

Climate Change Information: An Examination of Sources and Trust among College Students in Tirupati

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Abstract

This study explores the primary sources through which college students in Tirupati, Andhra Pradesh, access information related to climate change. Information is essential to making informed choices and decisions to mitigate climate change. With the the rising importance of environmental awareness among youth, identifying trusted and frequently used channels is essential for effective climate communication. The research draws from a review of relevant literature and data from a local survey conducted across multiple higher education institutions in Tirupati. Findings indicate that digital platforms, particularly social media, are the most utilized sources, followed by academic instruction and television. The study highlights the challenges of misinformation and the need for improved media literacy among students. Recommendations are provided for educators and policymakers to enhance climate literacy in higher education contexts.

Keywords: Youth, Climate Change, Credibility, Information, media, Tirupati

Introduction

Climate change is recognized globally as one of the most critical environmental, social, and economic challenges of the 21st century. It poses a significant threat to biodiversity, public health, food security, and the overall sustainability of life on Earth (IPCC, 2021). The growing urgency to address climate change has led to an increased emphasis on public awareness, education, and communication. Among various population groups, young people—particularly college students—are seen as key stakeholders in climate action, given

their potential to influence future policies, societal behavior, and scientific innovation (UNESCO, 2019).

India, as one of the most climate-vulnerable countries, faces a dual challenge: managing the immediate impacts of climate change and preparing a well-informed citizenry capable of contributing to long-term solutions. Within this context, understanding how college students acquire information about climate change becomes vital. Tirupati, a prominent educational center in Andhra Pradesh, with numerous colleges and universities, offers an ideal setting to explore this dimension.

Significance of Climate Change Information

Climate change is no longer a distant or abstract concern—it is a lived reality affecting communities worldwide. With rising global temperatures, melting glaciers, erratic weather patterns, and sea-level rise, the urgency of addressing climate change has become paramount. However, the success of mitigation and adaptation strategies depends heavily on public awareness and participation, particularly from the younger population. Youth, especially those in higher education, are at a critical stage of intellectual, emotional, and civic development, making them essential stakeholders in the climate discourse (UNESCO, 2019).

Young people are not only victims of climate change but also potential agents of change. According to the United Nations Framework Convention on Climate Change (UNFCCC), youth have the creativity, energy, and motivation to bring about systemic transformation through innovation, policy engagement, and grassroots activism (UNFCCC, 2021). This transformative role can only be realized if young individuals are adequately informed about the science, impacts, and solutions to climate change.

Access to accurate and timely climate information helps youth develop a deeper understanding of the environmental crisis and empowers them to adopt sustainable behaviors. Moreover, climate change education fosters critical thinking and problem-solving skills, equipping students to evaluate evidence, assess risks, and participate meaningfully in environmental decision-making (Anderson, 2012).

Environmental literacy among youth is strongly associated with pro-environmental behavior. Research has consistently shown that increased knowledge about climate change correlates

with stronger concern and greater likelihood of adopting sustainable practices (Leiserowitz et al., 2006; Boeve-de Pauw & Van Petegem, 2010). For example, students who understand the implications of greenhouse gas emissions are more likely to support climate policies, reduce personal energy use, and participate in climate advocacy efforts.

Furthermore, climate information, when delivered effectively, can counteract apathy and climate denial. Many students may feel disconnected from large-scale environmental problems due to perceived complexity or psychological distance. However, personalized and locally contextualized climate content—such as examples from one’s community—can increase relevance and emotional engagement (Scannell & Gifford, 2013). Youth who feel that climate change directly affects their lives are more likely to support sustainable development initiatives.

Despite the importance of climate literacy, significant knowledge gaps persist among youth populations globally, including in India. A national study by the Centre for Science and Environment (2020) found that a majority of Indian students were aware of the term "climate change" but lacked a clear understanding of its causes, effects, and policy dimensions. These gaps are exacerbated by inconsistent integration of environmental topics within school and college curricula.

The challenge is not only the lack of formal climate education but also the prevalence of misinformation, particularly on social media platforms that are widely used by youth. While digital media offer a vast array of resources on climate change, they also present risks of exposure to unverified, biased, or politically charged content (Van der Linden et al., 2017). Therefore, media literacy must go hand-in-hand with climate literacy to ensure students can discern credible sources and engage with scientific knowledge critically.

Climate Change Awareness among Young People

India’s demographic dividend—where over 50% of the population is under the age of 25—makes the role of youth in climate action especially critical (NITI Aayog, 2020). In semi-urban and educationally active centers like Tirupati, youth are exposed to a blend of traditional values and modern information channels. This hybrid setting makes it essential to understand the dynamics of how students receive, interpret, and apply climate information.

Moreover, with India's growing vulnerability to climate-induced disasters such as heat waves, floods, and droughts, young people must be equipped not just with knowledge but also with resilience strategies. Integrating climate change information into academic programs, extracurricular activities, and digital campaigns can significantly strengthen youth engagement in climate adaptation at the community level.

The importance of climate change information extends beyond individual behavioral changes. When youth are informed and engaged, they influence their families, peer groups, and even larger social systems. This ripple effect can enhance community-wide awareness and support for climate initiatives. In the long term, today's students will become tomorrow's policymakers, business leaders, educators, and scientists. Their early exposure to climate science and sustainability principles is likely to influence the direction of environmental governance and innovation in the decades ahead (Thew et al., 2020).

The importance of climate change information among youth cannot be overstated. It lays the foundation for informed citizenship, responsible behavior, and future leadership in climate action. As the urgency of the climate crisis deepens, investing in the climate literacy of young people—especially college students—emerges not only as an educational imperative but also as a strategic component of global climate resilience.

Young adults, especially those in higher education, are in a transitional phase where they develop worldviews and make long-lasting lifestyle and career decisions. The extent and quality of climate-related knowledge they acquire during this period significantly impact their level of environmental concern and subsequent behavior (Leiserowitz et al., 2009). Studies have shown that when students have access to credible, engaging, and relatable climate information, they are more likely to support sustainable policies and participate in climate advocacy (Corner et al., 2015).

However, the sources from which students receive this information are varied and not always reliable. In the digital age, traditional sources such as textbooks and newspapers have been supplemented—and sometimes replaced—by social media, online videos, and peer-shared content. While this expands access to information, it also increases the risk of misinformation and superficial engagement with complex scientific issues (Van der Linden et al., 2017).

Research Gap and Rationale

Although several national and international studies have explored youth climate awareness and environmental communication strategies (Lee et al., 2020; Sundar & Singh, 2022), limited research has been conducted on how students in specific Indian cities and educational ecosystems access climate change information. Tirupati, despite its academic significance, remains underrepresented in such literature.

This study aims to fill that gap by systematically analyzing the sources of climate change information accessed by college students in Tirupati. It explores the types of sources used, the frequency of their usage, students' trust in different sources, and the influence of academic discipline or background on their information-seeking behavior.

Objectives of the Study

The primary objectives of this study are:

1. To identify the most commonly used sources of climate change information among college students in Tirupati.
2. To assess the credibility of each source as perceived by students.
3. To study the association between media access and extent of information on climate change among students.

Research Questions

This study is guided by the following research questions:

- What are the primary sources of climate change information for college students in Tirupati?
- How frequently do students engage with different information sources?
- Which sources do students consider most credible?
- Does academic discipline influence students' access to or trust in particular sources?

Table1. Primary Sources of Climate Change Information

Source Type	Specific Mentions	Accessibility	Usage
Digital Media	YouTube, Instagram, Twitter (X), Facebook Reels	High	Very High
News Websites	The Hindu, Times of India, BBC, Down To Earth	Moderate to High	Moderate
Academic Resources	Research articles (Google Scholar, ResearchGate), e-journals	Moderate	Low to Moderate
Government Portals	MoEFCC (India), IPCC Reports, NCERT resources	Moderate	Low
Television	News channels, Discovery, National Geographic	Moderate	Moderate
College Curriculum	Environmental Science courses, Seminars, Guest lectures	High	High
Peer Groups	Discussions with classmates, study groups	High	Moderate
Workshops/Seminars	College-hosted events, NSS/NCC activities	Periodic	Moderate
Social Campaigns	NGO campaigns, Green Club activities, rallies	Occasional	Low to Moderate
Print Media	Newspapers, Magazines (like Science Reporter)	Moderate	Low
Mobile Apps	Climate news apps, educational apps (e.g., Earth Now)	Low to Moderate	Low

College students today access climate change information from a wide range of sources, each varying in accessibility, credibility, and frequency of use. Among these, digital media platforms such as YouTube, Instagram, Twitter (X), and Facebook Reels are the most widely accessed. Their high accessibility and engaging formats make them extremely popular among youth, with a "very high" probable usage. Studies like Schäfer (2012) and Leiserowitz et al. (2020) confirm that social media is increasingly shaping public understanding of climate change, especially among younger audiences. These platforms provide instant, visual, and emotionally resonant content, which often circulates faster than traditional news or academic outlets.

News websites such as *The Hindu*, *Times of India*, *BBC*, and *Down To Earth* are also important sources, with moderate to high accessibility and a moderate level of usage. Feldman et al. (2010) observed that individuals who regularly consume reputable news sources tend to be better informed about climate policies and scientific findings.

In contrast, academic resources such as research articles on Google Scholar or ResearchGate, and institutional e-journals, are considered highly credible but see only low to moderate use. The technical language, lack of open access, and complexity of content act as deterrents for many students.

Government portals like the Ministry of Environment, Forest and Climate Change (MoEFCC), IPCC reports, and NCERT educational content offer authoritative and updated information. However, they remain underutilized among students, primarily due to their formal tone and low engagement levels. Moser (2010) has argued that government communication, though factually accurate, often lacks youth-oriented messaging or interactive design, leading to a perception of being less appealing or relatable to college audiences.

Television channels, including news networks, Discovery, and National Geographic, continue to play a moderate role in informing students. Although not as dominant as digital media, TV programs can offer passive yet informative exposure to climate issues. The UNESCO (2016) report on youth media habits highlighted that environmental programs on TV still contribute to students' general awareness, though not necessarily to in-depth understanding, especially in the age of smartphones and on-demand content.

The college curriculum itself serves as a formal and structured source of climate knowledge. Environmental science courses, guest lectures, and seminars integrated into academic programs provide high accessibility and high usage among students. Annamalai and Jagadeesh (2018) emphasized that when climate education is institutionalized, it significantly enhances students' understanding and fosters environmentally responsible behavior. This structured exposure ensures that even students not actively seeking climate information still engage with the topic during their academic journey.

Peer groups, through informal discussions, classroom debates, or study groups, are another influential source. Their accessibility is high, with moderate usage. Bandura's (1977) social
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learning theory supports the notion that peers strongly influence attitudes and behaviors, including those related to climate change. Students often exchange opinions and learning materials through interpersonal networks, making peer influence a subtle but powerful channel of knowledge dissemination.

Participation in workshops and seminars hosted by colleges, NSS/NCC units, or student-led clubs provides periodic but meaningful engagement with climate topics. Although not a daily source of information, these events encourage deeper reflection and active participation. Ballew et al. (2019) suggest that experiential and interactive formats like workshops have a lasting impact on climate engagement, especially when linked to real-world action or project-based learning.

Occasional social campaigns, such as NGO initiatives, Green Club drives, or campus rallies, serve as low to moderate sources of climate information. While their frequency is limited, these campaigns can be impactful, particularly for students already interested in environmental issues. Gupta and Vegelin (2016) found that grassroots campaigns, when involving youth, can foster civic participation and environmental consciousness, even if their overall reach remains selective.

Print media, including newspapers and science magazines like *Science Reporter*, have seen declining use among the youth. Although these sources offer well-edited and credible content, they are often overlooked in favor of faster digital alternatives. The Pew Research Center (2018) observed that readers under 25 years old globally prefer mobile-friendly formats over traditional print, reducing the influence of printed newspapers and magazines among college students.

Finally, mobile applications that deliver climate news or interactive content (such as NASA's *Earth Now*) are innovative but underutilized. Despite offering dynamic and potentially engaging ways to learn about climate issues, they face low usage due to limited awareness or lack of interactive design. Mahapatra et al. (2021) highlighted that while eco-education apps have promise, their effectiveness is curtailed unless better integrated into mainstream education or outreach strategies.

Table 2. Credibility of Climate Change Information Sources

Source Type	Estimated Credibility (%)	Reason for Credibility
Academic Resources	85%	Peer-reviewed, research-based, factual and detailed
Government Portals	80%	Official data, national/international reports (e.g., IPCC)
College Curriculum	75%	Taught by professors, aligned with educational standards
News Websites	60%	Depends on the outlet; seen as professional but sometimes biased
Television	50%	Mixed trust; some watch credible channels like Nat Geo
Workshops/Seminars	50%	Trusted if conducted by experts or institutions
Peer Groups	40%	Informal, depends on the knowledge level of peers
Social Campaigns	35%	Awareness-driven but sometimes seen as emotionally biased
Print Media	30%	Declining readership; seen as outdated by younger audiences
Mobile Apps	25%	Low awareness; apps often lack source transparency
Digital Media	20%	Easily accessible but full of misinformation or unverified facts

When evaluating sources of climate change information, college students attribute the highest credibility to academic resources, with an estimated 85% credibility rating. These include peer-reviewed journals, scholarly articles, and institutional databases, which are valued for their factual accuracy, scientific rigor, and comprehensive detail. Prior research supports this trust, noting that students and educators often rely on academic literature for its objectivity and methodological soundness (Akerlof et al., 2015; Moser, 2010).

Government portals, such as those maintained by the Ministry of Environment, Forest and Climate Change (MoEFCC) or the Intergovernmental Panel on Climate Change (IPCC), are regarded as 80% credible. These sources are seen as official, policy-driven, and based on expert consensus, contributing to their perceived authority. According to Leiserowitz et al. (2020), when climate information is framed as coming from governmental or international organizations, it is more likely to be trusted—especially when it is data-rich and globally relevant.

The college curriculum, including environmental science courses and guest lectures, enjoys 75% credibility. Taught by faculty and aligned with standardized educational frameworks, classroom-based information is generally trusted by students as accurate and relevant. Studies suggest that structured academic environments enhance both the depth of knowledge and the confidence students place in the material (Annamalai & Jagadeesh, 2018; UNESCO, 2016).

News websites receive a 60% credibility rating, though trust varies based on the reputation of the outlet. Established newspapers such as *The Hindu* or *BBC* are often considered more trustworthy, while others are viewed with skepticism due to perceived editorial biases. Feldman et al. (2010) highlight that while professional journalism remains a key information source, its effectiveness depends on framing, political alignment, and transparency of sourcing.

Television earns a 50% credibility score, with students expressing mixed levels of trust. Channels like National Geographic and Discovery are seen as credible due to their documentary-style content, while general news channels are sometimes critiqued for sensationalism. According to Schäfer (2012), the credibility of television as a climate information source depends significantly on the channel and the program type.

Similarly, workshops and seminars are also rated at 50% credibility, particularly when organized by reputable institutions or conducted by field experts. Events hosted by NSS/NCC units or environmental clubs are more trusted when they provide experiential learning, as these formats tend to increase students' understanding and emotional engagement with the subject (Ballew et al., 2019).

Peer groups, including classmates and informal social circles, are seen as only 40% credible. While they are influential in shaping opinions and facilitating information sharing, the *B N Neelima/ Climate Change Information: An Examination of Sources and Trust among College Students in Tirupati/JYANAVI, Volume 1, Issue 2/2025*

credibility of peers is often questioned due to variable knowledge levels. Bandura's (1977) social learning theory explains how peers influence learning, but the quality of information depends on the original source and accuracy of interpretation.

Social campaigns, such as those organized by NGOs or student-led clubs, are viewed as 35% credible. Though these campaigns succeed in raising awareness and inspiring action, they are sometimes dismissed as emotionally charged or lacking in factual rigor. Gupta and Vegelin (2016) argue that while activism can spark interest, sustained learning requires data-driven messaging and follow-through.

Print media, including newspapers and science magazines, now holds a 30% credibility rating among students. The decline in readership and the shift toward digital media have contributed to perceptions that print is outdated or less relevant. Pew Research Center (2018) reports a consistent drop in newspaper readership among youth, impacting both access and trust.

Mobile apps dedicated to climate information, such as *Earth Now* or weather-related apps, are perceived as only 25% credible. Despite their convenience, many students express low awareness of such apps or question their source transparency. Mahapatra et al. (2021) found that while educational apps have potential, their effectiveness and credibility rely on proper design, institutional promotion, and integration into academic practices.

Finally, digital media—despite being the most widely used source—is rated as only 20% credible. This low rating is due to widespread misinformation, lack of fact-checking, and the overwhelming presence of unverified user-generated content (Schäfer, 2012; Leiserowitz et al., 2020). While these platforms are engaging and accessible, students are aware of the credibility gap, highlighting the need for better media literacy and critical evaluation skills.

Table 3. Relationship between Sources of Climate Change Information and Students' Knowledge Levels

Media Type	Knowledge Level	Observed % (O)	Chi-Square Component (χ^2)
Academic Resources	Well-Informed	62.5%	10.22
Academic Resources	Moderately Informed	31.3%	0.77
Academic Resources	Poorly Informed	6.3%	5.35

Media Type	Knowledge Level	Observed % (O)	Chi-Square Component (χ^2)
Government Portals	Well-Informed	50.0%	3.47
Government Portals	Moderately Informed	40.0%	0.01
Government Portals	Poorly Informed	10.0%	3.42
News Websites	Well-Informed	28.6%	0.07
News Websites	Moderately Informed	57.1%	2.14
News Websites	Poorly Informed	14.3%	2.30
Social Media	Well-Informed	10.0%	7.12
Social Media	Moderately Informed	40.0%	0.02
Social Media	Poorly Informed	50.0%	9.00
Television	Well-Informed	20.0%	1.55
Television	Moderately Informed	37.5%	0.13
Television	Poorly Informed	42.5%	3.06

An analysis of the relationship between the type of media accessed and college students' climate change knowledge levels reveals notable differences. Using observed percentages and Chi-square (χ^2) components, we can assess how different media sources influence whether students are well-informed, moderately informed, or poorly informed about climate change.

Academic resources, including peer-reviewed journal articles and scholarly databases, are strongly associated with students being well-informed, with 62.5% of users in this category. The Chi-square component for this group ($\chi^2 = 10.22$) reflects a significant deviation from the expected value, highlighting the effectiveness of academic media in deepening understanding. Only 6.3% of users from this group were poorly informed ($\chi^2 = 5.35$), further confirming the credibility and depth of academic sources (Moser, 2010; Akerlof et al., 2015).

Government portals—such as the IPCC and India's MoEFCC—also correlate positively with higher knowledge, with 50% of users being well-informed and a Chi-square component of 3.47. While moderately lower than academic sources, these platforms still show strong

credibility due to their policy-based, data-driven nature (Leiserowitz et al., 2020). The poor knowledge level among only 10% of users, yet with a high χ^2 value (3.42), indicates a mismatch in expected understanding, possibly due to complexity or accessibility barriers.

By contrast, news websites like *The Hindu*, *BBC*, and *Down To Earth* produce mixed results. Only 28.6% of their users are well-informed, while a majority (57.1%) are moderately informed ($\chi^2 = 2.14$). These findings suggest that mainstream news offers awareness but may not facilitate in-depth learning (Feldman et al., 2010). The balance between journalistic storytelling and scientific accuracy may limit the depth of knowledge transmitted.

Social media is notably associated with lower levels of climate change knowledge, with only 10% of users being well-informed and 50% being poorly informed ($\chi^2 = 9.00$). These figures indicate that although social media is widely used, it is often filled with unverified or misleading information (Schäfer, 2012). The high Chi-square values for both well-informed ($\chi^2 = 7.12$) and poorly informed ($\chi^2 = 9.00$) groups confirm a strong and negative association between this medium and climate literacy. Young users may be exposed to emotionally charged or fragmented narratives that lack scientific accuracy (Boulianne, 2015).

Television, encompassing both news channels and educational networks like National Geographic, shows a modest impact. Only 20% of TV users are well-informed, while 42.5% are poorly informed ($\chi^2 = 3.06$). The effectiveness of television may vary depending on the program format, the presence of sensationalism, or the viewer's level of engagement (Schmidt et al., 2013). While documentaries can be informative, general news programs often simplify complex issues, which may reduce educational value.

In summary, this data illustrates a statistically significant association between media type and students' climate change knowledge levels. Media like academic resources and government portals contribute positively to awareness and understanding, while social media is strongly linked to lower knowledge levels. These findings align with previous research that highlights the importance of credible, structured, and science-based content for effective climate change education (UNESCO, 2016; Ballew et al., 2019).

Conclusion

This study examined the sources of climate change information among college students in Tirupati and assessed how these sources relate to students' trust levels and their overall knowledge about climate change. The findings reveal that digital media is the most frequently accessed source (70%), followed by the college curriculum (60%) and peer discussions (45%). However, despite high accessibility, digital platforms such as social media are perceived as the least credible (20%), primarily due to the prevalence of misinformation. In contrast, academic resources (85%), government portals (80%), and the college curriculum (75%) emerged as the most trusted sources, valued for their evidence-based and authoritative content.

The frequency of engagement varied significantly across sources, with digital media accessed daily or weekly, while sources like workshops and print media were used only occasionally. Credibility perceptions were strongly influenced by the nature of the source—peer-reviewed and official content was trusted more than informal or emotionally driven sources.

Chi-square analysis showed a statistically significant association between the type of information source and students' knowledge level, indicating that students who primarily accessed academic and government sources were more likely to be well-informed. Conversely, reliance on social media was associated with lower levels of knowledge. Furthermore, the academic discipline of students influenced their trust in sources; students from science backgrounds exhibited higher trust in academic and government portals, while humanities and commerce students displayed greater reliance on peer discussions and digital media.

Overall, these findings suggest that while digital media remains a dominant and accessible source of climate information, enhancing student knowledge effectively requires promoting engagement with credible, science-based sources. Institutions and policymakers should consider integrating verified digital tools with curriculum-based instruction to bridge the gap between accessibility and trust, ultimately improving climate change literacy among students.

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