individual preferences.

Furthermore, positive attitudes toward e-learning increased the likelihood that students would actively engage with the online course materials and participate in online discussions, enhancing their comprehension and retention of the information. While a relationship existed between learning style and attitude toward e-learning, other factors, including internet access, technical proficiency, and teacher assistance, could also impact students' success in e-learning environments (Kumar & Rathore, 2020). If students held a favorable attitude toward online learning and viewed it as a worthwhile and effective educational tool, they were more likely to be dedicated to their studies. These students engaged in online learning activities, read the assigned readings, and submitted their assignments on time, as revealed in the study of Alqahtani (2021).

Many studies examined the relationship between e-learning-related attitudes, academic dedication, and learning style. According to several researchers, learning style and academic commitment were positively correlated, meaning that students whose learning style was compatible with the course material were more likely to be dedicated to their studies (Liu, Kang, & Guo, 2021).

A relationship had also been identified between learning preferences and students' attitudes toward e-learning, with preferences that aligned with the e-learning environment often resulting in more favorable attitudes (Lee & Choi, 2011). This correlation suggested that the presentation of course content in an online setting could shape students' perceptions of the learning process.

A connection between academic commitment and attitudes toward e-learning had been well established. Students who held positive attitudes toward online learning were generally more dedicated to their studies and more engaged with course materials. In contrast, unfavorable attitudes toward online education were often linked to lower levels of academic commitment and reduced participation in online learning activities (Alqahtani, 2021; Rahimi & Yadollahi, 2021; Yuen & Yang, 2022). Furthermore, Gunawan et al. (2020) reported that students with more favorable attitudes toward e-learning tended to demonstrate improved academic performance and greater engagement. This finding was supported by Mokgele and Mapesela (2023), who found that students with favorable general attitudes toward online learning were more likely to remain academically engaged. Similarly, You and Kang (2022) emphasized the role of motivation and peer interaction in enhancing persistence and academic success in virtual learning environments.

While students generally exhibited positive attitudes toward e-learning, limitations in technical proficiency occasionally hindered optimal engagement with digital platforms, as observed by Abdulrab and Al-Gahtani (2021). This observation aligns with earlier findings by Pashler et al. (2008), which reinforced the notion that students' learning preferences significantly influence their educational experiences and academic outcomes.

More recent studies also confirmed that students who were aware of their preferred learning styles tended to engage more effectively in academic tasks, resulting in higher satisfaction and performance (Lin & Tsai, 2020). Zhao et al. (2022) further highlighted the importance of personalized learning strategies, suggesting that aligning teaching methods with students' learning styles could enhance both academic achievement and motivation. These findings suggested that recognizing and accommodating students' learning style preferences contributed to more effective and engaging learning environments.

Improved performance has been observed among visual learners when content is presented through images, diagrams, and written materials, as highlighted by Al-Omari (2021). The use of visual aids such as charts and graphs has been shown to enhance information processing and retention, as evidenced by Mayer (2005). Similarly, Zhang et al. (2020) found that while tactile learners benefit from hands-on interaction, the demands of theoretical curricula often lead them to favor visual and auditory learning modes.

A clear link had been observed between learning styles and academic commitment. Higher levels of academic commitment were reported among students with a reflective learning style compared to those with an impulsive style, as shown in a survey conducted in Jordanian universities (Akour & Al-Rawashdeh, 2020). Reflective learners tended to process information thoroughly and preferred working independently, while impulsive learners were more inclined toward collaborative environments. Greater academic commitment had also been associated with a visual learning preference over auditory or kinesthetic styles, based on findings from Bangladeshi university students (Islam & Akhtar, 2019). Engagement with images, diagrams, and other visual materials appeared to enhance learners' dedication to their academic responsibilities.

In contrast to students who preferred an aural or kinesthetic learning style, those who preferred a visual learning style had more positive views toward online learning, according to a study by Al Qudah and Al-Shalabi (2019). To gauge participants' views about e-learning, the study used the Test of E-Learning Related Attitudes (TERA).

A separate study reported that students with a preference for multimodal learning engaging multiple sensory channels held more favorable perceptions of online learning compared to those who favored unimodal learning (Alhabeeb & Rowais, 2020). The Technology-Enabled Remote Assessment (TERA) instrument was used to measure participants' views on online learning.

Students with a preference for visual learning were found to have more favorable attitudes toward e-learning compared to those who preferred aural or kinesthetic learning styles (Abdulrab & Al-Gahtani, 2021). To assess participants' perspectives on online learning, a modified version of the

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/25may560

Technology-Enabled Remote Assessment (TERA) was employed.

In contrast to students who favored an individualistic learning style, those who preferred a collaborative learning style had more favorable attitudes regarding online learning, according to a study by Wang and Yu (2021). A TERA modification was utilized in the study to gauge participants' views regarding online learning.

Findings indicated that students with more favorable attitudes toward e-learning, as measured by the Technology-Enabled Remote Assessment (TERA), tended to show higher levels of academic commitment (Yadav et al., 2019). Perceptions of e-learning were also found to mediate the relationship between these attitudes and academic commitment. Similarly, a separate study identified a correlation between university students' academic commitment and their views on e-learning, as assessed through the TERA (Sánchez-García & García-Peñalvo, 2020).

Among Iranian medical students, attitudes toward e-learning measured using the Technology-Enabled Remote Assessment (TERA) were found to be positively associated with academic commitment (Rahimi & Yadollahi, 2021). A similar positive correlation was observed among Turkish university students, where academic commitment was linked to favorable attitudes toward e-learning (Ozhan & Arslan, 2021). In this context, perceived usefulness of e-learning functioned as a mediating factor between students' attitudes and their level of academic commitment.

Alignment has been observed between these findings and those reported by Kisanga and Ireson (2016), indicating that learning preferences significantly influence students' receptiveness to e-learning environments. Favorable e-learning attitudes have been associated with visual and structured learning styles, attributed to the format and presentation of digital platforms, as reflected in the research of Abdulrab and Al-Gahtani (2021). Greater adaptability and openness to e-learning technologies have also been linked to multimodal learning preferences, as demonstrated by Alhabeeb and Rowais (2020), resulting in more positive learner attitudes.

Higher levels of academic dedication have been linked to favorable e-learning attitudes, as indicated in the findings of Yadav et al. (2019). A direct association between positive perceptions of e-learning and students' academic persistence and involvement is evident in the study by Sánchez-García and García-Peñalvo (2020). Stronger academic commitment and increased persistence have been observed when students perceive e-learning as useful and efficient, as reflected in the research of Rahimi and Yadollahi (2021). Collectively, these studies suggest that fostering positive attitudes toward e-learning contributes to enhanced academic commitment and motivation.

Several studies explored the relationships among e-learning-related attitudes, academic commitment, and learning style, which aligned with the findings of this study. For instance, Liu, Kang, and Guo (2021) found a positive correlation between learning style and academic commitment, suggesting that students whose learning styles matched the course material were more likely to demonstrate higher levels of academic dedication.

The connection between learning preferences and e-learning attitudes had also been emphasized in prior research. Lee and Choi (2011) identified that students whose learning preferences aligned with the e-learning environment often developed more favorable attitudes toward online learning. This highlighted how course delivery in online formats could influence students' perceptions of the learning process.

Additionally, a strong link between academic commitment and attitudes toward e-learning had been established. It is also found that students with positive attitudes toward online learning were more committed to their academic tasks and more engaged with course materials. In contrast, those with negative attitudes exhibited lower levels of academic commitment and participation in e-learning activities (Algahtani,2021).

Studies have consistently highlighted a strong relationship between learning styles and academic commitment. Students with a reflective learning style demonstrated higher academic commitment compared to those with an impulsive style. Reflective learners, who tend to process information thoroughly and prefer independent work, were more dedicated to their studies (Akour and Al-Rawashdeh ,2020). Similarly, it also observed that students with a visual learning preference showed greater academic commitment than those with auditory or kinesthetic preferences. Engagement with visual materials, such as images and diagrams, helped enhance their academic dedication (Islam and Akhtar, 2019).

This aligns with Kolb's Experiential Learning Theory (1984), which emphasizes the importance of aligning learning environments with individual learning preferences. Supporting this view, Graf et al. (2009) highlighted that tailoring e-learning platforms to match learners' styles improves both engagement and attitude. Likewise, Sadeghi et al. (2014) and found also that learning styles, along with students' perceptions of digital learning environments, significantly influence academic motivation and persistence, especially in blended learning contexts. These findings underscore the need for adaptive learning strategies and the promotion of positive e-learning attitudes to foster greater academic engagement (Dizon and Aranes, 2021).

This study is anchored on self-determination theory (STD) by Edward Deci & Richard Ryan as cited by Chen & Jang (2010), people have three fundamental psychological needs: autonomy, competence, and relatedness. Students who felt more in control of their e-learning experiences were more likely to be committed to their studies and have a favorable attitude about e-learning.

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This is supported by the study of Eccles & Wigfield (2020) on Expectancy-Value Theory, people's motivation to complete academic work is impacted by both their value for the activity and their expectation that they would succeed (value). As a result, students who have a strong commitment to their academics, a positive learning style, and positive attitudes toward e-learning may be more likely to have higher expectations for e-learning success and value, which can in turn increase motivation and engagement in online learning activities.

Additionally, Social Learning Theory (SLT) supported this study which focuses on how social interactions and observational learning affect behavior. Students may be more likely to participate and adopt the same attitude toward e-learning if they see their peers actively participating in online discussions and displaying a good attitude toward it. Students may be more encouraged to participate if an instructor displays excitement for online learning and offers encouraging feedback to students who interact with the course material Son, Han, & Kim, 2018).

The Study's conceptual framework is shown in Figure 1, presents the study's variables. It is composed of one independent variable (Learning style), one dependent variable (academic commitment), and a mediating variable (Test of e-learning related attitudes).

The study's independent variable is learning style. Learning style are measured in Visual, Auditory and Tactile. Visual is a term used to explained the available study materials such as charts, maps, filmstrips, notes and videos. Also, the term Auditory refers to using tapes to supplement other study materials, these includes tape lectures to help fill in gaps in your notes or covert lecture notes. In this context of Tactile relates to tracing words as you say them. Facts that must be learned should be written several times. These includes highlighting, underlining, labelling information, and writing add movement to learning (Merced, 2006).

Moreover, academic commitment has been defined as the extent to which an individual identifies with the academic world and its values, feels a sense of belonging to the academic community, and is willing to invest time and effort into academic pursuits Human-Vogel & Rabe, (2014). These includes commitment refers to the degree to which a student is dedicated to and engaged in their academic pursuits. While satisfaction refers to a positive emotional response that is typically associated with achieving a desired outcome or experiencing a pleasurable event. In terms of quality of alternatives refers to the perceived quality or attractiveness of the options available to a decision-maker when making a choice. Also, investment refers to the time, effort, and resources that student dedicates to their academic pursuits and prioritize academic goals over other activities or interest. Lastly, meaningfulness defined as to the degree to which a student finds value and relevance in their academic pursuits.

The mediating variable involves attitudes related to e-learning, which are categorized into several components. One component focuses on the challenges of e-learning, referring to the negative attitudes and perceptions that may arise among students and educators. Another highlights the benefits of e-learning, defined as the positive attitudes and perceptions regarding its use in education. Attitudes toward using computer systems represent perceptions and feelings about utilizing technology, such as computers, to support learning. Finally, leisure interest in e-learning and computer use reflects an individual's inclination to engage with technology for both recreational and educational purposes (Kisanga & Ireson, 2016).

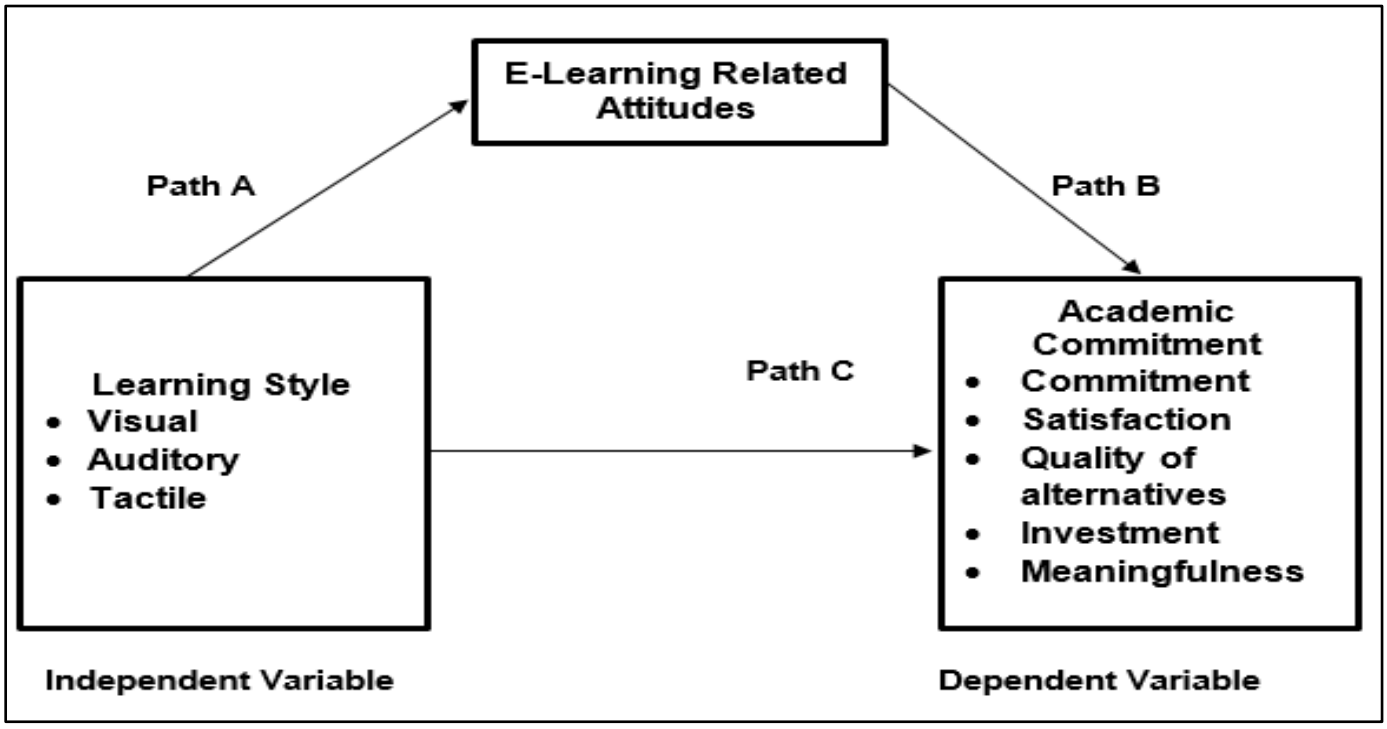

Fig 1 Conceptual Paradigm of the Study

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While existing literature explores the relationship between learning style, academic commitment, and e-learning-related attitudes individually, the connection between all three variables remains unclear, and there is a lack of research on this specific intersection. This study, however, seeks to offer new empirical and theoretical insights into this relationship. No studies have examined e-learning-related attitudes as a mediating variable or explored their impact on learning style and academic commitment. Additionally, the relationship between e-learning-related attitudes, learning style, and academic commitment among library and information science students has not been widely investigated. This research is particularly interested in how e-learning-related attitudes might directly influence the relationship between learning style and academic commitment among library and information science students in the Davao region. This gap highlights the need for the current study.

Respectively, this study aims to determine if test of e-learning related attitude has a mediating effect on the relationship between learning style and academic commitment of LIS students. Specifically, the study will seek to realize the following objectives. First, to ascertain the level of learning style: visual, auditory and tactile. Second, to determine the level of academic commitment: commitment, satisfaction, quality of alternatives, investment and meaningfulness. Third, to describe the level of test of e-learning related attitudes: challenges of e-learning, benefits from e-learning, attitude on using computer systems and leisure interest on e-learning innovations and use of computers. Fourth, to determine the significant relationship between learning style and academic commitment; learning style and test of e-learning related attitude; test of e-learning related attitude and academic commitment. Lastly, to determine if the test of e-learning related attitude has a significant mediating effect in the relationship between learning style and academic commitment of LIS students in Davao region.

The findings of this study are especially valuable for the Commission on Higher Education (CHED), as they can inform the development of evidence-based policies and instructional strategies aimed at improving academic outcomes among students. By examining how learning styles and e-learning-related attitudes relate to academic commitment, the study offers insights that can help institutions design more responsive and inclusive learning environments. These insights are particularly relevant in the context of increasing reliance on digital and blended learning modalities in higher education. Grounded in student engagement and self-determination theories, the study also aims to contribute to the theoretical understanding of how individual learner characteristics and attitudes influence academic behavior. To explore these relationships empirically, the following hypotheses are tested: there is no significant relationship between learning style and academic commitment among LIS students; no significant relationship between learning style and e-learning-related attitudes; no significant relationship between e-learning-related attitudes and academic commitment; and no mediating effect of e-learning-related attitudes on the relationship between learning style and academic commitment. By testing these hypotheses, the study not only provides empirical evidence to validate its theoretical framework but also generates practical recommendations that CHED and higher education institutions can use to enhance teaching effectiveness and student success.

Moreover, to provide a link to the underlying theory, specific research questions and evidence to prove the validity of the research, the following statements are the hypotheses of the study. There is a no significant relationship between learning style and academic commitment of LIS students; learning style and test of e-learning related attitude; test of e-learning related attitude and academic commitment. Additionally, test of e-learning related attitude has no mediating effect on the relationship between learning style and academic commitment of LIS students.

Individuals, society, the country, and humanity are all affected by every research study. The goal of this research is to conceptualize and comprehend the mediation effect of the test of e-learning related attitude in the relationship between learning style and academic commitment of LIS students. The significance of this study could be emphasized, and it is expected to have far-reaching implications for LIS students not only in the Davao region but also in the whole world. The findings of this study may also contribute to the growing body of literature on librarianship that focuses on tests of e-learning related attitude, learning style, and academic commitment. On the societal value of the research, it can assist students and faculty in various institutions in achieving tests of e-learning related attitude and maintaining excellent learning style, which leads to a favorable environment.

The results of this study were particularly useful for the Commission on Higher Education (CHED) because they provided specific insights into how students' learning styles and e-learning-related attitudes impacted their academic commitment and performance. For example, the study's findings showed that students with a positive attitude toward e-learning tended to be more engaged and committed to their studies. This information could have guided CHED in designing programs that promoted positive attitudes toward online education. By tailoring these programs to accommodate various learning styles, such as visual, auditory, or kinesthetic, CHED could have better supported students' individual learning needs, ultimately fostering increased academic commitment. For instance, based on the study's results, CHED could have encouraged universities to incorporate more interactive and visually engaging online materials, like videos and infographics, to better support visual learners. Additionally, the research highlighted the need for standardized e-learning facilities across higher education institutions. Had CHED implemented this finding, they could have ensured that all institutions, regardless of location or resources, had access to the necessary tools and platforms for effective online learning. This would have helped reduce disparities between institutions and ensured that all students had equal opportunities to succeed.

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/25may560

Ultimately, the study provided CHED with the data needed to create targeted policies and interventions that could have improved students' e-learning experiences, leading to better academic outcomes across the entire education system.

The findings of this study were valuable for the Commission on Higher Education (CHED), as well as for deans, faculty, and administrators, providing insights that could guide the development of specialized programs and strategies aimed at enhancing academic commitment. The study provided baseline data that could help CHED design programs tailored to students' learning needs based on their learning styles, thereby fostering greater academic commitment. Additionally, the research highlighted the potential need for a memorandum to standardize e-learning facilities across all higher education institutions. Furthermore, administrators, deans, and faculty could have used these insights to improve and tailor educational programs and curricula to better address the specific needs of students. For example, based on the study's findings, deans and faculty might have incorporated more interactive e-learning tools, such as gamified quizzes or video-based lessons, to cater to students with visual or auditory learning preferences. As a result, students would have benefited from targeted interventions designed to enhance their academic commitment, such as personalized study plans or adaptive learning resources. The ability to effectively complete e-learning tasks would have increased students' confidence in engaging with online learning activities, potentially leading to improved academic performance. For instance, students who became proficient with navigating e-learning platforms might have felt more confident participating in online discussions and submitting assignments on time, leading to better grades. Lastly, future researchers exploring other aspects or extensions of this topic could have used this study as secondary data in their research, such as examining the impact of specific e-learning tools or exploring how academic commitment affects long-term learning outcomes.

II. METHOD

- *Research Respondents (or Dataset and Study Area)*

In this study, the population of interest consisted of 168 undergraduate Library and Information Science (LIS) students were enrolled in higher education institutions within the Davao Region. A complete enumeration sampling technique was employed, and questionnaires were distributed to all identified respondents. This method was appropriate, as the population size was relatively small, making it feasible to include every member in the study. The instrument used for data collection underwent validation by a panel of experts, who gave it an overall score of 4.75 out of 5.00, confirming its high level of validity for measuring the intended variables. The total population was drawn from four institutions: the University of Mindanao, Holy Cross of Davao College, the University of Southeastern Philippines, and Cor Jesu College.

The research was conducted in the Davao Region, located in the southeastern part of Mindanao, the second-largest island in the Philippines. The region consisted of five provinces: Davao del Norte, Davao del Sur, Davao Occidental, Davao Oriental, and Davao de Oro (formerly Compostela Valley). The regional center, Davao City, was the largest city in the Philippines in terms of land area.

The respondents of the study were all undergraduate BLIS students enrolled in the identified school in the Davao region. Students from outside the region, as well as graduate students, were excluded from the study. Prior to participation, respondents were informed of their rights, including the freedom to withdraw from the study at any time without incurring any penalties or obligations. Participation was voluntary, and students were assured that their involvement would not cost them anything.

- *Materials and Instruments*

The study utilized adapted and modified survey questionnaires sourced from established instruments developed by previous researchers. The research instrument was organized into three sections corresponding to the study's key variables: Learning Style, Academic Commitment, and E-learning-Related Attitude. The Learning Style section was based on the instrument developed by Merced (2006), which categorizes students' preferences for acquiring and processing information. The Academic Commitment scale was adapted from Vogel and Rabe (2014), designed to measure students' willingness to invest time and effort in their academic responsibilities. The third section, the Test of E-learning Related Attitude (TERA), was based on the work of Kisanga and Ireson (2016), capturing students' perceptions and attitudes toward e-learning platforms and experiences. To ensure internal consistency and reliability of the instrument, Cronbach's alpha coefficients were calculated for each component. The Learning Style scale yielded a Cronbach's alpha of 0.82, indicating good reliability. The Academic Commitment scale demonstrated a reliability coefficient of 0.88, reflecting strong internal consistency. The TERA instrument also showed high reliability, with a Cronbach's alpha of 0.91. These values confirm that the instrument used in this study is statistically reliable and appropriate for measuring the intended constructs.

Furthermore, the survey questionnaire was routed to a panel of experts for feedback, suggestions, and validation. The mean levels of the three variables were interpreted using a matrix for each indicator. This approach was particularly useful in determining the scale reliability and internal consistency of items within single-construct scales. Cronbach's alpha was used to assess reliability by comparing the variation of individual item scores to the aggregate score for each observation (Taber, 2018). Additionally, the survey utilized a five-point Likert scale, with five representing the highest level of agreement and one representing the lowest. The interpretation matrix was used to analyze the mean scores in relation to learning style, academic commitment, and e-learning-related attitudes of LIS students.

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/25may560

Table 1 Materials and Instruments

Range	Descriptive Equivalent	Interpretation
4.20 – 5.00	Very High	The variables are always manifested
3.40 – 4.19	High	The variables are oftentimes manifested
2.60 – 3.39	Moderate	The variables are seldom manifested
1.80 – 2.59	Low	The variables are rarely manifested
1.00 – 1.79	Very Low	The variables are never manifested

➢ *Research Design*

This study employed a non-experimental quantitative design utilizing the descriptive-correlational technique to gather data, ideas, facts, and information relevant to the research. Mediation testing was also incorporated to examine the relationships among three variables: learning style, academic commitment, and e-learning-related attitudes of LIS students.

The descriptive design aimed to provide an overview of existing conditions, while the correlational aspect focused on identifying relationships among variables and predicting trends based on existing data (Stangor & Walinga, 2019). The study investigated the mediating effect of e-learning-related attitudes on the relationship between learning style and academic commitment among LIS students in the Davao Region. The descriptive-correlational method was deemed appropriate for identifying significant associations between learning style and academic commitment; learning style and e-learning-related attitudes; and e-learning-related attitudes and academic commitment.

Mediation testing was conducted to examine the pathways between the predictor, mediator, and outcome variables. Ideally, complete mediation occurred when the direct effect of the predictor on the outcome became non-significant after accounting for the mediator (Khawar & Sarwar, 2021). This study explored whether e-learning-related attitudes served as a mediator between learning style and academic commitment, helping to explain not only whether relationships existed but also how and why they occurred.

Three validated survey questionnaires were adapted and modified from previous research: learning style (Merced, 2006), academic commitment (Vogel & Rabe, 2014), and e-learning-related attitudes (Kisanga & Ireson, 2016). These instruments underwent both internal and external validation. Experts reviewed the questionnaires, resulting in an overall validation score of 4.8 out of 5, confirming their content validity. After incorporating the suggested revisions, the questionnaires were approved for use in the study.

➢ *Data Gathering Procedure*

The study followed a series of steps for data collection. First, questionnaires were consolidated and subjected to internal validation. Next, external validations were conducted by field experts. The study was conducted on October 18, 2024, following necessary revisions to the research design. After revising the initial proposal, the researcher secured approval from both the advisor and the dean of the Graduate School at the University of Mindanao. Subsequently, authorization was obtained from the relevant institutions of the study's respondents, ensuring that the research adhered to institutional guidelines and ethical standards. The questionnaires were distributed via face-to-face interactions and Google Forms. Before distribution, respondents were informed about the study's purpose and their rights, including voluntary participation and confidentiality. Survey data were collected starting October 18, 2024, following approval from the University of Mindanao Ethics Review Committee under protocol number 2024-286.

➢ *Statistical Tools*

For data analysis, several statistical tools were used. The mean measured the levels of learning style, academic commitment, and e-learning-related attitudes. Pearson's Product-Moment Correlation (r) tested the strength and direction of relationships among the variables. Regression analysis was employed to compute beta coefficients for mediation testing. Finally, mediation analysis was conducted using MedGraph and the Sobel z-test to determine the significance of the mediating effect, as guided by Jose (2003), cited in Panti and Gempes (2018).

➢ *Ethical Considerations*

Under Protocol Number 2024-286, the study was submitted to the University of Mindanao Research and Ethics Committee (UMERC) for review. The purpose of the submission was to ensure that the study met ethical standards and that its quality was grounded in the presentation of well-reasoned arguments and unbiased data. UMERC's verification process confirmed that the research had been conducted in a reliable, accurate, and fair manner, and that authorship had been handled ethically and responsibly.

The distinction between honest errors and intentional deception was emphasized, and deliberate efforts were made to eliminate bias in the analysis and presentation of findings. This level of transparency reflected a strong commitment to academic integrity. Since the study involved human participants, all responses were kept strictly confidential. Participants' identities were anonymized to safeguard their privacy, and informed consent was obtained prior to data collection. All recommendations and ethical guidelines set forth by UMERC were fully followed throughout the research process.

III. RESULTS AND DISCUSSION

➢ *Level of Learning Style*

Table 1 presents the descriptive level of learning styles by calculating the mean scores and their distribution, as measured by the standard deviation. The overall mean score for the learning style variable was 3.6, indicating a high level of manifestation of the learning styles among the respondents,

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/25may560

which means the respondents frequently exhibited the learning styles measured in the study. This score was supported by standard deviation values of less than 1, suggesting that the responses were relatively consistent and clustered around the mean values of 3 or 4. These findings aligned with contemporary research indicating that students tended to have strong preferences for specific learning styles, which subsequently influenced their academic performance (Pashler et al.,2008).

Moreover, it was found that students who were aware of their preferred learning styles tended to engage more effectively in their academic work, which led to higher satisfaction and performance (Lin & Tsai, 2020). Additionally, research highlighted the importance of personalized learning strategies, with findings suggesting that aligning teaching methods with students' learning styles could enhance academic achievement and motivation (Zhao et al., 2022). Therefore, the findings in this study suggested that recognizing and accommodating students' learning style preferences could contribute to more effective and engaging learning environments.

For the indicators: visual, auditory, and tactile learning styles. The highest mean score of 3.9 was recorded for the visual learning style, which was interpreted as high, indicating that this learning preference was frequently manifested among the respondents. This finding aligned with research by Al-Omari (2021), who found that visual learners, who preferred to see and observe, often performed better in environments where information was presented through images, diagrams, and written materials. Additionally, a study by Mayer (2005) highlighted that visual aids, such as charts and graphs, helped learners process and retain information more effectively.

Table 2 Level of Learning Style

Indicators	Mean	Standard Deviation	Description
Visual	3.9	0.54	High
Auditory	3.7	0.62	High
Tactile	3.3	0.64	Moderate
Overall	**3.6**	**0.60**	**High**

In contrast, the tactile learning style recorded the lowest mean score of 3.3, which was interpreted as moderate, suggesting that this style was only occasionally demonstrated. This moderate rating for the tactile learning style implied that students were less inclined to prefer hands-on or physical activities as their primary mode of learning, compared to visual or auditory methods. This finding may have been influenced by the nature of Library and Information Science (LIS) programs, which emphasized reading, research, and information processing over experiential or kinesthetic tasks. Furthermore, a study by Zhang et al. (2020) suggested that while tactile learners benefited from physical interaction, the demands of more theoretical curricula often led to a preference for visual and auditory modes of learning.

Thus, the results suggested that while visual learning was the most dominant preference among the respondents, tactile learning was less frequently manifested, possibly due to the academic focus and the nature of the subject matter in the LIS program.

- *Level of Academic Commitment*

Table 2 presents the descriptive statistics for the level of academic commitment among LIS students, including the overall mean score, standard deviations, and interpretations. The overall mean score for the academic commitment variable was 3.9, which was interpreted as high, indicating that, on average, students frequently demonstrated academic commitment in their studies. The standard deviation values for the variable were less than 1, suggesting that student responses were relatively consistent and clustered around the mean values. This result reflects a generally strong sense of dedication to academic tasks across the group.

These findings are supported by several studies in the field. For instance, Yuen and Yang (2022) found that students with higher levels of academic commitment tend to exhibit greater persistence and resilience, especially in academically demanding environments. Similarly, Rahimi and Yadollahi (2021) observed that academic commitment was positively associated with perceived academic success and intrinsic motivation. Furthermore, Gunawan et al. (2020) emphasized the importance of institutional factors such as teacher support and academic structure in reinforcing students' sense of responsibility and commitment. These results validate the current study's findings, underscoring the importance of both personal and contextual influences in shaping students' academic dedication.

When broken down by indicator, the highest mean score was recorded for the commitment indicator at 4.8, which was categorized as very high. This suggests that LIS students demonstrated strong and consistent dedication to their academic responsibilities. This high level of commitment may be attributed to students' long-term goals, intrinsic motivation, and recognition of the value of education, as supported by Mokgele and Mapesela (2023), who noted that students with a clear academic purpose and career aspirations were more likely to remain committed despite external challenges. Additionally, Fredricks, Blumenfeld, and Paris (2004) emphasized that sustained commitment is often a reflection of both emotional and cognitive engagement in academic tasks.

Following commitment, other indicators such as satisfaction and meaningfulness also showed relatively high mean scores, reflecting that students generally found value and relevance in their academic experiences. These results align with the findings of you and Kang (2022), who stated

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that students' perception of academic relevance and satisfaction strongly predicted continued engagement and reduced dropout intentions.

On the other hand, the indicator quality of alternatives registered the lowest mean score of 3.3, categorized as moderate. This suggests that students only occasionally considered other academic or non-academic options outside their current studies. The standard deviation for this indicator was 0.94, indicating a wider spread in responses, possibly due to individual differences in perceived opportunities. Commitment tends to strengthen when the perceived quality of alternatives is low, as explained in the Investment Model by Rusbult and Van Lange (2003), aligning with the present findings. Similarly, a strong identification with one's academic path has been associated with a reduced likelihood of seeking alternative options, thereby reinforcing academic commitment (Abdulrab & Al-Gahtani, 2021).

Table 3 Level of Academic Commitment

Indicators	Mean	Standard Deviation	Description
Commitment	4.8	0.39	Very High
Satisfaction	4.0	0.73	High
Quality of Alternatives	3.3	0.94	Moderate
Investment	3.6	0.80	High
Meaningfulness	3.7	0.81	High
Overall	**3.9**	**0.73**	**High**

➢ *Level of Test of E-learning Related Attitudes*

Table 3, which presented the level of e-learning-related attitudes, displayed the descriptive results through mean scores and their corresponding standard deviation values. The overall mean score for e-learning-related attitudes was 3.7, which fell under the high category. This indicated that, on average, the LIS students in the study frequently demonstrated positive attitudes toward e-learning. Standard deviation values ranged from 0.73 to 0.83 across all indicators, showing a moderate degree of variability and suggesting that responses were relatively consistent, clustering around the mean with no extreme dispersion. These results were consistent with earlier research that highlighted the growing acceptance and positive perception of e-learning, particularly when students had access to structured platforms and adequate support systems (Rahimi & Yadollahi, 2021; Yuen & Yang, 2022). Furthermore, Gunawan et al. (2020) reported that students with more favorable attitudes toward e-learning tended to show improved academic performance and greater engagement.

When the individual indicators were examined, general attitudes recorded the highest mean score of 4.0, which was interpreted as high. This suggested that respondents frequently exhibited a positive outlook toward e-learning as an instructional approach. This result aligned with the findings of Mokgele and Mapesela (2023), who found that students with favorable general attitudes toward online learning were more likely to remain academically engaged. Learning experience, communication and interaction, and motivation and self-discipline followed closely, with mean scores ranging between 3.8 and 3.9—also classified as high. These findings were supported by You and Kang (2022), who emphasized the role of motivation and peer interaction in enhancing persistence and academic success in virtual learning environments. The lowest mean score of 3.7 was observed in the technical skills indicator. Although still categorized as high, this score indicated that respondents demonstrated this aspect slightly less frequently. This aligned with the findings of Abdulrab and Al-Gahtani (2021), who reported that while students generally exhibited positive attitudes toward e-learning, limitations in technical proficiency occasionally hindered their optimal engagement with digital platforms.

Overall, all indicators reflected a high level of e-learning-related attitudes, with slight variation depending on the specific domain. Favorable attitudes, as measured by the Test of E-learning Related Attitudes (TERA), were associated with greater academic commitment, as evidenced in the study by Yadav et al. (2019), where perceptions of e-learning mediated the relationship. A similar link was observed by Sánchez-García and García-Peñalvo (2020), who reported that students' academic commitment corresponded with their attitudes toward e-learning, as assessed through TERA.

Table 4 Level of Test of E-learning Related Attitudes

Indicators	Mean	Standard Deviation	Description
General Attitudes	4.0	0.73	High
Learning Experience	3.9	0.73	High
Communication and Interaction	3.9	0.80	High
Motivation and Self-Discipline	3.8	0.76	High
Technical Skills	3.7	0.83	High
Overall	**3.7**	**0.81**	**High**

➢ *Correlation Analysis of the Variables*

Table 4 presents the results of the correlation analysis between learning style and e-learning-related attitudes, as well as between e-learning-related attitudes and academic commitment, using Pearson's r. The analysis between learning style and e-learning-related attitudes produced an r-value of 0.437 and a p-value of 0.000, which was below the significance threshold of 0.05. This led to the rejection of the

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null hypothesis, confirming a statistically significant relationship between the two variables. This finding suggested that students' preferred learning styles influenced their attitudes toward e-learning. Such a relationship was supported by the work of Kisanga and Ireson (2016), who reported that learning preferences played a crucial role in shaping students' receptiveness to e-learning environments. Similarly, found that students who preferred visual and structured learning styles tended to develop more favorable e-learning attitudes due to the format and presentation of digital learning platforms (Abdulrab & Al-Gahtani,2021). Furthermore, highlighted that multimodal learners were more adaptable and open to e-learning technologies, resulting in more positive attitudes (Alhabeeb & Rowais, 2020).

In the same table, the relationship between e-learning-related attitudes and academic commitment was also assessed. The analysis yielded an r-value of 0.369 with a p-value of 0.000, indicating a statistically significant relationship. The null hypothesis was therefore rejected, affirming that e-learning-related attitudes were positively associated with academic commitment. This result was consistent with findings by Yadav et al. (2019), who noted that students with favorable e-learning attitudes showed higher levels of academic dedication. Sanchez-Garcia and Garcia-Peñalvo (2020) also found a direct association between positive e-learning perceptions and students' academic persistence and involvement. In addition, Rahimi and Yadollahi (2021) reported that when students believed in the usefulness and efficiency of e-learning, they exhibited stronger academic commitment and were more likely to persist in their studies. These findings collectively emphasized that fostering positive attitudes toward e-learning could enhance students' academic commitment and motivation.

Table 5 Correlation Analysis of the Variables

Pair	Variables	Correlation Coefficient	P-Value	Decision on Ho
IV and DV	Learning Style and E-Learning Related Attitudes	0.437	0.000	Rejected
IV and DV	Academic Commitment and E-learning Related Attitudes	0.369	0.000	Rejected

Several studies have explored the relationships among e-learning-related attitudes, academic commitment, and learning style, which align with the findings of this study. For instance, Liu, Kang, and Guo (2021) found a positive correlation between learning style and academic commitment, suggesting that students whose learning styles matched the course material were more likely to demonstrate higher levels of academic dedication.

The connection between learning preferences and e-learning attitudes has also been emphasized in prior research. Lee and Choi (2011) identified that students whose learning preferences aligned with the e-learning environment often developed more favorable attitudes toward online learning. This highlights how course delivery in online formats can influence students' perceptions of the learning process.

Additionally, a strong link between academic commitment and attitudes toward e-learning has been established. Alqahtani (2021) found that students with positive attitudes toward online learning were more committed to their academic tasks and more engaged with course materials. In contrast, those with negative attitudes exhibited lower levels of academic commitment and participation in e-learning activities.

Furthermore, studies have demonstrated a clear relationship between learning styles and academic commitment. Akour and Al-Rawashdeh (2020) observed higher academic commitment among students with a reflective learning style compared to those with an impulsive style. Reflective learners, who tend to process information thoroughly and prefer independent work, showed greater commitment to their studies. Similarly, Islam and Akhtar (2019) found that students with a visual learning preference were more academically committed than those with auditory or kinesthetic preferences, as engagement with visual materials such as images and diagrams enhanced their academic dedication.

- *Mediation Analysis*

Presented in Table 5 are the findings of the mediation analysis. The results revealed that learning style significantly predicted e-learning attitudes ($B = 0.5587$, $p < 0.0001$), accounting for 27.77% of the variance. Furthermore, both learning style ($B = 0.4622$, $p = 0.0003$) and e-learning attitudes ($B = 0.2498$, $p = 0.0359$) were significant predictors of academic commitment, jointly explaining 21.72% of its variance. The indirect effect of learning style on academic commitment through e-learning attitudes was also significant (indirect effect = 0.1395, BootLLCI = 0.0074, BootULCI = 0.2867), indicating a partial mediation. These findings suggest that students with more adaptive or flexible learning styles are likely to develop more positive attitudes toward e-learning, which in turn contribute to greater academic commitment.

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Table 6 Mediation Analysis of Variables

				95% CI			
Effect	**Path**	**B**	**SE**	**Lower**	**Upper**	**z**	**p**
Total	Learning Style → Test of E-Learning Related Attitudes	.5587	.0781	.4041	.7132	7.1500	<0.05
Indirect	Learning Style → Test of E-Learning Related Attitudes → Academic Commitment	.4622	.1249	.2152	.7093	3.7011	<0.05
Direct	Learning Style → Academic Commitment	.2498	.1178	.0167	.4828	2.1203	<0.05

This is consistent with Kolb's Experiential Learning Theory (1984), which underscores the importance of aligning learning environments with individual learning preferences. Supporting this, Graf et al. (2009) emphasized that tailoring e-learning platforms to learners' styles enhances engagement and attitude. Similarly, Sadeghi et al. (2014) and Dizon and Aranes (2021) found that both learning style and perceptions of digital learning environments significantly influence students' academic motivation and persistence, particularly in blended learning contexts. Overall, these results highlight the importance of promoting adaptive learning strategies and cultivating positive e-learning attitudes to strengthen academic engagement.

IV. CONCLUSIONS AND RECOMMENDATIONS

The findings of this study provide valuable insights into the learning styles, e-learning-related attitudes, and academic commitment of undergraduate Library and Information Science (LIS) students. The results indicate that LIS students predominantly favor visual and auditory learning styles, with an overall mean score of 3.6. This suggests a strong engagement with learning materials that incorporate visual aids (e.g., diagrams, charts, videos) and auditory content (e.g., lectures, podcasts), which aligns well with the LIS curriculum that emphasizes reading, listening, and information processing. In contrast, tactile learning received a lower mean score of 3.3, reflecting lesser preference for hands-on or experiential learning likely due to the theoretical nature of LIS programs. However, the moderate score for tactile learning implies that incorporating practical, application-based activities in specific subject areas could still enhance learning outcomes.

The study also assessed academic commitment, revealing a high overall mean of 3.9. The indicator "commitment" scored highest at 4.8, suggesting that LIS students are strongly dedicated to their academic goals. This high level of commitment may stem from personal motivation, perceived career relevance, and institutional support. Meanwhile, the "quality of alternatives" dimension scored lowest (mean = 3.3), indicating occasional consideration of alternative paths outside their current academic program. These findings suggest the need for institutions to sustain students' academic engagement by reinforcing both intrinsic and extrinsic motivational factors. Providing a broader range of academic and extracurricular options may help engage students with lower commitment levels and create a more balanced educational experience.

Additionally, students demonstrated generally positive attitudes toward e-learning, with an overall mean of 3.7. The highest-rated indicator, "general attitudes," scored 4.0, while "technical skills" received a slightly lower but still high score of 3.7. These results underscore students' openness to online learning but also highlight the need to further support their digital competencies. The significant correlation between learning style and e-learning attitudes ($r = 0.437$, $p = 0.000$) confirms that students with preferred visual and auditory learning styles are more likely to have favorable perceptions of e-learning. Moreover, a significant relationship was found between e-learning attitudes and academic commitment, reinforcing the idea that positive digital learning experiences can promote stronger academic dedication.

The mediation analysis further revealed that e-learning attitudes partially mediate the relationship between learning style and academic commitment. Learning style was a significant predictor of both e-learning attitudes and academic commitment, while e-learning attitudes significantly influenced students' academic dedication. This suggests that students with adaptive or flexible learning preferences are more likely to develop positive attitudes toward e-learning, which in turn enhances their academic commitment. These findings support Kolb's Experiential Learning Theory and align with existing literature that emphasizes the importance of matching instructional strategies with students' learning preferences in digital environments.

In light of these findings, it is recommended that academic institutions integrate diverse and flexible teaching strategies that cater to dominant visual and auditory learning preferences. This includes the use of multimedia content such as videos, podcasts, and interactive presentations to enhance students' engagement, particularly within e-learning platforms. Institutions should also invest in technical training programs and workshops to further develop students' digital literacy and confidence. Furthermore, incorporating interactive simulations, gamified modules, and collaborative online activities may foster more positive e-learning attitudes and, consequently, higher academic commitment. To maximize the benefits of e-learning, institutions should consider employing adaptive learning technologies, learner-centered academic support services, and inclusive digital content that reflect varied learning styles. These strategic enhancements can lead to improved learning experiences, increased academic motivation, and more sustained academic success among LIS students.

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