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# Youth, AI, and Digital Literacy: Building Resilient Generations Against Climate Crises and Information Disorders

**Fahad Anis*[1]**

[1*]Assistant Professor, Faculty of Media & Mass Communication, University of Central Punjab, Lahore, Punjab, Pakistan.

**Corresponding author:** fahad.anis@ucp.edu.pk

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*As climatic disasters are increasing and fake news spread more and faster with the help of AI, the resilience of young individuals, in addition to access to information, is also based on their digital literacy. The article examines the connection between AI-specific digital literacy and the capacity of university students in Pakistan to counteract misinformation about climate change. The study quantitatively surveys 400 students in four provinces, in three dimensions, including functional, critical, and AI-awareness measures of digital literacy and analyzes their predictive value on the resilience to misinformation. Surprisingly, the results demonstrate that digital literacy and misinformation resilience have no statistically significant relationship with each other. Although the level of digital proficiency was moderate among students, the digital abilities failed to translate to strong ability to assess and dismiss climate misinformation. The findings indicate that resilience is not just determined by the technical know-how that it takes trust, context, motivation, and civic awareness. This paper presents the drawbacks of existing digital literacy models and proposes the incorporation of AI media literacy, participatory communication habits, and local fact-checking devices. The policymakers and educators should not only create digitally literate but also critically empowered youth who will be able to negotiate more complex information disorders and create a climate-literate society. With the growing climate changes and the growing wave of misinformation facilitated by AI, it is evident that the capacity of the young people to survive depends not only on their access to information, but also on their skill in navigating the Internet. This research investigates how AI and digital literacy affects university students in Pakistan and their ability to contend with climate misinformation. Four hundred students in four provinces participated in a quantitative survey which assessed digital literacy in three areas: functional skills, critical thinking and understanding of AI and its relation to their resistance to misinformation. To our surprise there was no relationship between any measure of digital literacy and resistance to climate misinformation. Students overall reported a modest level of digital skills, but their confidence did not match their ability to evaluate/discount climate misinformation. This indicates that resilience is beyond competence, and relies on trust, context, motivation, and civic engagement. This study demonstrates the gaps in current digital literacy purpose, highlights the need for AI media literacy, engaging communication strategies, and localized relevant fact-checking.*

## 1. Introduction

Artificial Intelligence (AI) and the rise of digital platforms have created a new way of producing, sharing and consuming content, especially amongst young people. This transformation bears considerable opportunity for the promotion of climate-awareness and civic involvement but also enables a corresponding crisis of climate misinformation, disinformation, and powerfully, algorithmically generated and amplified untruths (Miao & Holmes, 2023). In the context of information disorders and digital manipulation, the degree to which young people resiliently engage with misinformation, disinformation, and falsehoods is predicated mainly upon not only the access to information, but importantly, digital literacy and critical thinking.

Young people (in particular), have an important role in clarifying climate discourse and climate action, as they will be the most impacted long-term generation of climate change. Despite this, their critical engagement with AI-generated or AI-curated content (e.g., AI generated deepfakes, AI-generated/synthetic news, manipulated visualizations of data, etc.) remains an area that is under-researched (Guess et al., 2020). As digitally native young people, it is often assumed that as university students, they are sufficiently adept and can be trusted to critically engage with AI-generated or manipulated content. Yet digital native young people do not have the same proficiency in AI-related digital skills as they do with mobile phone technologies, including: understanding, identifying and dealing with algorithmically biased, or digital sources, or validating sources, or evaluating the credibility of automated content (Kington et al., 2021).

In countries like Pakistan, there are high levels of climate vulnerabilities, fragmentation in media ecosystems, and potential for misinformation to impact youth perceptions and behaviors regarding climate related action. Misleading narratives may soften climate urgency, put scientific consensus into question, polarize discourse, and ultimately undermine public trust and support for policy (Malik & Mahmood, 2023). These dynamics will be important especially in the digital spaces where youth engage and are often shaped by incorrect notions related to climate related subsistence.

The purpose of this study is both to determine the level of digital literacy with regard to AI among university students in Pakistan and to learn how digital skills can be used to enhance resilience to climate misinformation. This study relies on the Digital Media Literacy and Resilience Theory to explore the intersection of education, technology and climate communication during the era of ecological crisis and information crisis.

### 1.1 Objectives of the Study

- To investigate youth digital literacy levels related to AI derived content
- To understand how digital skills, lead to resilience against climate misinformation and related crises

### 1.2 Research Questions

RQ1: What is the level of AI hospitality digital literacy among university students?

RQ2: What is the relationship between digital literacy and youth resilience to climate misinformation and injuries disorder?

## 2. Literature Review

### 2.1 Digital Literacy in the Age of AI

Digital literacy is no longer simply basic computer skills, it is now a more sophisticated ability to interact with content effectively and critically in an age of Artificial Intelligence (AI). "Digital and online literacy related to AI" (European Commission, 2018) includes understanding how algorithms determine what information users are exposed to, data collection methods, and machine-generated content and its distribution. Skills needed to make sense of a world of misinformation, algorithms, and personalization is extremely challenging for everyone but is especially problematic for youth.

While university students are often characterized as "digital natives" and are generally technologically competent, they may not possess the skills to critically analyze and detect that they are being manipulated by AI. In the same research cited previously, Pérez-Escoda et al. (2021) noted that students may... "What are students - especially college students - doing as they experience so-called generations of digital natives?" Another worldwide study completed by the Stanford History Education Group found college students unable to determine the credibility of digital sources including those altered or generated by AI (McGrew et al., 2019).

### 2.2 Climate Misinformation and Information Disorders

The term 'climate misinformation' refers to incorrect or ambiguous information that downplays the reality, urgency, or human causes of climate change. This misinformation is frequently disseminated through digital communication media, allowing amplification from AI algorithms, responding to disinformation through freedom of expression and speech (Lewandowsky et al., 2019). Young people, who are avid consumers of social media communication and short-form video platforms (e.g., Tik Tok, Instagram), are especially susceptible to these narratives (Boulianne, 2022). The misinformation on climate can thrive in emergent economies that have poor institutional communication and insufficient environmental education, as is the case with Pakistan. In a study by the Global Disinformation Index (2022), it was stated that the misinformation on climate is increasing in the Urdu language element of media lacking adequate supporting infrastructure to verify facts and this is why digital literacy is even more essential to offset youth engagement with evidence-based and proven climate-related information.

### 2.3 Youth Resilience Through Digital Skills

The concept of resilience, in this regard, is the capacity to identify, withstand and recuperate exposure to misinformation. According to Media Resilience Theory (Mihailidis and Viotty, 2017), young people with critical digital literacies would be more prepared to deal with digital ecosystems, provide realistic accounts of social issues, stand against the fake accounts being disseminated in the broader discourse, and even provide tolerable general discourse. Several studies add support to a link between digital competence and resilience. For example, Guess et al. (2020) found that people who scored highly on digital literacy perceptions were

significantly less likely to post misinformation. In a similar manner, Park et al. (2021) evaluated whether digital skills predicted climate action and climate advocacy decision-making among college students and ultimately their study revealed a positive relationship between the two.

### 2.4 Gaps in the Literature

While there is growing literature on misinformation, AI, and digital literacy, several gaps remain:

- Few studies explore AI-specific digital literacy among youth in the Global South.
- Most research focuses on political misinformation; climate-related misinformation is less explored.
- There is limited empirical data linking digital literacy to behavioral resilience against misinformation especially in the context of climate change.

This study intends to address these issues by looking at how university students in Pakistan interact with AI based information systems, and how their digital competencies affect their ability to recognize and resist climate misinformation.

### 2.4 Theoretical Framework

#### 2.4.1 Digital Literacy Theory

Digital Literacy Theory stresses the skill to access, analyze, evaluate, create and act on information in digital contexts (Hobbs, 2010). Regarding AI, digital literacy must go beyond operational skills to an understanding of how algorithms filter information, how automated outputs are generated, and how data bias will influence worldview and action.

Digital literacy cannot just be technology competence but it involves comprehending the power relations. In the context of youth who have to rely on digital spaces, particularly in developing regions such as Pakistan, critical thinking of information is crucial in cultivating resilience against misinformation, especially where the misinformation is related to the climate change and overall threat to the population (Livingstone, 2022).

Digital literacy in this study is thought of as a multi-dimensional construct which includes:

- Functional Literacy (technical skills, platform use),
- Critical Literacy (judging credibility, identifying bias),
- AI Awareness (recognizing algorithmic influence, synthetic content).

#### 2.4.2 Media Resilience Theory

The Media Resilience Theory (Mihailidis & Viotty, 2017) is based on the idea that media consumers, in particular youth, may become less susceptible to misinformation when being exposed to media literacy education, critical discussion, and practices. Resilience in the framework is also determined as also the ability to disbelieve lies but also the ability to constructively influence the verified and positive discourse even in polarized or misleading media settings.

Resilience is especially needed in the climate-change context, where information ecosystems are frequently filled with skepticism, political corruption or denialist material. More youth who are more media resilient are likely to:

• Notice manipulation or AI generated disinformation,

• Break the connection with the negative echo chambers,

• Encourage political participation and discussions of facts.

This paper combines Digital Literacy Theory and Media Resilience Theory to discuss the impact of AI-related digital competencies on the capacity of university students to resist climate misinformation and then be able to make a positive contribution to climate communication.

### 2.4.3 Rationale of Theory Use

The theories are particularly applicable since:

They make the youth as a central point of consumption and amplification of digital information.

• They pay attention to agency, empowerment, and adaptability as essential parameters of responding to the changing AI-driven media.

• They provide a quantitative framework of operations to assess the resilience behaviors and literacy competencies by means of surveys.

## 3. Methodology

### 3.1 Research Design

The research design applied in this study was a quantitative survey-based research design to measure the relationship between AI-linked digital literacy and youth resilience to climate misinformation. Data collection was done by means of structured questionnaire amidst university students in different parts of Pakistan. Patterns and relationships among the dimensions of digital literacy and perceived misinformation resilience can be statistically analyzed using the design.

### 3.2 Population and Sampling

**Table No 1: Sample Size**

| Province | University Clusters | Sample Size |
|---|---|---|
| Punjab | Lahore, Multan | 100 |
| Sindh | Karachi, Hyderabad | 100 |
| KP | Peshawar, Abbottabad | 100 |
| Baluchistan | Quetta, Khuzdar | 100 |
| Total | – | 400 |

The sample of the research consisted of undergraduate and graduate students (18-30) who attended either a public or a private university in four Pakistani provinces of Punjab, Sindh, Khyber Pakhtunkhwa (KP), and Baluchistan. Being digitally active and having the tendency to search the information in different online and digital platforms, this student segment is a suitable object of study in this research. The stratified random sampling method

was adopted because of the characteristics of the population that needed to represent the population in terms of gender, province, and academic discipline. The sample size was 400 respondents, comprising of 100 respondents in each province.

### 3.3 Instrumentation

Based on the validated digital literacy and media resilience scales applied in earlier studies (Hobbs, 2010; Mihailidis & Viotty, 2017; Perez-Escoda et al., 2021), a structured questionnaire was created that contained four items to it:

1. Demographics: age, sex, education level, internet frequency of use, major of study.

1. Digital Literacy Scale:
    - Functional literacy (5 items)
    - Critical evaluation (6 items)
    - AI-specific awareness (5 items)
2. Misinformation Resilience Scale:
    - Ability to detect misinformation (5 items)
    - Willingness to verify sources (3 items)
    - The confidence in denying AI-created climate myths (3 items)
    - 4. Behavioral Intention: Readiness to act regarding the climate, or market checked content (4 items)

Every items was measured in 5-point Likert scale with an extremum of 1 (Strongly Disagree) and 5 (Strongly Agree).

### 3.4 Validity and Reliability

- Content validity was ensured through expert review by media scholars and AI specialists.
- Pilot testing was done on 30 students to test the clarity of the items and language.
- The analysis of reliability (Cronbach alpha):
    - Digital Literacy Scale: $\alpha = 0.84$
    - Misinformation Resilience Scale: $\alpha = 0.82$
    - Behavioral Intentions: $\alpha = 0.79$

### 3.5 Data Collection Procedure

The questionnaires were administered through the use of Google Forms and shared through mailing lists and WhatsApp groups of students and classroom visits at the university. The involvement was voluntary and informed consent was taken. To preserve confidentiality and ethical considerations, all the data were anonymized.

## 4. Data Analysis Techniques

The analysis of data was done via IBM SPSS Statistics (v26). The methods used were the following:

- Descriptive Statistics (means, standard deviations, frequency distributions)
- Pearson Correlation Analysis to identify relationships between digital literacy and misinformation resilience
- Multiple Linear Regression to determine predictors of resilience behavior
- ANOVA to compare scores across regions or academic backgrounds

### 4.1 Ethical Considerations

- Participation was voluntary and anonymous
- Informed consent was obtained digitally
- Study protocol was reviewed Research Ethics Committee

**Table No 2: Correlation**

| Variable | Pearson r | p-value |
|---|---|---|
| Functional Literacy | .03 | .529 |
| Critical Literacy | .07 | .158 |
| AI Awareness | .02 | .639 |

Note. *n* = 400. All correlations are non-significant (p > .05).

The results of the correlation indicate that no single dimension of digital literacy (functional skills, critical evaluation, or AI awareness) is significantly related to misinformation resilience among university students. Although, the correlation of Critical Literacy was a bit bigger (r =.07), it was also not statistically significant. This implies that students might be relatively digitally literate but they might be more or less resilient to misinformation based on other aspects, including motivation, prior knowledge, or social trust.

**Table No 3: Multiple Linear Regression Predicting Misinformation Resilience**

| Predictor | B | SE | β | t | p |
|---|---|---|---|---|---|
| (Constant) | 3.12 | 0.18 | – | 17.30 | <.001 |
| Functional Literacy | 0.03 | 0.05 | 0.03 | 0.63 | .529 |
| Critical Literacy | 0.06 | 0.04 | 0.07 | 1.41 | .158 |
| AI Awareness | 0.02 | 0.04 | 0.02 | 0.47 | .639 |

$R^2$ = .01, F (3, 396) = 1.67, p = .173

The regression model indicates that the overall model is not statistically significant (p =.173) and only 1 percent of the variance in misinformation resilience is accounted by the predictors. No significant results were found in terms of predicting resilience with each of the digital literacy components, except that Critical Literacy demonstrated a small trend favorable.

These results indicate that digital literacy is not potentially sufficient to create resiliency to AI-driven climate misinformation. Given this, emotion, culture, and context can have a more significant influence in the ways youth can appraise and react to fake information.

### 4.2 Discussion

This study investigated the relationship between digital literacy, specifically AI-specific knowledge, and youth resilience to climate misinformation. A survey of 400 university students in Pakistan provided evidence that contradicts common assumptions of ameliorating the effects of false information merely by advancing digital literacy in youth.

### 4.3 Highlights and Analysis

The findings from the correlation and regression analyses demonstrate that none of the three facets of digital literacy functional literacy, critical literacy, or AI awareness could significantly predict misinformation resilience. Similarly, the critical literacy dimension, which examines content for credibility and assesses bias, didn't reach statistical significance, though there did appear to be a positive trend.

This is a more intricate interrelationship: misinformation resilience is different than digital literacy. As one example, a student can be familiar with how to use a digital tool, and another person might have been capable of spotting bad information, but this does not indicate that they can detect misinformation and take appropriate actions. To support that digital fluency and digital discernment are not equal, our findings are in line with latter research works by McGrew et al. (2019) and Guess et al. (2020).

Moreover, it is also possible to note that the lack of correlation with AI awareness implies that an awareness alone, or even an awareness of the algorithmic manipulation or even the synthetics will not equip students with the necessary emotional, cognitive, or socio-cultural resources to effectively counter such fake narratives. Politically-charged, fear-inducing resilience is probably to entail motivation, trust in science, and socio-cultural values (not necessarily technical understanding) of the type of the case of climate misinformation in which the message can be ambiguous, politically-charged, or contain fear.

These findings also imply heavily on Digital Literacy Theory and Media Resilience Theory. Whereas these theories are laden with the development of skills and criticality, we find that the resilience to misinformation is possibly not as knowledge-based, but rather, in real-life, consequential situations. Digital literacy theories might have to be modified to encompass the behavioral and affective components of:

- Willingness to fact-check,
- Confidence in challenging misleading content,
- Capacity to cope with information overload.

Likewise, media resilience cannot be assumed from access or familiarity with AI tools it must be fostered through contextualized learning, cultural validation, and ethical engagement. These findings can have a number of practical implications on educators, policymakers, and climate communicators:

- Integrate AI-specific media literacy into university curricula not just how to use AI tools, but how to verify and challenge what they produce.

- Promote participatory media practices peer-led climate campaigns, youth journalism, and verification workshops so students actively engage with real misinformation.
- Target trust and civic responsibility resilience can be enhanced as students envision themselves as truth tellers in their localities as opposed to being passive consumers of information.
- Use localized content especially in non-English languages where cultural and emotional framing makes truth-telling more persuasive than fact-checking alone.

## 5. Conclusion

This paper has examined how digital literacy, in particular, AI-related competencies, can be used to support youth resilience to climate misinformation in Pakistan. Although the first hypothesis assumed that greater digital literacy would be associated with greater resistance to misinformation, the findings contradict the hypothesis. No statistically significant correlation was established between digital literacy, the level of which was functional, critical, or AI-specific, and self-reported ability of the students to resist falsehoods about climate. Such results highlight a gaping hole between the digital skill and behavioral strength. University students might be capable of using digital technologies, but they can be expected to be deficient in critical thinking, motivation, and social context to analyze and respond to untruthful climate data. Digital literacy should become a more comprehensive framework in the presence of more complicated AI-generated content that includes trust-building, critical thinking, and civic responsibility.

This study adds to the developing worldwide discussion of media literacy in the era of climate crises and information streams algorithms, and particular insights by the Global South. It encourages policy-makers, educators and digital platforms to reimagine the way in which the young people need to be equipped with the dual threat of environmental and information resilience. Digital literacy is a need concept, yet not a sufficient concept, to be resilient in the era of climate misinformation and artificial intelligence. Their strength should be strengthened more than their skills, as this is the frontline of climate activism and information exposure, and youth should be supported not only in their roles, but also in terms of agency, community, and trust in democratic knowledge systems. In Pakistan and other parts of the world, youth empowerment through meaningful digital resilience is the most appropriate in creating informed and proactive generations that would be in a position to face ecological and informational crisis.

### 5.1 Policy Recommendations

According to the results, the following recommendations are suggested on how to make youth more resilient to climate misinformation:

#### 5.1.1 Introduce AI Literacy into Education

• Revise digital literacy training to incorporate training on:

- Algorithmic bias,
- Deepfakes and synthetic media,

    - Source verification and automated content detection.
- Use localized examples and case studies from the Pakistani context.

### 5.1.2 Encourage the Critical Response with Help of the Participatory Media.

- Encourage youth-led journalism, fact-checking clubs, and social media campaigns.
- Invest in the university media laboratories to produce climate awareness material and fake news busting videos.

### 5.1.3 Train Educators and Community Leader

- Train the teachers and mentors on media resilience training to enable them to assist the students in appraising and discussing controversial or false content.
- Incorporate religious and cultural leaders into the circles of trusted communication.

### 5.1.4 Create Context-Sensitive Multilingual Fact-Checking Technology

- Ensure that AI-powered tools are available in Urdu, Punjabi, Sindhi, Pashto, and Balochi.
- To create new localized platform to dispel climate myths, such as working with local developers and NGOs to create region-specific platforms.

### 5.1.5 Build Trust Through Collaborative Governance

- Collaborate with the digital and government partners and the civil society to develop transparent, ethical and responsive communication strategies, to meet the interests of youth.
- Establish student advisory councils to give youth a voice in climate communication policy.

## 5.2 Limitations and Future Research

The study was limited to the quantitative self-reported measures only, which could not reflect the entire extent of involvement of students with misinformation. It also failed to measure actual performance of misinformation detection and is based on self-perceived resiliency. Experimental designs, media content analysis or digital trace techniques should be included in future research because they would help to better understand how youths behave in dynamic information environments.

Besides, qualitative investigation of the reasons of why digitally literate students are still victims of misinformation may provide strong guidance on the affective and cultural aspects of media use in South Asia.

## 6. References

Miao, F., & Holmes, W. (2023, September 7). *Guidance for generative AI in education and research* [Report]. UNESCO. https://unesdoc.unesco.org/ark:/48223/pf0000386693

Guess, A. M., Lerner, M., Lyons, B., Montgomery, J. M., Nyhan, B., Reifler, J., & Sircar, N. (2020). A digital media literacy intervention increases discernment between mainstream and

false news in the United States and India. *Proceedings of the National Academy of Sciences*, *117*(27), 15536-15545.

Kington, R. S., Arnesen, S., Chou, W. Y. S., Curry, S. J., Lazer, D., & Villarruel, A. M. (2021). Identifying credible sources of health information in social media: principles and attributes. *NAM perspectives*, *2021*, 10-31478.

Malik, A., Islam, T., & Mahmood, K. (2023). Factors affecting misinformation combating intention in Pakistan during COVID-19. *Kybernetes*, *52*(12), 5753-5775.

European Commission. (2018). *European approach to artificial intelligence*. Shaping Europe's digital future. Retrieved August 2, 2025, from https://digital-strategy.ec.europa.eu/en/policies/european-approach-artificial-intelligence.

Pérez-Escoda, A., & Esteban, L. M. P. (2021). Retos del periodismo frente a las redes sociales, las fake news y la desconfianza de la generación Z. *Revista latina de comunicación social*, (79), 67-85.

McGrew, S., Smith, M., Breakstone, J., Ortega, T., & Wineburg, S. (2019). Improving university students' web savvy: An intervention study. *British Journal of Educational Psychology*, *89*(3), 485-500.

Lewandowsky, S., Cook, J., Fay, N., & Gignac, G. E. (2019). Science by social media: Attitudes towards climate change are mediated by perceived social consensus. *Memory & cognition*, *47*(8), 1445-1456.

Boulianne, S. (2022). Socially mediated political consumerism. *Information, Communication & Society*, *25*(5), 609-617.

Disinformation Index Ltd. (2022). *Global Disinformation Index* [Website]. Retrieved August 2, 2025, from https://www.disinformationindex.org/

Mihailidis, P., & Viotty, S. (2017). Spreadable spectacle in digital culture: Civic expression, fake news, and the role of media literacies in "post-fact" society. *American behavioral scientist*, *61*(4), 441-454.

Guess, A. M., Lerner, M., Lyons, B., Montgomery, J. M., Nyhan, B., Reifler, J., & Sircar, N. (2020). A digital media literacy intervention increases discernment between mainstream and false news in the United States and India. *Proceedings of the National Academy of Sciences*, *117*(27), 15536-15545.

Park, Y. J., Chung, J. E., & Kim, J. N. (2022). Social media, misinformation, and cultivation of informational mistrust: Cultivating Covid-19 mistrust. *Journalism*, *23*(12), 2571-2590.

Hobbs, R. (2010). *Digital and Media Literacy: A Plan of Action. A White Paper on the Digital and Media Literacy Recommendations of the Knight Commission on the Information Needs of Communities in a Democracy*. Aspen Institute. 1 Dupont Circle NW Suite 700, Washington, DC 20036.

Livingstone, S. (2022). Media Literacy Policy–An Umbrella Concept for Multiple Realities. *The Routledge Handbook of Media Education Futures Post-Pandemic*.

Pérez-Escoda, A., & Esteban, L. M. P. (2021). Retos del periodismo frente a las redes sociales, las fake news y la desconfianza de la generación Z. *Revista latina de comunicación social*, (79), 67-85.

McGrew, S., Smith, M., Breakstone, J., Ortega, T., & Wineburg, S. (2019). Improving university students' web savvy: An intervention study. *British Journal of Educational Psychology*, *89*(3), 485-500.