

# Exploring Knowledge, Attitudes and Barriers among Postgraduate Distance Learners in India

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## Abstract

*This cross-sectional study explored the understanding and perspective of postgraduate students in distance education regarding research, along with the research barriers. The study aimed to compare the knowledge, attitudes, and challenges faced by students across different genders, four age groups, and*

*three fields. A self-report questionnaire was administered to postgraduate students of distance education across three universities in Western India. Questions were primarily closed-ended and consisted of Likert scales. Descriptive statistics, independent sample t-test, and one-way ANOVA were used to analyse and compare the means of groups by gender, age, and field of study while using Excel and Jamovi. The study considered a 95 percent confidence level and the standard significance level p-value of 0.05 for statistical analysis. The study results showed that there was no statistically significant difference in the average knowledge and attitude scores of male and female students toward research. Additionally, there was no significant variance in the knowledge and attitude scores within different age groups and fields. The study revealed an above-average positive attitude towards research. The findings indicated that there was no significant difference in the score of barriers to research between male and female students, different age groups, and fields of postgraduate students of distance education. The major obstacles to involvement in research in distance education were found to be the unavailability of time, mentors, and social and family obligations.*

**Keywords:** distance education, research, knowledge, attitude and barriers.

## Introduction

Access to higher education is an essential driver of social and economic development. It equips individuals with the technical and institutional knowledge necessary to impact individuals and society positively. Research has shown that higher levels of education correspond with higher life expectancy and GDP per capita, highlighting the crucial role of higher education in promoting human development (Tilak, 2003). With over 46,641 institutions, including universities and colleges, India boasts the largest higher education system worldwide. The number of students enrolled in higher education is approximately 43.3 million (MoE, 2023). Higher education's purpose has evolved to prioritize equity and access, with increased public and private financing. This shift has led to a significant increase in the number of institutions and modes of operation.

The role of distance education is notable in the increased access to higher education in India. In terms of total enrolment in Indian higher education, distance enrolment constitutes 10.57%. The number of students enrolled in distance education is 4,572,509, with male students accounting for 55.7% and female students accounting for 44.3%. At the undergraduate level, the total enrolment is around 3.04 million, with 1.81 million male students and 1.23 million female students. The total enrolment is 1.31 million at the postgraduate level, with 0.61 million male students and 0.70 million female students (MoE, 2023). However, despite these enrolment numbers, the flow of distance education students in research programs is limited.

This study aims to investigate the knowledge, attitude, and barriers of postgraduate students in distance education toward research.

### **Statement of the Problem**

Literature suggest that students enrolled in distance education programs often face significant limitations in terms of access to research resources, academic mentorship, and collaborative learning environments. These limitations may affect their knowledge of research methods, shape their attitudes towards research engagement, and present barriers that hinder active participation in scholarly inquiry. Moreover, these factors may vary depending on gender, age, and field of study, highlighting the need for a deeper understanding of the contextual influences on research participation.

In the Indian context, where distance education is expanding rapidly to meet educational demand, little empirical evidence is available regarding how postgraduate students in these programs perceive research and what obstacles they face in conducting it. Without this understanding, efforts to enhance research culture and output among distance learners may remain ineffective.

Therefore, this study seeks to explore the knowledge, attitude, and barriers towards research among postgraduate students of distance education in India, with particular attention to how these factors differ across gender, age groups, and academic disciplines. The findings aim to inform policy, curriculum design, and support services that can improve research engagement and capacity in distance education programs.

### **Objectives of the Study**

- To assess the knowledge and attitudes towards research among postgraduate distance education students.
- To examine whether knowledge and attitudes towards research differ by gender, age group, and field of study.
- To identify the barriers faced by postgraduate distance education students in conducting research.
- To analyze whether research barriers differ by gender, age group, and field of study.

### **Review of Literature**

Several studies have explored the trends in Distance education, including work by Davies, Howell and Petrie (2010), Bozkurt *et al.*, (2015), and Zawacki-Richter and Naidu (2016). Literature on distance learning have also explored student perception and attitudes towards

distance education courses, as seen in studies conducted by Dobbs, del Carmen, and Waid-Lindberg (2017), Horspool and Lange (2012), and Hannay and Newvine (2006).

Petty and Krosnick conducted a study in 1995 and found that knowledge plays a critical role in shaping attitudes. The study revealed that the attitude that remains in memory is determined by the number of beliefs and experiences associated with it, as well as the strength of the connections between them. To measure knowledge, researchers have used open-ended listing tasks in the past. These tasks involve asking individuals to recall attitude-related beliefs and experiences, as done by Davidson *et al.* (1985), Kallgren and Wood (1986), and Wood (1982). Other studies have relied on individuals' reported knowledge about the attitude object, as demonstrated in studies by Davidson *et al.* (1985) and Wood (1982). However, it can be challenging to differentiate the impact of knowledge from the attitude itself, as they are highly correlated. For instance, a study by Bassili (1996) and Krosnick *et al.* (1993) showed that knowledge and attitude were highly related to one another.

Success in research courses depends on students' attitude toward research and their level of knowledge of research methodologies. Attitude and knowledge play a significant role in the success of postgraduate students in research courses. Attitude refers to cognitive preferences and behavioral predispositions towards an object which results in a favorable or unfavorable assessment of a specific stimulus (Miguel and Antonio, 2021). Attitudes towards research represent the positive or negative beliefs or emotions about research that are internalized. Negative attitudes are often characterized by anxiety, fear of failure, low levels of self-efficacy, lack of interest, and poor performance (Lazar, 1991; Maschi *et al.*, 2007; Rabatin and Keltz, 2002; Rubin and Babbie, 2011; Wainstock, 1994). Negative attitudes towards research courses are quite common among postgraduate students despite knowing the importance of research.

Some of the reported challenges include inadequate time, lack of support and guidance from supervisors, insufficient training in research methodology, difficulty in publishing, lack of research self-efficacy, limited access to data sources and materials, and lack of research interest (Park, McGhee and Sherwin, 2010; Alghamdi *et al.*, 2014; Siemens *et al.*, 2010). Additionally, distance education students face unique challenges due to limited research programs, family obligations, and the difficulty of researching while working.

## **Methodology**

This is a cross-sectional study. A 4-page questionnaire was distributed to postgraduate students pursuing education through distance mode in three universities in Western India. Questions were grouped into three categories: demographic characteristics of students, knowledge and attitudes toward research, and barriers to research. The questionnaire was finalized in consultation with the faculty members engaged in distance education programs and a literature review on research attitude. The questions were altered and improved as per the suggestions. The reliability coefficient, measured using Cronbach's alpha, was 0.702 for the knowledge and attitude scale, and 0.648 for the barrier scale.

The data were collected using convenient sampling. The questionnaires were distributed directly to 312 students and 204 students returned the filled-in questionnaire. The questionnaire was distributed to the students pursuing the final year of postgraduate studies through distance mode.

The first part of the questionnaire dealt with demographic information such as gender, age, and field of study.

The second part was regarding knowledge and attitude assessed by 14 questions that included closed and open-ended questions. The close-ended answers were evaluated by a 5-point Likert rating scale ranging from strongly agree (score 1) to strongly disagree (score 5). The questions on knowledge were centered on the research aspect of the curriculum, their involvement in research, and their awareness of research literature in their field. The questions on attitude included their view on the complexity of research, interest, research for career and life, and training. The research experience was studied in open-ended questions that discussed scientific presentations, participation in conferences/seminars, and their enthusiasm to continue in the research field.

The third part consisted of 9 questions (both open-ended and close-ended) on barriers to research. A 5-point Likert rating scale evaluated the close-ended answers. The questions on barriers included the issues related to time constraints, interest, social obligations, and program availability. The open-ended question dealt with measures to address the barriers.

### **Statistical Analysis**

All the data from the filled-in questionnaires were collected and coded for each parameter to examine the students' responses from the faculty/field of social science, languages, and commerce. The postgraduate programs in the faculty/field of social science for the study were History, Economics, Sociology, and Political Science. The postgraduate programs in the faculty/field of languages were English, Gujarati, Hindi, and Sanskrit. The students' answers were compared to identify any impact of age, gender, and field of education on their responses. The quantitative variables were shown as percentages and the qualitative data was shown by means and standard deviations of variables relating to the gender, age group, and field of education.

The data were entered in the Microsoft Excel and were depicted using frequencies, mean, and standard deviation. Descriptive statistics (mean and standard deviation) were used to describe students' overall scores on knowledge and attitude as well as barriers. Categorical data were represented as frequencies. Scientific methods were used for analysis of Likert scale (Sullivan and Artino, 2013; Norman, 2010). The students' knowledge and attitude as well as barriers score based on gender was analyzed using a t-test for comparison of mean scores of male and female students. Similarly, the student's knowledge and attitude as well as barriers score based on age group and field of study was analyzed using two-way ANOVA for comparison of mean scores of male and female students.  $P \leq 0.05$  was considered statistically significant. Data analyses were performed using the jamovi 2.3.28 for the Windows version.

### **Results**

The average age of the participants in the study was 28.61 years. The majority of the students fell in the age group of 21-25 years. Out of the total number of students, 123 (60.29%) were males and 81 (39.71%) were females. Additionally, most of the postgraduate students enrolled in distance education belonged to the languages' faculty (41.18%) while the others were from the social science (32.35%) and commerce (26.47%) faculties, as indicated in Table 1.



**Table 1**  
*Demographic Profile*

Variable		N	%
Gender	Male	123	60.29
	Female	81	39.71
Age Group	21-25	118	57.84
	26-35	43	21.08
	36-45	36	17.65
	46-55	7	3.43
Field/Faculty	Social Science	66	32.35
	Languages	84	41.18
	Commerce	54	26.47

The data was analyzed using both descriptive and inferential statistics. The average mean scores and standard deviations for each factor were calculated. To determine the differences in research knowledge and attitudes between students with different demographic variables, an independent sample t-test and one-way analysis of variance (ANOVA) were utilized to calculate the mean score differences.

**Table 2**  
*T-test for comparison of Mean scores of Male and Female students' knowledge and attitude toward research*

Factors	Male N=123		Female N=81		Statistic	p
	M	SD	M	SD		
I have a course on research methodology	2.44	1.27	2.3	1.27	0.784	0.434
The curriculum has a research component of practice	3.98	1.15	3.81	1.12	0.988	0.324
I am involved in a research project	3.95	1.13	4.09	1.06	-0.856	0.393
I have published research paper/s	4.09	1.04	4.04	1.02	0.355	0.723
I know significant research publications in my field	3.43	1.27	3.54	1.2	-0.629	0.53
Conducting research is not exhausting and distressful	2.88	1.16	2.65	1.06	1.396	0.164
Research deals with discovering innovative ideas	1.83	0.96	1.81	0.78	0.113	0.91
Analysis of data is not complex	2.66	1.31	2.77	1.26	-0.579	0.563
I have an interest in research	2.71	1.48	2.74	1.51	-0.157	0.875
A research degree provides a better future career	2.52	1.39	2.36	1.25	0.85	0.396

I would like to pursue a research degree	2.71	1.46	2.65	1.48	0.252	0.801
Postgraduate programs should provide research training	2.14	1.18	2.11	1.19	0.16	0.873

Table 2 represents the Independent Samples test for mean scores of males and females regarding knowledge and attitude toward research by individual factors. The significance value for all factors is more than 0.05. There was no significant difference in the knowledge and attitude scores for Males (M=2.94, SD=0.594) and females (M=2.91, SD=0.591) conditions;  $t(202) = 0.432$ ,  $p = 0.666$ . The effect size, measured by Cohen's  $d$ , was  $d = 0.0619$ , indicating a small effect. These results suggest that there is no significant difference in the mean knowledge and attitude scores of male and female students toward research.

**Table 3**

*One-way ANOVA for Knowledge and Attitude Measure Across Four Age Groups*

	21-25		26-35		36-45		46-55		ANOVA	
	N=118		N=43		N=36		N=7			
	M	SD	M	SD	M	SD	M	SD	F	p
I have a course on research methodology	2.40	1.41	2.60	1.10	2.00	0.99	2.14	0.38	1.683	0.172
The curriculum has a research component of practice	3.90	1.16	4.12	1.00	3.70	1.24	4.00	0.58	1.037	0.377
I am involved in a research project	3.90	1.17	4.30	0.90	3.90	1.09	4.00	0.58	1.353	0.258
I have published research paper/s	4.10	1.02	4.00	1.20	4.10	0.87	4.29	0.76	0.224	0.880
I know significant research publications in my field	3.40	1.24	3.44	1.40	3.80	1.15	3.57	1.13	0.916	0.434
Conducting research is not exhausting and distressful	2.80	1.12	3.02	1.10	2.60	1.10	2.14	1.35	1.626	0.185
Research deals with discovering innovative ideas	1.90	0.98	1.98	0.80	1.60	0.77	1.71	0.49	1.363	0.255
Analysis of data is not complex	2.60	1.28	2.93	1.40	2.60	1.25	3.14	1.07	0.947	0.419
I have an interest in research	2.70	1.50	3.07	1.40	2.50	1.46	2.57	1.51	1.131	0.338
A research degree provides a better future career	2.40	1.31	2.70	1.30	2.40	1.51	2.14	0.69	0.695	0.556
I would like to pursue a research degree	2.70	1.46	2.70	1.40	2.40	1.58	3.43	1.40	0.938	0.424
Postgraduate programs should provide research training	2.20	1.20	2.02	1.20	2.10	1.08	1.57	1.13	0.846	0.470

Table 3 compares the mean scores of students belonging to four different age groups regarding knowledge and attitude toward research. The mean scores and standard deviation for each age group were: 21-25 (M=2.92, SD=0.61), 26-35 (M=3.07, SD=0.58), 36-45 (M=2.81, SD=0.56), and 46-55 (M=2.89, SD=0.48). The researchers conducted a one-way ANOVA to compare the means of the four groups. A one-way ANOVA revealed no significant difference in the mean

scores of postgraduate students of different age groups,  $F(3,200) = 1.41$ ,  $p = 0.242$ . The effect size, measured by Cohen's  $d$ , was  $d = 0.0058$ , indicating a very small effect.

**Table 4**

*One-way ANOVA for Knowledge and Attitude Measure Across four fields*

Factors	Social Science		Languages		Commerce		ANOVA	
	N=66		N=84		N=54		F	p
	M	SD	M	SD	M	SD		
I have a course on research methodology	2.27	1.23	2.42	1.28	2.46	1.31	0.38	0.683
The curriculum has a research component of practice	3.77	1.15	4.13	1.07	3.74	1.18	2.7103	0.069
I am involved in a research project	4.02	1.06	3.98	1.13	4.04	1.13	0.0537	0.948
I have published research paper/s	4.24	0.73	3.88	1.26	4.15	0.92	2.5365	0.082
I know significant research publications in my field	3.61	1.24	3.38	1.3	3.46	1.18	0.6051	0.547
Conducting research is not exhausting and distressful	2.89	1.19	2.86	1.09	2.56	1.08	1.6198	0.201
Research deals with discovering innovative ideas	1.80	0.93	1.83	0.89	1.83	0.86	0.0255	0.975
Analysis of data is not complex	2.47	1.23	2.83	1.30	2.78	1.33	1.6133	0.202
I have an interest in research	2.64	1.44	2.73	1.52	2.81	1.51	0.2141	0.807
A research degree provides a better future career	2.30	1.24	2.49	1.32	2.59	1.46	0.7407	0.478
I would like to pursue a research degree	2.65	1.46	2.70	1.50	2.70	1.45	0.0272	0.973
Postgraduate programs should provide research training	2.12	1.22	2.14	1.15	2.11	1.19	0.0131	0.987

Table 4 compares the mean scores of students of different fields about knowledge and attitudes toward research across 12 factors. The mean scores and standard deviation of the different fields were as follows: Social Science ( $M=2.90$ ,  $SD=0.59$ ), Languages ( $M=2.95$ ,  $SD=0.55$ ), and Commerce ( $M=2.94$ ,  $SD=0.66$ ). The researchers conducted a one-way ANOVA to compare the means of the three groups. A one-way ANOVA revealed no significant difference in the mean scores of postgraduate students of different fields,  $F(2,201) = 0.133$ ,  $p = 0.876$ . The effect size, measured by Cohen's  $d$ , was  $d = -0.0086$ , indicating a very small effect.

**Table 5***T- test for comparison of Mean scores of Male and Female students' barriers to research*

t- test for comparison of mean scores of male and female students' barriers to research						
Barriers to research	Male		Female		Statistic	p-value
	N=123		N=81			
	M	SD	M	SD		
Lack of interest	2.80	1.45	2.73	1.38	0.3353	0.738
Difficult to give full-time	2.54	1.34	2.80	1.44	-1.3042	0.194
Social and family obligations	2.98	1.35	3.00	1.44	-0.082	0.935
Inadequate training in research	2.28	1.33	2.22	1.30	0.3304	0.741
My current job makes it difficult to do research	2.98	0.90	3.25	0.94	-2.0106	0.046
Non-availability of funding	2.21	0.99	2.28	0.94	-0.5271	0.599
Lack of mentor availability	2.36	1.09	2.44	0.99	-0.5752	0.566
Limited research programs in distance mode	2.02	0.90	2.14	0.98	-0.8331	0.406

Table 5 shows the Independent Samples test results for the mean scores of males and females regarding barriers to research across 8 factors. The significance value for all factors is greater than 0.05. This means that there is no significant difference in the barrier scores of males (M=2.52, SD=0.65) and females (M=2.61, SD=0.62);  $t(202) = 0.925$ ,  $p = 0.356$ . The effect size, measured by Cohen's  $d$ , was -0.132, indicating a very small effect.

**Table 6***One-way ANOVA for Barriers to Research Measure Across Four Age Groups*

	21-25		26-35		36-45		46-55		ANOVA	
	N=118		N=43		N=36		N=7		F	p
	M	SD	M	SD	M	SD	M	SD		
Lack of interest	2.75	1.44	2.79	1.36	3.06	1.47	1.57	0.54	2.196	0.090
Difficult to give full-time	2.72	1.41	2.70	1.28	2.44	1.44	2.14	1.35	0.694	0.557
Social and family obligations	3.19	1.36	2.79	1.26	2.58	1.48	3.00	1.63	2.167	0.093
Inadequate training in research	2.25	1.29	2.05	1.33	2.64	1.31	1.86	1.46	1.611	0.188
My current job makes it difficult to do research	3.15	0.94	3.02	0.99	2.92	0.77	3.29	0.95	0.783	0.505



Non-availability of funding	2.36	0.99	2.05	0.90	2.08	0.91	2.14	0.90	1.599	0.191
Lack of mentor availability	2.42	1.07	2.42	0.88	2.33	1.15	2.00	1.41	0.403	0.751
Limited research programs in distance mode	2.11	0.94	2.19	1.07	1.89	0.75	1.57	0.54	1.419	0.238

Table 6 presents a comparison of mean scores among students of four different age groups concerning research barriers for different factors. The mean scores and standard deviations for each age group were as follows: 21-25 (M=2.62, SD=0.68), 26-35 (M=2.50, SD=0.57), 36-45 (M=2.49, SD=0.56), and 46-55 (M=2.20, SD=0.65). To compare the means of the four groups, we conducted a one-way ANOVA. Results showed no significant difference in mean scores among postgraduate students of different age groups,  $F(3,200) = 1.35$ ,  $p = 0.260$ , with a small effect size of  $d = 0.0051$  according to Cohen's  $d$ .

**Table 7**

*One-way ANOVA for Barriers to Research Measure Across fields of study*

	Social Science N=66		Languages N=84		Commerce N=54		ANOVA	
	M	SD	M	SD	M	SD	F	p
Lack of interest	2.71	1.44	2.86	1.43	2.70	1.40	0.269	0.764
Difficult to give full-time	2.83	1.46	2.37	1.28	2.85	1.39	2.941	0.055
Social and family obligations	2.97	1.36	2.99	1.41	3.02	1.39	0.019	0.982
Inadequate training in research	2.03	1.10	2.24	1.34	2.57	1.47	2.598	0.077
My current job makes it difficult to do research	3.09	0.89	3.11	0.91	3.06	1.00	0.051	0.950
Non-availability of funding	2.27	0.97	2.19	0.96	2.28	0.96	0.190	0.827
Lack of mentor availability	2.33	1.07	2.49	1.05	2.31	1.04	0.596	0.552
Limited research programs in distance mode	2.02	0.92	2.10	0.94	2.09	0.96	0.159	0.853

Table 7 shows the One-way ANOVA test results for the mean scores of students from three different fields regarding barriers to research. The significance value for all factors is greater than 0.05. This means that there is no significant difference in the barrier scores of students from Social Science (M=2.53, SD=0.63), Languages (M=2.54, SD=0.61), and Commerce (M=2.61, SD=0.69). A one-way ANOVA revealed no significant difference in the mean scores of postgraduate students of different age groups,  $F(2,201) = 0.265$ ,  $p = 0.767$ . The effect size, measured by Cohen's  $d$ , was  $d = -0.0086$ , indicating a small effect.

## Discussion

The overall response rate among the postgraduate students in distance education was 65.38% (204/312) while disaggregating by gender, the response rate of males was 66.47% (123/185),

and of females it was 63.78% (81/127). This study found that 70% of respondents had taken a course on research methodology. Despite taking courses on research methodology, distance education students' attitudes toward research were not significantly influenced, as found in other studies too (Sizemore and Lewandowski, 2009). Moreover, despite taking a course on research methodology, most distance education students had no opportunity to apply it through research paper writing, field visits, research seminars, and dissertations. In the absence of an appropriate application of methodology courses, this course may lead to anxiety and develop a negative attitude toward research (Schober *et al.*, 2006).

Many students conveyed that data analysis was complex. They did not have adequate knowledge of the relevant software and statistics. They believed that knowledge of statistics was necessary but showed anxiety about this (Majmudar, Ganesh and Roy, 2015; Murtonen, 2005; Onwuegbuzie and Wilson, 2003). By gender, we did not find a significant difference in the attitude. About 56% of the students expressed their research interest. However, no substantial difference was found by gender and field of study. The attitude that a research degree provides better future opportunities was considered by about 67% of the respondents. By age group, the research interest for the students in the age group 26-35 was high compared to other age groups. About 67% of the respondents perceived that in the postgraduate programs research training should be incorporated. There is no significant difference by gender, age group, and field of study concerning training attitude. The attitude that a research degree provides better future opportunities was considered by about 67% of the respondents. There was no noteworthy difference in attitude by gender, field, and age group. About 57% of the students expressed their desire to pursue a research degree program. The students in the age group 46-55 had a higher desire to pursue a research degree compared to the other age group students.

It was observed that gender, age, and field had no relation to the knowledge and attitude towards research. However, male students displayed a more positive knowledge and attitude towards research compared to their female counterparts, which is consistent with findings from Costello (1991), Williams and Coles (2003), and Maqsood (2019). Although this study did not show a significant relationship between gender and attitude, it is important to note that the mean knowledge and attitude scores of both males and females were not significantly different.

Our study did not show a relationship between age and knowledge as well as attitude. Yet, this contradicts studies of Siemens *et al.* (2010) and Shaukat *et al.* (2014) in which age was positively related to a higher attitude towards research. This observation may be attributed to the relatively homogenous nature of the student sample under investigation concerning the study level in distance education and age.

Like the above, there was no significant difference in the mean scores of the relationship between the fields of study, knowledge, and attitude. This finding aligns with Bandele and Adebule's (2013) research. The reason behind this could be the homogeneous objective of postgraduate distance education students, which is to pursue further education and lifelong learning.

The barriers to conducting research perceived by students were explored in this study. The job, household activities, family, and social obligations were found to be the most significant barriers

to pursuing research. The other barriers included inadequate training, lack of funding, lack of interest, and limited research programs in distance education. Many other studies have also confirmed these barriers to research (Moore and Avant, 2008; Maschi, Wells and Slater, 2010; Park, McGhee and Sherwin, 2010; Chakraborti *et al.*, 2012; Stockfelt, Karlsson and Finizia, 2016). Female respondents reported societal norms and family responsibilities as a major barrier, which has also been found in the literature on access to higher education among women (Madan, 2012; Fontanini, Joshi and Paivandi, 2020).

## Conclusion

The widespread use of distance learning has revolutionized the field of education, making it more accessible to everyone. However, students who opt for these programs may face challenges when it comes to conducting research due to a lack of resources, time constraints, or difficulties in communicating with mentors. To tackle these issues, educational institutions must integrate research-oriented projects and assignments into their distance learning curricula. To ensure that students can overcome the obstacles they face in distance learning, educational institutions must adopt a comprehensive approach that includes support systems, a research-oriented mindset, and digital resources. These institutions should also develop research programs and curricula that are tailored to the specific needs of postgraduate students who are enrolled in distance education programs. By doing so, we can create a more constructive learning environment that fosters critical thinking, creativity, and innovation, and prepares students of distance education for success in research.

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