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# Information-Seeking Behavior among Non-Traditional Learners in Online Education Platforms

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*Abstract* - **Aim: As online education continues to evolve, it increasingly attracts non-traditional learner's individuals who diverge from the conventional college-aged, full-time student demographic- including adult learners, part-time students, career-switchers, and lifelong learners. Understanding how these learners seek, evaluate, and utilize information within online learning platforms is essential for enhancing educational design and learner engagement. It investigates the information-seeking behavior of non-traditional learners across various online education platforms, learning management systems, and informal learning resources.**

**Methodology: A mixed-methods approach was adopted, combining survey data (n = 486), semi-structured interviews (n = 30), and platform usage analytics. Quantitative data were analyzed using descriptive statistics, chi-square tests, and logistic regression models to identify significant predictors of effective information-seeking behavior by utilizing SPSS version 28.**

**Result: That reveals that 68.5% of participants relied primarily on external resources alongside platform content. Chi-square analysis showed a significant association between age group and preference for multimedia resources ($\chi^2 = 24.73$, $p < 0.001$), and logistic regression identified digital literacy level (OR = 2.14, CI = 1.58–2.89, $p < 0.001$) as a strong predictor of proactive information-seeking strategies. Moreover, time constraints (reported by 74.2%) and difficulty navigating course interfaces (62.8%) emerged as key obstacles.**

**Conclusion: The research concludes with recommendations for integrating adaptive learning features, personalized search support, and modular content presentation to enhance user experience. This research contributes to the growing discourse on learner diversity in online education and offers actionable insights for pedagogy, policy, and platform development.**

*Keywords:* **Information-Seeking Behavior, Non-Traditional Learners, Online Education, Learner Engagement**

## I. INTRODUCTION

The rapid advancement of technology and the proliferation of the internet have completely transformed learning settings throughout the world. Online learning platforms have developed into efficient means of providing various learners with flexible, inexpensive, and easily accessible learning options (Isaeva et al., 2025). The advantages of online learning over traditional classroom instruction include self-directed learning, unrestricted geographic access, and a wide selection of courses tailored to various interests and career needs (Darkwa & Antwi, 2021). These platforms have attracted more non-traditional learners, such as individuals advancing their careers, professionals balancing work and family obligations, part-time students, and lifelong learners seeking personal fulfilment. Non-traditional students differ from typical students not only in demographic characteristics but also in needs, motivations, and learning styles (Chang et al., 2021). Non-traditional students typically had multiple responsibilities, such as employment, childcare, or other personal commitments, unlike traditional full-time students. Their information-seeking behavior, including locating, evaluating, and using information, had therefore been more efficient, practical, and goal-oriented (Carreira & Lopes, 2021) (Poursheikhi & Torkestanib, 2015). Understanding how non-traditional learners required and accessed information was essential to designing effective online learning (Menon & Rao, 2024). The key elements for

improved online learning are shown in Fig. 1. Previous studies had primarily addressed how non-traditional students in formal learning environments accessed information (Hofer et al., 2021).

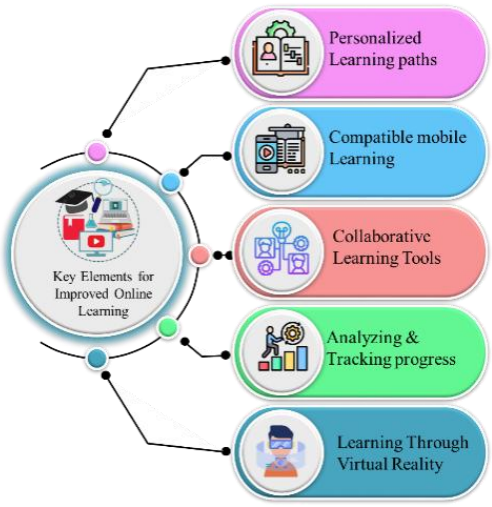


Fig. 1 Key Elements for Improved Online Learning

However, the need to explore how different learners engage with digital learning environments has emerged. Their strategies for accessing and utilizing information might have been influenced by factors such as age, motivation, information literacy, prior knowledge, and learning objectives (Hoadley & Campos, 2022). Additionally, the increasing use of virtual classrooms, massive open online courses (MOOCs), and other online materials has made it even more important to understand how non-traditional students navigate and utilize these platforms (Sutherland et al., 2024). To improve usability and design, understanding the distinctive information-seeking behaviors of non-traditional learners has been crucial. Instructors and designers could create learning spaces that ensure engagement, satisfaction, and achievement by considering each learner's unique needs, preferences, and obstacles (Vlasenko et al., 2023). However, prior investigations had often been constrained by a narrow focus on non-traditional distance learners, which might have led to overlooking issues faced by traditional students and failing to consider diverse economic and cultural backgrounds.

Aim: To improve instructional design, engagement, and learner support systems. To examine how non-traditional learners search, evaluate, and use information across online learning platforms (Monisha et al., 2019).

Organization: Part 2 gathers relevant material, Part 3 describes the methodology, Part 4 shows the performance review, Part 5 shows the discussion, and Part 6 shows the conclusion.

## II. Conceptual Work

The related investigation identifies recent findings on the online behaviors of non-traditional students to inform improved learner support, engagement, and instructional design (Villacis et al., 2024).

Zamecnik et al., (2022) examined survey responses from 232 online students, a sample of 1,687 students, using unsupervised machine learning. Based on motivation, demographics, engagement, and performance, six learner profiles were identified. The small sample size and potential biases were the constraints. The findings point to unique investigation possibilities and obstacles for every profile. Improved learning results and student engagement could have resulted from improved teaching strategies.

Singh et al., (2021) studied the application of the Lean approach to online education amid the COVID-19 pandemic through qualitative semi-structured interviews with 40 non-traditional adult learners (NALs) (Patil & Das, 2024). Work-life balance, lack of standards, difficulties with online learning, and workplace connection were the four themes identified. The absence of quantitative analysis and restricted generalizability were the drawbacks. The goal of the problem statement was to enhance NALs' online learning experiences by applying Lean methods.

The qualitative learning examined twelve online teachers' experiences interacting with non-traditional students on eCampus through document analysis and interviews by Ren, (2023). The findings revealed issues and opportunities related to community development, adaptive engagement strategies, emotional engagement uncertainty, and diversity in course design. Non-generalizability and a limited sample size were disadvantages. To improve web-based learning opportunities for underrepresented groups, institutional assistance was recommended.

To highlight three main social constructivist teaching approaches: transactional distance, time and place dispersion, and collaborative learning by Brown, (2022). These strategies promote student-centered learning by providing social support; yet, their rapid implementation under COVID-19 compromised adherence to fundamental objectives. Weak social support models and a lack of accurate evaluations were among the disadvantages. Maintaining successful online learning methods required an overall review.

Al-Anqoudi et al., (2023) used a quantitative methodology, and 124 online educators completed a self-reporting form. Conventional ($M = 3.16$, $SD = .442$) and non-conventional ($M = 3.05$, $SD = .521$) measures differed significantly, according to statistical analysis (t-test), $p = .009$, eta $= .02$. The absence of gender-based results and experience-dependent effects were the drawbacks. The findings emphasized how crucial it was to use unconventional measurements to guarantee a comprehensive assessment.

Abualadas & Xu, (2023) compared 31 studies of in-person and online anatomy education using test results and satisfaction ratings using a systematic review methodology (Khodjaev et al., 2024). Students were happier with in-person

education, but statistical analysis showed no discernible difference in academic achievement. Potential bias and the exclusion of socioeconomic factors were the limitations. The results show that learning efficiency was increased by combining traditional and online approaches.

Hall & Campbell, (2023) examined community-building using both conventional (video conferencing, discussion boards) and non-traditional (avatar-based meetings) technologies using teacher field notes, course materials, questionnaires, and evaluations. The benefits of synchronous sessions, diverse responses to discussion boards, incremental task achievement, and enhanced flexibility and community were all demonstrated by the results. The lack of measurable outcomes and the variety of student choices were limitations. It emphasized how to use technology as much as possible to improve online learning.

## III. METHODOLOGY

The present exploration methodology section uses a mixed-methods approach to investigate how non-traditional learners find, assess, and use information in online learning settings. To achieve the intent of improving learner support systems, interaction, and instructional design, it uses a mixed-methods approach, including 30 interviews and 486 survey responses. Using descriptive statistics, chi-square tests, and logistic regression, it uses six key characteristics to examine how non-traditional learners find, evaluate, and use information on various online learning platforms. Fig. 2 displays the overall flow.

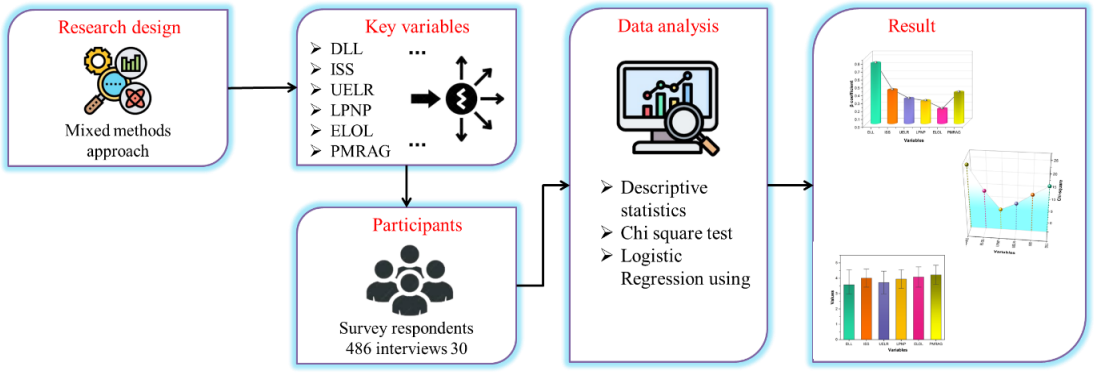


Fig. 2 Overall Flow for Non-Traditional Learners in Online Education Platforms

### A. Key Determinants

To improve teaching, engagement, and learner support systems, the main goal of the investigation was to examine how non-traditional learners searched, evaluated, and used information across online learning systems. Six factors were found to have directly influenced the technological, behavioral, and cognitive dimensions of information-seeking in online learning contexts for the following reasons:

- The Digital Literacy Level (DLL): This was chosen to evaluate a learner's ability to use digital tools and platforms efficiently, which was essential for navigating online resources and performing efficient information searches.
- Information-Seeking Strategy (ISS): This measure traced the trends and methods students utilized to locate relevant information, for example, self-directed versus guided searching.
- Use of External Learning Resources (UELR): This was a reflective initiative and flexibility by contributing to the extent that students utilized resources beyond the learning management system.
- Learning Platform Navigation Proficiency (LPNP): This assessed the ease of use of the online interface and how comfortable the learner was in finding resources, both of which were critical to interaction and information gathering.
- Engagement Level in Online Learning (ELOL): The effectiveness of the platform and course design was captured within the ELOL, capturing the learner's active engagement within discussions, collaboration with the material, and degree of motivation.
- Preference for Multimedia Resources by Age Group (PMRAG): This dimension represented age-patterned trends in the preference for learning modality, specifically the use of multimedia-based resources like interactive simulations, video, and animation, which had the largest influence on increasing understanding and interest across various groups of learners.

By identifying the most important elements that supported non-traditional students' performance in online environments, these variables collectively helped the investigation achieve its goal of guiding further pedagogical and technological interventions.

### B. Overview

To investigate how non-traditional students searched, evaluated, and used information on websites, 30 semi-structured interviews and 486 demographic questionnaires were completed, as shown in Table I.

Survey respondents (n = 486): Most respondents were in the age range, with males outnumbering females; the majority had a graduate degree, and were full-time employees. In terms of digital literacy, respondents were categorized as advanced, basic, and intermediate. Respondents preferred asynchronous learning. The most common weekly time spent on online learning was Fig. 3 (a). The majority occasionally used outside materials and had a moderate level of familiarity with learning management systems.

Interviews (n = 30): individuals that responded, between the ages, were men, and were full-time employees. Most people have a graduate degree, followed by undergraduate and postgraduate degrees. Most had either advanced or intermediate digital literacy. The most popular method was asynchronous learning. Online learning of each week is depicted in Fig. 3 (b). The majority used external resources occasionally or frequently and had a moderate level of knowledge of LMSs.

TABLE I DEMOGRAPHIC DETAILS

| Variables | Category | Survey Participants (n = 486) | Interview Participants (n = 30) |
|---|---|---|---|
| Age Group | 25–34 | 150 (30.9%) | 10 (33.3%) |
| | 35–44 | 180 (37.0%) | 12 (40.0%) |
| | 45 and above | 156 (32.1%) | 8 (26.7%) |
| Gender | Male | 260 (53.5%) | 18 (60.0%) |
| | Female | 226 (46.5%) | 12 (40.0%) |
| Employment Status | Full-time | 320 (65.8%) | 22 (73.3%) |
| | Part-time | 166 (34.2%) | 8 (26.7%) |
| Educational Level | Undergraduate | 190 (39.1%) | 10 (33.3%) |
| | Graduate | 230 (47.3%) | 14 (46.7%) |
| | Postgraduate | 66 (13.6%) | 6 (20.0%) |
| Digital Literacy | Basic | 110 (22.6%) | 5 (16.7%) |
| | Intermediate | 260 (53.5%) | 16 (53.3%) |
| | Advanced | 116 (23.9%) | 9 (30.0%) |
| Learning Preference | Synchronous | 200 (41.2%) | 11 (36.7%) |
| | Asynchronous | 286 (58.8%) | 19 (63.3%) |
| Time Spent on Online Learning/Week | Less than 5 hours | 102 (21.0%) | 5 (16.7%) |
| | 5–10 hours | 180 (37.0%) | 10 (33.3%) |
| | 11–15 hours | 130 (26.7%) | 9 (30.0%) |
| | More than 15 hours | 74 (15.2%) | 6 (20.0%) |
| Familiarity with Learning Management Systems (LMS) | Low | 80 (16.5%) | 4 (13.3%) |
| | Moderate | 260 (53.5%) | 17 (56.7%) |
| | High | 146 (30.0%) | 9 (30.0%) |
| Use of External Learning Resources | Rarely | 80 (16.5%) | 2 (6.7%) |
| | Sometimes | 230 (47.3%) | 14 (46.7%) |
| | Frequently | 176 (36.2%) | 14 (46.7%) |

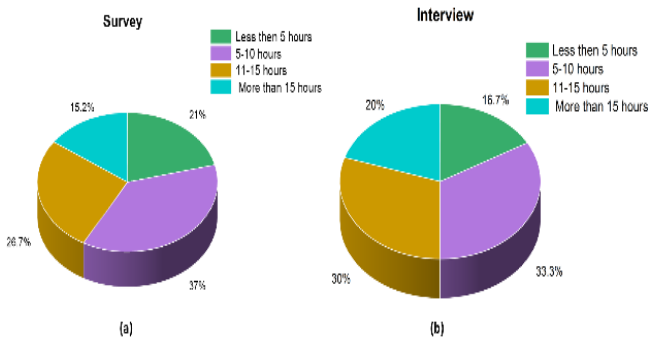


Fig. 3 Percentage of Participants (a) Survey (b) Interview (Time Spent on Online Learning/Week)

### C. *Statistical Analysis*

Investigating how non-traditional learners seek, evaluate, and apply knowledge across online learning settings was the primary goal to enhance learner support systems, engagement, and instructional design. SPSS version 28 was used to perform three major statistical tests for this purpose. The fundamental tendencies, variance, and distribution of responses were displayed using descriptive statistics, which shed light on broad trends in learner behavior. Relationships between categorical variables were tested using chi-square analyses; for example, the association between age category and preference for multimedia resources was shown to be significant. When the determinants of successful information-seeking behavior were examined using logistic regression analysis, the degree of digital literacy was shown to be a significant predictor.

Six major variables were analyzed: Engagement Level in Online Learning (ELOL), Preference for Multimedia Resources by Age Group (PMRAG), Utilization of External Learning Resources (UELR), Digital Literacy Level (DLL), Information Search Strategy (ISS), and Proficiency of Learning Platform Navigation Proficiency (LPNP). When combined, these analyses provided solid, data-driven understandings of student behavior and guided the development of digital teaching strategies.

## IV. Result and Discussion

Due to the methods described, the findings highlight important trends in the ways non-traditional learners engage with online learning environments, with particular attention to their preferred learning formats, digital literacy levels, and information-seeking behaviors.

### A. *Descriptive Statistics*

In statistical analysis, descriptive statistics are used to summarize and characterize a dataset's most important features quantitatively. It was used to examine critical aspects of non-traditional learners' information-seeking behavior in online learning settings. Among the crucial actions are:

- Mean (Average): This shows the overall trend of student answers for each variable (e.g., engagement, digital literacy).
- The standard deviation (SD) highlights the degree of variation or consistency in students' experiences.
- Minimum and Maximum: The range of responses for each component is shown in the minimum and maximum values.

### B. *Intent of Descriptive Statistics*

Descriptive statistics were used to characterize participant responses along key learning behavior factors, providing insight into the average and variability of traits, including digital literacy, participation, and learner choice. To

comprehend central patterns and variability, descriptive statistics served as the foundation for further inferential analysis using logistic regression and chi-square tests. Descriptive statistics matched the variables being measured with the investigation's objective of understanding the elements that influenced non-traditional students' information-seeking behavior in online learning settings by identifying baseline trends.

TABLE II DESCRIPTIVE STATISTICS OF KEY VARIABLES

| Variables | Mean ± SD | Min | Max |
|---|---|---|---|
| DLL | 3.87 ± 0.68 | 2.5 | 5 |
| ISS | 4.01 ± 0.59 | 3 | 5 |
| UELR | 3.72 ± 0.74 | 2 | 5 |
| LPNP | 3.95 ± 0.61 | 2.8 | 5 |
| ELOL | 4.08 ± 0.66 | 3 | 5 |
| PMRAG | 4.22 ± 0.63 | 3.1 | 5 |

The descriptive statistics of six key variables about the conduct of non-traditional learners in virtual learning environments were compiled in Table II and Fig. 4.

- Digital Literacy Degree (DLL)**:** With an average score of 3.87 and a standard deviation of 0.68, the DLL ranged from 2.5 to 5, indicating that participants demonstrated a high to moderate degree of competency with digital technologies.

- Information-Seeking Strategy (ISS): With scores ranging from 3 to 5, the ISS had a mean of 4.01 (SD = 0.59), suggesting that participants were generally proactive in employing a variety of tactics to locate relevant information.

- Usage of External Learning Materials (UELR): The UELR averaged 3.72 (SD = 0.74), with values spanning 2 to 5, which indicated a moderate level of reliance on learning materials beyond the structured course content.

- Learning Platform Navigation Proficiency (LPNP): Respondents indicated an average of 3.95 (SD = 0.61), ranging from 2.8 to 5.0, indicating a general confidence in using online learning environments.

- Engagement Level in Online Learning (ELOL): Active engagement and interaction in the online learning process were indicated by the highest mean of 4.08 (SD = 0.66) on a scale of 3 to 5.

- Preference for Multimedia Resources by Age Group (PMRAG): A high preference for multimedia-based learning materials by people of all age groups was indicated by a mean of 4.22 (SD = 0.63), ranging between 3.1 and 5.

These values captured the range and central tendencies of each variable and served as a foundation for further statistical analysis. It aimed at understanding the factors that influenced non-traditional learners' information-seeking behavior and the impact of digital literacy, engagement, and resource usage on their online learning experiences.

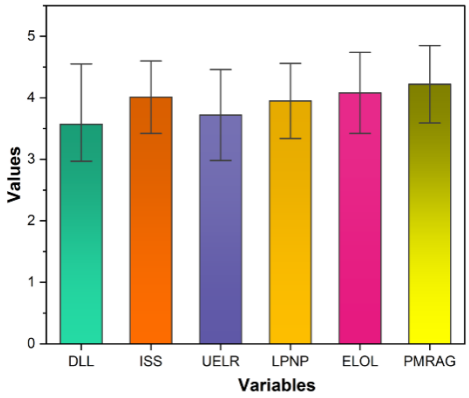


Fig. 4 Distribution of Mean Scores for Key Information-Seeking Variables

### C. *Logistic Regression Analysis*

Logistic regression analysis was applied to assess how selected variables influenced non-traditional learners' likelihood of engaging in proactive information-seeking behavior within online education platforms. The standard logistic regression is expressed in equation (1):

$$Log\left(\frac{o}{1-o}\right) = \beta_0 + \beta_1 W_1 + \beta_2 W_2 + \cdots \beta_l W_l \quad (1)$$

Where, $o$ = Probability of the event occurring, $\beta_0$ = Intercept, $\beta_1, \beta_2, \ldots, \beta_l$ = Coefficients, $W_1, W_2, \ldots, W_l$ = Predictor variables. This method allowed the investigators to estimate the probability of an outcome occurring based on multiple predictors. The key components of the analysis included

- β (Coefficient): Defined the strength and direction of each independent variable's link to the result. A greater likelihood of proactive conduct was indicated by a positive β.

- Probability Ratio (OR or Exp(β)): Showed how changes in the predictor variable affected the probability of the outcome by one unit.

- Confidence Interval (CI): The 95% CI provided a measure of precision by showing the computed range that the real odds ratio was most likely to fall inside.

- P-value: Verified each predictor's contribution to the result by indicating if it had a statistically significant effect (often $p < 0.05$).

By identifying which of these variables, such as digital literacy level, use of external resources, and preference for multimedia, were most predictive of effective information-seeking behavior among non-traditional learners, the regression analysis was validated.

### D. *The Function of Logistic Regression*

Logistic regression was applied to find the degree to which different learner-related traits accounted for proactive information-seeking behavior from non-traditional learners. The statistical procedure helped make an analysis of how

such learners searched, critiqued, and employed content from alternative online learning spaces simpler. Specifically, it enabled the identification of factors that were statistically significant to learner behavior, including digital literacy, the application of external resources, and multimedia preference. In e-learning systems, findings have facilitated the enhancement of student support infrastructure, engagement metrics, and instructional planning.

TABLE III LOGISTIC REGRESSION ANALYSIS OF PREDICTORS OF INFORMATION-SEEKING BEHAVIOR

| Variables | β (Coefficient) | SE | Wald | OR (Exp(β)) | 95% CI for OR | p-value |
|---|---|---|---|---|---|---|
| **DLL** | **0.76** | **0.16** | **22.5** | **2.14** | **1.58 – 2.89** | **< 0.001** |
| ISS | 0.42 | 0.14 | 9.00 | 1.52 | 1.16 – 2.00 | 0.003 |
| UELR | 0.31 | 0.13 | 5.69 | 1.36 | 1.06 – 1.75 | 0.017 |
| LPNP | 0.28 | 0.15 | 3.49 | 1.32 | 0.99 – 1.76 | 0.062 |
| ELOL | 0.18 | 0.12 | 2.25 | 1.2 | 0.95 – 1.51 | 0.134 |
| PMRAG | 0.39 | 0.14 | 7.76 | 1.48 | 1.13 – 1.94 | 0.005 |

The findings of this logistic regression analysis suggested that the following traits contributed to the explanation of why some non-traditional students were more engaged in their quest for information on online learning environments, as shown in Table III and Fig. 5.

- Digital Literacy Level (DLL): This had the most significant impact. The likelihood of actively seeking information was more than doubled (OR = 2.14) for students with greater levels of digital competency ($p < 0.001$).
- Information-Seeking Strategy (ISS): This was significant as well. Students who applied more strategies had 1.5 times higher chances of being active seekers (OR = 1.52, $p = 0.003$).
- Utilization of External Learning Resources (UELR): This was significant; students utilizing external resources had a 36% greater probability (OR = 1.36, $p = 0.017$) of being active seekers.
- Learning Platform Navigation Proficiency (LPNP): It indicated a weaker relationship and was not statistically significant ($p = 0.062$).
- Engagement Level in Online Learning (ELOL): It was affected least and was not significant ($p = 0.134$).
- Preference for Multimedia Resources by Age Group (PMRAG): It was significant, with multimedia users being 1.48 times more likely to actively look for information ($p = 0.005$).

These findings helped to achieve its goal of identifying the variables that influenced how non-traditional learners used, looked for, and evaluated material in online courses.

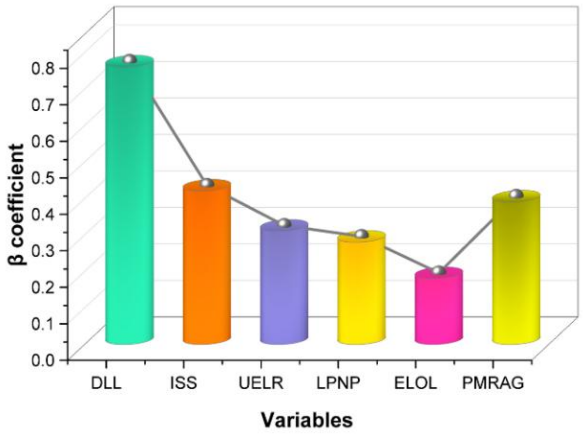


Fig. 5 β Coefficients Representing the Impact of Variables in Logistic Regression

### *E. Chi-Square Test*

Chi-square tests were used in statistical analysis to examine relationships between category variables. Significant relationships between learner characteristics and information-seeking behavior were established with the use of chi-square analysis. The general chi-square test is as follows in equation (2):

$$X^2 = \sum \frac{(O-E)^2}{E} \qquad (2)$$

Where, $X^2$ = Chi-Square statistic, $O$ = Observed frequency, $E$= Expected frequency, $\sum$= Summation across all categories. The main actions that were taken were:

- Chi-Square Value ($\chi^2$): It is used to quantify how strongly the variables were associated.
- The degree of freedom (df): It represented the quantity of independent values that were used in the calculation.
- P-Value: This showed whether the relationship was significant. A significant association was shown by a value of less than 0.05.

By determining which student traits were linked to different tactics in online learning settings, these findings were validated.

### *F. Chi-Square Mission*

To investigate significant relationships between categorical learner characteristics and their information-seeking behavior in virtual environments, the chi-square test was utilized. It made it easier to determine if different learner groups were statistically connected with variables like digital literacy, engagement level, and preferred learning materials. By identifying trends that influenced how non-traditional learners looked, evaluated, and used information, the analysis helped to achieve its main objective. The findings aided in improving learner support systems, engagement strategies,

and instructional design to accommodate different learner needs in online learning settings.

TABLE IV CHI-SQUARE TEST RESULTS FOR KEY VARIABLES INFLUENCING INFORMATION-SEEKING BEHAVIOUR

| Variable | $\chi^2$ (Chi-Square) | df | p-Value | Significance |
|---|---|---|---|---|
| DLL | 18.32 | 4 | 0.001 | Significant |
| ISS | 14.76 | 4 | 0.005 | Significant |
| UELR | 10.94 | 3 | 0.012 | Significant |
| LPNP | 8.21 | 3 | 0.042 | Significant |
| ELOL | 15.29 | 4 | 0.004 | Significant |
| **PMRAG** | **24.73** | **4** | **< 0.001** | **Highly Significant** |

The chi-square test was used to determine whether learner characteristics and their information-seeking behavior in virtual environments were significantly correlated. Its aim of improving teaching design and assistance for non-traditional students was attested to by the significant findings obtained from each variable in Table IV and Fig. 6.

- Digital Literacy Level (DLL): A strong association between digital abilities and how students accessed online material, with a chi-square value of 18.32 and $p = 0.001$.
- Information-Seeking Strategy (ISS): Showed a substantial correlation between learners' online activity and their information-seeking techniques, with a value of 14.76 and $p = 0.005$.
- Use of External Learning Resources (UELR): $p = 0.012$ and reported $\chi^2 = 10.94$ show that using external learning resources had an impact on learners' preferences and involvement.
- The Learning Platform Navigation Preference (LPNP): This showed a relationship between learner behavior and preferred platform navigation methods, with $\chi^2 = 8.21$ and $p = 0.042$.
- Engagement level in Online Learning (ELOL): Resulted in $\chi2 = 15.29$ and $p = 0.004$, suggesting that learning patterns were significantly impacted by engagement levels.
- Preference for Multimedia Resources across Age Groups (PMRAG): Demonstrated the strongest outcome with $\chi^2 = 24.73$ and $p < 0.001$, indicating that multimedia preferences differed across ages and were extremely significant in influencing online learning practice.

These findings confirmed the primary goal of the inquiry, which was to improve learner support systems, motivation, and instructional design for non-traditional learners in online learning environments. It also helped to clarify how different student characteristics influenced online behavior.

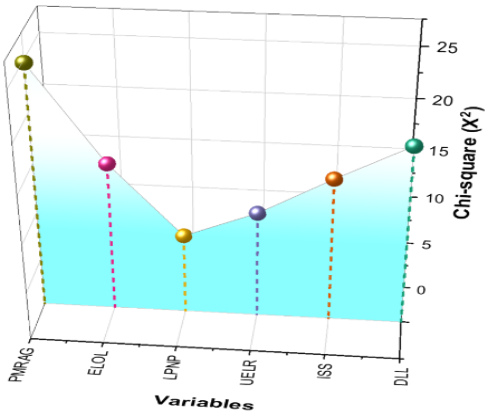


Fig.6 Chi-Square Scores of Key Learning Behavior Variables

## V. DISCUSSION

The aim was to improve instructional design, student involvement, and support systems by investigating how non-traditional learners found, evaluated, and used information on various online learning platforms. Compared to previous investigations, it offers more comprehensive and unbiased data. Singh et al., (2021), for example, employed just interviews and failed to gather any quantitative data, which limited the generalizability of the findings. It gets around this by comparing survey and interview data from a wider range of students. Additionally, Ren, (2023) only looked at instructors' experiences working with non-traditional students, whereas the current study looks at students' behavior directly. Initial findings from descriptive statistics showed that the participants had significant preferences for multimedia learning resources (PMRAG = 4.22 ± 0.63), information-seeking methods (ISS = 4.01 ± 0.59), and high to moderate digital literacy (DLL = 3.87 ± 0.68). These results showed that students favored interactive content and were generally well-prepared to operate in digital environments. Significant correlations between these learning behavior factors and learners' behaviors were also found by chi-square analysis; high significance levels were found for DLL ($\chi^2 = 18.32$, $p = 0.001$) and PMRAG ($\chi^2 = 24.73$, $p < 0.001$). DLL ($\beta = 0.76$, OR = 2.14, $p < 0.001$), ISS ($\beta = 0.42$, OR = 1.52, $p = 0.003$), and PMRAG ($\beta = 0.39$, OR = 1.48, $p = 0.005$) were found to be significant predictors of effective information-seeking behavior using logistic regression analysis. To identify trends, patterns, and important correlations, all statistical methods worked in tandem with one another. By emphasizing the importance of digital skills, student preferences, and engagement in determining non-traditional students' success in online learning, the analysis's findings are completely consistent with the investigated objective.

## VI. CONCLUSION

Enhancing instructional design, learner engagement, and support systems, it sought to investigate how non-traditional learners look for, assess, and use information inside online education platforms. It used a mixed-methods approach, analyzing platform usage metrics, semi-structured interviews

with 30 people, and survey data from 486 participants. Using SPSS version 28, the data was analyzed using logistic regression, chi-square tests, and descriptive statistics. According to the findings, 68.5% of students consulted outside sources in addition to the content on the site. Age group and preference for multimedia resources were shown to be significantly correlated by chi-square tests ($\chi^2 = 24.73$, $p < 0.001$). Digital literacy (OR = 2.14, CI = 1.58–2.89, $p < 0.001$) and information-seeking tactics (OR = 1.52, $p = 0.003$) were revealed to be significant predictors of active information-seeking behavior using logistic regression. The two biggest challenges were found to be time constraints (74.2%) and complex user interfaces (62.8%). It found that providing non-traditional learners with user-centered, adaptive online environments might significantly improve academic success, retention, and engagement across a range of learning population trends. The use of self-reported data from a specific geographic region limited its generalizability.

### *A. Future Scope*

It would be beneficial for future research to look at longer-term patterns and learner groups with greater diversity. Including cross-platform activity tracking and AI-powered analytics might yield deeper insights into how to best utilize digital learning environments for non-traditional learners. Additionally, investigating the efficacy of adaptive technology and individualized learning strategies may encourage higher accomplishment and engagement among varied learner cohorts, ultimately enabling more inclusive and fruitful educational experiences. Expanding it to include a greater range of educational environments and resources may potentially yield practical insights for widespread implementations.

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