A Multidisciplinary Perspective on Education, Environment, and Social Challenges: A Tutorial Review

Shahida Perveen[1], Rehmana Akhtar[2], Rubina Naz[3], Sohaib Usman[4], Usman Hafeez[5] Areeba Shareef[6], Muzafar Hussain[7], Abdullah Azhar[8], Muhammad Ilyas[9,] Mehwish Jabeen[10]

[1] PhD Scholar, Department of Education, The Islamia University of Bahawalpur, Bahawalnagar Campus, Corresponding Author Email: shahidaperveen7007@gmail.com

[2] MPhil Scholar, Department of Education, The Islamia University of Bahawalpur, Bahawalnagar Campus, rehmanaakhtar558@gmail.com

[3] MPhil Scholar, Department of Education, The Islamia University of Bahawalpur, Bahawalnagar Campus, rubinanaz181@gmail.com

[4] Ph.D. Agriculture Extension, Project Manager Gateway Co. Lahore, sohaibusmancheema174@gmail.com

[5] Mphil Environment Sciences, National College of business administration & Economics Lahore, Punjab, Pakistan, usmanmalik20@hotmail.com

[6] Ph.D. Scholar, Department of Education, The Islamia University of Bahawalpur, areebashareef12@gmail.com

[7] Ph.D. Scholar, Department of Education, The Islamia University of Bahawalpur, Punjab, Pakistan, z4zaffar@gmail.com

[8] M.Phil. Education, Institute of Agriculture Extension, Education, and Rural Development(IAEERD), University of Agriculture Faisalabad, abdullahazharjutt203@gmail.com

[9] M.Phil. Education, Institute of Agriculture Extension , Education, and Rural Development(IAEERD), University of Agriculture Faisalabad, ilyaschoni@gmail.Com

[10] SST(Science), Govt.Girls High School Bala Arrian, Bahawalnagar, mzfaridi@hotmail.com

Abstract

This tutorial review examines the interrelated challenges of education, environmental sustainability, and social inclusion in Pakistan, drawing on peer-reviewed research findings. It critically analyzes issues such as shortages in early childhood education, constraints in skill-based learning, environmental degradation, waste management, and policy failures in addressing these concerns. From an interdisciplinary perspective, this review advocates for the integration of environmental education into formal curricula, extensive teacher training, and enhanced social inclusion for marginalized communities. Key findings highlight those shortages of qualified teachers and inadequate infrastructure hinder early childhood education, while skill-based education remains underdeveloped, particularly for women. Furthermore, environmental challenges including smog, plastic pollution, and urban waste mismanagement necessitate urgent policy interventions. Education policy frameworks that promote critical thinking and interdisciplinary learning are essential for fostering sustainability and resilience. The review also addresses inclusive education policies for transgender individuals and students with special needs, emphasizing the importance of creating equitable learning environments. This study underscores the urgency of policy reforms, curriculum integration, and stakeholder collaboration to tackle these pressing issues. By adopting sustainable educational strategies,

_____

enhancing digital literacy, and strengthening policy institutions, Pakistan can transition towards a more inclusive and environmentally conscious education system. The findings offer actionable recommendations for policymakers, educators, and researchers, advocating for a comprehensive top-down approach that integrates education and sustainability.

Keywords: Environmental Education Policies, Sustainable Skill-Based Learning, Inclusive Education Reforms, Waste Management Strategies, Early Childhood Education Development

Introduction
Context and Significance
The socio-economic development of any nation depends heavily on the quality of its educational system and sustainable environmental practices. Pakistan's educational and environmental sectors face significant problems, such as an underqualified teaching staff and environmental degradation. Social inequalities escalate because Pakistan fails to establish proper educational policies and sustainability programs, mainly affecting disadvantaged groups (Rafiq-uz-Zaman et al., 2024). Research by Sujaya et al. (2023) demonstrates that education faces related challenges to environmental sustainability in Pakistan because floods destroyed educational facilities, thus disrupting educational access for millions of students. The integration of Education for Sustainable Development (ESD) persists in teacher education programs, but instructors mainly teach through traditional methods, according to Khadim et al. (2024). The operation of quality education, which drives sustainable development, depends on various elements, according to Khushik and Diemer (2020). In South Punjab communities of transgender individuals, educational differences have grown stronger because of environmental problems, including water pollution and deforestation (Rafiq-uz-Zaman et al., 2025). Educational organizations must embed climate change and disaster management education in teaching materials and training school staff in Environmentally Sustainable Development practices (Sujaya et al., 2023). Educational programs and cooperative study methods must be supported to advance environmental understanding (Khadim et al., 2024; Rafiq-uz-Zaman et al., 2025).

Objectives of the Review
- To analyze contemporary challenges in education and environmental sustainability.
- To assess the impact of skill-based education on economic and social development.
- To evaluate the role of environmental education in fostering sustainability.
- To provide policy recommendations for inclusive and sustainable education models.

Education and Skill Development
Early Childhood Care and Education (ECCE) in Pakistan
Early childhood care and education development in Pakistan faces considerable challenges because of untrained teaching personnel and limited training possibilities. The quick resolution of standard school policies becomes necessary to remedy crowded classrooms and limited educational materials that degrade learning quality (Rafiq-uz-Zaman, 2024). Early childhood education (ECE) in Pakistan faces multiple significant barriers that hinder its positive advancement and reduce its quality standard levels. ECCE development in Pakistan faces three main barriers: insufficient teaching staff, deficient training systems, and crowded classrooms with limited resources. Students' educational performance remains minimal, while enrollment numbers decrease because of these adverse conditions (Alam et al., 2022; Artipah et al., 2024). An unideal ECE situation persists across Pakistan due to poverty levels, sufficient budget funding, I policy measures, and insufficient public awareness, according to Zamir, 2018). Support from the government does not erase the financial, structural, organizational, or cultural challenges during policy implementation of Early Childhood Education (ECE) (Hunzai, 2007). A solution for ECE problems would integrate ECE operations separately from primary facilities est, abolish unique funding streams dev,elop specialized teaching competencies, and

_____
Volume: 3, No: 2   **April-June, 2025**

37

implement technical infrastructure in community centers (Alam et al., 2022; Artipah et al., 2024). Pakistan needs better collaborative strategies between its public institutions and NGOs alongside the private sector to enhance present ECE operations (Arshad and Zamir, 2018).

The teacher shortage problems and resource deficiencies faced in Pakistan's early childhood education can be better understood by applying Vygotsky's sociocultural thought. This theory demonstrates that social interaction and cultural context determine cognitive development and learning through social interactions (Vygotsky 1978). The sociocultural framework shows that effective solutions for ECCE issues need engaging social environments and education materials that speak to local cultures. Children's learning achievement and participation rates improve when programs incorporate community-based experiences and cultural materials students recognize (Gonzalez et al., 2005).

Skill-Based Education and Gender Empowerment

The educational development of skills is a fundamental tool for empowering Pakistani women. The implementation of skill-based education in Pakistan experiences limitations because of social limitations, insufficient vocational training opportunities, and economic factors. Digital learning's platform delivers prospects to resolve gaps within training systems. The nation must establish educational programs to teach women market-relevant skills in Pakistan because cultural gender norms, economic poverty, and training deficiencies persist (Rafiq-uz-Zaman et al., 2024e). Women gain financial independence through digital skills, leading them to join broader social networks despite existing technological resource challenges (Dilawar et al., 2024). The vocational education framework of Pakistan shows deficits involving obsolete education materials, weak university-industry relationships, and governmental administration problems that primarily influence students studying in rural territories. Digital methodologies present different methods to increase employment and economic growth, yet the adoption of these methods remains limited because of substantial differences between groups. Multiple policies have emerged to address these challenges through investments in digital infrastructure, updated curricula, and new partnerships and gender equality initiatives (Aijaz et al., 2024; Ali et al., 2024). Digital platforms need government support for inexpensive technology distribution and targeted training to achieve gender empowerment so that educational gaps close (Dilawar et al., 2024; Rafiq-uz-Zaman et al., 2024e).

Digital competency training is indispensable in empowering women by helping them complete their education and participate in career opportunities and business establishment. The existence of established vocational training programs provides evidence to substantiate this point. Through renewable energy programs, women receive solar power and wind technology training, making them substantial contributors to environmental businesses (UNESCO-UNEVOC, 2015). Through Sambhav Foundation sustainable agriculture workshops, women learn organic farming and agribusiness proficiency, establishing food security while developing economic independence (Sambhav, 2023). People who acquire educational skills can parallel their knowledge with real professional opportunities and become financially independent while experiencing ongoing personal development.

Comparative Analysis of Skill-Based Education in Pakistan and Other Countries

India realizes vocational education using a specific method that prepares students for the workforce. Pakistan must combine training programs into a comprehensive educational framework for developing vocational training opportunities (Rafiq-uz-Zaman & Nadeem, 2024). Multiple recent academic works have identified significant weaknesses in Pakistan's vocational education system, characterized by old curricula, inefficient industry-academe relations, and governance management issues (Ali et al., 2024). The Single National Curriculum (SNC) demonstrates the potential for standardizing educational practices throughout the country yet requires better integrating environmental and skill-based education elements (Faridi et al., 2024). Recent studies of workforce patterns in Pakistan show an ongoing

mismatch of skills between employers' needs and employees' qualifications, which requires revisions of teaching methods along with professional development for teachers and institution strengthening (Mustafa et al., 2005). The assessment of vocational training models between Pakistan and Britain, along with German systems, demonstrates the limited success of dual education in Pakistan, thus requiring specific implementation methods (Shah et al., 2011). The development of nationwide occupational skills standards should be pursued. At the same time, public-private partnerships need support, and the integration of advanced Industry 4.0 technology must be accomplished to improve workforce preparation, according to Ali et al. (2024).

Single National Curriculum (SNC) Implementation

Educators in Pakistan show conflicting reactions to the Single National Curriculum implementation policy. The Single National Curriculum works to achieve standardized education and equity standards, but multiple implementation issues make its effectiveness difficult (Nadeem et al., 2024; Khan and Abbas, 2023). The SNC faces multiple implementation obstacles because schools lack proper funding, educators need more training, and stakeholders do not fully support the program. Private education institutions produce additional obstacles that make it challenging to implement the Single National Curriculum, according to Malik et al. (2023). The SNC commitment rates of teachers with advanced qualifications prove higher, while teacher experience leads to different degrees of SNC acceptance (Sher et al., 2024). Most head teachers support the Social Networking Curriculum because they think it will eliminate social inequalities and enhance student abilities. Success for SNC will require numerous investments in instructing teachers and providing substantial educational resources alongside initiatives to overcome cultural and language barriers, according to Malik et al. (2023) and Iqbal et al. (2024).

Enhancing Critical Thinking through Literature

Academic institutions can utilize traditional literary works to train students in critical thinking. Educational practices that combine inquiry learning methods with digital equipment enable teachers to support their students' analytical thinking abilities and intellectual independence (Hassan et al., 2025). According to research findings, classic literature is a practical resource for teaching students critical thinking abilities. Through analyzing literary texts, students participate in advanced cognitive activities that involve stating their views, making conclusions, and transferring ideas to new contexts (Ramadhana et al., 2022). Through humanities education that includes classic texts, students assume the role of protagonists in experiencing indirect problems while developing potential answers to resolve these concerns. When applied to the literature, the active study methods of event, lysis, and socialist analysis activate thinking operations while improving critical thinking abilities (Kovpik, 2020). According to Ouhiba (2022), literature acts as a link that improves EFL teaching methods to enhance students' language skills and critical thinking abilities. According to research findings, combining literature-based instruction and suitable approaches results in meaningful improvements in critical thinking abilities throughout different educational environments. Literary works from traditional times have used complex narratives, moral dilemmas, and multiple perspectives to develop students' critical thinking. Literature as a form of mobilizing repressed voices and overcoming socio-political regimes is presented in "A Thousand Splendid Suns."(Qazi et al., 2025). The educational methods of Socratic questioning with project-based learning and debate practices improve the learning process when combined. Through Socratic questioning, students learn to think independently at higher levels because this method requires them to critically analyze and evaluate materials (Paul and Elder, 2006). Implementing project-based learning combined with debate activities leads to improved critical thinking competencies because they demand students to conduct analytical discussions supported by evidence-based reasoning and deep comprehension of texts, according to Miller (2021).

Different educational methods enable teachers to enhance students' literary evaluation skills while teaching them how to translate their literary understandings into practical situations.

Environmental Education and Sustainability
Environmental Degradation and Policy Interventions
Weak policy enforcement leads to Pakistan's environmental problems, including deforestation, soil erosion, and air pollution. Teachers who add environmental studies to their educational programs enable students to learn how to protect nature better and participate actively (Rafiq-uz-Zaman et al., 2024c). The origins of environmental issues like deforestation water scarcity soil erosion, and air pollution date back to colonial times, yet fast industrialization and urbanization worsened their impacts (Rafiq-uz-Zaman et al., 2024c; Hasan & Ali, 1992). Ineffective environmental protection occurs due to weak policy enforcement alongside insufficient regulatory institutions. Economic policies, including irrigation water subsidies, created brown and green environmental problems (Faruqee, 1997). Several experts advocate using market-based policies to strengthen environmental legislation and improve intersectoral cooperation to solve these challenges (Rafiq-uz-Zaman et al., 2024c; Faruqee, 1997). The Single National Curriculum of Pakistan incorporates environmental and skill-based education to build public awareness, which supports sustainable development, according to Faridi et al. (2024). A comprehensive method seeks educational consistency and tackles social and environmental matters as part of its goals.

Environmental discourse in Pakistan regarding policy failures and environmental concerns stands to gain from applying deep ecology and ecofeminist principles of environmental ethics. Deep ecology establishes that life is inherently worthwhile, and it supports both heightened ecological awareness and systematic social changes in human communities that embrace ecological principles (Naess, 1973). The principles of ecofeminism study how female mistreatment connects with ecological destruction while stressing that environmental protection hinges on social justice principles (Warren, 1990). Combining these ethical frameworks demonstrates how the environmental worth of nature should be acknowledged and how environmental degradation affects women in political solutions.

Integration of Environmental Awareness in Mathematics Education
Multiple studies indicate that teaching mathematics through sustainable content raises students' performance in environmental consciousness and problem-solving (Rafiq-uz-Zaman et al., 2024b; Hamilton & Pfaff, 2014). The method employs authentic environmental-related data from real-life examples throughout mathematics teaching sessions. Students learn environmental consciousness better through contextual teaching methods that mimic the native setting of Papua, according to Mumu et al. (2020). Educational professionals face various obstacles because they need better sustainable education training, sufficient resources, and additional teaching time (Lestari et al., 2024). Through research, Rafiq-uz-Zaman et al. (2024b) urge scientists to develop uniform curricular materials while training all professionals thoroughly as institutions provide the necessary support to address these educational problems. Students achieve better motivation alongside improved educational experiences when sustainability becomes integrated into mathematics courses and thus advance their readiness for sustainable futures (Lestari et al., 2024).

Addressing Smog and Climate Resilience
The pollution issue of smog endangers public health and environmental quality in major Lahore and Faisalabad urban areas, based on the findings reported by Rafiq-uz-Zaman et al. (2024d). Industrial emissions, automotive pollutants, and farming burning activities result in smog formation that worsens because of climate change (Khalid et al., 2024). The Pakistan Clean Air Program encounters problems during execution because it does not have adequate enforcement tools, and people lack sufficient knowledge about its objectives. The smog crisis

in Pakistan demands immediate attention to environmental policy enhancement alongside better implementation approaches and environmental education programs, according to Rafiq-uz-Zaman et al. (2024d) and Khalid et al. (2024). According to the authors ' recommendation, fearful farmers need financial support and education, national institutions must teach environmental principles, and stakeholders need increased participation. Pakistan requires an extended strategic system combining national and regional measures to prevent air quality deterioration from smog pollution (Khalid et al., 2024).

Waste Management and Urban Sustainability

Sustainable waste management needs strong educational initiatives as its primary driver. Khalid et al. (2024) argue that improvements to urban waste disposal systems need the participation of communities and governmental organizations. Multiple-component interventions yield enhanced results as they produce better outcomes when implemented to increase mastery levels and practice excellence among healthcare personnel (Conti et al., 2024). Effective urban waste disposal modernization depends on strong partnerships between communities and their government offices. The collaboration between local authorities and community members serves as a critical factor for resolving waste management problems in Ambon City and Palu City, according to Tuanaya (2024). Governments conduct essential functions by creating policies, building infrastructure, and starting waste bank initiatives, but they need community members to recycle and reduce waste amounts actively. The waste management system faces ongoing obstacles due to low public awareness, insufficient facilities, and weak law enforcement policies. Achieving efficient waste management depends on comprehensive efforts between education programs, enhanced facilities, and constant policy enforcement (Ariyadi & Afriandi, 2024).

Health and Environmental Risks of Plastic Usage

The pollution of urban Pakistan by plastics establishes significant environmental dangers and health threats (Mukheed & A. Khan, 2020; Ahmed Sipra, 2020). The rising urbanization and expanding population numbers have resulted in increased plastic waste manufacturing, emphasizing single-use products that generate environmental harm while creating health issues (Bano et al., 2024). Ecosystem deterioration occurs in the environment because microplastics from diverse sources break into water bodies and terrestrial systems, which endanger marine ecosystems, human well-being, and soil health through ingestion, inhalation, and dermal exposure (Lee et al., 2024). The essentiality of public education and new regulations represent the solution to this problem. Community-based programs and public-private sector alliances for waste recycling and suitable waste disposal systems form Bano et al.'s (2024) suggested resolutions. Effective waste management, advanced wastewater treatments, and education-based campaigns represent the recommended solutions to eliminate plastic pollution in urban environments, according to Lee et al. (2024).

Social Inclusion and Education
Reducing Prejudice and Enhancing Intergroup Relations

The subsequent section applies Rawls' theory of justice as fairness together with Sen's capability approach to implementing social justice and equity principles. Rawls (1971) defines a just society as a realm where citizens obtain equal opportunity for fundamental rights. Sen (1999) established that people should acquire the capabilities needed to value their desired life. Utilizing these theories demonstrates how education standards should implement inclusive policies to deliver equal quality education regardless of background or identity. Shafi et al. (2024) establish that diversity-sensitive instruction methods help eliminate classroom biases and establish interconnected social relationships. Students' comprehension of inclusion grows best when collaborating on multi-part assignments and international group tasks (Willerton and Beznosov, 2020). Monitoring group member diversity strengthens social cohesiveness and

exceptional cultural interrelations (Pagani, 2014). Educators are responsible for studying social interactions before approaching every type of diversity, including gender-based and ethnic features and different ability levels (Hymel and Katz, 2019). Staff members must track their implicit prejudices through curriculum delivery, verbal messages, and cross-cultural examples. Learner-centered strategies and concrete learning activities develop more inclusive classrooms, which boosts student motivation and self-worth, according to Mobbs and Tashjian (2022). A combination of such strategies works to decrease discrimination and promote community unity in multiculturally diverse classrooms.

To develop inclusive learning environments schools must adopt diversity-sensitive practices when they face unconscious prejudice. Teachers need explicit practical strategies along with their sensitivity training as a mandatory component of inclusive classroom practice discourse. A combination of various instruction approaches enables teachers to develop individualized pedagogical styles which are beneficial to all pupils while UDL provides equal accessibility in learning. Learning environments inclusive of students make it easier for students to be valued members of society by respecting and recognizing them. An inclusive strategy implementation enables teachers to do more than mere awareness by constructively building positive intergroup classroom relationships.

Educational Barriers Faced by Eunuchs in South Punjab
The hunt for education remains impossible for transgender individuals throughout Pakistan because of environmental barriers, together with social discrimination. The survey in South Punjab revealed that transgender people experience complete deprivation of social protection alongside unstable income, and environmental education holds the potential to enhance their lifestyle by 92% (Rafiq-uz-Zaman et al., 2025). Transgender students face barriers to educational inclusion caused by institutional bias, together with social discrimination, limited support programs, and institutional biases (Arshad et al., 2024). Studies conducted in Lahore showed contradictory attitudes toward the educational inclusion of transgender people because some interviewees raised cultural implications and security worries (Noreen and Rashid, 2024; Khalid and Malik, 2024). Improving education access for transgender people requires NGOs to work together with peer education programs and government initiatives supported by economic empowerment programs, according to Rafiq-uz-Zaman et al. (2025). A combination of inclusive educational settings with designated policies, educational awareness campaigns, and workshops offers solutions to improve social inclusion and educational possibilities (Arshad et al., 2024; Khalid and Malik, 2024).

Special Education and Teacher Performance
Increased special education outcomes stem from inclusive teaching strategies, assistive technologies, and professional development initiatives (Rafiq-uz-Zaman et al., 2025a). These programs build inclusive educational practices and support assistive technologies and instructional teaching methods (Memisevic & Biscevic, 2023; Rude and Brewer, 2003). Implementing educational technology through inclusive policies and ongoing professional development delivers improved learning outcomes because it provides personalized education for different student needs (Navarro et al., 2016). The combination of online programs with coaching support and assistive technology tools enhances teachers' knowledge about assistive technology, improving their classroom implementation while developing early literacy skills among disabled students (Schladant et al., 2023). Modern evidence-based training programs directed at special education instructors promise to improve professional methods and educational performance despite obstacles created by digital barriers and reluctance toward change (Rude and Brewer, 2003; Navarro et al., 2016).

Policy Recommendations and Future Directions
- **Improving ECCE and Skill-Based Education**

_____

- ➢ Expanding teacher training programs.
- ➢ Enhancing vocational education for economic empowerment.

- **Strengthening Environmental Policies**
- ➢ Enforcing stricter regulations on pollution control.
- ➢ Integrating environmental studies into all educational levels.

- **Promoting Social Inclusion in Education**
- ➢ Implementing policies to support marginalized communities.
- ➢ Encouraging culturally responsive teaching practices.

- **Interdisciplinary Research and Collaboration**
- ➢ Fostering partnerships between academia, government, and NGOs.
- ➢ Encouraging research-driven policymaking for sustainable development.

Conclusion

The tutorial review demonstrates how education connects to environmental sustainability and social inclusion within Pakistan through multiple complex challenges. The analysis demonstrates that the nation requires an immediate fundamental transformation because early education lacks basic standards, environmental destruction threatens every community, and important social groups remain excluded. Single reforms alone will not work, and the solution requires comprehensive approaches combining multiple disciplines with an integrated and holistic system. The recommended approach combines extensive educational policy changes with significant funding for educational facilities and teacher training programs that must be accompanied by curriculum reform for extensive environmental literacy and inclusive learning practices. Pakistan can create a future of educational empowerment alongside environmental protection through social equality by adopting digital literacy standards, sharpening institutional capabilities, and developing key alliances among relevant stakeholders. Sustainable and inclusive development for Pakistan will become possible only through focused and continuous national initiatives.

Roles of Authors:

It is a collaborative work. This paper has 13 different tutorials related Education, Environment, and Social Challenges. Each author has equal contribution in drafting the paper. Each author was wrote his/her section. The first 3 authors drafted overall paper text like Abstract, Introduction, recommendations and conclusion and overall framing. They also wrote their assigned sections. Remaining authors wrote their sections as well as assigned. The 4th Author supervised overall draft and review it.

1. Early Childhood Care and Education (ECCE) in Pakistan[8]
2. Skill-Based Education and Gender Empowerment[8]
3. Comparative Analysis of Skill-Based Education in Pakistan and Other Countries[9]
4. Single National Curriculum (SNC) Implementation[10]
5. Enhancing Critical Thinking through Literature[1]
6. Environmental Degradation and Policy Interventions[2]
7. Integration of Environmental Awareness in Mathematics Education[3]
8. Addressing Smog and Climate Resilience[5]
9. Waste Management and Urban Sustainability[5]
10. Health and Environmental Risks of Plastic Usage[6]
11. Reducing Prejudice and Enhancing Intergroup Relations[8]
12. Educational Barriers Faced by Eunuchs in South Punjab[9]

13. Special Education and Teacher Performance[7]

References

Ahmed, T., & Sipra, H. F. K. (2020). Environmental and health implications of plastic pollution: A Pakistan perspective. In *Handbook of research on environmental and human health impacts of plastic pollution* (pp. 38-58). IGI Global Scientific Publishing.

Aijaz, U., Lodhi, K. S., Shamim, M. A., & Mughal, S. (2024). Economics of education and digital learning for human capital development in Pakistan: A critical review. *Qlantic Journal of Social Sciences*, *5*(1), 217-234.

Alam, J., Ashraf, M. A., Tsegay, S. M., & Shabnam, N. (2022). Early childhood between a rock and a hard place: Early childhood education and students' disruption in Khyber Pakhtunkhwa province, Pakistan. *International journal of environmental research and public health*, *19*(8), 4486.

Ali, W., Rahman, A., & Karsidi, R. (2024). Sustainable Skill Development in Pakistan: Bridging Gaps in Vocational and Technical Education Policy–A Systematic Literature Review. *Society*, *12*(2), 656-673.

Ariyadi, F., & Afriandi, F. (2024). The Role of Government and Community Collaboration in the Implementation of Waste Management Policies in Palu City. *Journal of Management and Administration Provision*, *4*(2), 179-187.

Arshad, M. R., Hassan, Z., Khalid, A., & Haider, S. M. S. (2024). Challenges Faced by Transgender Individuals in Accessing Higher Education in Pakistan: A Critical Analysis. *Indus Journal of Social Sciences*, *2*(2), 602-621.

Arshad, M., & Zamir, S. (2018). Situational analysis of early childhood education in Pakistan: Challenges and solutions. *JECCE*, *2*.

Artipah, A., Sain, Z. H., Asfahani, A., & Sa'diyah, S. D. (2024). Early Childhood Education Reform in Pakistan: Challenges, Innovations, and Future Prospects. *Absorbent Mind*, *4*(1), 57-64.

Bano, S., Rafiq-uz-Zaman, M., & Khalid, N. (2024). Assessing Health and Environmental Risks: Educational Awareness on Plastic Usage and Solid Waste Disposal in Bahawalpur. (2024). Journal of Asian Development Studies, 13(3), 917-929. https://doi.org/10.62345/jads.2024.13.3.75

Conti, A., Viottini, E., Comoretto, R. I., Piovan, C., Martin, B., Albanesi, B., ... & Campagna, S. (2024). The effectiveness of Educational interventions in improving waste management knowledge, attitudes, and practices among healthcare workers: a systematic review and meta-analysis. *Sustainability*, *16*(9), 3513.

Dilawar, F., Hussain, I., & Tahira, R. (2024). Role of Digital Skills as Strategy for Women Empowerment. *Voyage Journal of Educational Studies*, *4*(2), 448-461.

Faridi, M. Z., Saeedi, S. H., Akram, M. A., Shareef, A., & Hussain, R. M. (2024). A Holistic Review of Environmental and Skill-Based Education under Pakistan's Single National Curriculum: Policy Directions for Sustainable Development. *Social Science Review Archives*, *2*(2), 2110-2122.

Faruqee, R. (1997). *Using economic policy to improve environmental protection in Pakistan* (No. 1757). World Bank Publications.

Gonzalez, N., Moll, L. C., & Amanti, C. (Eds.). (2005). *Funds of knowledge: Theorizing practices in households, communities, and classrooms*. Lawrence Erlbaum Associates.

Hamilton, J., & Pfaff, T. J. (2014). Sustainability education: The what and how for mathematics. *Primus*, *24*(1), 61-80.

Hasan, A., & Ali, A. A. (1992). Environmental problems in Pakistan; their origins and development and the threats that they pose to sustainable development. *Environment and Urbanization*, *4*(1), 8-21.

Hassan, B., Rafiq-uz-Zaman, M., & Khan, Z. A. (2025). Beyond Memorization: Cultivating Critical Thinking Skills through Classic Literature in Secondary Education for the 21st

Century Learner. Review of Education, Administration & Law, 8(1), 115-124. https://doi.org/10.47067/real.v8i1.410

Hunzai, Z. N. (2007). Early years education in Pakistan: trends, issues and strategies. *International Journal of Early Years Education*, *15*(3), 297-309.

Hymel, S., & Katz, J. (2019). Designing classrooms for diversity: Fostering social inclusion. *Educational Psychologist*, *54*(4), 331-339.

Iqbal, K., Hasan, S., Nasreen, S., & Imran, M. (2024). Exploring Head Teacher's Perspectives Regarding the Execution of the Single National Curriculum (SNC) in Public Primary Schools. *Journal of Education and Social Studies*, *5*(1), 131-139.

Khadim, M., Jamil, S., & Yaqub, S. (2024). EXPLORING THE TEACHER EDUCATORS PRACTICES FOR INTEGRATING EDUCATION FOR SUSTAINABLE DEVELOPMENT CONCEPTIONS. *JOURNAL OF SOCIAL SCIENCES DEVELOPMENT*, *3*(2), 247-257.

Khalid, A., & Malik, M. A. From Isolation to Acceptance: Improving Social Acceptance and Educational Opportunities for Transgender People in Pakistan.

Khalid, N., Arshad, I., & Rafiq-uz-Zaman, M. (2024). Enhancing Environmental Education to Promote Pre- Emptive Smog Mitigation Strategies in Urban Areas of South Punjab: An Overview. (2024). Journal of Asian Development Studies, 13(3), 956-964. https://doi.org/10.62345/jads.2024.13.3.78

Khalid, N., Rafiq-uz-Zaman, M., Tahira, W., & Maqbool, M. (2024). Solid Waste and Environmental Sustainability: Educational Approaches to Managing Urban Waste in Bahawalpur City. Journal of Climate and Community Development, 3(2), 155-170. https://joccd.com/index.php/joccd/article/view/50

Khan, H. F., & Abbas, S. (2023). Investigating the Implementation of Single National Curriculum (SNC) In Primary Private Schools of Karachi. *Pakistan Journal of Applied Social Sciences*, *14*(2), 41-55.

Khushik, F., & Diemer, A. (2020). Education and sustainability, how sdg4 contributes to change the representations of developing issues? The case study of Pakistan. *International Journal of Management and Sustainability*, *9*(2), 101-119.

Kovpik, S. (2020). Developing critical thinking skills by students through active methods of the study of literature. In *SHS Web of Conferences* (Vol. 75, p. 04003). EDP Sciences.

Lee, J. Y., Chia, R. W., Veerasingam, S., Uddin, S., Jeon, W. H., Moon, H. S., ... & Lee, J. (2024). A comprehensive review of urban microplastic pollution sources, environment and human health impacts, and regulatory efforts. *Science of the Total Environment*, 174297.

Lestari, S. A. P., Nurapriani, F., & Kusumaningrum, D. S. (2024). Integrating sustainable development principles in learning mathematics to stimulate sustainable skills in future generations. *Jurnal Rekayasa Sistem Industri*, *13*(1), 1-10.

Malik, S. A., Ch, M. S., Batool, Z., & Mahmood, S. (2023). Challenges and opportunities in implementation of single national curriculum: A qualitative inquiry. *Journal of ISOSS*, *9*(1), 85-98.

Meriem OUHIBA, N. (2022). The Role of Literature in Boosting EFL University Students' Critical Thinking: Case of First-year Students in Algeria. *Arab World English Journal (AWEJ) Volume*, *13*.

Miller, R. (2021, November 11). *Using the socratic method in your classroom*. Edutopia. https://www.edutopia.org/article/using-socratic-method-your-classroom?utm_source=chatgpt.com

Mobbs, D., & Tashjian, S. M. (2022). Ten simple rules for unbiased teaching. *PLoS Computational Biology*, *18*(10), e1010344.

Mukheed, M., & Alisha, K. (2020). Plastic pollution in Pakistan: environmental and health Implications. *J. Pollut. Effects Contr*, *4*, 251-258.

Mumu, J., Prahmana, R. C. I., Sabariah, V., & Tanujaya, B. (2020, October). Students' environment awareness through scientific approach in mathematics instruction. In *Journal of Physics: Conference Series* (Vol. 1657, No. 1, p. 012056). IOP Publishing.

Mustafa, U., Abbas, K., Saeed, A., & Anwar, T. (2005). Enhancing Vocational Training for Economic Growth in Pakistan [with Comments]. *The Pakistan Development Review*, 567-584.

Nadeem, M. A., Khan, Z. A., & Rafiq-uz-Zaman, M. (2024). A Comparative Analysis of Public and Private School Teachers Perception on Single National Curriculum Implementation. International" Journal of Academic Research for Humanities", 4(3), 209-218. https://doi.org/10.5281/zenodo.13741847

Naess, A. (1973). The shallow and the deep, long-range ecology movement: A summary. *Inquiry*, 16(1-4), 95-100. https://doi.org/10.1080/00201747308601682

Navarro, S., Zervas, P., Gesa, R., & Sampson, D. (2016). Developing teachers' competences for designing inclusive learning experiences. Educational Technology and Society, 19(1), 17-27.

Noreen, S., & Rashid, K. (2024). Access to education for transgender individuals in Pakistan: Cultural and institutional barriers. *Annals of Human and Social Sciences*, *5*(1), 55-66.

Pagani, C. (2014). Diversity and social cohesion. Intercultural Education, 25(4), 300-311.

Paul, R., & Elder, L. (2006). The art of Socratic questioning. Foundation for Critical Thinking.

Qazi, S., Rafiq-uz-Zaman, M., & Hassan, B. (2025). Reclaiming agency amid chaos: A feminist and postcolonial reading of Khaled Hosseini's *A thousand splendid suns*. *Social Science Review Archives, 3*(1), 2710–2729. https://doi.org/10.70670/sra.v3i1.581

Rafiq-uz-Zaman, M. (2024). Evaluation of challenges faced by the early childhood care and education due to the shortage of teachers in Punjab, Pakistan. Journal of Childhood Literacy and Societal Issues, 3(2), 58-74. https://doi.org/10.71085/joclsi.03.02.50

Rafiq-uz-Zaman, M., & Nadeem, M. A. (2024). Comparative Analysis of Skill-Based Education Curriculum in Pakistan and India: A Contemporary Review. International" Journal of Academic Research for Humanities", 4(3), 188-197. https://doi.org/10.5281/zenodo.13646448

Rafiq-uz-Zaman, M., Ashraf, I., Shah, H., & Farah, N. (2025). Educational environment and teacher performance in the context of special education institutions in Pakistan: A review paper. *Social Science Review Archives, 3*(2), 17–35. https://doi.org/10.70670/sra.v3i2.552

Rafiq-uz-Zaman, M., Imtiaz, I., & Khalid, N. (2024). Innovative Integration of Environmental Awareness into Mathematics Education: Insights from Teachers' and Students' Perceptions in Bahawalpur. Journal of Asian Development Studies, 13(4), 899-910. https://doi.org/10.62345/jads.2024.13.4.72

Rafiq-uz-Zaman, M., Khalid, N., & Shafi, S. (2024). Historical Analysis of Environmental Degradation in Pakistan: A Narrative Review. Global Political Review, IX(IV), 24-35. https://doi.org/10.31703/gpr.2024(IX-IV).03

Rafiq-uz-Zaman, M., Khalid, N., & Susanto, E. (2025). Addressing Environmental and Social Challenges: A Mixed-Method Study on the Education and Inclusion of Eunuchs in South Punjab, Pakistan. Social Science Review Archives, 3(1), 284-299. https://doi.org/10.70670/sra.v3i1.311

Rafiq-uz-Zaman, M., Khalid, N., Faridi, M. Z., & Khan, Z. A. (2024). Smog Mitigation and Climate Resilience in Pakistan: A Policy-Centric Review of Strategies and Challenges. Social Sciences Spectrum, 3(4), 302-317. https://doi.org/10.71085/sss.03.04.175

Rafiq-uz-Zaman, M., Nadeem, M. A., & Rasheed, I. (2024). Empowering Women through Skill-Based Education in Pakistan: A Narrative Review. Global Sociological Review, IX(IV), 52-59. https://doi.org/10.31703/gsr.2024(IX-IV).05

Ramadhana, R. N., Al Arief, Y., Elyani, E. P., & Mu'in, F. (2022). Triggering Students' Critical Thinking Through Literary Analysis. *Lentera: Jurnal Ilmiah Kependidikan--Edisi Khusus ISETA*, 222-230.

Rawls, J. (1971). *A theory of justice*. Harvard University Press.

Rude, H. A., & Brewer, R. D. (2003). Assessment of professional development systems: Improving rural special education services. Rural Special Education Quarterly, 22(4), 20-28.

Sambhav. (2023, November 7). *Vocational training for all: Achieving gender balance in skills development*. https://sambhavfoundation.org/blog/vocational-training-for-all-achieving-gender-balance-in-skills-development/?utm_source=chatgpt.com

Schladant, M., Ocasio-Stoutenburg, L., Nunez, C., Dowling, M., Shearer, R., Bailey, J., ... & Natale, R. (2023). Promoting a culture of inclusion: impact of professional development on teachers' assistive technology practices to support early literacy. Journal of Early Childhood Teacher Education, 44(2), 147-166.

Sen, A. (1999). *Development as freedom*. Knopf.

Shafi, S., Akbar, W., & Rafiq-uz-Zaman, M. (2024). A Study of Reducing Prejudice and Improving Intergroup Relations of the Students at School Level Through Different Teaching Approaches. Global Social Sciences Review, IX(IV), 124-134. https://doi.org/10.31703/gssr.2024(IX-IV).13

Shah, I. H., Ajmal, M., Rahman, F., & Akhter, M. N. (2011). A comparative study on vocational training structure of Pakistan with British and German model. *International Journal of Business and Social Science*, 2(1), 162-169.

Sher, G. A., Khan, Z., & Khan, A. N. (2024). THE IMPLEMENTATION OF SINGLE NATIONAL CURRICULUM IN PUNJAB: TEACHERS'PERSPECTIVES BY EXPERIENCE AND QUALIFICATION. *JOURNAL OF SOCIAL SCIENCES DEVELOPMENT*, 3(4), 01-10.

Sujaya, K., Abdul-Haq, Z., & Imran, M. (2023). Educational sustainability: An anthropocenic study in the wake of the 2022 floods in Pakistan. *ECNU Review of Education*, 20965311231209503.

Tuanaya, W. (2024). Building Eco-Friendly Cities: Government-Community Collaboration In Shaping Sustainable Urban Waste Management. *Baileo: Jurnal Sosial Humaniora*, 1(3), 281-292.

Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes*. Harvard University Press.

Warren, K. J. (1990). The power and the promise of ecological feminism. *Environmental Ethics*, 12(2), 125-146. https://doi.org/10.5840/enviroethics199012221

Willerton, J. P., & Beznosov, M. (2020). Fostering Student Sensitivity to Diversity and Inclusion in Today's Classroom.