

Mainstreaming Disaster Education for Risk Reduction: A Curriculum-Based Analysis of Odisha

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Abstract

Disasters are always destructive in nature, and has overall impact in lives, livelihood, property, economy and infrastructure of the state. This calamitous event often exceeds the coping ability of the community by affecting them in multiple ways and prevent them from growth and development. Therefore, resilience building remains essential to reduce vulnerability, mortality, damage, and destruction. In this regard, disaster education seems to be an effective strategy for capacity development by spreading knowledge and skills in disaster risk reduction.

Aim: This study examines the state of Odisha's innovative approach of incorporating disaster education into the school curriculum to build a culture of resilience from an early age.

Methodology: A qualitative approach is used in this study based on desk review and curriculum analysis of disaster management education initiatives in Odisha. Further, it focuses on analyzing available secondary sources of resources from academic literature: books, journals, Government policies, programmes, and reports.

Findings: The findings of the study reveal that the Indian state of Odisha has created a comprehensive plan to incorporate Disaster education in the school curriculum, which is backed by a school disaster management plan, training and awareness programs. These efforts have significantly enhanced disaster awareness and preparedness among students. This study highlighted the potential of education-based interventions to enhance community resilience to natural disasters.

Keywords: Disaster, education, resilience, vulnerability, mitigation

Introduction

Odisha state is situated in the eastern part of India shares 480 km of coastline with the Bay of Bengal, which is a 1,55,707 square km area that covers 4.87% of the total area of the country. The state has encountered a multitude of natural disasters since time immemorial due to its geo-climatic conditions, such as floods, drought, cyclones, landslides, lightning, river erosion, hailstorms, fires, earthquakes, etc. Among these, the most recurrent disasters are cyclones, floods, droughts, hailstorms, and heat waves that bring severe misery to people's lives. Being situated in the northern part of the East Coast, the state is highly vulnerable to

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cyclones. Every year, one or more cyclones eye the Bay of Bengal and usually affect the coastal districts of Odisha. Many times, the state encounters drought due to monsoon failure, particularly in the western part of the state. The socio-economic vulnerability of people exacerbates the hazardous event into disasters. Approximately 90% of people live in disaster-prone areas, where 38% are below the poverty line (GoO,2022). These disasters often cause huge losses of lives, property, and assets.

From this perspective, the Super Cyclone 1999 and the 2013 cyclone Phailin were significant catastrophic events that caused severe challenges and impacted people's livelihoods (Iwasaki, 2016). The experience of these cyclones has highlighted the critical importance of disaster preparedness and resilience in the state. The initiatives taken by Odisha for disaster risk reduction, with national and local commitments, have proven effective in protecting human lives and mitigating damages, as evidenced by the improved response to Cyclone Phailin in 2013 compared to the 1999 Super Cyclone (Iwasaki, 2016). This success was the consequence of the involvement of communities in the entire disaster management process, from preparedness to response and recovery. It helps in building community resilience, which is an essential part of emergency preparedness and response strategies (Plough et al., 2013). The disaster management approach of Odisha has evolved over the years by focusing on education and community involvement as a significant part of its strategy (Iwasaki, 2016; Oktari et al., 2015). The state adopted this approach recognizing that educational institutions play a vital role in sharing knowledge for community resilience. In this regard, school-based disaster preparedness programs are implemented and identified as an effective method to enhance the capacity of teachers and students (Oktari et al., 2015). Community resilience is the result of adaptive capacities, such as community competence, social capital and information technology (Norris et al., 2007). Although the state has tremendously improved towards 'zero casualty', challenges still persist in reducing economic loss and damage to critical infrastructure (Mohanty et al., 2020). Therefore, by focusing on education and community involvement, the state can create the groundwork for sustainable, long-term disaster preparedness that can adapt to future challenges (Norris et al., 2007; Oktari et al., 2015).

Objective of the study

This study emphasises the analysis of the following objectives

- To examine the integration of Disaster Risk Reduction into Odisha's school curriculum.
- To analyse the alignment of disaster education in Odisha with the national and global frameworks.
- To identify the main challenges in the implementation of Disaster Risk Reduction Education in Odisha.

Methodology of the study

This Paper examines the integration of disaster management education in school curricula in the state of Odisha, the most disaster-battered state in India. The researcher has used resources from available secondary literature, such as books, reports, journals, policy and government documents. Particularly, the researcher has collected data from the school syllabus under the Odisha Board of Secondary Education, the Central Board of Secondary Education,

the Council of Higher Secondary Education: stream Arts, Science, and Commerce, Odisha State Open University Syllabus, CBCS courses of study for graduation students. All these syllabi have been thoroughly gone through and identified the subject where the concepts like disasters, hazards, earthquakes, floods, cyclones, hailstorms, and droughts are mentioned. Various disaster management plans: national, state, local, and school-based, were analyzed to identify the programs, methods, and plans used in creating awareness and enhancing their skills.

Importance of Disaster Risk Reduction Education

Climate change and global warming remain a concern worldwide, highlighting the importance of disaster education, recognised as a powerful weapon for building resilience. Disaster education mainly contributes to preparing students to deal with the impact of disasters, which helps reduce damage and destruction. Disaster education refers to the study of “disaster risks, mitigation measures, and preparedness strategies” to address the issue (Johnson et al., 2014). It involves the “teaching of two incorporated subjects, such as (1) disaster risks and (2) actions to mitigate or reduce injuries and damage from disasters” (Johnson et al., 2014).

Since the “International Decade of Natural Disaster Reduction (IDNDR)” in the 1990s, significant efforts in public education have been started in all nations, and hazard education has become a subject in school curricula (Fernandez,2022). Since then, every researcher, advocate, and observer of disaster in the world has made a statement proclaiming the primary importance of ‘public awareness’ and ‘education for disaster risk reduction’(Fernandez,2022) to promote and thrive in a sustainable society (Kekic & Milenkovic, n.d.a). In this perspective, the Hyogo Framework of Action (HFA) 2005-2015 and the Sendai Framework for Disaster Risk Reduction 2015-30 emphasised the importance of integrating disaster education into school curricula (UNISDR 2005: 1; UNISDR, 2015a; Chen & Adefila, 2020). These frameworks highlight that disaster education plays a crucial role in building a “culture of safety and resilience” at all levels (Zhou et al, 2014; Johnson et al, 2014; Apronti et al, 2015). In this context, “new educational materials were developed in the form of booklets, handbooks, textbooks, posters, activities, and games in material and digital formats” (Fernandez,2022). These will help increase public disaster preparedness by saving numerous lives and mitigating damages (Kekic & Milenkovic n.d.a). Further, Kofi Annan, the former UN Secretary General at the UNGA 2001, highlights the importance of education and rightly said, “*We must, above all, shift from a culture of reaction to a culture of prevention. Prevention is not only more humane than cure; it is also much cheaper.... Above all, let us not forget that disaster prevention is a moral imperative, no less than reducing the risks of war*” (Gupta, 2022; Parijat, 2022).

In the context of India, its 10th five-year plan 2002-2007 emphasized disaster management, and accordingly, the National Disaster Management Act 2005 was enacted. Further, the “National Disaster Management Authority (NDMA)” and the “National Institute for Disaster Management (NIDM)” emphasized the need for Disaster Management education at the three levels, such as ‘elementary knowledge’ at middle school level; ‘basic and advanced disaster skill sets’ for senior school students and then ‘higher skill sets’ at college/UG level (Gupta,2022). In this context, incorporation of disaster education in the disaster management

approach is significantly relevant for the state of Odisha, as it has witnessed various disasters frequently. Therefore, integrating disaster education in school curricula remains a strategic intervention for building long-term disaster-resilient communities and enhancing sustainable development.

Disaster Education for Children at the Elementary Level

The study reflects that numerous children are affected by different kinds of disasters throughout the world. For instance, one billion children under the age of 15 live in the earthquake-prone region of the USA. Each year, approximately 175 million children are exposed to risks due to extreme weather events linked to climate change (Torani et al., 2018). The study also reflects that between 1990 and 2000, within a decade, natural hazards and conflict affected around 77 million children worldwide (Apronti et al., 2015). Disasters significantly disrupt their healthy growth, development, and overall well-being (OSEPA n.d.). Therefore, in recent years, educational programs focused on disaster preparedness for children have been recognised as a novel approach to Disaster Risk Reduction (DRR), with some theories supporting their effectiveness by recognising that "education can increase the perception of risk among children" (Gupta, 2022; Torani et al., 2018). Mainly, it aims to bring significant change in the mindset, perception, and behaviour of children that helps in taking proactive and preventive disaster response. Disaster education for children remains a global concern to produce some gains in individual and community disasters (Johnson et al., 2014). Primary-level Disaster Education is recognised as highly effective, as young learners not only acquire essential knowledge and skills but also instinctively share this knowledge and expertise with their families, fostering a ripple effect of awareness and resilience (Chen & Adefila, 2020; UNICEF, 2011). Disaster education "develops a culture of preparedness and increases safety and resilience by creating awareness of disasters" among children (Apronti et al., 2015).

Disaster management education imparted in early childhood has numerous advantages, which are given below.

- "Earlier onset disaster prevention education makes it easy for children to think about disaster issues, resilience, and risk reduction, officials from an early age
- Children tend to define what they have learned from their parents. As a result, education for children can gradually increase the level of awareness of the community
- Individuals who are familiar with the concepts of hazards and disasters in their childhood can respond better and faster when disasters and accidents occur
- People do not simply forget what they learn at an early age.
- In many countries, a high proportion of people in the community are children" (Torani et al., 2019; Gupta, 2022).

Disaster Management Education in the Indian School Curriculum

Education plays a significant role in disaster mitigation, providing knowledge and awareness among children and creating a "culture of safety and resilience" from early childhood. Different categories of school boards are found in the Indian schooling system. Some school boards have their headquarters at the central level, and their branch schools are

operating in different parts of the country, while some are state-specific, and their franchise schools are limited to the state only. CBSE is the largest school board that introduced the Disaster Management course in social science in classes VIII-X from the 2009-10 academic session. Further Disaster Management is included in the course of Environmental Studies curriculum for class V, and a unit is added in the Geography subject of class XI. ICSE (Council for Indian School Certificate Examination) is another school board at the national level that has introduced Disaster Management at class IX (Gupta,2022). Disaster education has been introduced to improve knowledge and techniques of disaster preparedness to reduce the impact of disasters on the communities (Das, 2015).

Disaster Management Education in Odisha's School Curriculum

The Odisha government has highly emphasised integrating “disaster education” in its education syllabus. The following table apparently indicates what type of content is included in different levels of education in Odisha.

Table for DRR content in Odisha school curricula

Educational Level	Conceptual Content (Knowledge)	Skill-Based Content	Practical / Drill-Based Activities
Primary Education	Basic understanding of disasters (floods, cyclones, fire safety); local hazard awareness	Basic safety skills (evacuation awareness, do's and don'ts during disasters)	Annual fire and evacuation drills (as per Govt. of Odisha, 2018); awareness activities like drawing, posters, storytelling,
Secondary Education (Class IX–X)	Disaster Management in Geography (earthquakes, tsunamis, floods, droughts); introduction to climate and hazards	Introductory disaster preparedness and response skills; understanding mitigation strategies	School safety programs, mock drills, school safety programs, awareness campaigns (essay, debate, painting)
Senior Secondary (Class XI–XII)	Environmental Education (compulsory): floods, cyclones, earthquakes, disaster management; specialized Geography units on hazards and disaster management	Advanced skills: first aid, basic disaster response, volunteer training through NSS/Youth Red Cross	Fire safety drills, workshops, seminars, mock drills, participation in community preparedness activities

Higher Education (UG & PG Level)	Environmental & Disaster Management as compulsory/optional papers; advanced concepts in Geography; specialized courses (e.g., PG Diploma in Disaster Management) offered by institutions like Odisha State Open University and Utkal University	Advanced technical and analytical skills; training in disaster governance, research, and policy; capacity building by Odisha State Disaster Management Authority through SIDM	Training programs, workshops, seminars, field exposure, research activities; institutional engagement through centres like National Law University Odisha (Centre for Disaster Management and Law)
Institutional / Cross-Level Initiatives	School safety guidelines aligned with National Disaster Management Authority and national policies	Preparedness planning, coordination, leadership skills among students and staff	School disaster management plans, evacuation drills, capacity-building programs for teachers, administrators, and volunteers

Source: Author draw the table based on the above studies.

Challenges and Issues in Disaster Education

Disaster education in Odisha faces several issues and challenges, as highlighted in various research. A case of traumatic shock was witnessed by a major disaster event in Odisha that led to bringing reform in governance practices (Waltch, 2018). In this regard, the Odisha government has made significant efforts to improve its disaster management approach through education. However, implementing disaster risk reduction education faces common challenges observed in other developing countries. These include a “lack of teacher training and professional development, inadequate teaching and learning materials, and gaps between the disaster pedagogy outlined in syllabi and what occurs in practice in the classroom, the syllabus has narrow scope and little content regarding disaster education, lack of student interest and appreciation for lessons taught on unfamiliar disaster events, and insufficient time to teach disaster lessons, were also identified as factors undermining disaster risk education in the study communities” (Apronti et al., 2015). In the Odisha context, an evaluation study conducted by OSDMA reveals that School-based Disaster Management Plans are made for most schools, but their implementations remain inconsistent with limited mock drills (OSDMA, 2018). Another joint study conducted by the Government of Odisha and UNICEF highlights that teachers engaged in teaching these concepts lack the training, skills, and confidence to deliver effective disaster education. Therefore, they are only involved in theoretical teaching rather than practical experiential learning (UNICEF, 2016). Further, a report of OSEPA indicates that though Disaster education content is integrated in subjects like Geography and Environmental Studies, due to time constraints and exam-oriented teaching, it fails to reach in-depth involvement (OSEPA, 2019).

Conclusion

The conclusion of this study is organised in four sections: findings, implications of policies in Odisha, suggestions and limitations for future study.

Since the declaration of the “International Decade for Natural Disaster Reduction” in the 1990s, the focus on disaster literacy and public awareness has become of growing significance worldwide. In this context, education plays a vital role in vulnerability reduction and building resilience at all levels. Although Indian schools and universities have integrated disaster education into their school curriculum, it is yet to reach maturity. Disaster education and training still fall behind the academic periphery. However, the integration of disaster education in Odisha’s school syllabus is an innovative approach highly aligned with international frameworks remain a significant effort to build community resilience in the classroom. It helps build a culture of disaster preparedness and risk reduction among children from early childhood, through interactive and experiential learning, which is a step towards the establishment of a resilient society. In addition to this, it increases students' understanding and creates awareness among family and community members.

The disaster education system of Odisha comprises school safety plans and evacuation drills at all levels of education. In this regard, the state can adopt the Japan model of disaster education in the school curriculum. As the frequency and intensity of hazards are increasing due to climate change, Odisha’s strategy could serve as a model for other vulnerable countries in disaster mitigation.

Suggestions:

Although the state has made a significant effort in developing disaster education programs, challenges remain in their implementation. These include filling the gap between the syllabus design and its practice, developing thorough learning materials, and teacher involve in disaster teaching requires better training. Further disaster education content may be expanded to other subjects. Despite having multiple challenges, the classroom-based resilience-building effort shows the state’s commitment towards strengthening community resilience and response to natural disasters. However, continuous refinement of the syllabus, research and evaluation will help in long-term resilience building and reducing disaster impacts.

Limitations of the study:

As completely secondary sources were used in this study, it lacks empirical evidence. Classroom observations and primary investigations of students and teachers were absent because this study highly focuses on educational syllabi, government reports, books, journals, and scholarly documents. As this research is purely confined to Odisha’s education system, generalisations of its findings for other regions become difficult. Therefore, this study suggests conducting a primary field study to know the accurate contribution of disaster education in building resilience.

References

- Apronti, P., Kranjac-Berisavljevic, G., Osamu, S., & Otsuki, K. (2015). Education for Disaster Risk Reduction (DRR): Linking Theory with Practice in Ghana’s Basic Schools. *Sustainability*, 7(7), 9160–9186. <https://doi.org/10.3390/su7079160>
- Chaudhary, M. T., & Piracha, A. (2021). Natural Disasters — Origins, Impacts, Management. 1101–1131.

- Chen, Y. F., & Adefila, A. (2020). Enhancing school safety through university engagement in DRR education. *International Journal of Disaster Risk Reduction*, 44. <https://doi.org/10.1016/j.ijdrr.2019.101386>
- Fernandez, G. (2022). Disaster risk reduction education. *Routledge Handbook of Environmental Hazards and Society*, January 2008, 551–561. <https://doi.org/10.4324/9780367854584-40>
- Gupta, B. (2022). Role of Education in Mitigating Disasters in India — thus Saving Lives. Centre For Land Warfare Studies (Claws): Issue Brief, 362.
- Indrajit Pal, Vinit Raj, Anushree Pal, Kullanan Sukwanchai. (2021). Disaster risk reduction education (DRRE) and resilience in Asia-Pacific, *Disaster Resilience and Sustainability*, Elsevier, 2021, 667-683,
- Iwasaki, S. (2016). Linking disaster management to livelihood security against tropical cyclones: A case study on Odisha state in India. *International Journal of Disaster Risk Reduction*, 19(19), 57–63. <https://doi.org/10.1016/j.ijdrr.2016.08.019>
- Johnson, V. A., Ronan, K. R., Johnston, D. M., & Peace, R. (2014). Evaluations of disaster education programs for children: A methodological review. *International Journal of Disaster Risk Reduction*, 9, 107–123. <https://doi.org/10.1016/j.ijdrr.2014.04.001>
- Kekik, D & Milenkovic, M. (n.d.). DRM and Education.
- Lin, C. K., Nifa, F. A. A., Musa, S., Shahron, S. A., & Anuar, N. A. (2018). Challenges and opportunities of disaster education program among UUM student. AIP Conference Proceedings, 2016(July). <https://doi.org/10.1063/1.5055440>
- Mohanty, S. K., Shaw, R., & Chatterjee, R. (2020). Building Resilience of Critical Infrastructure: A Case of Impacts of Cyclones on the Power Sector in Odisha. *Climate*, 8(6), 73. <https://doi.org/10.3390/cli8060073>
- National Disaster Management Authority. (2007). *National Disaster Management Guidelines: School Safety Policy*. Government of India.
- Norris, F. H., Wyche, K. F., Pfefferbaum, B., Stevens, S. P., & Pfefferbaum, R. L. (2007). Community Resilience as a Metaphor, Theory, Set of Capacities, and Strategy for Disaster Readiness. *American Journal of Community Psychology*, 41(1–2), 127–150. <https://doi.org/10.1007/s10464-007-9156-6>
- Odisha School Education Programme Authority. (2019). *Annual work plan and budget report*. Government of Odisha.
- Odisha State Disaster Management Authority. (2018). *Evaluation report on school safety programme in Odisha*. Government of Odisha.
- Oktari, R. S., Shiwaku, K., Munadi, K., Syamsidik, S., & Shaw, R. (2015). A conceptual model of a school–community collaborative network in enhancing coastal community resilience in Banda Aceh, Indonesia. *International Journal of Disaster Risk Reduction*, 12, 300–310. <https://doi.org/10.1016/j.ijdrr.2015.02.006>