Linking Student Readiness Dimensions to Institutional Strategies: Correlational and Group Difference Insights from eLearnReady Analytics

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Abstract

This study investigates interrelationships among nine dimensions of online learning readiness and their implications for distance education administration. Using a

dataset of over 50,000 students from multiple higher education institutions, correlational and inferential analyses were conducted to examine associations among self-motivation, self-management, learning preferences, and technology-related competencies. Results revealed a strong correlation between Technology Skills and Course Management System Skills (r = .632), highlighting the synergy between general technical competence and platform-specific fluency. Moderate correlations were observed between Self-Motivation and Self-Management (r = .424), indicating behavioral and motivational interdependence. Additional analyses demonstrated statistically significant differences in readiness across both age and gender groups. Younger participants reported higher levels of Self-Motivation, Technology Skills, and Course Management competencies, whereas older participants scored higher in Self-Management, Social Interaction, and Reading/Visual dimensions. Gender analyses revealed small but significant effects, with females scoring higher in Self-Motivation, Self-Management, and Text-Based Learning Preferences, and males slightly outperforming females in Visual Learning dimensions. These findings underscore the value of readiness analytics for institutional decision-making, faculty development, and learner support strategies aimed at improving online learning outcomes.

Keywords: online readiness, correlation analysis, technology skills, distance education management, gender differences, age differences, self-motivation, self-management, learning preferences

Introduction

As online learning becomes a mainstream modality in higher education, institutions increasingly depend on data-driven approaches to enhance student success and

instructional quality. Readiness for online learning---comprising motivational, behavioral, and technical competencies---is a critical factor influencing persistence and satisfaction (Garrison, 2016; Joosten & Cusatis, 2020). Understanding how readiness dimensions interrelate and differ across demographic groups provides administrators with actionable insights for program planning, faculty development, and learner support. This study analyzes correlations and group differences among nine dimensions of online readiness measured through the eLearnReady diagnostic instrument, revealing patterns that inform both research and management strategies for improving distance education delivery (Lee et al., 2019).

Literature Review

Researchers have consistently identified student readiness as a significant predictor of success in online learning environments (Joosten & Cusatis, 2020; Martin et al., 2020). Readiness encompasses multiple dimensions, including self-regulation efficacy, technology efficacy, communication competency, and motivation for learning (Martin et al., 2020; Torun, 2020). Recent studies have validated comprehensive assessment tools, such as the Student Readiness for Online Learning (SROL) instrument and the Learning Skills Journey Tool, which measure readiness across four key constructs: self-regulation efficacy, locus of control, communication efficacy, and technology efficacy (Joosten & Cusatis, 2023; Martin et al., 2020). These instruments offer practical insights for institutional interventions as administrators increasingly seek ways to translate individual-level readiness data into strategies that improve student engagement and retention. Contemporary research has explored intercorrelations among readiness factors, with findings indicating that self-directed learning serves as the strongest predictor of academic achievement,

followed by motivation toward e-learning, while technological self-efficacy and learner control show more variable relationships with success (Joosten & Cusatis, 2020; Torun, 2020). Additionally, demographic differences, including educational level and prior online learning experience, have been shown to influence readiness profiles, with students who have more online learning experience demonstrating higher confidence across readiness competencies (Martin et al., 2020; Tang et al., 2021). By examining intercorrelations and group differences across multiple readiness domains, this study extends prior work by connecting psychometric evidence with management applications relevant to online education leadership.

Method

Data for this analysis were obtained from eLearnReady, an online diagnostic tool assessing nine readiness dimensions: (1) Self-Motivation, (2) Self-Management, (3) Need for Instructor Feedback and Clarity, (4) Peer Interaction and Collaboration, (5) Text-Based Learning Preferences, (6) Visual Learning Preferences, (7) Auditory Learning Preferences, (8) Technology Skills, and (9) Classroom Website Skills (Lee et al., 2019). 52,425 students from multiple higher education institutions completed the survey. Responses were analyzed using Pearson's r for continuous variables, point-biserial correlations for dichotomous gender variables, and Spearman's rho for ordinal data such as age. Statistical significance was evaluated at $p < .001$. One-way ANOVA was used to assess age group differences across seven categories (Under 18 to 66+), and independent samples t-tests examined gender differences. Effect sizes (eta-squared for ANOVA, Cohen's d for t-tests) were calculated to evaluate practical significance. Analyses were conducted using SPSS, with a focus on

identifying relationships and differences of practical and managerial significance (Tabachnick & Fidell, 2019).

Findings

The correlation and ANOVA analyses revealed several noteworthy relationships among readiness dimensions and demographic variables:

- **Strong correlations (|*r*| ≥ .50):** Technology Skills (D8) and Course Management System Skills (D9) demonstrated a strong positive relationship (*r* = .632***), emphasizing the synergy between general technical competence and platform-specific fluency essential for online learning success.
- **Moderate correlations (.30 ≤ |*r*| < .50):** Self-Motivation and Self-Management were moderately correlated (*r* = .424***), reflecting the interdependence between students' internal drive and their ability to organize learning behaviors (Horzum et al., 2015; Lee, 2015).
- **Weak but meaningful associations (.10 ≤ |*r*| < .30):** Small but noteworthy relationships were found between Age and Text-Based Preferences (*r* = .149***, Spearman's rho) and Gender and Text-Based Preferences (*r* = .100***, point-biserial) (Hergüner et al., 2020). A negative relationship between Need for Instructor Feedback and Technology Skills (*r* = -.195***) suggested that students with greater technological confidence tend to rely less on instructor intervention (Gupta, 2024; Nguyen et al., 2022).
- **Group differences by Age (ANOVA results):** One-way ANOVA analyses across seven age categories (Under 18 to 66+) revealed significant differences in all nine readiness dimensions (*p* < .001). Younger participants (Under 35) showed higher scores in Self-Motivation, Listening, Technology Skills, and

Course Management, while older participants (36+) scored higher in Self-Management, Social Interaction, and Reading/Visual dimensions. Effect sizes (η^2 = .006--.030) were small to moderate, indicating practical yet modest group distinctions (Berkling et al., 2021; Hergüner et al., 2020).

- **Group differences by Gender (*t*-test results):** Independent samples *t*-tests indicated significant gender differences in seven of nine dimensions ($p < .001$). Females reported higher means in Self-Motivation, Self-Management, Text-Based Learning, and Listening, whereas males scored higher in Visual Learning dimensions. No significant gender differences emerged for Technology Skills and Course Management System Skills ($p > .05$), suggesting parity in technological readiness across genders (Gupta, 2024; Yaseen et al., 2024).

Discussion

The combined correlational and group difference findings provide nuanced insights into how demographic variables intersect with readiness factors in online learning. The strong association between Technology Skills and Course Management System Skills supports institutional efforts to integrate technology literacy and LMS navigation training as complementary components of student onboarding (Gupta, 2024). Similarly, the Self-Motivation and Self-Management linkage highlights the importance of incorporating self-regulation strategies into advising and early-semester interventions (Horzum et al., 2015; Lee, 2015; Nguyen et al., 2022).

Age-related differences reveal distinct developmental readiness profiles: younger learners demonstrate higher technological fluency and motivational energy, while older learners exhibit superior self-regulation and preference for structured, text-rich content (Berkling et al., 2021; Hergüner et al., 2020). These results align with recent

findings emphasizing the role of prior online learning experience and educational level in shaping readiness profiles (Martin et al., 2020; Tang et al., 2021). Gender patterns, though small in magnitude, reinforce the need for inclusive design approaches. Females' higher scores in self-regulation and text-based learning may reflect stronger engagement with written materials and course organization, while males' higher scores in visual learning suggest differential cognitive strategies (Hergüner et al., 2020; Yaseen et al., 2024). The lack of gender difference in technology and LMS readiness indicates progress toward equity in digital access and competence, a trend supported by recent studies on technological readiness across diverse student populations (Gupta, 2024; Yra et al., 2020).

Implications for Distance Education Administrators

These findings extend previous correlational insights by linking readiness dimensions to actionable institutional strategies:

1. **Data-informed Orientation Programs:** Develop onboarding modules that strengthen both technical and self-management competencies, especially for younger and less-experienced online learners (Joosten & Cusatis, 2020; Lee et al., 2019; Yra et al., 2020).
2. **Targeted Faculty Development:** Encourage faculty to employ multimodal instructional designs that support both text-preferring older learners and visually oriented younger males (Berkling et al., 2021; Hergüner et al., 2020; Martin et al., 2020).
3. **Age-Sensitive Advising:** Implement differentiated advising and support structures that recognize varying readiness profiles across age groups and

experience levels (Berkling et al., 2021; Tang et al., 2021; Yaseen et al., 2024).

4. **Gender-inclusive Design:** Promote balanced instructional media and interaction opportunities to accommodate diverse learning preferences without reinforcing stereotypes (Hergüner et al., 2020; Yaseen et al., 2024).
5. **Equitable Technology Support:** Continue institutional investment in LMS training and digital support services, as both genders now demonstrate similar technology proficiency levels (Gupta, 2024; Yra et al., 2020).
6. **Predictive Analytics Integration:** Leverage readiness scores and demographic patterns in early-alert systems to identify at-risk students and guide personalized interventions, recognizing that self-directed learning and motivation are the strongest predictors of success (Baldwin et al., 2018; Joosten & Cusatis, 2020; Torun, 2020; Yra et al., 2020).

Conclusion

This extended analysis underscores that online readiness is multifaceted---shaped by motivational, behavioral, and technological competencies as well as demographic diversity. The significant differences across age and gender, coupled with strong intercorrelations among readiness factors, provide a robust evidence base for institutional policy and instructional design. By aligning orientation, training, and advising strategies with these findings, distance education administrators can better promote equity, engagement, and persistence in online learning environments. Future research should examine longitudinal changes in readiness profiles and the impact of institutional interventions over time, particularly as validated instruments like the Learning Skills Journey Tool continue to evolve (Horzum et al., 2015; Joosten & Cusatis, 2023; Lee, 2015).

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