Digital Reading Across Generations: E-Book Usage and Comprehension Strategies Among Mongolian Learners

Sarangerel Tserenjav, Yandii Purevsuren
Mongolian National University of Education, Mongolia
E-mail address: ts.sarangerel@msue.edu.mn; yandii@msue.edu.mn

Abstract—The advancement of digital technologies has significantly reshaped how students access and interact with academic content. E-books, as accessible and portable alternatives to printed texts, have gained popularity among learners. This study explores e-book usage among Mongolian university students and compares their behaviors with those of younger learners. The research identifies patterns, preferences, and barriers in digital reading using a structured survey and statistical analyses, including correlation and ANOVA. Key findings indicate that while children engage more frequently in digital reading for entertainment, university students show strategic but less consistent academic usage. Notable differences were found across age, gender, and academic year in terms of device preference, strategy use, and comprehension. The study emphasizes the need for integrated digital literacy training and adaptive instructional strategies tailored to diverse learner profiles.

Keywords— e-book usage, digital literacy, reading behavior, Mongolia, university students, educational technology.

I. INTRODUCTION

The shift toward digital learning resources has transformed how students acquire, engage with, and process academic content. E-books—electronic versions of traditional printed books—offer benefits such as portability, cost efficiency, search functions, and multimedia integration. These features make them an increasingly vital component of contemporary education systems.

Globally, e-book adoption has surged, particularly during the COVID-19 pandemic. In countries like South Korea, the United Kingdom, and the United States, e-books have become integral to higher education, with governments and institutions investing heavily in digital infrastructures (Choi & Lee, 2020; Jamali et al., 2019). E-books are recognized not only for convenience but also for their potential to democratize knowledge access across remote and under-resourced regions (UNESCO, 2021).

Despite these developments, in Mongolia, the use of e-books remains uneven. While mobile penetration and internet accessibility have improved, traditional paper-based learning materials continue to dominate in universities. Many institutions lack centralized e-library platforms, and students often express a preference for printed texts (Tsogtbaatar, 2022). Digital fatigue, limited awareness of academic platforms, and the absence of structured guidance further inhibit the widespread integration of e-books in Mongolian higher education.

Comparative international studies reveal varying patterns. For instance, Mizrachi (2015) reported that U.S. students prefer printed textbooks due to comprehension advantages and reduced eye strain. Conversely, engineering students in Spain favored e-books for their annotation and search capabilities (Aparicio et al., 2020). In Saudi Arabia, mandated use of digital platforms led to increased student access, albeit with concerns about distractions and screen fatigue (Almefleh & Althunibat, 2021).

In Mongolia, early studies have primarily focused on university populations, with limited data available on younger readers. This study addresses this gap by comparing e-book usage between two distinct age groups—university students and children—within the Mongolian context. It examines reading frequency, strategies, challenges, and preferences across demographics.

Research Questions:

1. What is the current level of e-book usage among Mongolian university students and children?
2. What purposes and platforms are most frequently used?
3. What challenges do different age groups encounter in using e-books?
4. Are there significant differences based on gender, age, or academic year?
5. Is there a relationship between strategy use and perceived reading comprehension?

II. LITERATURE REVIEW

The global transition to e-books has been accelerated by improvements in digital infrastructure and the growing prevalence of smartphones and tablets. In countries like the U.S. and the UK, e-books are embedded into curriculum delivery and digital library services (Lamothe, 2021). In South Korea, government-supported platforms have enabled near-universal digital textbook usage in schools (Choi & Lee, 2020).

Digital reading platforms offer several advantages: portability, customizable fonts, search features, built-in dictionaries, and note-taking tools (Patterson & Rodriguez, 2021). For learners in rural or remote areas, digital materials reduce geographic barriers and provide updated content on demand. However, researchers also note drawbacks such as digital fatigue, eye strain, reduced comprehension for

19

extended texts, and distractions (Singer & Alexander, 2017; Delgado et al., 2018).

Research on children's digital reading suggests that interactive content can enhance engagement and vocabulary acquisition (Korat & Blau, 2017). The pedagogical advantages are, however, highly dependent on platform design and parental involvement. Some multimedia features may distract rather than support comprehension (Takacs et al., 2015).

In Mongolia, research by Sarangerel (2021) shows that fewer than a quarter of university students regularly use e-books, citing a lack of access, institutional subscriptions, and training. While initiatives like ER-Central have shown promise (Batjargal & Enkhbaatar, 2022), print materials still dominate. Among schoolchildren, Burmaa and Tumur (2023) found that although smartphone use for reading is high, structured guidance and strategy training are lacking.

There is a need for comparative data on generational differences in digital reading habits within a single cultural context. Most prior studies focus either on adult learners or on children, rarely examining both. This study seeks to fill that gap by analyzing two distinct groups in Mongolia—university students and school-aged children—using the same survey framework

III. METHODOLOGY

Research Design: This study employed a quantitative, cross-sectional survey design to investigate digital reading habits among two age-based cohorts: university students and children aged 10–13. The research aimed to compare e-book usage patterns, strategy deployment, and barriers across these groups in the Mongolian context. A structured online survey was administered using Google Forms to ensure accessibility and consistency in data collection.

A total of 219 participants completed the survey, consisting of 96 university students and 123 schoolchildren from Ulaanbaatar. University students were drawn from faculties including education, humanities, and engineering. Schoolchildren represented grades 5 to 7. Gender distribution was balanced across both samples. Digital informed consent was collected from university students, and parental consent was obtained through institutional procedures for minors.

Two survey versions were created, tailored linguistically and cognitively to each age group. Both included Likert-scale, multiple-choice, and checkbox items covering five thematic sections:

- Demographics: Age, gender, academic level
- Frequency and duration of digital reading
- Device and platform preferences
- Reading strategies (e.g., re-reading, summarizing, note-taking)
- Challenges faced in digital reading environments

The instrument underwent pilot testing with 15 respondents, and revisions were made for clarity and internal consistency.

Data were analyzed using SPSS (v26.0). Descriptive statistics (frequencies, means, SDs) described participant behavior. Pearson correlation tests assessed relationships between variables (e.g., strategy use and comprehension), and one-way ANOVA was employed to identify significant differences across gender, academic year, and age group. Effect sizes were interpreted using Cohen's conventions, and statistical significance was set at $p < 0.05$.

This research was approved by the Institutional Review Board of [Institution Placeholder]. Participation was voluntary, with full anonymity ensured. Parental and student consent protocols adhered to ethical research guidelines for educational settings.

IV. RESULTS

The study analyzed responses from two distinct groups: 96 university students and 123 schoolchildren. University students were aged between 18 and 24 and represented a variety of disciplines, including education, humanities, and engineering. Among them, 84% identified as female. The schoolchildren, aged 10 to 13, were from public schools in Ulaanbaatar and showed a similar gender ratio. Both groups had frequent access to smartphones and the internet, though their digital reading habits and content preferences differed significantly.

TABLE 1. Participant Demographics and Device Access

Group	Sample Size	Age Range	% Female	Main Device Access
University Students	96	18–24	84%	Smartphone (67%)
Schoolchildren	123	10–13	78%	Smartphone (91%)

These data highlight the widespread access to digital devices across both groups, with mobile technology being the primary gateway to digital content.

Digital Reading Frequency and Preferences

TABLE 2. E-Book Usage Frequency and Preferences

Group	% Regular E-Book Use	Preferred Format	Top Barrier
University Students	28%	PDF	Screen fatigue (58%)
Schoolchildren	75%	Animated fiction	Eye strain, distraction

Children reported higher overall engagement with digital reading, primarily for entertainment, while students focused on academic content. Notably, students showed limited awareness of structured academic platforms like ER-Central (17%).

Strategy Use and Comprehension Support

TABLE 3. Reading Strategy Use and Impact on Comprehension

Group	Strategy Type	Usage Rate	Associated Outcome
Students	Note-taking	32%	Higher comprehension scores
Students	Highlighting	25%	Moderate use, not strongly linked
Children	Re-reading	86%	Stronger comprehension (r = 0.52)
Children	Skimming	41%	Negatively correlated with attention (r = -0.31)

These findings suggest that deeper processing strategies, such as note-taking and re-reading, enhance understanding,

especially when consistently applied. However, strategy training appears inconsistent across age groups.

Correlation Analysis

TABLE 4. Pearson Correlation Results

Group	Variable 1	Variable 2	r	p-value
Students	E-book usage frequency	Reading comprehension	0.39	0.006
Students	Use of strategies	Preference for digital format	0.43	0.003
Children	Re-reading behavior	Comprehension level	0.52	0.001
Children	Skimming habit	Attention concentration	-0.31	0.032

These results support the hypothesis that strategy use significantly influences comprehension. Positive correlations suggest that more frequent engagement with e-books and thoughtful strategy use improve understanding. Conversely, passive strategies like skimming may hinder focus.

ANOVA Results

TABLE 5. ANOVA Summary for Group Differences

Factor	Outcome Variable	F-value	p-value	Interpretation
Age Group	Weekly hours of digital reading	7.89	0.006	Children read more frequently in a digital format
Gender	Use of strategic behaviors	4.65	0.034	Females used more metacognitive strategies
Academic Year	Preference: print vs. digital	5.27	0.021	Seniors preferred printed texts more than freshmen

The ANOVA results confirm statistically significant differences based on demographic factors. Children's frequent digital reading likely stems from recreational use, while students' engagement is shaped by academic expectations. Gender differences in strategic behavior align with previous studies showing higher metacognitive awareness among female learners. Finally, the shift in preference among senior students toward print suggests a reversion to more comfortable or effective study habits developed over time.

V. DISCUSSION

This study provides valuable insights into the digital reading behaviors, preferences, and challenges experienced by Mongolian university students and schoolchildren. The comparative design allowed for generational contrasts within a shared cultural and technological context, highlighting both common trends and age-specific distinctions.

While both groups reported widespread access to smartphones and internet connectivity, the nature of digital engagement varied markedly. Children reported higher frequencies of digital reading, primarily for entertainment, consistent with global studies (Korat & Blau, 2017). However,

their engagement was often superficial, lacking guidance and cognitive scaffolding.

University students, on the other hand, accessed digital content mainly for academic purposes, but did so less frequently. Screen fatigue, lack of familiarity with structured platforms like ER-Central, and a continued preference for printed materials contributed to this pattern. These findings align with prior research suggesting students still rely on print for deep comprehension (Mizrachi, 2015).

One of the most significant findings was the positive relationship between strategic behavior (e.g., note-taking, re-reading) and perceived comprehension. Among students, those who employed metacognitive strategies reported higher comprehension levels. However, only a minority actively used such strategies, suggesting a lack of explicit instruction in digital reading techniques.

In children, re-reading and visualization were common, intuitive strategies, but more advanced approaches such as summarizing or annotation were rarely observed. The negative correlation between skimming and attention among children suggests that digital multitasking may undermine focus, echoing concerns raised by Singer & Alexander (2017).

The ANOVA results revealed gender-based differences in strategy use, with female participants demonstrating greater use of metacognitive techniques. This supports existing literature on gender and learning behaviors. Additionally, older students (seniors) reported a stronger preference for print, possibly due to accumulated academic experience or adaptation to high cognitive loads.

These findings highlight a disconnect between access to technology and its effective educational use. While devices are available, students and children alike lack sufficient training or structured support in how to use digital tools for deep learning. This calls for institutional interventions at both the school and university levels.

In particular, universities should integrate e-book platforms within course design and provide training on digital reading strategies. Primary schools should involve parents and teachers in guiding children's digital reading behaviors, ensuring that engagement is purposeful and pedagogically supported.

This study focused on students from urban areas and did not account for rural access disparities. Additionally, self-reported data may introduce bias regarding comprehension and behavior. Future studies could include observational methods, longitudinal tracking, and cross-country comparisons to further understand digital reading behaviors across contexts.

VI. CONCLUSION

This study explored and compared the digital reading behaviors, strategies, and preferences of Mongolian university students and schoolchildren. The findings demonstrate that while digital device access is widespread across age groups, the quality, purpose, and cognitive engagement in digital reading vary substantially.

Children engaged more frequently with digital texts, often driven by entertainment-focused content, but lacked strategic guidance or structured support. University students,

meanwhile, used e-books primarily for academic purposes, though less frequently, and exhibited limited application of effective reading strategies.

The research confirmed positive correlations between strategy use and comprehension outcomes. Note-taking and re-reading behaviors were particularly influential in enhancing understanding, though not widely practiced. Significant demographic differences—especially in gender-based strategy use and senior students' preference for print—highlight the importance of personalized approaches to digital learning.

Overall, the results call for a more deliberate integration of digital reading instruction in both school and university curricula. Equipping learners with the necessary strategies and tools to engage meaningfully with digital content is critical to ensuring that the availability of technology translates into actual educational benefit.

By addressing the cognitive and contextual factors that shape digital reading, educators and policymakers in Mongolia and similar contexts can design more inclusive and effective digital literacy programs. Future studies are encouraged to expand this work across rural populations, longitudinal frameworks, and diverse academic disciplines.

REFERENCES

[1]. Almefleh, A., & Althunibat, A. (2021). E-book usage among university students in Saudi Arabia: Attitudes and barriers. *International Journal of Educational Technology in Higher Education, 18*(1), 22–34. https://doi.org/10.1186/s41239-021-00249-0

[2]. Aparicio, M., Bacao, F., & Oliveira, T. (2020). Adoption of e-book platforms by engineering students in Spain. *Computers & Education, 144*, 103–121. https://doi.org/10.1016/j.compedu.2019.103706

[3]. Batjargal, B., & Enkhbaatar, T. (2022). Effects of ER-Central-based instruction on Mongolian EFL learners' vocabulary acquisition. *Mongolian Journal of Applied Linguistics, 12*(2), 41–56.

[4]. Bhatia, V. K. (1993). *Analysing Genre: Language Use in Professional Settings*. Longman.

[5]. Bruce, B., & Rubin, A. (2005). Readability formulas: Matching tool and task. *The Reading Teacher, 59*(3), 278–282. https://doi.org/10.1598/RT.59.3.9

[6]. Burmaa, Ts., & Tumur, S. (2023). Монгол хүүхдүүдийн цахим орчин дахь унших дадал: Судалгааны тойм. *Боловсрол Судлал, 18*(3), 52–61.

[7]. Cameron, L. (2003). *Metaphor in Educational Discourse*. Continuum.

[8]. Capel, A., & Green, S. (2013). Working with the English Vocabulary Profile. Cambridge University Press.

[9]. Charteris-Black, J. (2004). Corpus Approaches to Critical Metaphor Analysis. Palgrave Macmillan. https://doi.org/10.1057/9780230000612

[10]. Chen, Y.-H., & Baker, P. (2010). Lexical bundles in L1 and L2 academic writing. *Language Learning & Technology, 14*(2), 30–49. https://www.lltjournal.org/item/3091

[11]. Choi, Y., & Lee, M. (2020). Digital textbook policy in Korea: Case studies from national implementation. *Asia Pacific Education Review, 21*(2), 123–138. https://doi.org/10.1007/s12564-019-09612-2

[12]. Cortes, V. (2013). The purpose of this study is to: Connecting lexical bundles and moves in research article introductions. *Journal of English for Academic Purposes, 12*(1), 33–43. https://doi.org/10.1016/j.jeap.2012.11.002

[13]. Crossley, S. A., & McNamara, D. S. (2011). Text coherence and judgment bias: The influence of language and cognitive factors. *Discourse Processes, 48*(3), 171–190. https://doi.org/10.1080/0163853X.2010.494244

[14]. Davaadorj, B. (2020). Challenges of digital library integration in Mongolian universities. *Mongolian Journal of Information Studies, 8*(1), 17–26.

[15]. Delgado, P., Vargas, C., Ackerman, R., & Salmerón, L. (2018). Don't throw away your printed books: A meta-analysis on the effects of reading media on reading comprehension. *Educational Research Review, 25*, 23–38. https://doi.org/10.1016/j.edurev.2018.09.003

[16]. Grabe, W., & Stoller, F. L. (2011). *Teaching and Researching Reading* (2nd ed.). Routledge. https://doi.org/10.4324/9781315833743

[17]. Hyland, K. (2004). *Disciplinary Discourses: Social Interactions in Academic Writing*. University of Michigan Press.

[18]. Jamali, H. R., Nicholas, D., & Rowlands, I. (2019). Scholarly e-book use: A review of the literature. *Journal of Academic Librarianship, 45*(1), 1–8. https://doi.org/10.1016/j.acalib.2018.09.001

[19]. Jurafsky, D., & Martin, J. H. (2021). *Speech and Language Processing* (3rd ed.). Pearson. https://web.stanford.edu/~jurafsky/slp3/

[20]. Korat, O., & Blau, H. (2017). Reading digital vs. printed books to young children: Outcomes and parent–child interaction. *Early Education and Development, 28*(1), 5–23. https://doi.org/10.1080/10409289.2016.1222127

[21]. Lamothe, M. (2021). Transforming university libraries for the digital age. *Library Management, 42*(3), 145–159. https://doi.org/10.1108/LM-04-2020-0065

[22]. Liu, Z. (2020). Print vs. digital: User behavior in digital libraries. *Journal of Academic Reading, 33*(4), 456–472.

[23]. Martin, J. R., & Rose, D. (2008). *Genre Relations: Mapping Culture*. Equinox Publishing.

[24]. Mizrachi, D. (2015). Undergraduates' academic reading format preferences and behaviors. *Journal of Academic Librarianship, 41*(3), 301–311. https://doi.org/10.1016/j.acalib.2015.03.009

[25]. Mokhtari, K., & Reichard, C. (2002). Assessing students' metacognitive awareness of reading strategies. *Journal of Educational Psychology, 94*(2), 249–259. https://doi.org/10.1037/0022-0663.94.2.249

[26]. Nation, I. S. P. (2001). *Learning Vocabulary in Another Language*. Cambridge University Press. https://doi.org/10.1017/CBO9781139524759

[27]. Neumann, M. M. (2018). The effects of e-book reading on young children's literacy: A systematic review. *Educational Psychology Review, 30*(3), 535–564. https://doi.org/10.1007/s10648-017-9407-5

[28]. Owusu-Acheaw, M., & Larson, A. G. (2019). E-resources usage among Ghanaian university students: Access, challenges, and attitudes. *Library Philosophy and Practice, 2019*, 1–15.

[29]. Patterson, L., & Rodriguez, J. (2021). Enhancing digital literacy through e-book integration. *Digital Education Review, 39*, 112–127.

[30]. Sarangerel, Ts. (2021). Use of online academic resources among Mongolian university students. *Journal of Mongolian Higher Education, 5*(2), 33–45.

[31]. Singer, L. M., & Alexander, P. A. (2017). Reading across mediums: Effects of reading digital and print texts on comprehension and calibration. *Journal of Experimental Education, 85*(1), 155–172. https://doi.org/10.1080/00220973.2016.1143794

[32]. Statista. (2023). E-book user penetration worldwide. Retrieved from https://www.statista.com

[33]. Takacs, Z. K., Swart, E. K., & Bus, A. G. (2015). Benefits and pitfalls of multimedia and interactive features in technology-enhanced storybooks: A meta-analysis. *Review of Educational Research, 85*(4), 698–739. https://doi.org/10.3102/0034654314566989

[34]. Tsogtbaatar, D. (2022). Integration of digital reading materials in Mongolian high schools: Current state and future directions. *Asian Journal of Education, 14*(2), 76–91.

[35]. UNESCO. (2021). Literacy through digital platforms: A global perspective. *UNESCO Digital Literacy Report*.