



Evaluation of attitudes towards scientific research in university students

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Abstract

Research activities in the training of undergraduate students in Peru are more repetitive than reflective learning. In the present study, attitudes towards scientific research were analyzed according to socio-educational factors in university students in the city of Arequipa. A total of 2050 university students from four (4) universities in the areas of social sciences, health sciences and engineering participated, to whom the scale of attitudes towards research was applied. It was found that the attitudes are average with a tendency to be unfavorable, in the subscales vocation and valuation for research the attitudes are not very favorable, and concerning the subscale disinterest in research, the student's attitude is unfavorable. It is concluded that students in the area of health sciences have better attitudes towards research than students in social sciences and engineering, and it is the students in the last years of study who value and have a greater vocation for research than students in the first years of study.

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Introduction

Currently, research activities in the training of undergraduate students in Peru are more repetitive than reflective learning, and as a result of this, there are few research skills acquired. Although some students are part of seed groups or research groups promoted by some professors, most of them practice these research activities in the execution of the thesis to obtain the degree. Thus, to date, an average of more than 220,000 theses have been registered in the National Registry of Research Works (RENATI) since 2007. According to information from the National Superintendence of University Higher Education (SUNEDU, 2020), less than 5% of these theses have been used for the writing and publication of scientific articles, therefore, it is evident that the scientific activity of university students in the country has limitations. The traditional education provided in universities is only in charge of training professionals, without considering whether they receive adequate training in scientific research or whether the participation of students in seed groups or research projects funded by these houses of study is promoted (Olivera, 2020; Heydari et al., 2022).

In Peru, according to the new university law No. 30220, one of the purposes of universities is to promote scientific, technological and humanistic research. Although vice-rectorships for research have been created to promote and manage this issue, it is still weakened by the number of recognized research professors working in educational institutions, with less than 5% dedicated to research (Sánchez et al., 2022).

On the other hand, the relationship between education and research should boost academic development and above all the prestige of educational institutions, therefore, the participation of academics is essential to continue refuting or confirming theories, seek new knowledge or expand existing ones González et al (2017), (Calizaya, 2020), therefore, it is necessary to develop attitudes towards research from the academic classrooms (Janssens et al., 2022).

Thus, the student in the formative practice must go through a reflective and critical process about the problems to be studied and must generate a

positive attitude towards the generation of knowledge. However, one of the main attitudes shown by students is disinterest in research (Mercado, 2019). They do not find it attractive to investigate because they are not motivated and above all, they are not passionate about the topics of scientific interest, they do not deepen the contents and are satisfied with what is taught in the academic classrooms, showing passivity (Mercado, 2019).

In addition, the research teacher is the main actor that forms the necessary attitudes in the student to achieve an adequate development of research skills, however, the student is not able to fully develop these skills, because it is difficult to undertake a research project, looking for the necessary information is not within their expectations, they read little, they are not used to writing and the analysis of their academic work is imprecise (Ortega et al., 2018).

Therefore, to strengthen positive attitudes in the future researcher, he/she must be willing to dedicate him/herself to scientific work, manage his/her emotions and feelings, collaborate in multidisciplinary teams, and promote values such as honesty, critical thinking, empathy, solidarity, assistance and above all demonstrate ethical principles that demonstrate his/her vocation for research. In this sense, if the attitude acquired by the student generates pleasant feelings and thoughts, it is most likely that he/she will develop a positive attitude, otherwise, the attitude will be negative and will most likely determine an adverse behavior (Alm et al., 2022).

According to socio-educational factors of the students and attitudes towards research, according to sex, no significant differences were found between men and women, highlighting that both sexes can present favorable or unfavorable attitudes, of interest or disinterest, with or without vocation, of valuation or without appreciation towards research (Pino et al., 2022; Barrios & Delgado, 2020). According to the variable age and attitude towards research, significant differences were found, with students in their last years presenting better attitudes towards research than students in their first semesters, mainly because the thesis is fundamental for their graduation.



And concerning the area of studies and attitudes towards research, health sciences students show greater interest and vocation towards research than students of social sciences and engineering, however, no differences were found in attitudes towards research according to the educational institution, so it is not possible to specify which university trains or promotes research better in their students (Wang & Liu, 2023).

Therefore, the objective was to analyze attitudes towards scientific research according to socio-educational factors in university students in the city of Arequipa.

Methodology

A cross-sectional, descriptive, non-experimental study is presented. The data were obtained in March 2020.

2.1. Participants

The research involved 2050 university students from four (4) private universities in the city of Arequipa: University A (N= 683), University B (N= 475), University C (N= 666), University D (N= 226), who were randomly selected (Carrasco, 2019). The age range of the students is between 16 and 30 years, 46.9% are male and 53.1% female; 43.6% are from the area of social sciences, 38.0% from sciences and engineering and 18.5% from health sciences; according to the year of studies 25.0% are studying in the first year, 27.6% second year, 22.8% third year, 12.0% fourth year, 11.8% fifth year, and 0.8% sixth year.

2.2. Instrument

The instrument of attitudes towards research - revised version EACIN-R, (Aldana, et al., 2019), the scale contains 28 items, divided into three subscales, disinterest in research (9 items), vocation for research (12 items) and valuing research (7 items), the answers are on a Likert-type scale ranging from 0 to 4 where 0 is "strongly disagree" and 4 is "strongly agree", the total score of the scale is from 0 (low scores indicate an unfavorable attitude) to 112 (high scores indicate positive or favorable attitude towards research). Likewise, the instrument included social characteristics such as age, sex, origin, year and area of study, as well as the informed consent data.

Table 1. Reliability indices of the research attitudes scale.

Quality of service	Reliability indexes	
	N	α
Attitudes towards research	2050	0.739
Lack of interest in research	2050	0.738
Vocation for research	2050	0.740
Evaluation of the research	2050	0.739

Note: N= Sample; α = Cronbach's alpha.

For the version adapted to the local sample, the levels of reliability of the scale were obtained through the internal consistency method and Cronbach's alpha test, therefore, the instrument has good reliability since a value of 0.793 was obtained in the general scale, which is a value considered acceptable (Frías, 2020).

2.3. Procedure

To apply the instrument, all the pertinent rigors were followed, so that both the universities and the students agreed with the collection of information, and were aware of the study in progress, and informed consent was obtained. The collection of information was carried out individually to ensure the greatest effectiveness of the responses and the anonymity of the interviewees.

2.4. Data analysis

The distribution, skewness, kurtosis and normality tests were analyzed using the Kolmogorov-Smirnov test, showing that there was no normal distribution ($p < 0.05$). A descriptive and comparative analysis of attitudes towards research according to sex, age, year and area of study was performed. To compare two independent samples, the Mann-Whitney U test was used and the effect size (ES) was evaluated by calculating the probability of superiority (P_{Sest}), being interpretative rules, not effect (P_{Sest} ≤ 0.0), small (P_{Sest} ≥ 0.56), medium (P_{Sest} ≥ 0.64) and large (P_{Sest} ≥ 0.71) (Ventura, 2016). The comparison of k independent samples was performed with Kruskal Wallis H, its effect size used was epsilon squared (ϵ^2) being its interpretative rules small, for $\epsilon^2 \geq 0.01$, medium for a $\epsilon^2 \geq 0.06$ and large for a $\epsilon^2 \geq 0.14$. SPSS 25.0 and JASP 0.13.1.0 were used for statistical analysis.



Results

The results of the study describe and compare attitudes towards research, first according to the area of studies (Engineering, Social Sciences and Biomedical Sciences), second according to years of studies (1st to 6th year of studies) and third according to sex (men and women) to specify and identify in which of these variables there are

favorable or unfavorable attitudes.

Table 2 describes the values of measurement of attitudes towards research, finding average values with a tendency to be unfavorable, in that sense, in the subscale's vocation and valuation for research the attitudes are not very favorable, and concerning the subscale's disinterest in research the student's attitude is unfavorable.

Table 2. Numerical values of research attitudes

	<i>M</i>	<i>DE</i>	<i>Md</i>	<i>Min.</i>	<i>Max.</i>	
Attitudes towards research	61.17	10.21	61	0	112	<i>Ratings</i>
Lack of interest in research	14.23	6.11	14	0	36	→ Unfavorable
Vocation for research	28.28	6.95	28	0	48	} Average
Research assessment	18.66	4.86	19	0	28	

M = Average; D = Standard deviation; Md = Regular; Min. = minimum; Max. = maximum

Table 3 compares the attitudes toward the research of the students according to their area of studies, finding significant differences in the general scale, being the students of the health sciences area present more favorable attitudes towards research than the students of social sciences and engineering (small effect size). Likewise, in the subscale's vocation and

appreciation for research, it is also the students of health sciences who stand out more favorably than the other students (small effect size). However, no significant differences were found in disinterest in research, demonstrating that most students have an unfavorable attitude in this subscale.

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Table 3. Kruskal Wallis test of attitudes towards research according to an area of study.

Subscales of the attitude towards research	<i>Engineering</i>	<i>Social Cs.</i>	<i>Cs. of Health</i>	<i>H</i>	<i>p</i>	ϵ^2
	(<i>n</i> = 778)	(<i>n</i> = 893)	(<i>n</i> = 379)			
	<i>Range</i>	<i>Range</i>	<i>Range</i>			
Attitudes towards research	971.41	1024.42	1139.08	20.477	0.000	0.01
Lack of interest in research	1034.32	1034.57	986.1	2.074	0.354	0.01
Vocation for research	969.46	1007.19	1183.68	34.967	0.000	0.02
assessment	991.25	1019.84	1109.14	10.294	0.005	0.01

Note: n = sampling size; Range = Average Range; H = H for Kruskal Wallis; p = p value. ϵ^2 = Square epsilon (effect size)

In Table 4, when comparing attitudes towards research according to year of study, it was found that in the general scale no significant differences were found, however, differences were found in the subscales, with students in the first years showing greater disinterest in research

(moderate effect size); and according to the post hoc analysis, it is the students in the last years who value and show greater vocation for research than the other students (moderate and small effect size, respectively).

Table 4. Kruskal Wallis test of attitudes towards research according to year of study.

Subscales of the attitude towards research	<i>1st</i>	<i>2nd</i>	<i>3rd</i>	<i>4th</i>	<i>5th</i>	<i>6th</i>	<i>H</i>	<i>p</i>	ϵ^2
	(<i>n</i> = 513)	(<i>n</i> = 566)	(<i>n</i> = 468)	(<i>n</i> = 246)	(<i>n</i> = 241)	(<i>n</i> = 16)			
	<i>Range</i>	<i>Range</i>	<i>Range</i>	<i>Range</i>	<i>Range</i>	<i>Range</i>			
Attitudes toward research	1034.63	1012.34	1011.47	987.57	1082.10	1339.31	8.396	0.136	0.01
Lack of interest in research	1073.13	1069.73	1050.51	933.25	890.83	648.72	32.332	0.000	0.02



Vocation for research	1025.23	1013.74	985.78	1030.11	1105.46	1336.72	11.190	0.048	0.01
Research assessment	977.86	963.40	1035.50	1080.35	1163.21	1539.53	37.053	0.000	0.02

Note: n = sampling size; Range = Average Range; H = H for Kruskal Wallis; p = p value. ϵ^2 = Square epsilon (effect size).

In Table 5, when comparing attitudes towards research according to sex, no statistical differences were found, considering that both

male and female university students can experience favorable and unfavorable attitudes towards research.

Table 5. Mann Whitney U-test of attitudes towards research according to sex.

Subscales of the attitude towards research	Men	Women	U	p	PS _{est}
	(n = 962)	(n = 1088)			
	Range	Range			
Attitudes towards research	1017.16	1032.88	515302.0	0.548	0.01
Lack of interest in research	1034.24	1017.77	514916.5	0.529	0.02
Vocation for research	1025.41	1025.58	523239.5	0.995	0.01
Research assessment	1006.56	1042.24	505109.5	0.172	0.01

Note: n = sampling size; Range = Average Range; U= U Mann Withney p = p value; PS_{est}= Superiority Probability (effect size)

Discussion

Regarding the objective, the attitudes toward research in university students of the city of Arequipa were analyzed according to socio-educational factors. The results showed average values with a tendency to be unfavorable, (research still produces in the student discouragement, boredom, disorder, generating disinterest), which demonstrates the low intellectual production of the student, as pointed out by Olivera (2020); so, the Universities do not promote, nor consider whether the student receives adequate training in research and especially the teacher has not formed the necessary attitudes to achieve the competencies of the student researcher profile (Mol & van den Hoven, 2022).

Regarding the area of study, students from the health sciences area show more favorable attitudes towards research (they are better informed, read and write, and are passionate about participating in academic events) than students from the social sciences and engineering, especially in the subscale's vocation and valuation.

Likewise, differences were found in the attitudes towards research according to the year of studies, showing that students in the last years compared to students in the first years, who present

favorable attitudes, especially in the vocation and appreciation for research, similar results were found by Estrada et al. (2022), who also specify that students in the last years are focused on the objective of graduating or feel pressured by relatives or by themselves, therefore, they show greater interest in executing the thesis.

And according to the sex of the student, no differences were found in attitudes towards research, highlighting that both sexes can present favorable or unfavorable attitudes, of interest or disinterest, with or without vocation, of valuation or without appreciation towards research, as pointed out by Quezada et al., 2019; Barrios & Delgado, 2020).

Therefore, despite the limitations that were presented in the research process (collecting information in a significant and diverse sample), the low predisposition of some students to be surveyed. It is necessary to continue studying the issue of attitudes towards scientific research in both students and teachers to expand the topic and especially to have a better view of the main factor that influences this variable.

Conclusions

The conclusion is that students present average attitudes towards research with a tendency to be unfavorable, being those of the health sciences area who present better attitudes toward



research than students of social sciences and engineering, and it is the students in the last years of study who value and present a greater vocation for research than students of the first years.

Attitudes toward scientific research are the responsibility of the University and its human resources (teachers), who must first train their competencies to be a model for their students and motivate them to participate in scientific activity.

Research is not exclusive to one area of study but to all areas and all academics who must have the necessary attitudes to be able to identify the problem and above all to solve it.

Educational institutions should restructure their curricula to foster and promote science-based education. Knowledge and skill in the development of research projects can lead to the resolution of social, academic and professional problems, which contribute in an important way to the nations of the world.

References

1. Aldana, G., Babativa, D., Caraballo, G., y Rey, C. (2020). Escala de actitudes hacia la investigación (EACIN): evaluación de sus propiedades psicométricas en una muestra colombiana. *Rev. CES Psicología*, 13(1), 89-103. Recuperado de <https://revistas.ces.edu.co/index.php/psicologia/article/view/4828>
2. Alm, K., Beery, T., Eiblmeier, D., & Fahmy, T. (2022). Students' learning sustainability - implicit, explicit or non-existent: a case study approach on students' key competencies addressing the SDGs in HEI program. *International Journal of Sustainability in Higher Education*, 60-84.
3. Barrios, E. y Delgado, U. (2020). Diseño y validación del cuestionario "Actitud hacia la investigación en estudiantes universitarios". *Revista Innova Educación*, 2(2), 280-302. <https://doi.org/10.35622/j.rie.2020.02.004>
4. Bullón, E. (2019). Formación investigativa y actitud hacia la investigación científica en estudiantes de ciencias sociales de la UNCP. *Socialium*, 3(1), 1-11. <https://doi.org/10.26490/uncp.sl.2019.3.1.521>
5. Calizaya, J. M. (2020). Algunas ideas de investigación científica. *Minerva*, 1(3), 35-39. <https://doi.org/10.47460/minerva.v1i3.15>
6. Carrasco, S. (2019). Metodología de la Investigación Científica. Pautas metodológicas para diseñar y elaborar el proyecto de investigación, Lima: Editorial San Marcos.
7. Estrada, E., Gallegos, N., & Huaypar, K. (2022). Calidad metodológica de las tesis de pregrado de una universidad pública peruana. *Universidad y Sociedad*, 22-49.
8. Frías, D. (2020). Análisis de la consistencia interna de las puntuaciones de un instrumento de medida, Valencia: Universidad de Valencia. Recuperado de <https://www.uv.es/~friasnav/AlfaCronbach.pdf>
9. Gálvez, N., Gonzáles, Y., y Monsalve, M. (2019). Actitud hacia la investigación científica al final de la carrera de Enfermería en Perú. *Gaceta Médica Boliviana*, 42(1), 32-37. Recuperado en 05 de enero de 2021, de http://www.scielo.org.bo/scielo.php?script=sci_arttext&pid=S1012-29662019000100006
10. González, F. J., Barros, C. I., Iglesias, P., & Rugel, C. I. (2017). Analysis of the applications of the game theory in the process of strategic administration and direction of companies. Paper presented at the CISC 2017 - Decima Sexta Conferencia Iberoamericana En Sistemas, Cibernética e Informática, Decimo Cuarto Simposium Iberoamericano En Educación, Cibernética e Informática, SIECI 2017 - Memorias, 362-366. Retrieved from www.scopus.com
11. Heydari, A., Kashef, S., Seyyedameri, M., & Aghababa, M. (2022). Distribution of educational resources of the ministry of science, research and technology based on the degree of development of universities. *Sport Science*, 43-47.
12. Janssens, L., Kuppens, T., Mulà, I., Staniskiène, E., & Zimmermann, A. (2022). Do European quality assurance frameworks support integration of transformative learning for sustainable development in higher education? *International Journal of Sustainability in Higher Education*, 148-173.
13. Ley N° 30220. Ley Universitaria Perú. Recuperado de http://www.minedu.gob.pe/reforma-universitaria/pdf/ley_universitaria.pdf
14. Mercado, M. (2019). Actitudes hacia la investigación en los estudiantes de la carrera de Medicina Humana de la Universidad Peruana Los Andes. *Educación Médica*, 20(1), 95-98. <https://doi.org/10.1016/j.edumed.2017.10.012>
15. Mol, H., & van den Hoven, M. (2022). Is there a relationship between student attitudes and behavior regarding integrity issues? *International Journal for Educational Integrity*, 6.
16. Olivera, Edith. (2020). Actitudes hacia la investigación de bachilleres en administración y psicología de una universidad peruana. *Revista Chakiñan de Ciencias Sociales y Humanidades*, (11), 70-81. <https://doi.org/10.37135/chk.002.11.05>
17. Ortega, R., Veloso, R., y Hansen, O. (2018). Percepción y actitudes hacia la investigación científica. *ACADEMO*, 5(2), 101-109. <http://dx.doi.org/10.30545/academo.2018.jul-dic.2>
18. Pino, Y., Toro, J. D., Medina, R., Noda, M., & Concepción, I. (2022). Metodología para la evaluación del impacto social de los resultados científicos de las maestrías. *Universidad y Sociedad*, 30-40.



19. Sánchez, T., Mayorga, H. T., Medina, A., & Cabrera, H. (2022). Modelo conceptual de gestión de la calidad desde el diseño curricular. *Universidad y Sociedad*, 11-21.
20. Superintendencia Nacional de Educación Superior Universitaria (SUNEDU, 2020). Registro Nacional de Trabajos de Investigación de Pregrado. Recuperado de <http://renati.sunedu.gob.pe>
21. Ventura, J. (2016). Tamaño del efecto para la U de Mann-Whitney: aportes al artículo de Valdivia-Peralta et al. *Revista chilena de neuro-psiquiatría*, 54(4), 353-354. <https://dx.doi.org/10.4067/S0717-92272016000400010>
22. Wang, L., & Liu, W. (2023). Problems and Countermeasures of Sharing Ideas of the Effectiveness of Ideological and Political Course Teaching in Colleges and Universities from the Perspective of Creative Education. *Journal of Testing and Evaluation*.

