

Readiness, Attitude, and Engagement: A Triadic Study of Student Participation in Self-Paced Online Learning

Shyamali Mondal

Abstract: This study investigated the relationships between readiness, attitude, and engagement among higher education students. Adopting a descriptive survey method of quantitative research approach, the study analyzed numerical data from a sample of 120 students, including undergraduate, postgraduate, B.Ed., Ph.D. students in the 3-government college of Ranchi district. Simple random sampling technique was used to gather data using a self-constructed questionnaire comprising twenty-four close-ended items, achieving a high reliability score with a Cronbach's alpha of 0.956. The findings indicated that very positive correlations existed between readiness and engagement ($r = 0.844$, $p < .001$), between attitude and engagement ($r = 0.831$, $p < .001$) and between readiness and attitude ($r = 0.777$, $p < .001$) suggesting that better-prepared students with positive attitude are more engaged in self-paced learning, with an overall correlation of $r = 0.889$ among Readiness, Attitude, and Engagement. The R^2 value of 0.790 indicated that 79% of the variance in Engagement was explained by Readiness and Attitude of higher education students. Furthermore, no significant attitude differences were found between male/female or urban/rural students ($t = -0.212, 0.077$; $p = 0.832, 0.939$). These findings were important in fostering readiness and positive attitudes to enhance student engagement in self-paced online learning.

Keywords: readiness, attitude, engagement, self-paced online learning, higher education.

Highlights

What is already known about this topic:

- Self-paced online learning is a flexible mode of education where learners control the pace, place, and time of their study.
- Students' readiness for self-learning reflects their preparedness, skills, and confidence to engage independently in online, self-paced study.
- Engagement in online learning refers to students' active participation, motivation, and sustained interaction with digital content.

What this paper contributes:

- The study found strong positive correlations: readiness and engagement, attitude and engagement, and readiness and attitude.
- No significant differences in attitude were observed between male and female students or between urban and rural students.

Implications for theory, practice and/or policy:

- Technology integration in education enables flexible, self-paced online learning by providing accessible tools, interactive resources, and data-driven support that enhance student autonomy and engagement.
- Highlights the equitable access to digital tools ensures all learners can participate fully in online education.

Introduction

The digital revolution has profoundly transformed the educational landscape, ushering in new paradigms of learning that transcend traditional classroom boundaries. Among these innovations, Self-paced online learning, referring to a structured, asynchronous form of distance education where learners progress through content at their own pace, has gained prominence, offering learners the flexibility to tailor their educational experiences to their individual needs, schedules, and learning styles. This shift towards more autonomous and flexible learning environments necessitates a deeper understanding of the factors that influence student success in these settings.

In self-paced online learning a structured, asynchronous form of distance education where learners progress through content at their own pace (Moore & Kearsley, 2012) the dynamics of readiness, attitude, and engagement are particularly crucial. Readiness, defined as the degree to which students are prepared to embark on their learning journey, encompasses not only technological skills and access but also psychological preparedness, such as self-motivation and time management skills (Hung et al., 2010). Attitude towards self-paced online learning, encompassing students' beliefs, perceptions, and feelings about this mode of education, significantly impacts their motivation and engagement levels. Engagement, a multi-dimensional construct, involves cognitive, emotional, and behavioural components, reflecting which learners are actively involved in their learning process.

The interplay between these factors forms the foundation of effective self-paced online learning experiences. For instance, a student's readiness can directly influence their initial engagement with course material. Likewise, a positive attitude towards online learning can enhance both readiness and engagement, creating a conducive environment for academic success. Conversely, a lack of readiness or negative attitudes can hinder engagement and impede learning outcomes. Hamutoglu et al. (2021), based on students' prior online educational expertise, discovered that, developing and ongoing experience of pupils has a significant effect on preparation, attitude, and self-control toward the process of e-learning.

This study seeks to explore the relationships between readiness, attitude, and engagement among students participating in self-paced online learning. By employing a comprehensive approach that integrates various theoretical perspectives, including Self-Determination Theory, Technology Acceptance Model, and the Community of Inquiry Framework, this study aims to uncover the underlying mechanisms that drive successful learning in this context. Understanding these dynamics is not only academically significant but also practically relevant. This study's findings can help create and implement online learning programs, helping educators and instructional designers create more supportive and effective learning environments.

Ultimately, this work refers to the expanding body of knowledge about online education, with important implications for improving the quality and accessibility of self-paced learning. By shedding light on the critical aspects of readiness, attitude, and engagement the study aims to foster more inclusive and effective educational practices, empowering students to achieve their full potential towards digital age.

Review of the Related Literature

Azeem (2023) investigated the relationship between digital self-worth and autonomy in online education preparedness with pupil engagement among teens. Muflih et al. (2021) revealed that learners who demonstrated readiness to participate in online learning, simultaneously had a positive attitude about online education. For improved learning results, students must engage in online education with excitement and effort, as well as in a friendly environment (Subban et al., 2022). According to Smith (2005), online education preparedness was defined as managing time, autonomous learning management, intrinsic drive, and a grasp of self-learning styles and perspectives. Khairuddin et al. (2020) examined six components of Open and Distance Learning (ODL) preparedness, a framework that emphasizes learner autonomy and technology-mediated education, highlighting a substantial impact on learners' technology access, self-assurance adoption, independent learning, and retraining.

Gülbahar (2012) researched on pupils' preparedness for online education, exploring sub-dimensions such as utilization of technology, accessibility, and ambition; external variables like as training environments; and success factors leading to readiness conception. Salehudin et al. (2023) found that there is a substantial positive association both readiness as well as attitude in online education ($p < 0.05$, $v = 0.359$). Limenie (2022) investigated the attitudes of learners to virtual education being positive and influenced by extra computer use in school, while preparedness was medium and influenced by gender. Similarly, Luu (2022) demonstrated that students' degree of preparation was only modest, which explained their resistance to using online learning as an alternative to traditional education. Salamat et al. (2022) examined that intrinsic motivation is more crucial than extrinsic incentive in encouraging students throughout the online learning process. Cabi and Kalelioglu (2019) discovered that students' acquisition of internet and computer self-efficacy is beneficial in increasing students' self-directed learning skills. Lee et al. (2016) found learners' ways of learning and instructor support as crucial variables affecting the use of technology for students' learning. Tang et al. (2021) revealed several crucial aspects relevant to motivation for learning, learning preparedness, and student self-assurance in engagement to online instruction throughout the pandemic phase with respect to gender variations and education levels.

Reviewing the existing literature on students' readiness, attitude, and engagement towards self-paced online learning, it has been found that limited studies have focus on finding the relation between digital readiness, attitude, and engagement in online education. While, existing research focused only survey, case study, descriptive method solely, surprisingly, few studies investigated the differences in online learning readiness across various educational levels like school, college, and university, while numerous studies have examined factors influencing online learning, research specifically exploring the relationship between students' readiness, attitude, and engagement towards self-paced online learning remains limited. Further the impact of intrinsic motivation on online learning outcomes and the role of gender in online learning readiness and engagement needs further exploration. So, researcher decided to work in this area to explore the relation between readiness, attitude and engagement towards self-paced online learning among students in higher education.

Theoretical Framework

The relationship between readiness, attitude, and engagement towards self-paced online learning among students in higher education was grounded in several theoretical frameworks. According to Self-Determination Theory (Deci & Ryan, 2000), motivation, autonomy, and competence were essential for learner engagement. Technology Acceptance Model (Davis, 1989) posited that perceived usefulness and perceived ease of use determined technology adoption. The Community of Inquiry Framework (Garrison et al., 2000) emphasized social presence, teaching presence, and cognitive presence in online learning environments.

Research indicated that students' readiness for online learning significantly predicted their engagement (Hung et al., 2010). A positive attitude towards online learning enhanced students' engagement (Lee, 2014). Furthermore, readiness for online learning influenced their attitude towards online learning (Warmansyah et al., 2022).

These theoretical frameworks and empirical studies provided a foundation for understanding the complex relationships between readiness, attitude, and engagement in self-paced online learning. By understanding these relationships, educators and policymakers could develop targeted interventions to enhance students' online learning experiences.

Rationale of the study

In the digitalized era, the incorporation of ICT (information and communication technology) in education has become increasingly prevalent (Bates, 2015). Self-paced online learning has been suggested as a potentially effective approach to improving students' online learning outcomes (Means et al., 2013). Research indicates that effective online learning environments depend on student readiness and attitude (Hung et al., 2010). Additionally, engagement is often cited as a critical factor in

online learning success (Fredricks et al., 2004). This study explores the relationships between readiness, attitude, and engagement, with the aim of providing insights for educators and researchers seeking to promote student success in online learning contexts. Furthermore, self-paced online learning has been associated with increased accessibility in education, which can support lifelong learning and workforce development (OECD, 2019).

Objectives

1. To examine the predictive power of readiness, and attitude on engagement levels towards self-paced online learning among students in higher education.
2. To assess the relationship between readiness and engagement levels towards self-paced online learning among students in higher education.
3. To assess the relationship between attitude and engagement levels towards self-paced online learning among students in higher education.
4. To assess the relationship between readiness and attitude levels towards self-paced online learning among students in higher education.
5. To find out the attitude of students in higher education towards self-paced online learning, based on gender.
6. To find out the attitude of students in higher education towards self-paced online learning, based on geographic location.

Hypothesis

H1: Readiness and attitude significantly predict engagement levels towards self-paced online learning among students in higher education.

H2: Readiness has a positive relation with engagement levels towards self-paced online learning among students in higher education.

H3: Attitude has a positive relation with engagement levels towards self-paced online learning among students in higher education.

H4: Readiness has a positive relation with attitude levels towards self-paced online learning among students in higher education.

H₀1: There will be no significant difference in the attitude towards self-paced online learning between male and female students in higher education.

H₀2: There will be no significant difference in the attitude towards self-paced online learning between urban and rural students in higher education.

Methodology

This study employed a descriptive survey design, utilizing a quantitative research approach (Creswell, 2014) to investigate the relationships between readiness, engagement, and attitude in self-paced online learning. A structured questionnaire, validated through expert review and pilot testing, was used to collect data from a sample of 120 participants selected via random sampling. Statistical methods, including inferential statistics (t-test, ANOVA, and regression), were applied to analyze numerical data and identify correlations among variables.

Population

The population of this study were different disciplines of undergraduate, postgraduate, B.Ed, Ph.D. students in the 3-government college of Ranchi district of Jharkhand.

Sample

A total of 120 students from three government colleges in the Ranchi district of Jharkhand were selected through a simple random sampling technique. The sample size was determined based on the requirements for conducting regression analysis, aiming for a participant-to-variable ratio of

approximately 15:1 (Stevens, 2002), and considering the feasibility of data collection within the study's constraints. Demographic details of the sample are depicted in table 1.

Table 1. Demographic details of the Sample (N=120).

Demographics	Item	Frequency	Percentage (%)
Gender	Male	59	49.2
	Female	61	50.8
Area	Rural	86	71.7
	Urban	34	28.3
Educational Level	Graduation	17	14.2
	Post- Graduation	36	30
	B.Ed.	45	37.5
	Ph.D.	22	18.3

Instruments

A self-constructed questionnaire tool that contained twenty-four close-ended items to assess the relationships between readiness, attitude, and engagement towards self-paced online learning among students (Groves et al., 2011), having a reliability value of .956 Cronbach's Alpha (Vaske et al., 2017), was administered. Data collected was tabulated in MS Excel and SPSS 22.0 was used for Items analyses. Reliability score of items is depicted in table 2.

Table 2. Reliability Score of the Research tool.

	Variable	Cronbach's α	No. of Items
Reliability	Readiness	0.893	8
	Attitude	0.907	8
	Engagement	0.874	8
	Total (Readiness, Attitude, Engagement)	0.956	24

Construction of REA (Readiness, Engagement, Attitude) Scale

To examine the relationships between readiness, attitude, and engagement towards self-paced online learning among students, the researcher developed the Readiness, Engagement, Attitude (REA) Scale towards Self-Paced Online Learning, through the following steps-

After going through various literature on readiness, engagement, and attitudes towards self-paced online learning and related constructs, it was decided to construct a REA Scale on a Liker scale with five possible forced alternatives for each item: Strongly Agree, Agree, Neutral, Disagree, Strongly Disagree. At first, a total pull of 40 items was considered for the scale. Each of the items were in positive statement forms. After the first try-out, several items did not match the factor loading pool which were dropped immediately. Some items were modified as per the suggestions of the validating experts. After modification, the researchers finalized the REA (Readiness, Engagement, Attitude) Scale consisting of a total 24 statements to be administered among the sample. The alternative of Strongly Agree, Agree, Neutral, Disagree, and Strongly Disagree positive statements were given a score of 5,4,3,2,1. This scoring ensured that higher scores indicated a more favourable disposition towards self-paced online learning. According to Hair et al. (2010) factor loadings greater than 0.5, Average Variance Extracted (AVE) above 0.5, and Composite Reliability (CR) above 0.70 indicated a strong relationship, acceptable convergent validity, and good reliability of the items. In this study, the Kaiser-Meyer-Olkin (KMO) value of 0.754 confirmed that the data was suitable for factor analysis, and Bartlett's test of sphericity revealed a significant result ($\chi^2 = 292$, $p < 0.001$), supporting the suitability of the data for factor analysis. The goodness-of-fit indices for the confirmatory factor analysis of the scale were found to be acceptable, with RMSEA= 0.083. CFI= 0.96, TLI= 0.93 (Demir & Cevik, 2025). The results,

presented in Table 3, showed that the factor loadings, AVE, and CR met these criteria, indicating acceptable convergent validity and good reliability.

Table 3. Factor loading of the items.

Variable	Sl. No	Items	Factor Loading	AVE	CR
Readiness	1.	I feel confident in my ability to manage my time effectively to engage with self-paced online learning materials	0.729	0.51	0.89
	2.	I have access to the necessary technological resources to participate in self-paced online learning activities	0.764		
	3.	I possess the self-discipline required to stay focused for complete self-paced online learning modules or assignments	0.655		
	4.	I believe I have the necessary skills (e.g., digital literacy, critical thinking) to succeed in self-paced online learning environments	0.680		
	5.	I am comfortable with independent learning for my own progress in self-paced online courses	0.735		
	6.	I have a clear understanding of the requirements of self-paced online learning courses or programs	0.679		
	7.	I am open to seeking help or support from instructors or peers when needed during self-paced online learning experiences	0.653		
	8.	I am excited about the flexibility for self-directed exploration that self-paced online learning offers	0.741		
Engagement	9.	I actively participate in discussions, forums, or interactive elements within self-paced online learning platforms	0.675	0.50	0.88
	10.	I regularly set goals for myself to stay on track with self-paced online learning modules or assignments	0.637		
	11.	I eagerly explore additional resources or supplemental materials to deepen my understanding of self-paced online learning topics	0.633		
	12.	I frequently interact with course content through multimedia elements such as videos, simulations, or interactive quizzes in self-paced online learning environments	0.673		
	13.	I enjoy collaborating with peers on group activities within self-paced online courses	0.657		
	14.	I regularly adapt strategies to maximize my engagement in self-paced online learning	0.771		
	15.	I take advantage of opportunities for formative feedback to improvement in self-paced online learning modules	0.735		
	16.	I proactively seek out opportunities for independent exploration to supplement my learning experience in self-paced online courses	0.745		

Attitude	17.	I believe that self-paced online learning provides valuable opportunities for flexibility in education	0.773	0.53	0.90
	18.	I view self-paced online learning as an effective way to acquire such as new knowledge, skills at my own pace	0.774		
	19.	I have a positive attitude towards self-directed learning for my own education in online environments	0.766		
	20.	I see self-paced online learning as a valuable complement to traditional classroom-based education, offering additional avenues for learning	0.723		
	21.	I believe that self-paced online learning can help individuals from diverse backgrounds to access quality education	0.733		
	22.	I am enthusiastic about the potential of self-paced online learning to promote lifelong learning	0.732		
	23.	I receive adequate support from instructors in self-paced online learning environments	0.660		
	24.	I find it easy to stay focused on my studies in a self-paced online learning environment	0.634		

Data Analysis

Analysis was based on the objectives of studying the students' readiness, attitude, and engagement towards self-paced online learning.

Predictive Power of Readiness, and Attitude on Engagement Levels Towards Self-Paced Online Learning

Table 4. Regression analysis of readiness, and attitude on engagement levels towards self-paced online learning (N=120)

Variable	r	R Square	F	df	P value
Readiness	0.889	0.790	220	117	<.001
Attitude					
Engagement					

A Multiple Regression analysis was revealed a strong positive correlation ($r = 0.889$) among Readiness, Attitude, and Engagement. The R^2 value of 0.790 indicated that 79% of the variance in Engagement was explained by Readiness and Attitude. This suggested a significant influence of Readiness and Attitude on Engagement in Self-paced Online Learning. The model demonstrated an excellent fit, highlighting the importance of Readiness and Attitude in predicting Engagement. The findings implied that students' readiness and attitude were crucial factors in determining their engagement levels. Overall, the results emphasized the significance of fostering positive attitudes and readiness to enhance engagement in online learning environment. Thus, the hypothesis H1 was accepted.

Relationship Between Students' Readiness, Attitude and Engagement Levels Towards Self-Paced Online Learning

The relationship between the three variables viz. readiness, attitude and engagement of the students towards Self-Paced Online Learning, was examined using the Pearson Product Moment Correlation test. This test only explains the strength of the relationship and whether or not the two variables have a significant relationship.

The significance level was kept at a confidence level of $p < .001$. Table 5 presents the result, which indicate a substantial positive association between all the three variables measured. The correlation between readiness and engagement towards Self-Paced Online Learning among students came as $r = 0.844$, while that between students' attitude and engagement level with self-paced online learning came

as $r = 0.831$, and that between readiness and attitude came as $r = 0.777$. Along with a positive correlation, the relationship strength was very high as well. Thus, the hypothesis (H2, H3, and H4) was accepted.

Table 5. Relation between Readiness, Attitude, and Engagement towards self-paced online learning (N=120).

Variable	Coefficient	Readiness	Engagement	Attitude
Readiness	Pearson's r value p value (2- tailed) N	1 <.001 120	.844 <.001 120	.777 <.001 120
Attitude	Pearson's r value p value (2- tailed) N	.777 <.001 120	.831 <.001 120	1 <.001 120
Engagement	Pearson's r value p value (2- tailed) N	.844 <.001 120	1 <.001 120	.831 <.001 120

Students' Attitude Towards Self-Paced Online Learning with Respect to Their Gender and Type of Area Their Educational Institution Is Residing

Table 6 represent the attitude of students in higher education towards self-paced online learning between male and female students revealing a t-value of -0.212 and a p-value of 0.832. These results suggested that there was no statistically significant difference in attitude of students between the two genders. Both male and female students in higher education showed a similar attitude towards the self-paced online learning in their learning processes. Therefore, the null hypothesis (H_01) was accepted.

Table 6. t-test of attitude towards self-paced online learning between male and female students and urban and rural students.

Gender		N	Mean	Std. Deviation	Std. Error Mean	t-value	df	Sig.
Attitude towards self-paced online learning	Male	59	28.0	8.16	1.06	-0.212	118	0.832
	Female	61	27.7	7.88	1.01			
	Urban	34	27.7	8.28	1.42	0.077	118	0.939
	Rural	86	27.9	7.91	0.85			

Similarly, Table 6 represent the attitude of students in higher education towards self-paced online learning between urban and rural students revealed a t-value of 0.077 and a p-value of 0.939. These results suggested that there was no statistically significant difference in attitude of students between the two geographical locations. Both urban and rural students in higher education showed a similar attitude towards the self-paced online learning in their learning processes. Therefore, the null hypothesis (H_02) was accepted.

Discussion

The study reveals significant relationships between readiness, attitude, and engagement in self-paced online learning, with strong positive correlations among Readiness, Attitude, and Engagement $r = 0.889$. Specifically, significant correlation exists between readiness and engagement ($r = 0.844$, $p < .001$), attitude and engagement ($r = 0.831$, $p < .001$), and readiness and attitude ($r = 0.777$, $p < .001$). Furthermore, no statistically significant differences in the attitudes were found between male and female

students ($t = -0.212$, $p = 0.832$) or urban and rural students ($t = 0.077$, $p = 0.939$). These findings suggest that self-paced online learning is perceived similarly in students in higher education across demographics. Teachers' plays a crucial role in promoting student engagement in self-paced online learning by focusing on readiness and attitude development. The findings align with that of Geng (2019) where the researcher found that students with self-paced learning tendencies and positive attitudes toward technology were more likely to adopt online learning strategies and achieve their academic goals in blended learning environment (Mondal & Das, 2025). Further, the result was justified by (Luo et al., 2019) demonstrated there is a positive relation between innovative ability, learning attitude, and autonomous learning preparation among learners. Learning attitude moderated, the link between innovative ability like problem solving and autonomous learning preparation ($F=74.227$, $P<0.01$). Karatas and Arpacı (2021) demonstrated that potential of teachers' readiness for online education is favourably connected with their aptitude for self-paced learning, cognitive awareness, and contemporary skills and competencies. These findings showed that increasing aspiring teachers' cognitive awareness, independent learning, and contemporary skills and competencies should help students prepared more effectively for online education (Mondal & Das, 2024). Lin and Dai (2022) indicated that readiness of internet-based learning has a positive impact on self-education for students. While, Ibrahim et al. (2022) showed that, through a passive procedure involving e-learning readiness, orientation to objectives as well as self-worth were significantly strongly related to learning engagement and assessed quality of instruction. In summary, both readiness and attitude positively impact engagement in self-paced online learning, with readiness having a stronger influence. Thus, fostering positive attitudes and equipping students with technological skills will enhance their engagement in self-paced learning environments.

Conclusion and Recommendation

The study explores the complex relationships between readiness, attitude, and engagement in self-paced online learning among higher education students. By examining these dynamics, it reveals that students who feel prepared for online learning are more engaged, and positive attitudes towards online learning correlate with higher engagement levels.

The implications of this study suggest that educators and policymakers should focus on fostering readiness and positive attitudes among students to enhance their engagement in self-paced online learning. This can be achieved by providing students with the necessary skills and support to succeed in online courses, such as training on digital ICT tools (Mondal et al., 2025), time management, and self-directed learning. Additionally, educators can promote a positive attitude towards self-paced online learning by highlighting its benefits, including flexibility, autonomy, and accessibility.

To promote student readiness and engagement in self-paced online learning, educators can provide clear instructions and expectations for online courses, including information on course format, content, and assessment. Furthermore, offering support services, such as technical support, academic support, and counselling, can help students succeed in online courses. Educators can also encourage student interaction through discussion forums, group work, and peer review, which can promote engagement and motivation. Moreover, using a variety of teaching methods, such as video, audio, and text-based materials, can cater to different learning styles and preferences.

Policymakers also play a crucial role in promoting student readiness and engagement in self-paced online learning. They can develop policies and guidelines for online course development and delivery, including standards for course quality and student support. Providing funding and resources for online course development and delivery, including support for faculty training and development, can help to promote innovation and improvement in online education. Encouraging collaboration and sharing of best practices among educators and institutions can also help promote student success.

The findings of this study have significant implications for educators, policymakers, and students themselves, highlighting the need for further research and innovation in this area. By working together, we can promote student readiness and engagement in self-paced online learning and improve the overall quality of online education.

In conclusion, fostering student readiness and cultivating positive attitudes are essential for creating meaningful engagement in self-paced online learning environments. When students feel prepared and supported, they are more likely to succeed academically and develop lifelong learning skills. A

collaborative effort among educators, institutions, and policymakers can ensure that online education becomes more inclusive, effective, and learner-centered. Thus, this study provides a foundation for future research and practical innovations aimed at enhancing online learning experiences.

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About the Author

Shyamali Mondal, Central University of Jharkhand, India; Email: mondalshamu2112@gmail.com , ORCID ID: <https://orcid.org/0000-0002-7478-7745>

Author's Contributions

Author conceptualized the study, conducted the literature review, designed the methodology, performed data analysis, and wrote and edited the research study.

Sustainable Development Goals

This study is relation to the following Sustainable Development Goals (SDGs): Quality Education (SDG 4) and Industry, Innovation, and Infrastructure (SDG 9).

Data Accessibility Statement

Data supporting this study's findings can be obtained from the corresponding author upon reasonable request.

Ethics and Consent

No formal ethical approval was required for this study. However, permissions were obtained from educational institutions, participation was voluntary with informed consent, and confidentiality and anonymity were maintained throughout.

Conflict of Interest

The author declares no conflict of interest associated with this study, and no significant financial support was received that could have influenced its outcome.

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