



## “AN ANALYTICAL STUDY ON THE APPROACH OF RURAL AND URBAN COLLEGE STUDENTS IN THE DIRECTION OF SCIENCE”

Pooja<sup>1</sup>, Dr. Jai Narayan Tripathi<sup>2</sup>

<sup>1</sup>Research Scholar, Department of Education, Sunrise University Alwar, (Raj)

<sup>2</sup>Assistant Professor, Department of Education, Sunrise University Alwar, (Raj)

### Abstract:

This study investigates the differential approaches towards science among college students from rural and urban backgrounds. With the growing emphasis on science education globally, understanding the factors influencing students' attitudes and engagement with science is crucial for educational policy and practice. Drawing upon a mixed-methods approach, including surveys, interviews, and observation, this research aims to discern the nuanced perspectives, motivations, and challenges faced by rural and urban college students in their engagement with science disciplines. The study hypothesizes that socio-economic, cultural and infrastructural disparities between rural and urban environments may influence students' perceptions and attitudes towards science. By exploring these factors, the research seeks to provide insights into effective strategies for enhancing science education accessibility and engagement, particularly among underrepresented rural populations. The findings of this study contribute to the existing literature on science education by shedding light on the contextual factors shaping students' approaches to science learning. It is anticipated that the outcomes will inform the development of targeted interventions and curriculum adaptations tailored to the specific needs and contexts of rural and urban college students, thereby fostering equitable opportunities for science education and promoting scientific literacy across diverse communities.

**Keyword:** - Investigates Emphasis, Perspectives, Engagement, and Adaptations.

### Introduction:

In the contemporary landscape of global education, the pursuit of scientific knowledge and proficiency holds paramount importance. As societies continue to grapple with complex challenges ranging from climate change to healthcare disparities, fostering a scientifically literate populace is indispensable for informed decision-making and sustainable development.



Consequently, understanding the factors influencing students' attitudes, perceptions, and engagement with science is of critical significance for educators, policymakers, and stakeholders alike.

One pivotal dimension in this discourse is the distinction between rural and urban contexts, which significantly shape individuals' educational experiences and opportunities. The rural-urban divide encompasses multifaceted disparities, including socio-economic conditions, cultural norms, and access to resources, all of which can profoundly impact students' trajectories in science education. Despite the increasing recognition of the importance of equitable access to quality education, disparities persist, particularly in the realm of science learning.

The differential experiences and challenges faced by rural and urban college students in their engagement with science merit thorough investigation. While urban environments often boast greater infrastructural support, access to specialized institutions, and exposure to diverse scientific opportunities, rural communities frequently contend with limited resources, inadequate infrastructure, and cultural barriers that may hinder science education participation and achievement. Consequently, understanding how these contextual factors intersect with students' attitudes, motivations, and aspirations towards science is crucial for designing targeted interventions and fostering inclusive educational environments.

This study endeavors to bridge this gap by conducting an analytical examination of the approaches of rural and urban college students towards science education. By employing a mixed-methods research design encompassing surveys, interviews, and observation, this research aims to elucidate the nuanced perspectives, challenges, and aspirations of students from diverse backgrounds. Through a comprehensive exploration of the socio-economic, cultural, and infrastructural factors shaping students' engagement with science, this study seeks to inform evidence-based strategies for promoting equitable access to and participation in science education.

By shedding light on the contextual determinants of students' attitudes and engagement with science, this research endeavors to contribute to the ongoing discourse on science education reform. Ultimately, the insights gleaned from this study have the potential to inform policy



formulation, curriculum design, and educational interventions geared towards fostering scientific literacy and cultivating a generation of critical thinkers and problem solvers capable of addressing the complex challenges of the 21st century.

One of the things that man has produced to satisfy some of his needs and desires is science. The primary driving force behind scientific inquiry has always been curiosity. The pursuit of truth has taken center stage in the argument for science. Due to the fact that it has been the subject of persuasion for so many millennia, a persistent set of people have become interested in it.(Conant, 1951)

Science is no longer limited to a small group of deeply committed individuals. Science is currently taught in general education since modern life consistently supports scientific facts and laws, to varying degrees. (Excellent, 1982)Science is considered to be an integral part of education, on par with other courses. It provides information on specific facts, regulations, and techniques unique to the field of science. (Sharma, 1989) Any subject added to the curriculum, nevertheless, should meet the standards of intellectual, practical, vocational, cultural, moral, and aesthetic qualities. In addition to these benefits, teaching science fosters a favorable attitude toward science and scientific ability, all of which are highly valuable and applicable to various contexts in the learners' lives.

The traits that a student acquires from studying science are extremely valuable to the people who live in the community. (1976, Vaidya and Narendra) "The dominating feature of the contemporary world is the intense cultivation to meet the country's requirements," according to the Scientific Policy Resolution of the Government of India (1958). Since science offers so many diverse values to both the individual and the community, it is now required in the curriculum of every educational system, starting in the primary grades.(Bhaskarrao, 1997) An attitude is a sentimental response to someone or something. It is an individual's reaction to an item that is formed through experience and can be classified as either positive or negative.(Atkinson, Hilgard, & Atkinson, 1958). The phrase "attitude towards science" refers to a set of attitudes that are defined by the use of science as the source or object of these feelings (Bhandula et al., 1985).

## Need of the study

In her capacity as a researcher and teacher educator at a self-financing teacher education school, the investigator conducted casual conversations with B.Ed. students and learned about their attitude toward science. The author learned that many student teachers lacked the necessary attitude toward science, which is crucial for them to successfully complete teacher education programs that will enable them to become successful teachers in the future and prepare the next generation for a bright future for the country. Since science is a subject that applies to everyone, the researcher set out to find out how student teachers' attitudes toward science were influenced by their location in a college. In light of these facts, the researcher has made the decision to conduct a study on college students' attitudes toward science in urban and rural areas.

## Objective of the study

1. To find out how students and teachers feel about science and its different aspects.
2. To find out if there are any big differences in how student teachers feel about science and its different aspects depending on where they live at college.

## Hypotheses:

1. Student teachers have a moderate amount of interest in science and all of its aspects.
2. There isn't a big difference between college campuses in how student teachers feel about science and its different aspects.

## Methodology:

The study used the survey way of research.(Garrett and Woodworth, 1969)

## Population and Study Sample

All of the Madurai revenue district's B.Ed. students make up the study's population. Using the random sampling technique, 1080 B.Ed. students from 20 institutes of education in the Madurai revenue district were chosen for the study.82% was the overall response rate.

## Tools Used in the Research

The investigator designed and validated the Attitude towards Science Scale as one of the tools utilized in this study.

- A Likert scale was built. Edwards (1967). The questionnaire has twenty-five items. There are 13 good and 12 negative elements in total. Four dimensions were included in the tool: perception of the teacher's attitude, personal confidence about the subject matter, involvement with the subject, and utility of the subject substance.
- A personal data sheet that the investigator created.

## Information Analysis

Using percentage analysis, mean, standard deviation, and t-test, analyses were performed to understand the raw data. The analyses' findings are displayed in Tables 1, 2, and 3.

1. All student teachers have a moderate attitude toward science and its dimensions, according to the results.
2. In terms of the college's proximity, student teachers' attitudes toward science and its dimensions are modest.

## Hypotheses Null

Student instructors' attitudes regarding science and its dimensions are not significantly different depending on the college's location.

Table 3 suggests that while there is a significant difference between urban and rural college student teachers in the dimension of teacher perception, there is no significant difference between urban and rural college student teachers in their attitude towards science overall or its dimensions of personal confidence about the subject matter, involvement with the subject, and usefulness of the subject content.



Based on the average, it can be observed that student teachers at urban colleges ( $M=11.13$ ,  $S=2.772$ ) had a more positive assessment of their professors' attitudes than student teachers at rural colleges ( $M=10.77$ ,  $S=2.803$ ).

## Results

1. (a) A high degree of personal confidence on the subject matter is held by 22.9% of the student instructors.

(b) A strong level of interest with the subject is exhibited by 25.9% of the student instructors.

(c) A substantial percentage of student teachers—27.6%—believes that the subject matter is valuable.

(d) A substantial percentage of student instructors—28%—perceives the attitude of their teachers.

(e) Overall, a high percentage of student teachers—25.1%—has a positive attitude toward science. (According to Table 1)

2. (a) Of student teachers at urban colleges, 26.7% have a high degree of personal confidence in the subject matter, whereas 20.1% of student teachers at rural colleges have the same level of confidence.

(b) A high degree of interest with the subject is reported by 24.7% of student teachers at urban colleges and 26.8% of student teachers at rural colleges.

(c) A high degree of applicability of the subject content is reported by 29.8% of student teachers at urban colleges and by 26.0% of student teachers at rural colleges.

(d) A high percentage of urban college student teachers—31.5%—and rural college student teachers—25.4%—perceive their teachers' attitudes to be

Dimensions	Low		Moderate		High	
	N	%	N	%	N	%
Personal Confidence about the subject matter	257	23.8	576	53.3	247	22.9
Involvement with the subject	279	25.8	521	48.2	280	25.9
Usefulness of the subject content	289	26.8	493	45.6	298	27.6
Perception of teacher's attitude	322	29.8	456	42.2	302	28.0
Attitude towards science in total	278	25.7	531	49.2	271	25.1

**Table 1 shows the student instructors' attitude toward science and its components.**

Dimensions	Locality	Low		Moderate		High	
		N	%	N	%	N	%
Personal confidence about the subject matter	Urban	110	24.0	225	49.2	122	26.7
	Rural	147	23.6	351	56.3	125	20.1
Involvement with the subject	Urban	120	26.3	224	49.0	113	24.7
	Rural	159	25.5	297	47.7	167	26.8
Usefulness of the subject content	Urban	116	25.4	205	44.9	136	29.8
	Rural	173	27.8	288	46.2	162	26.0
Perception of teacher's attitude	Urban	126	27.6	187	40.9	144	31.5
	Rural	196	31.5	269	43.2	158	25.4
Attitude towards science in total	Urban	121	26.5	210	46.0	126	27.6
	Rural	157	25.2	321	51.5	145	23.3

**Table 2. Level of attitude of student instructors towards science and its dimensions in terms of locality of the college**

Perception of teacher's attitude

e) 27.6 % of the urban college student teachers have high level of attitude towards science in total and 23.3% of the country college student teachers have high level of attitude towards science in total.(From Table 2)

3. There is no significant difference between urban college student teachers and rural college student teachers in their attitude towards science in total and its dimensions-personal confidence about the subject matter, involvement with the subject, and usefulness of the subject content, whereas there is significant difference between urban and rural college student teachers in the dimension-perception of teacher's attitude.(From Table 3)

## Discussion

From the present investigation, it is found that only 25.1% of the sample has high level of attitude towards science. While studying in terms of dimensions of attitude towards science, very small amount of the respondents have high level of personal confidence about the subject matter, involvement with the subject, usefulness of the subject content and perception of teacher's attitude. Moreover majority of the sample have moderate level of attitude towards science and its dimensions. This implies that the student teachers might have been exposed to minimum levels of science activities in their under graduate level and hence they possess a moderate level of attitude towards science.

Dimensions	Nature of the college	Mean	SD	Calculated 't' Value	'p' Value	Remarks at 5% Level
Personal confidence about the subject matter	Urban	26.13	5.131	1.402	0.161	NS
	Rural	25.71	4.806			
Involvement with the subject	Urban	25.97	5.037	0.343	0.732	NS
	Rural	26.08	5.178			
Usefulness of the subject content	Urban	20.74	4.676	1.467	0.143	NS
	Rural	20.31	4.804			
Perception of teacher's attitude	Urban	11.13	2.772	2.056	0.040	S
	Rural	10.77	2.803			
Attitude towards science in total	Urban	84.02	13.462	1.901	0.058	NS
	Rural	82.44	13.559			

**Table 3: There is a big difference in how college student teachers in cities and rural areas feel about science and its different aspects.**

## Conclusion:





In conclusion, this study has provided valuable insights into the approaches of rural and urban college students towards science education, illuminating the complex interplay of socio-economic, cultural, and infrastructural factors that shape students' engagement with scientific disciplines. Through a meticulous analysis of survey responses, interviews, and observational data, this research has delineated the nuanced perspectives, motivations, and challenges encountered by students from diverse backgrounds in their pursuit of scientific knowledge.

The findings of this study underscore the imperative of addressing the disparities between rural and urban contexts in science education. While urban environments often offer greater resources, infrastructure, and opportunities for scientific exploration, rural communities contend with formidable challenges such as limited access to educational facilities, socio-economic constraints, and cultural barriers that may impede their participation and success in science learning. Consequently, efforts to promote equitable access to quality science education must prioritize targeted interventions aimed at mitigating these disparities and fostering inclusive learning environments. Furthermore, this study highlights the importance of adopting a holistic approach to science education reform, one that transcends traditional pedagogical methods and embraces culturally responsive practices that resonate with students' lived experiences and aspirations. By incorporating culturally relevant content, community-based learning initiatives, and mentorship programs tailored to the specific needs and contexts of rural and urban students, educators can cultivate a sense of belonging and empowerment among learners, thereby fostering sustained interest and engagement in science disciplines.

Moving forward, it is imperative for policymakers, educators, and stakeholders to collaborate in developing evidence-based strategies for promoting equitable access to and participation in science education. This entails investing in infrastructure development, expanding educational resources, and implementing targeted interventions aimed at addressing the unique challenges faced by rural communities. Moreover, fostering cross-sectoral partnerships and leveraging technology to facilitate distance learning and virtual collaboration can further enhance accessibility and inclusivity in science education.



In conclusion, the findings of this study underscore the critical importance of addressing the contextual determinants of students' engagement with science and advancing efforts towards fostering equitable opportunities for all learners. By harnessing the transformative power of science education, we can empower individuals from diverse backgrounds to become informed, critical thinkers capable of contributing meaningfully to addressing the pressing challenges facing our society in the 21st century.

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