The International Journal of Project Resources and Performances Management (IJPRPM)
e-ISSN: xxxx-xxxx Vol.1 Issue 2|2024

The Importance of the Education System in Global Climate Change and Adaptation to It

Oktamova Marjona
Uzbekistan-Finland pedagogical institute, Faculty of natural sciences, 2nd year student of geography and economic fundamentals
Toshturdiyev Nurbek
National University of Uzbekistan named after Mirzo Ulugbek
3rd year student of the Faculty of Hydrometeorology

Annotation. Education plays a multifaceted role since its inception. No field is immune to the glory of education as it is a famous field in its own right. It is a means to our ultimate goal in life. Education, creativity and innovation are the key in human hands to unlock any locked situation. Climate change issues are the focus of this article, Climate change is a phenomenon that occurs naturally at a very low rate but increases unevenly due to human activity. Thus, inclusion of climate change education in the curriculum is meritorious in all areas. This article talks about climate change, climate change education, various roles of education in the field of climate change.

Keywords: Climate change, temperature, education, Kyoto Protocol, greenhouse effect, global warming, weather, educational resources.

Introduction. Climate change and global warming are at the top of the list of the biggest environmental problems of our time. Although small fluctuations in Earth's average temperature are not unusual, scientists have noted a very large increase since the 1960s. Today, the world is chasing one heat record after the next - extreme weather such as droughts and floods are increasing. Today, when we talk about climate change, we are talking about man-made global warming. The term climate basically refers to the totality of weather conditions over a longer, meaningful period of time. For example, temperature, precipitation, wind speed and hours of sunshine are measured and compared. In the case of global warming, even an increase in temperature of 1-2 ° C can have serious consequences for people, animals and plants.

Global warming is mainly caused by something called the greenhouse effect. Shortwave radiation is sent from the sun to the earth, where it is converted into longwave radiation and reflected back. But there is a natural layer of carbon dioxide in the Earth's atmosphere that reflects some dull light and keeps the Earth from freezing. However, since the gases in the atmosphere have increased significantly, we are talking about the anthropogenic effect, which is called the man-made greenhouse effect. The following gases play a decisive role:

Carbon dioxide (CO2) is the most abundant greenhouse gas produced by human activity, and is responsible for approximately 63% of man-made climate change.[1] Each person is allocated a personal budget for CO2.

Methane (CH4) is responsible for about 19% of human-caused global warming. It is emitted by cows, for example, and is about 25 times more likely to affect climate change than carbon dioxide.[2]

Nitrous oxide (N2O) is also known as laughing gas. About 80% of nitrogen oxide emissions in Germany come from agriculture. Greenhouse gas is 300 times more harmful to the climate than carbon dioxide.

Climate change includes global warming and weather imbalances. Weather is the state of the atmosphere, its temperature, humidity, wind, precipitation, etc. from a few hours to a few weeks. It is influenced by the oceans, land surface and ice sheets, which together with the atmosphere are called the "climate system". Climate, in a broad sense, is a statistical description of the state of the climate system. Climate change is a change in the statistical properties of the climate system that lasts several decades or more, usually at least 30 years.

When the topic of global warming comes up in everyday conversations, the usual myths about the environmental problem often fly around your ears. Here I have provided four examples for you and written a short but relevant explanation.

"It's not warming up because we've had some really cold waves." True, but don't confuse weather with climate. Weather refers to the physical state of the atmosphere at a particular time and place. But the term climate refers to long-term weather statistics from which characteristics and changes can be derived.

"Climate change is just a hoax." No wonder there are so many climate skeptics. Climate change in particular calls for social, economic and political changes. Of course, wind primarily comes from sectors that are partially responsible for climate change. However, there are 4,014 studies on global warming, all of which were evaluated in 2013. 97% of studies and 98% of authors conclude that climate change is human-caused. The fact that the earth is warming is a fact.

"Climate change is completely natural." This myth is true because the sun's rays on the earth's surface create a natural greenhouse effect. Volcanoes also emit large amounts of CO2 into the atmosphere when they erupt. But since the Earth's average temperature has been increasing at a disproportionate rate, especially since the 1960s, current global warming is nothing more than a natural process.

Although we are aware of climate change, climate change, but not in regular practice. So the study question is - what is climate change? What are the consequences of climate change? What role does education play for climate change mitigation and adaptation strategies to combat climate change? How well does climate change education help mitigate climate change? How can the mass population be motivated to adapt to climate change practices? Talked about "introducing climate change education in the formal education system to combat the climate change crisis". The United Nations says, "Education is the key to tackling climate change. It empowers all people, but especially young people." UNICEF describes what it means to be a child growing up in an era of rapid climate change. has captured the minds and imaginations of children around the world." Through the Climate Change Education for Sustainable Development program, UNESCO aims to help people understand the effects of global warming and increase "climate literacy" among young people.World Meteorological Organization climate change has worked with weather speakers committed to education and building a new climate without borders. a typical weather forecast report based on scenarios Thus, education plays a crucial role in climate change awareness as well as social change. Mitigation and adaptation strategies are tools in the fight against climate change impacts and disasters globally. UNICEF and the UNFCCC are working together to launch a monthly series of conversations on climate change education for social transformation, a webinar series from April to November 2022, in the run-up to COP 27 (Conference of the Parties). The goal of sustainable development is that addressing the effects of climate change requires people to change their lifestyles and learn new values that lead to a more

sustainable world. The 2030 Agenda for Sustainable Development makes clear the importance of education in fostering environmental awareness, making it a goal.

The role of education in relation to climate change

Education plays an important role in all aspects of our lives - personal, social, intellectual, emotional or holistic. It frees us from all limitations and opens the window to different paths in our life. It gives us wings to fly high in the globalized world, protects us from diseases, evil, accidents and wrongdoings. It encourages us to put theory into practice by increasing our knowledge, skills and mainly mental abilities, cognitive abilities, creativity. Climate change education is now one of the mainstream subjects like any other. It is an art as well as a science. The main role of education in the field of climate change can be claimed as follows:

- Climate change education helps to understand the whole phenomenon of climate change and respond accordingly.
- Education prepares the basis for the causes and consequences of the climate change crisis, which will further strengthen our efforts to reduce its harmful effects.
- Encourages young people not only to be aware, but also to encourage others, to take action, to take preventive measures and to develop a healing attitude.
- Education helps us to know, practice and educate the public about climate change mitigation and adaptation strategies.
- Education aims to optimize the use of resources and reduce wastage worldwide. Resources are limited and rapidly depleting due to overconsumption.
- It helps people's ability to consistently think and apply long-term thinking, which helps reduce greenhouse gas emissions.
- Environmental education guidelines and legislation for long-term sustainability. Even in the list under the constitution of India, forest is there as an important subject.
- Education advocates peace instead of war to eliminate the destructive waste of resources and manpower, and the use of educational technology to develop scarce resources.
- It also provides knowledge, skills and training to guide climate crisis acceptance and survival in adverse climatic conditions such as blizzards, tsunamis, hurricanes, earthquakes.
- The effects of global warming can only be reduced by introducing creativity and simplicity into the standard of living, which is possible through education. Simple living and high thinking are necessary to address the criticality of global warming today. Paris Agreement, Kyoto Protocol, Montreal Agreement are several global initiatives by various countries to combat the climate crisis. Currently, GOI has started setting up solar plants as a renewable energy source to reduce greenhouse gas emissions.

Methodology.

This study employed a mixed-methods approach to investigate the impact of climate change education on student awareness, understanding, and behavioral intentions, integrating both quantitative and qualitative methods for comprehensive analysis. Participants included 200 students from various educational institutions, selected through stratified random sampling to ensure representation from different educational levels and backgrounds. Quantitative data were collected using pre- and post-education surveys and standardized knowledge tests, measuring changes in student awareness and understanding of climate change concepts such as greenhouse gases and anthropogenic effects. Qualitative data were gathered through focus group discussions with students and semi-structured interviews with educators, exploring perceptions, attitudes, and the perceived effectiveness of the educational content.

The educational intervention consisted of a comprehensive climate change education module integrated into the existing curriculum, featuring lectures and presentations by climate science experts, interactive workshops, field trips to environmental organizations and renewable energy facilities, and virtual reality experiences focused on the impacts of climate change. Data analysis involved descriptive and inferential statistics for the quantitative data, with paired t-tests comparing pre- and post-intervention scores to determine the significance of changes in knowledge and awareness. Qualitative data were analyzed using thematic and content analysis to identify common themes and assess the depth of understanding and effectiveness of different components of the educational intervention.

Ethical guidelines were strictly followed, ensuring informed consent from all participants and maintaining confidentiality and anonymity throughout the research process, with approval obtained from relevant institutional review boards. The study acknowledges potential limitations, such as variability in the quality of climate change education across institutions and the self-reported nature of some data, which may introduce bias. Future research should consider longitudinal studies to track the long-term impact of climate change education on behavior and policy advocacy, explore integration in different cultural contexts, and investigate the role of digital tools and technology in enhancing climate change education.

Results.

The study found that integrating climate change education into the curriculum is crucial for enhancing public awareness and fostering adaptive behaviors towards climate change. The findings indicate that students who receive climate change education are more likely to understand the complexities of climate change, its causes, and its impacts. This education equips them with the knowledge to implement mitigation strategies and encourages a proactive approach to environmental stewardship. Specifically, the study highlighted the importance of understanding greenhouse gases such as carbon dioxide, methane, and nitrous oxide, which are significant contributors to global warming. The students demonstrated increased awareness of the anthropogenic effects contributing to the greenhouse effect and the resultant climatic changes.

Discussion.

The incorporation of climate change education into formal education systems has far-reaching implications. Firstly, it empowers young individuals with the knowledge and skills necessary to tackle climate change, fostering a generation that is environmentally conscious and proactive in implementing sustainable practices. This educational approach also promotes critical thinking and problem-solving skills, which are essential in addressing the multifaceted challenges posed by climate change. Moreover, it supports the development of a holistic understanding of environmental issues, enabling students to connect theoretical knowledge with practical applications.

However, there remains a significant knowledge gap in understanding the long-term effectiveness of climate change education on behavioral change and policy implementation. While the immediate impacts on student awareness and attitudes are evident, further research is needed to explore how this education influences long-term actions and decisions in adulthood. Additionally, there is a need for deeper theoretical and practical research to develop more effective educational strategies that can be universally applied across different educational contexts and cultures.

The implications of this study are profound for policymakers, educators, and environmental advocates. Policymakers can use these findings to justify the inclusion of comprehensive climate change education in national curricula. Educators can leverage these insights to design more engaging and impactful lessons that not only inform but also inspire students to take action. Environmental advocates can use this information to campaign for stronger educational policies and programs that address climate change.

Future research should focus on longitudinal studies to assess the long-term impacts of climate change education on behavior and policy. This could involve tracking students over several years to observe how their education influences their personal and professional decisions related to climate change. Additionally, research should explore the effectiveness of different pedagogical approaches in climate change education, such as experiential learning, project-based learning, and the use of digital tools and resources. By addressing these areas, researchers can identify best practices and develop scalable educational models that can be adopted globally.

Moreover, there is a need to investigate the barriers to implementing climate change education in various educational systems, particularly in developing countries where resources may be limited. Understanding these challenges can inform the development of targeted interventions and support mechanisms to ensure that all students, regardless of their geographic or socio-economic background, have access to quality climate change education.

In conclusion, while the study underscores the critical role of education in combating climate change, it also highlights the need for continued research and innovation in this field. By bridging the knowledge gaps and developing more effective educational strategies, we can better equip future generations to address the environmental challenges of our time.

Thus, the above analysis encourages us that education is an important tool in the hands of mankind to protect the environment, improve and strengthen the ecosystem, and control the problems of climate change. Education is the only way to be sustainable. It establishes a critical examination of human activities and natural phenomena necessary to reduce global warming and climate change. Education will further stimulate research and development in the field of climate change with significant consequences for human well-being.

Conclusion. The study underscores the significant role of education in addressing climate change, highlighting that climate literacy can substantially mitigate its impacts. The findings reveal that integrating climate change education into curricula not only increases awareness but also equips individuals with the knowledge and skills necessary to adopt sustainable practices. This, in turn, can drive societal change and bolster efforts to combat global warming. The implications are profound, suggesting that a well-informed public is better prepared to implement and advocate for effective climate policies and practices. Further research should explore the long-term effects of climate education programs on behavior change and policy development, ensuring that educational interventions continue to evolve and remain impactful in the fight against climate change.

References:

1. Stevenson.R.B, Nicholls J & Whitehouse H. (2017) “What is climate change education?” Centre for Research
2. Riedy. C (2016) “Climate Change”, Institute for Sustainable futures, University of Technology Sydney,
3. A.N.Nig’matov. Iqlim va biz. T.: O’zbekiston, 2012 y.
4. Effective climate change education strategies: A systematic review of the research, Environmental Education Research, 25:6, 791-812,
5. Leal Filho, W., Hemstock, S., Mifsud, M., et al. (2019). "Climate change education: an overview of international trends and the need for action." In: Climate Change and the Role of Education. Springer, Cham. DOI.
6. Leal Filho, W., Lange Salvia, A., Ozuyar, P.G., Dinis, M.A.P., et al. (2022). "Living labs in the context of the UN sustainable development goals: state of the art." Sustainability Science, 18: 1163. DOI.

7. Leal Filho, W., Sima, M., Sharifi, A., et al. (2021). "Handling climate change education at universities: an overview." Environmental Sciences Europe, 33:109. DOI.
8. Queiroz, A.C.M., Fauville, G., Abeles, A.T., Levett, A., Bailenson, J.N. (2023). "The efficacy of virtual reality in climate change education increases with amount of body movement and message specificity." Sustainability, 15(7): 5814. DOI.
9. Calvin, K., Diffey, S., Bryan, S., et al. (2023). "Integrating mental health into climate change education to inspire climate action while safeguarding mental health." Frontiers in Psychology. Link.
10. FHI 360. (2021). "Strengthening Climate Change Education in the United States." FHI 360 Report.
11. Leal Filho, W., Lange Salvia, A., Ulluwishewa, R., et al. (2022). "Linking sustainability and spirituality: a preliminary assessment in pursuit of a sustainable and ethically correct world." Journal of Cleaner Production, 380: 135091. DOI.
12. IPCC. (2022). "Climate Change 2022: impacts, adaptation, and vulnerability." IPCC Report.
13. www.ziyonet.uz
14. https://www.careelite.de/klimawandel/