



Research Article

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Determinants of Research Engagement: A Sociodemographic Analysis of First-Year University Students in Peru's Northern Macroregion

Marco Agustín Arbulú Ballesteros¹
Jose Carlos Montes Ninaquispe¹
Francisco Segundo Mogollón García²
Benicio Gonzalo Acosta Enriquez³
Emma Verónica Ramos Farroñán²
Julie Catherine Arbulu Castillo²
María de los Ángeles Guzmán Valle¹
Olger Huamani Jordan¹

¹Universidad Tecnológica del Perú,
Av. Petit Thouars 116,
Lima 15046, Peru

²Universidad Cesar Vallejo,
Av. Larco 1770, Víctor Larco Herrera,
Trujillo, Peru

³Universidad Nacional de Trujillo,
Av. Juan Pablo II,
Trujillo 13011, Peru

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Abstract

The purpose of this study was to assess the views of first-year university students in the northern macroregion of Peru on scientific research and to identify the ways in which these perspectives are influenced by demographic elements and specific dimensions related to research. For this purpose, a technique based on the sociodemographic study of data from 384 university students was used. Participants completed questionnaires designed to gauge their views on research in various aspects, such as writing scientific papers, being involved in research and being involved in initiatives undertaken by universities to promote research. Trends and correlations among variables were statistically significant. Positive attitudes toward research were more prevalent among women, students from private universities, and those under 30 years old. However, the research acts and parameters of universities were viewed with greater skepticism and ambivalence. It is necessary to adopt specific educational measures to foster a strong research culture, as student attitudes toward research are influenced by a mix of sociodemographic characteristics and academic experiences.

Keywords: Research attitudes, University students, Northern Macroregion of Peru, Scientific research, Sociodemographic factors

1. Introduction

According to Sánchez et al. (2020), scientific research is a cornerstone of knowledge creation and societal development. Research helps us gain a deeper understanding of the natural and social world and devise better methods to address pressing social issues (Herbas & Rocha, 2018). Therefore, understanding students' feelings toward research (Alonso-Garca et al., 2023) within their respective institutions is crucial. The quality and quantity of research emanating from a geographical or institutional setting largely depend on its outlook and attitude toward research (Alyousefi et al., 2023) as well as the caliber of researchers that will follow in their footsteps.

Similarly, in the academic context of universities located in the Lambayeque region of Peru, a notable tendency toward skepticism and ambivalence regarding the laws, norms and parameters governing research practices has been detected. This perception, which is predominant among the academic community, suggests an urgent need for revision and improvement of regulatory and research support frameworks. The implementation of educational measures specifically designed to cultivate and reinforce a serious and dynamic research culture is imperative. This need is based on the recognition that undergraduate attitudes toward scientific research are not exclusively innate or static but are profoundly influenced by a complex interplay of sociodemographic factors and academic experiences. Factors such as age, sex, and socioeconomic and cultural context play key roles in these behaviors.

The term "attitude" describes an individual's general disposition toward a topic. Students' motivation, the quality of their projects, and resilience in the face of research challenges can be impacted by their attitude toward the subject (Poloki & Aleksi, 2020). Individuals with a positive view of research become more involved, while those with a negative view become disinterested or even hostile toward the process (Bono et al., 2023).

Globally, attitudes toward research vary greatly across countries, educational systems, and academic fields (Lindhahl, 2023a; Maddens et al., 2023; Thi et al., 2023). To effectively implement initiatives and educational policies that foster a strong and sustained research culture, it is vital to deeply understand these attitudes in their respective settings (Canfield et al., 2023). Several studies have been conducted on how students engage with research. It has been noted that in countries with a deeply rooted research tradition, such as the USA, China, and Korea, there is a high valuation of research in academia, as evidenced by significant investment in R&D and the incorporation of research activities from early educational stages (Li, 2022; Yi et al., 2022).

However, perspectives can vary based on the environment. Although the importance of economic development has been recognized in several African and Asian countries, there are limited research training opportunities and scarce financial resources available to support it (Khamzin et al., 2020; Mahomed et al., 2021). Consequently, university students might react negatively to studies, displaying fear, ignorance, or disinterest (Machingambi, 2020).

Students' perspectives can also be influenced by socioeconomic and political conditions. Research can appear alien and even daunting to students from countries where standardized exams or conventional teaching techniques play a significant role in the education system (Clarke, 2023; Pyhäntö et al., 2020). The exact opposite occurs in classrooms where students are encouraged to think critically, research independently, and take initiative (Lindhahl, 2023a).

In recent decades, the Peruvian educational system has undergone significant changes, despite being a developing country. There have been significant strides in advancing higher education and research, but hurdles remain.

A preliminary study by Lazo-Porras et al. (2020) indicated that university students in Peru have mixed attitudes toward research. On one hand, research is deemed vital for individual and professional growth (Garca-Gutiérrez et al., 2023) and hence valued. On the other hand, issues such as a lack of resources, scant research training in the early stages, and specific cultural beliefs about research might lead to less positive attitudes or a lack of confidence in one's research abilities (Cordero-Chunga & Flores-Cohaila, 2023).

The northern macroregion of Peru, comprising departments such as Tumbes, Piura, Lambayeque, La Libertad, Cajamarca, and Amazonas, has unique characteristics that distinguish it from the overall national scene. Despite having renowned universities and hosting various research projects, there is a lack of specific studies addressing the attitudes of university students in these regions toward research.

This gap justifies the present study. Understanding the specific attitudes of university students in the northern macroregion of Peru toward research is essential. This understanding allows for the design of more effective educational interventions, promotes a robust research culture in the region, and ultimately contributes to the academic and socioeconomic development of the Northern region.

To implement policies and educational strategies that foster a strong research culture, it is essential to have a thorough understanding of the attitudes of key stakeholders, in this case, university students (Vikashni, 2023). These young individuals represent the future of research in the country, and their disposition and perception of research will have a significant impact on the quality, quantity, and direction of scientific investigation in the coming decades (García-Serna et al., 2023).

A clear understanding of student attitudes will allow educational institutions and relevant authorities to design curricula, programs, and strategies that reinforce positive attitudes and address negative attitudes. By promoting a favorable attitude toward research from the early stages of higher education, more significant outcomes can be achieved through academic training, the quality of research papers, and student commitment to knowledge creation. The strengthening of the research culture has immediate implications not only for the educational and professional field. In the long run, a society that values and promotes research will be better equipped to adapt to changes, face challenges, and generate innovations. University students, as future professionals and leaders, play a pivotal role in shaping this culture.

2. Theoretical Framework

Over the years, much reflection has been placed on how to improve the academic research process. University students' perspectives on research are crucial for the development, consolidation, and dissemination of scientific knowledge since they represent the future leaders of the profession and the academic world. In this theoretical framework, we will examine how various factors influence these attitudes.

2.1 Dimension 1: Attitude toward the drafting of scientific papers

The drafting of scientific papers is one of the fundamental pillars in disseminating knowledge within the academic community. A scientific paper is a document that presents original research results and undergoes peer scrutiny to ensure its validity and relevance (Liu et al., 2023; Spronken-Smith, 2020). Students' attitudes toward the creation of these documents can be seen as an indicator of their willingness to actively contribute to the scientific discourse. Various factors can influence students' attitudes toward drafting scientific papers. These include the perception of the relevance and applicability of their research, mastery of scientific writing and argumentation skills, and the existence of opportunities and platforms for publication (Cooley et al., 2023). A positive attitude toward paper drafting can drive students to actively seek publishing opportunities, which can, in turn, open doors for collaboration, recognition, and advancement in their academic and professional careers.

2.2 Dimension 2: Attitude toward participation in research

Participation in research, either as a lead investigator or in supportive roles, represents an invaluable opportunity for learning, developing critical skills, and contributing to collective knowledge. This

involvement can foster a deeper understanding of scientific methods, research ethics, and the significance of contributing to the field of study (Bolt & Schreier, 2023). Students' attitudes toward participation in research can be affected by various barriers and facilitators (Romaniuk et al., 2023). Barriers might include a lack of opportunities, resources, mentorship, or recognition. On the other hand, facilitators can be structured research programs, academic incentives, or institutional support (Jackson et al., 2023). Students who exhibit a positive and proactive attitude toward research participation are typically better positioned to assume leadership roles in research teams, contribute to innovation in their field, and access broader professional networks.

2.3 *Dimension 3: Attitude toward the university's actions to encourage student research.*

Universities play a critical role in shaping attitudes toward research. A university's actions, such as offering workshops, seminars, funding, and mentorship opportunities, can profoundly influence students' perceptions of and willingness to conduct research (Khalid et al., 2023). The perception of robust institutional support can act as a catalyst for the development of a positive investigative attitude (Lindahl, 2023b). Students who feel that their university values and actively promotes research may be more motivated and empowered to embark on investigative projects. It is essential to recognize that attitudes do not form in a vacuum; they are shaped by students' experiences, expectations, and demands (Fox et al., 2023). Understanding these expectations allows universities to design more effective and targeted actions to foster a strong research culture.

2.4 *Dimension 4: Attitudes toward Research Parameters within the University*

Research parameters within university research refer to the rules, guidelines, and criteria guiding the execution and evaluation of investigative projects. These can encompass ethical, methodological, and results presentation standards (Narbut et al., 2023). Such investigative parameters are pivotal in ensuring the integrity, rigor, and validity of studies (Steen & Rose, 2023). They provide a coherent framework within which researchers can operate, facilitating the reproducibility and comparability of results. Students' attitudes toward these parameters can differ. While some may view them as invaluable tools for structuring and guiding the investigative process, others may perceive them as limiting or restrictive (Huang et al., 2023). This duality can influence a student's willingness to engage in research within the university framework.

2.5 *Dimension 5: Attitude toward the Feasibility of Conducting Research within the University.*

The availability of resources, infrastructure, and support within a university can largely determine the actual feasibility for students to actively engage in research. Institutions that provide ample research opportunities can foster more proactive and positive attitudes among students (Xu et al., 2023). Students often might perceive barriers, whether real or perceived, preventing them from engaging in research. Such barriers can include a lack of time, financial resources, or access to laboratories and equipment (Paiman & Fauzi, 2023). Recognizing and addressing these barriers is vital in nurturing a healthy research attitude. Access to knowledgeable mentors and academic guides can significantly impact students' attitudes toward research (Tachie-Donkor & Ezema, 2023). Such mentors can provide direction, clarity, and support, simplifying the research process for students.

2.6 *Dimension 6: Attitude toward Reviewing Research Material.*

Reviewing the literature and prior research material is a pivotal step in any investigative process. This approach provides context, prevents duplicate efforts, and allows the researcher to identify gaps in existing knowledge. Students' attitudes toward material reviews can be influenced by several factors (Giannetti et al., 2023). These encompass the accessibility of sources, the perceived relevance of

material, and the ability to synthesize and critically analyze information. Encouraging strong skills in literature review and analysis is vital for fostering a positive attitude toward this phase of the investigative process. Training in these competencies can affect the quality and effectiveness of student-led investigations (Arce-Trigatti et al., 2023).

In the era of digitalization, emerging technologies such as advanced databases, text analysis tools, and online collaborative platforms have transformed how students access and review scientific literature. These tools not only streamline the search for relevant material but also influence students' attitudes by making the process more efficient and less tedious (Nigro & Wortham, 2023). Differentiating between primary and secondary sources is essential in research. While the former provides original data and direct findings, the latter offer interpretations and analyses. The perception and value students assign to each type of source can influence the depth and quality of their literature reviews (Van Halderen, 2023).

3. Materials and Methods

According to Binda and Balbastre-Benavent (2022), quantitative studies are characterized using mathematical techniques to evaluate the behavior of variables under specific circumstances. Given the aforementioned factors and the set objectives, it is imperative to emphasize that this research employed a strictly quantitative approach.

Hernández et al. (2014) state that in nonexperimental research, variables remain unchanged. The researcher simply observes events in their natural environment as they unfold. Data acquisition occurs swiftly, followed by subsequent analysis. Within this conceptual framework, fieldwork data related to the variable of attitude toward research remained unchanged and were not affected in any manner, which could have altered the statistical analysis of this study. Therefore, due to the characteristics of the variable, this was a nonexperimental design.

Descriptive research is conducted when there is a need to thoroughly describe the numerous elements of a given reality (Guevara et al., 2020). The examination of the variable, attitude toward research, seeks to explain it using a theoretical framework comprising its various aspects. Consequently, a descriptive study was suggested.

Regarding the population composition, it is essential to note that the study included 8,500 undergraduate university students taking courses related to research from Tumbes, Piura, Lambayeque, Cajamarca, and La Libertad. The sample size was determined using finite population estimation techniques, resulting in a total of 384 participants.

The instrument was developed based on the six dimensions compiled from the literature review and developed in the theoretical framework. Twenty-seven items were formulated with a Likert scale and five response options ranging from "Strongly disagree" to "Strongly agree". The items of the Attitude toward the elaboration of scientific articles dimension were adapted from the Attitude toward Research Scale (EACIN-R) developed by Hidalgo Euribe et al. (2023), while the Attitude toward Participation in Research dimension was adapted from the Attitude toward Research Scale (EACIN) proposed by Becerra et al. (2020). The dimension Attitude toward university actions to encourage student research was adapted from Hidalgo Euribe et al. (2023). The dimension attitude toward the parameters in research within the university was adapted from Barja-Ore et al. (2019). The dimension attitude toward the possibility of conducting research within the university was adapted from (Loayza-Rivas, 2021). Finally, the dimension attitude toward reviewing research material was adapted from Barja-Ore et al. (2019).

These dimensions were compared with sociodemographic factors. Nevertheless, the instrument successfully underwent a validation test through the evaluation of six specialists in the study variable, demonstrating the suitability of the test for use in the given context.

For data collection, the participants were first asked to fill out the informed consent form and then complete the online survey. In addition, these results were subjected to conceptual validity testing and exploratory factor analysis (CFA) to determine their final structure. Statistical processing

and analysis were performed using Microsoft Excel and SmartPLS 4 software. To comply with ethical standards in research, the data collected will not be shared with third parties and will be kept confidential.

4. Results

The sociodemographic panorama of university students in Lambayeque, Peru, reflects heterogeneity that is characterized by the cultural and socioeconomic dynamics of the region. This diversity extends to the academic attitudes and professional aspirations of students, particularly with regard to their interest in and motivation for scientific research. The aspirations of Lambayeque University students toward scientific research are determined by multiple factors. These include, but are not limited to, the educational environment, access to resources and research opportunities, perceptions of the relevance and impact of science on regional and national development, and socioeconomic and cultural expectations. Institutions that foster a climate of intellectual interest offer adequate resources for research and actively promote student participation in research projects, which tends to generate a greater disposition toward scientific research among students. On the other hand, limitations in terms of access to resources, such as funding, research infrastructure and adequate mentoring, can act as significant barriers. Table 1 shows the sociodemographic data of the participants.

Table 1. Sociodemographic summary

Sociodemographic	n	%
Gender		
Males	184	48
Femeles	200	52
Age Range		
18 - 21	205	54
22 - 24	149	38
25 and older	30	8
University Type		
Private	302	79
Public	82	21
Academic Cycle		
VII	67	18
VIII	155	40
IX	78	20
X	84	22
Total	384	100

In this sociodemographic study, 384 participants were analyzed, 48% of whom were males and 52% of whom were females. In terms of age range, the majority of participants were in the 18 to 21 years group, representing 54% of the sample, followed by the 22 to 24 years group, which accounted for 38%. Only 8% of the participants were 25 years or older. Regarding the type of university, 79% were private universities, while 21% were public universities. In terms of the number of academic cycles, 40% were in the eighth cycle, 22% were in the tenth cycle, 20% were in the ninth cycle, and 18% were in the seventh cycle. These results provide an overview of the sociodemographic characteristics of the sample studied.

Table 2. Sociodemographic by category

	Good Attitude		Regular Attitude		Poor Attitude	
	N	%	n	%	n	%
Gender						
Males	80	20.8	64	16.7	40	10.6
Females	120	31.2	54	14.0	26	6.7
Age Range						
18 - 21	100	26.0	60	15.6	45	11.7
22 - 24	49	12.7	70	18.2	30	7.8
25 and older	15	3.9	5	1.3	10	2.6
University Type						
Private	102	26.56	150	39.0	50	13.0
Public	45	11.71	27	7.0	10	2.6
Academic Cycle						
VII	30	7.8	17	4.4	20	5.2
VIII	55	14.3	80	20.8	20	5.2
IX	28	7.2	20	5.2	30	7.8
X	34	8.8	30	7.8	20	5.2
Total	384	100	384	100	384	100

In this study, involving 384 participants, attitudes were assessed in three categories: "good attitude", "regular attitude", and "poor attitude". The main findings were as follows: "good attitude" was more common among females (31.2%), individuals aged 18 to 21 years (26.0%), and students from private universities (26.56%). "Regular attitude" was more common among males (16.7%), individuals aged 22 to 24 years (18.2%), and students in the eighth academic cycle (20.8%). Poor attitudes were generally less common but more prevalent among males (10.6%), individuals 25 years or older (2.6%), and students from public universities (2.6%). These results highlight the differences in attitudes based on gender, age, type of university, and academic cycle.

Table 3: Scales by dimensions

Dimension	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Writing scientific articles	8%	17%	28%	34%	13%
Participation in research	10%	15%	27%	35%	13%
University actions to encourage student research	12%	17%	31%	30%	10%
Standards for research within the university	5%	20%	35%	30%	10%
Opportunity to conduct research within the university	10%	20%	35%	25%	10%
Review of research material	12%	22%	31%	24%	11%

Table 3 indicates that most participants placed themselves in the middle categories ("Neutral" and "Agree") for most of the dimensions evaluated, indicating a neutral or moderate perception of these aspects of university research. A higher percentage of respondents in the "agree" and "strongly agree" categories were involved in research and reviewed research material, suggesting a more positive perception of these areas. On the other hand, the university's actions to encourage student research and the standards for research within the university had a higher percentage of responses in the "neutral" and "disagree" categories, indicating a more critical or ambivalent perception of these aspects.

Table 4: Construct quality tests

Construct	Item	Media	Standard deviation	Factor loadings	Cronbach's Alpha	Composite Reliability	AVE
Attitudes toward the elaboration of scientific articles	AESA1	3.25	0.76	.812	0.74	0.77	0.62
	AESA2			.851			
	AESA3			.865			
	AESA4			.801			
	AESA5			.833			
	AESA6			.871			
Attitudes toward research participations	ARP1	3.55	0.69	.785	0.7	0.76	0.78
	ARP2			.789			
	ARP3			.852			
	ARP4			.838			
Attitudes toward the university's actions to encourage student research.	AUA1	3.58	0.55	.792	0.81	0.87	0.8
	AUA2			.860			
	AUA3			.794			
	AUA4			.863			
	AUA5			.789			
Attitude toward the possibility of conducting research within the university.	APCR1	3.26	0.31	.871	0.82	0.86	0.57
	APCR2			.898			
	APCR3			.856			
	APCR4			.907			
	APCR5			.863			
Attitudes toward reviewing research material	ARRM1	2.85	0.56	.819	0.76	0.88	0.83
	ARRM 2			.875			
	ARRM 3			.884			
Attitudes toward research parameters within the university	ARPU1	3.74	0.68	.871	0.89	0.75	0.83
	ARPU2			.892			
	ARPU3			.834			
	ARPU4			.873			

Table 4 indicates that most of the dimensions achieved medium scores, indicating moderate perceptions among the participants. The reliability of the scales was generally appropriate, with certain dimensions standing out for their high reliability. In terms of shared variance, most dimensions showed a consistent relationship among the questions, with some dimensions having a higher shared variance than others.

Table 5: Discriminant validity of the constructs

	AESA	ARP1	AUA1	APCR1	ARRM1	ARPU1
AESA	0.78					
ARP1	0.745	0.888				
AUA1	0.745	0.497	0.893			
APCR1	0.698	0.659	0.787	0.751		
ARRM1	0.697	0.751	0.730	0.626	0.912	
ARPU1	0.687	0.783	0.780	0.712	0.786	0.911

Discriminant validity indicates that the items of a dimension must be correlated with each other (Fornell y Larcker, 1981). Table 5 shows that there is discriminant validity because the values of the correlations of the dimensions are below the square root of the average of the variance extracted (AVE) displayed as a diagonal.

5. Discussion of Results

Scientific research, as a fundamental component of the advancement of knowledge and societal progress (Sánchez et al., 2020), is evident in the perspectives of university students, who play a pivotal role in shaping the future generation of knowledge (Alonso-García et al., 2023). This research analyzed the opinions of 384 university students from the northern macroregion of Peru.

The provided sample showcases a balanced gender distribution and a prevalence of younger students, aligning with a prevalent pattern observed throughout the initial phase of university education. Notably, a significant proportion of individuals affiliated with private universities was observed, potentially suggesting an emerging trend of increased enrollment in such academic institutions. Nonetheless, it is important to acknowledge that this finding may also be influenced by some limitations in the sample's representativeness.

According to the results, women tend to have a more positive attitude toward research. This might align with the notion that an attitude toward a particular subject or theme, such as research, can influence the quality and perseverance of work (Pološki & Aleksić, 2020). Moreover, the inclination of younger students and those from private universities to exhibit a more positive attitude could relate to the perception of research's relevance in their professional development (Li, 2022; Yi et al., 2023).

On the other hand, the less favorable perceptions of research among men, older students, and those from public universities might be influenced by cultural, economic, and political factors, as observed in contexts where education is heavily influenced by standardized testing or traditional teaching methods (Clarke, 2023; Pyhältö et al., 2020).

Regarding specific research dimensions, it was observed that students value hands-on experience and the literature review process, consistent with the idea that a literature review is a pivotal stage in any research process (Giannetti et al., 2023). However, the more critical perceptions about universities' actions and research parameters suggest that students might feel that institutions are not providing enough support or finding certain parameters restrictive, aligning with the concept that attitudes are not formed in a vacuum but are shaped by experiences and expectations (Fox et al., 2023).

6. Conclusion

This study provided an in-depth view of the sociodemographic characteristics and perceptions of research among a sample of 384 university students. The sample mostly consisted of individuals aged between 18 and 24 years, with a slight female predominance (52%) over male predominance (48%). Furthermore, most participants were studying at private universities and were in advanced academic cycles. When assessing student attitudes, it was found that women, younger students, and those from private universities generally held more positive views of research. Conversely, negative attitudes were more prevalent among men, older individuals, and those in public universities.

In relation to perceptions about different research dimensions, there was a tendency toward neutral or moderate responses. However, a more positive perception was evident in dimensions such as participation in research and review of the research material. Conversely, there was more critical perception regarding university actions to encourage student research" and research parameters within the university. Reliability measures, such as Cronbach's alpha and composite reliability, suggest that the scales used in the study are reliable. Additionally, the AVE index showed that most of the dimensions had good consistency in their responses. Despite moderate perceptions and some criticisms of certain aspects of university research, the reliability of the measures suggested that the results were representative of student perceptions. These findings can be invaluable for universities when considering strategies to enhance research promotion and encouragement among students.

7. Limitations

Considering the specific limitations of the study, we should consider the limitations imposed by the availability of resources and the scope of the study, which could limit both access to advanced tools for data collection and analysis and the duration of the study, affecting the ability to capture longitudinal changes in student attitudes. In addition, the sociocultural and educational uniqueness of the northern macroregion of Peru could restrict the extrapolation and generalization of the

findings to other regional or national contexts. Likewise, it is necessary to consider the influence of uncontrolled variables, such as changes in educational policies or significant socioeconomic events, which may influence students' attitudes during the study period.

Regarding biases in self-reported data, social desirability bias stands out, as students may modify their responses to align them with perceived social norms, which may not accurately reflect their true attitudes toward the research. Self-selection bias is also a relevant consideration, given that the students most likely to participate in surveys may be those with an already established predisposition toward research, thus biasing responses toward more favorable attitudes. In addition, recall bias, which refers to students' ability to accurately recall and evaluate past experiences and attitudes, may be distorted, affecting the reliability of the data collected. Finally, in relation to the representativeness aspects of the sample, it is relevant that the sample include an equitable and representative proportion of students from various faculties, academic levels, genders and socioeconomic groups to adequately reflect the heterogeneity of the student population.

8. Recommendations

Based on the findings from the study regarding the attitudes of university students from the northern macroregion of Peru toward research, the following recommendations are proposed:

It is recommended that educational institutions, especially public universities, intensify their efforts to promote the importance of scientific research among their students. This can be achieved through implementing workshops, seminars, and programs highlighting the relevance and applicability of research in professional and academic development. Moreover, universities must provide adequate resources, such as access to laboratories, equipment, and funding, to facilitate student involvement in research projects.

Given the critical perception observed regarding university actions and research parameters, a review and potential restructuring of these parameters to make them more inclusive and less restrictive is recommended. Universities might benefit from direct student feedback to adapt these parameters to current needs and expectations.

The importance of mentorship in students' research training is emphasized. Universities should strive to connect students with experienced mentors who can guide them throughout the research process, providing direction, clarity, and support.

Finally, considering the significance of the literature review in research, it is proposed that universities incorporate specific training in the literature review and analysis of skills. This approach would not only enhance the quality of student-led research but also bolster their positive attitude toward this pivotal stage of the research process.

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