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Innovation in Disaster Education for Kindergarten: The Bousai Terakoya Experience

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Abstract

Climate change has intensified issues that undermine children's health, compromise their well-being, and hinder their ability to develop disaster resilience. Disaster education is essential for building disaster resilience among children. As a disaster-prone country, Japan has been developing new approaches to improve disaster education programs, including those in early childhood education, to equip children with the knowledge and skills needed to mitigate risks and respond effectively to disasters. Basic disaster concepts are introduced through hands-on learning, helping children understand key ideas. This paper examines innovations in disaster education, particularly at the kindergarten level, using Bousai Terakoya as a case study. The study reveals that Bousai Terakoya fosters collaboration among schools, communities, and industries to educate kindergarten students about disasters. It emphasizes that protecting oneself and one's family is a focus of the program, which aims to strengthen future disaster education efforts. This research adds to the discussion on disaster education for children. Active involvement from schools, communities, and industries can help develop strategies to improve the retention of essential disaster concepts in children's memories.

Keywords: disaster education; disaster resilience; early childhood; kindergarten; innovation

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1. Introduction

According to UNESCO report [1], climate and environmental crises represent a second megatrend that poses a risk to children's health and well-being. It emphasizes the need for swift action, as delaying action will exacerbate the impact on them. Addressing climate and environmental crises is linked to developing initiatives for disaster risk reduction. The UNDRR report [2] has highlighted that children and young people are agents of change and should be given the room and resources to contribute to disaster education. One of the key topics is to educate them on disaster preparedness, where they can learn how to protect themselves from disaster risks [3].

This learning opportunity should be introduced to children at an early age [4]. This early age lays the foundation for a child's educational life. Similarly, UNICEF, the World Bank, and WHO have launched the Nurturing Care Framework (NCF). The Nurturing Care Framework consists of conditions that ensure children's health, nutrition, security, safety, responsive caregiving, and opportunities for early learning, particularly for children aged 0–8 years [5]. The framework presents a comprehensive approach to fulfilling the fundamental rights and needs of children. Component 5: Security and Safety proposes

that quality Early Childhood Care and Education (ECCE) should adopt an inclusive, child-centered, play-based, and emergency- and climate-resilient approach [6].

Japan is one of the countries that actively engage in disaster education, having faced large-scale typhoons and earthquakes that caused significant damage and casualties. These experiences have provided invaluable lessons that help the country improve and strengthen its disaster management strategies and policies [7]. The importance of teaching disaster prevention education was underscored after the 1995 Great Hanshin-Awaji Earthquake [8]. Disaster education in Japan aims to build individuals' capacities based on the concept of "three helps," namely self-help, mutual help, and public help [9].

Additionally, the concept of "Network help" has been introduced, as evidenced by the active engagement of neighborhood organizations and local volunteers [10]. These ideas are promoted in various training sessions conducted by different government agencies to enhance disaster education nationwide. UNICEF [11] has shown that building resilience in children is just as important as investing in physical infrastructure in the context of the climate crisis. The National Curriculum Standard for Kindergarten states that kindergartens should encourage children to maintain emotional stability, to acquire safety preparedness through play, and to learn about dangerous places and things [12].

From this departure, this study aims to investigate the innovation of disaster education programs for early childhood, particularly at the kindergarten level, by identifying the innovative elements that can enhance the delivery of disaster education to children.

The following are the research questions of the study:

a. What influences the innovation of disaster education programs for the kindergarten level in Japan?
b. What are the challenges in innovating disaster education programs for kindergarten students?
c. How do these influences contribute to developing disaster education programs for kindergarten students?

The following are the research objectives of the study:

a. To determine the key drivers in innovating disaster education programs in the kindergarten.
b. To identify challenges and gaps in implementing innovation in disaster education programs for kindergarten.
c. To evaluate the effectiveness of disaster education programs in fostering disaster awareness among kindergarten students.
d. To formulate strategies for enhancing disaster education programs, with a focus on the kindergarten level.

The Hyogo Framework for Action (HFA) priorities for action 3 state, "use knowledge, innovation, and education to build a culture of safety and resilience at all levels." [13]. Disaster Risk Reduction (DRR) and Climate Change Adaptation (CCA) education often target programs for schools or communities [14]. The government has proactively worked to educate the public on these topics by involving schools and communities as key partners.

The core of disaster education is to empower students to make decisions during disasters. Countries are increasing their efforts to improve the teaching and learning environment for students through innovative methods. Innovations are not always tangible products but can also include processes, approaches, frameworks, concepts, and other forms [15]. Figure 1 shows the various innovations for disaster risk reduction. The beginning of the 21st century has enabled educational institutions to develop innovative approaches to teaching disaster management.

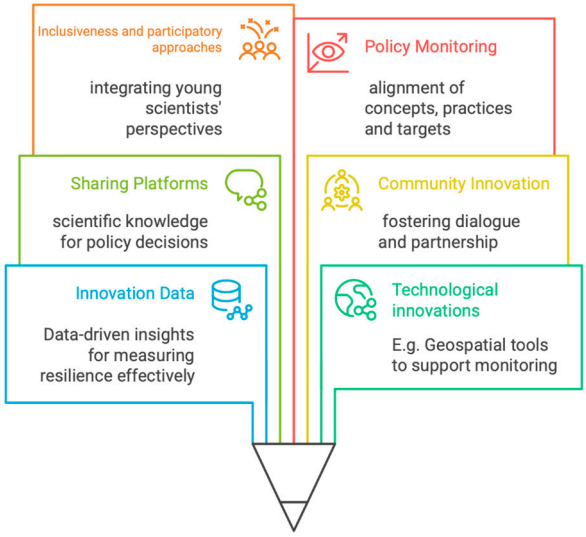


Figure 1. Innovation in Disaster Risk Reduction Source: UNISDR.

A service-learning approach was used to educate undergraduate and graduate students in North Carolina about disasters in the US [16]. Students had the opportunity to engage with the community and experts on disaster management. This community engagement is being expanded to include arts and science in disaster education. Graduate students in Florida participated in a field trip that included scientific lectures and artist-led collage-making sessions to gain a deeper understanding of marine ecosystems and their interactions with climate change processes [17].

In Asia, notable innovations are evident in the Philippines and Indonesia, countries that are vulnerable to disasters due to their geographic positions in the Pacific region and the Ring of Fire. Disaster management education is part of both high school and college curricula in the Philippines [18]. Educational institutions serve as platforms to prepare stakeholders by enhancing their values, citizenship, and social awareness [19]. One study developed an e-module for undergraduates as an innovative blended learning tool, helping students learn more effectively about floods, earthquakes, and COVID-19 in Indonesia. Importantly, technological advances have led to the development of e-modules and the integration of information technology into disaster education, with Japan, also a disaster-prone country, actively working on initiatives in this area.

Japan's location on the Pacific Ring of Fire makes it vulnerable to typhoons and earthquakes, which can cause significant damage and loss of life. These events influence disaster education, especially during the "*period of integrated study*" [20]. After the 1995 Great Hanshin-Awaji Earthquake, disaster-prevention education became a priority, emphasizing the "three helps"—self-help, mutual help, and public help—through government training [9]. Currently, network help is an additional focus in DRR education [10]. Disaster risk reduction (DRR) education in Japan has primarily focused on imparting basic knowledge, whereas newer initiatives incorporate more precise objectives, drills, and training activities [8]. These recent efforts have shaped how students view their learning about disasters. Students' prior disaster experiences encourage proactive responses and influence disaster education [20]. Additionally, innovations are being integrated to improve the learning environment for students. This is reflected in the teaching methods used in disaster education across elementary schools, special needs schools, junior high schools, high schools, and universities in the country.

Moreover, a gaming simulation (GS) approach was used to enhance community disaster risk reduction (DRR) among university students [21]. It encouraged students to express their opinions on balancing self-help and mutual help in disaster situations.

At the high school and junior high levels, the integration of digital technology to innovate disaster education programs is actively pursued in the country [10]. Digital technology, especially a cloud-based learning platform, for high school students was used in Muroran City. The project allowed students to reflect on their behaviors and decision-making during disasters. Additionally, an online DDR educational tool was created, specifically a web-based hazard map, which was created using a GIS application [22]. It was found that students' map-reading skills improved, and they preferred using the application over printed maps. A volcanic disaster risk reduction education program was developed to help junior high students visually understand the risks associated with volcanic eruptions, utilizing the ADDIE model and integrating a GIS application in Nasu, Tochigi [23]. This encouraged students to engage in interactive learning with digital technology, enhancing their knowledge and skills in protecting themselves from volcanic disasters.

At the elementary level, innovations have focused on improving teaching and learning environments. A learning program was developed to teach elementary students in Nagaoka City about heavy rainfall using the ADDIE (Analyze, Design, Develop, Implement, Evaluate) model [24]. It aimed to enhance the disaster response skills of schoolchildren in the event of heavy rainfall. Notably, this model was also utilized in a special needs school. An earthquake disaster management program was created for students with intellectual disabilities using the ADDIE model, which allowed for teaching disaster education related to daily classroom concerns without requiring expertise in disaster management [25].

Moreover, a disaster prevention pocket notebook and quizzes for elementary students were created, combining lectures and games [26]. These teaching strategies provide a fun and creative approach to learning about disasters. Notably, a guided play method was used to teach disaster prevention skills and knowledge [27]. A disaster education program was developed to teach elementary students and their parents about the Nankai Trough earthquake using the newspaper-making method [28]. The learning activities are not only engaging and creative but also serve as bonding experiences with families. These activities are crucial in the development of children, particularly in early childhood education.

Innovation in Disaster Education for Early Childhood

Children are highly vulnerable to the impacts of climate change, which affects their rights, access to water, food, and health in vulnerable countries [29,30]. Climate change may also increase household violence due to higher temperatures [31]. However, 21st-century young people can utilize new media to mobilize their peers and pressure governments and the private sector on climate issues, framing it as a health, human rights, and equity concern to ensure accountability [32]. These can be an avenue for innovations. Izumi et al. [15] argued that innovations do not need to be entirely new or high-tech; approaches and frameworks can still influence thinking and behavior. These innovations are crucial to introduce in the early stages of learning and development, particularly in early childhood education.

A systematic literature review, guided by the PRISMA framework, was conducted to conceptualize the innovation of disaster education in early childhood education, with a focus on the kindergarten level. Disaster education, resilience, and early childhood education were the key terms used in the search engines of various databases, namely SCOPUS, JSTOR, and Google Scholar. The search yielded 80 papers from the databases. Then, 35 papers were removed because they were unrelated to the topic. The abstracts were read for the remaining 35 papers. The criteria for inclusion of papers are the following: (1) written in the English language, (2) papers published in peer-reviewed publications, and (3) innovation primarily focused on kindergarten students. After the screening, eight papers were included in the study.

Figure 2 shows the systematic literature review using the PRISMA Framework of innovations in disaster education for Early Childhood. Databases, including utilizing Google Scholar, SCOPUS, and JSTOR, resulting in 80 papers. The following keywords are used: disaster education, innovation, and early childhood. Eight papers were included in the review. These papers are focused on the kindergarten level and have shown innovation in the teaching and learning of disaster education. Table 1 shows the summary of these innovations.

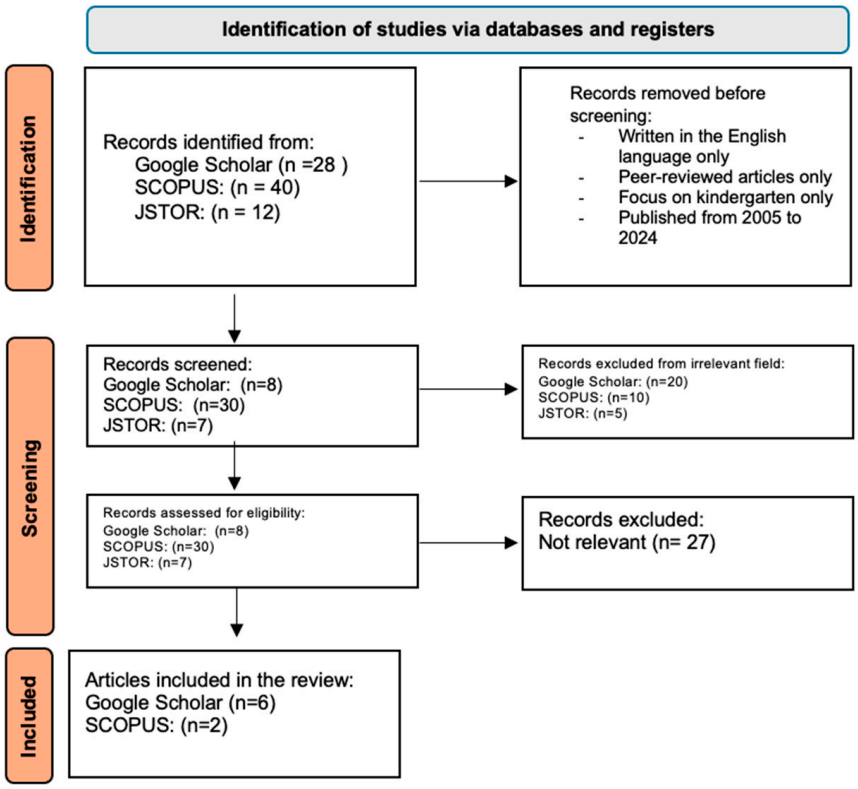


Figure 2. PRISMA Framework of Innovation in Disaster Education for Early Childhood Source: modified by the authors.

In China, the movement behavior of children aged 4−5 years old was found to develop slower than that of children aged 5–6 years old [33]. They argued that younger groups should be placed on the lower floor or close to the staircase. The study was coordinated with the local fire department. They used the fire drill to conduct this study.

In Japan, the Social Thinking and Academic Readiness Training (START) program improved the academic readiness of kindergarten students affected by the Great East Japan earthquake [34]. The START program is efficacious in improving control of inhibition, self-regulation, and problem behavior.

In Zimbabwe, the COVID-19 pandemic created new opportunities for student learning. A numeracy prototype was developed using IsiNdebele, addressing situations where in-person interaction was impossible [35].

In the Philippines, the Life Saving Automated "MESA" to Endure Seismic Activity (LAMESA) desk was designed for kindergarten students [36]. The desk serves as an alarm system when seismic activity is detected, and it can be automatically transformed into a safe structure to protect occupants from debris and other falling objects. In addition, storytelling, particularly a narrative story stem technique, can help kindergarten students improve their understanding of typhoons [37].

In Indonesia, digital technologies were used to engage students in learning about disasters. A survival game media based on the Roblox engine was developed to simulate

earthquake and tsunami disaster preparedness [38]. It helped students understand the concepts in a new and engaging way through a virtual world, showing them how to protect themselves from the mentioned disasters. Additionally, folklore can be used as a communication tool to help students understand disaster concepts such as disaster mitigation [39]. Moreover, storytelling through a storybook can help students understand disaster mitigation and develop resilience [40].

Table 1. Innovations in Disaster Education for Kindergarten Level. Source: compiled by the authors.

Author and Date	Country	Output	Type of Innovation
Yao & Lu, 2020 [33]	China	Evacuation Drills (Movement behavior)	Community innovation (approach)and innovation of data (method)
Yamamoto & Imai-Matsumura, 2023 [34]	Japan	Executive Function intervention program	Approach
Maphosa & Dube, 2021 [35]	Zimbabwe	Numeracy-based App (prototype)	Technological innovation (product)
Morales et al., 2019 [36]	Philippines	LAMESA (Life Saving Automated "MESA" to Endure Seismic Activity) (prototype)	Technological innovation (product and approach)
Tolentino et. al., 2020 [37]	Philippines	Storytelling (Narrative Story Stem Technique)	Approach
Maulida et al., 2023 [38]	Indonesia	Roblox (Tsunami Survival Game)	Technological innovation (product)
Rahiem & Rahim, 2024 [39]	Indonesia	folklore	Community innovation (approach) and technological innovation (product)
Dewi, 2024 [40]	Indonesia	storybook	product

The literature review has highlighted various innovative approaches to disaster risk reduction that educational and social institutions are actively employing. These innovations have redefined the existing community-based and pedagogical approaches, as well as technological advancements in the 21st century. Innovation has been achieved in the 21st century. Innovations in disaster education in Japan have focused on the utilization of digital technology and the development of programs to improve disaster education pedagogies. However, research on innovation in early childhood education (i.e., kindergarten) has not been thoroughly explored. The systematic review found that innovations mainly focus on creating products and short-term initiatives for children. Notably, Indonesia actively develops initiatives for disaster education. However, the studies emphasize students' perceptions and behaviors when learning disaster concepts. Understanding the insights of people (i.e., parents, teachers, etc.) regarding kindergarten students has not been studied comprehensively. Studies only highlight the role of the school, but the roles of the community and private sectors are not emphasized, which this study aims to investigate.

2. Materials and Methods

2.1. Research Design

This study uses a mixed-methods approach and includes a case study, supplemented by insights from the students, parents, and organizers to understand the phenomenon. Re-

search objectives (a) and (b) are addressed through a literature review while (c) is through an empirical study. Finally, the results are utilized to address research objective (d). It employed a mixed-methods approach, integrating both quantitative and qualitative data to enhance understanding of the study [41]. The qualitative methods, including literature review, field observation, interviews, and drawing activities, were selected to gain insights into the processes and systems underlying the study's innovation. Qualitative research emphasizes individuals' subjective experiences and meaning-making processes to achieve understanding [42]. The quantitative aspect, specifically the survey questionnaire, was utilized to gather the perspectives of parents and caretakers regarding their knowledge of the study at hand.

The study begins with a comprehensive literature review to gain a global understanding of innovations in disaster education. The investigation offers a conceptual framework of these innovations and explores the main drivers behind the development of teaching and learning methods in disaster education. It then focuses on understanding the local perspective by examining current innovations in teaching and learning disaster education in Japan. This provides a foundation for various initiatives and highlights the research gaps in disaster education within early childhood education in the country.

The literature review was followed by selecting a case study and conducting a field observation. The Bousai Terakoya, a disaster education program for kindergarten level, was chosen for the following reasons: (1) the program is a grassroots initiative to promote security and safety among early childhood education, particularly for kindergarten students, within the Nurturing Care Framework (NCF) as endorsed by UNICEF, the World Bank, and WHO; (2) a community-led initiative responding to the Ministry of Education's guidelines, promoting safety through play and learning about dangers; (3) the program promotes three types of help: "self-help, mutual help, and mutual help," and encourages "network help" initiatives through private and public partnerships to implement the program; (4) accessibility of the data and location proximity due to the network and partnership collaboration of the authors' university laboratory and the Yokohama Fire Bureau, as the lead organizer of the program.

The fieldwork has focused on understanding and gaining insights into the processes and systems of Bousai Terakoya, as implemented by the organizers. This facilitated the researcher's identification of key drivers for a disaster education program in early childhood education, focusing on innovations that exist within it.

Meanwhile, an assessment tool is used to evaluate students' understanding of the lesson learned from the picture books. The researcher and the kindergarten teachers assisted the students in selecting the item, and no additional questions were asked. This allows students to express their ideas independently and make their own decisions.

This was followed by conducting a survey questionnaire and key interviews to gain insights about the participants' parents and organizers, respectively. Their insights provided the key lessons and main challenges in implementing Bousai Terakoya. This helps to identify how to improve and develop disaster education at the kindergarten level within the context of Bousai Terakoya.

2.2. Data Collection

2.2.1. Field Observation

The researcher had a preliminary visit to the study site. An introductory meeting with the Yokohama Fire Bureau was conducted to orient the researcher to the nature of Bousai Terakoya. The researcher had the opportunity to join the sessions for a year from February 2024 to February 2025. Table 2 shows a snapshot of Bousai Terakoya.

Table 2. Snapshot of Bousai Terakoya Source: Authors' Illustration.

Date	Venue	Topic	Attendees
02/21/2024	Yokohamabashi Shopping District	Earthquake	18
07/09/2024	Shirobara Nursery School	Typhoon	19
11/28/2024	Yokohamabashi Shopping District	Emergency care	18
02/13/2025	Yokohama City Minami Library	Fire	12
	No of participants		67

2.2.2. Assessment Tool

A simple drawing activity was developed and conducted at the end of the session. Students were presented with drawings of various items used during emergencies and disasters. The authors collaborated with a visual artist to ensure the drawings were easy for the students to replicate. This drawing activity aimed to assess students' perspectives on disaster education through the question, "*What is the most important item for you in times of disaster*?" Fourteen drawings were collected from the students. However, due to time constraints during the session's implementation, the assessment tool was administered only once by the authors.

2.2.3. Survey Questionnaire

A paper-based survey questionnaire for the kindergarten children's parents and caretakers was prepared and distributed after each session. The survey questionnaire was collected after the final session designated for the 2024–2025 school year. The completed questionnaires were transferred into Google Forms for accessibility and convenience. Eighteen responses to the questionnaires were gathered.

2.2.4. Key Informant Interview

A semi-structured interview was conducted from April to May 2025 with representatives and staff from the Yokohama Fire Bureau, NOGE Printing Corp., and teachers at Shirobara Nursery School who were involved in implementing Bousai Terakoya. A total of 6 staff members participated in the interview. There are five females and one male who represent the institutions. Each institution provided two representatives for the in-person interview, which lasted one hour. All interviews were conducted in Japanese, with an interpreter present to assist the researchers. The interviews were recorded, transcribed using the AI Labs transcription tool from Humboldt-Universität zu Berlin, and translated into English using the Google Docs translation tool.

2.3. Data Analysis

Thematic analysis is employed to identify emerging themes and patterns, thereby understanding the drivers that influence the innovation of disaster education in early childhood education, particularly at the kindergarten level. In this research, the author proposed the following steps to analyze the data collected:

1. Analyze the innovation strategies to conceptualize the innovation concepts found in the research papers related to disaster education, particularly in early childhood education.
    - The concepts that emerged were used to determine the central themes to be included in the construction of the survey questionnaire and interview.
2. Analyze students' drawings to understand their insight into the topics learned in the picture books.

- The research employs semiotic methods to examine how kindergarten students use symbol repetition in their drawings and paintings [43]. Such repetitions can suggest scale and importance, contributing to a layered, metaphorical, and symbolic dimension. This approach reveals the students' comprehension of disaster-related ideas.

3. Interpret the survey questionnaire (Appendix A) results to gain insights into parents' perspectives on disaster education and Bousai Terakoya.
    - The quantitative data, collected through a structured questionnaire with Likert-scale items, were analyzed using Microsoft Excel. Responses were manually entered into Google Forms for easy access and then transferred to an Excel spreadsheet. The data were first organized and cleaned to ensure accuracy and completeness. Descriptive statistics, especially frequencies and percentages, were calculated to summarize overall response trends. Next, the variables were examined and linked to the emerging themes identified in the literature review to reveal their relationships. Microsoft Excel was chosen for its accessibility, functionality, and ability to effectively handle the scope and scale of the dataset. It also allowed for the creation of visual representations, supporting the interpretation of key findings. Although Excel has limitations in advanced statistical modeling, it was sufficient for the descriptive analyses required in this study, given the small number of respondents.
4. Organize and analyze the key informant interviews from the 6 participants who are the main organizers of Bousai Terakoya.
    - The interview was conducted in Japanese and then translated into English. Transcripts were manually coded to identify themes using the six-phase thematic analysis [44]. After transcription, the data were read multiple times to ensure a thorough understanding. Initial codes were created by highlighting important words, phrases, and patterns. These codes were then grouped into broader themes that reflected recurring ideas related to the research questions. Themes were reviewed, refined, and clearly defined to ensure clarity and distinctness. The analysis aimed to capture both explicit content and underlying meanings. Microsoft Word and Excel were used for coding and organizing data, chosen for their flexibility and ability to support participants' experiences.

2.4. Ethical Considerations

This study was conducted in accordance with established ethical guidelines for research involving human participants. Consent for participation was sent to the students' parents and guardians. Informed consent was provided to the interviewees. Participants and respondents were also informed that their participation was voluntary.

All responses were stored securely to protect confidentiality and anonymity, with no identifiable information or names included.

2.5. Case Study: Bousai Terakoya

Yokohama is in central Japan. This port city serves as a strategic hub for international trade. The Yokohamabashidori Shopping District is situated here, where the Bousai Terakoya session took place. It is a vibrant shopping street that dates to before World War II [45]. The area features a diverse range of Asian cuisines and goods, catering to both locals and visitors. The city is located near low-lying areas that are prone to disasters such as landslides and flooding due to heavy rainfall, and it is susceptible to earthquakes [46,47].

2.6. The Birth of Bousai Terakoya

The Bousai Terakoya is a 45 min to 1 h learning session that covers various disaster education themes. It aims to teach kindergarten students about disaster prevention in a fun and interactive way. Launched in 2022 through a partnership between the Yokohama Fire Bureau and NOGE Printing Corp., which began in 2019, this initiative originated when the Yokohama Fire Bureau sought a company to collaborate with in creating educational materials on disaster preparedness for children, which had previously been limited. Additionally, the president of NOGE Printing Corp. looked for ways to give back to society through their printing business. The Fire Department wanted to produce a video, while the company desired experiential opportunities. Both institutions agreed to work on the initiative on a pro bono basis. The collaboration began with radio dramas and picture story performances for nursery schools, showcasing stories from the fire department. Later, NOGE Printing Corp. proposed creating picture books, which were subsequently published. The series was titled 防災絵本 みんな森シリーズ (Bōsai ehon min'na no mori shirīzu: In English, Disaster prevention picture book: Forest Series). Figure 3 shows the book cover of the series and Figure 4 is the poster of the program. The picture books discuss earthquakes, typhoons, and fires. Table 3 shows the synopsis of the picture books.

Table 3. Synopsis of the Picture Books. Source: Translation from NOGE's website.

Book Title in Japanese	Book Title in English	Synopsis
みんな森の仲間とオオカミのサイレン～君には優しさという強さがある～	Everyone's Friends in the Forest and the Wolf's Siren	A wolf's reckless fire causes destruction, but teamwork and courage help extinguish the flames. Captain Panda of the Fire Brigade teaches the wolf that true strength lies in kindness and valuing friends.
みんな森の子どもたちとヤギおじさん～君のやさしさが、明日を生きる希望になる	All the Children of the Forest and Uncle Goat	After losing his family, Uncle Goat isolates himself. An earthquake and a tsunami prompted the forest's children to rescue him with the help of the fire brigade. Their kindness encourages him to read stories and reconnect with others.
みんな森の子供たちとアウル爺さん～みんなの命を救ったのは、小さな勇気でた	All the Children of the Forest and Grandpa Owl	Riccio, a fearful and weak young hedgehog, takes a brave action on the night of a big storm. He recalls a critical teaching he heard from Grandpa Owl. Grandpa Owl's teaching and Riccio's bravery were able to save everyone in the forest, highlighting the importance of learning from past disasters.



Figure 3. Book covers of the picture books Source: Screenshots from the NOGE Printing Corp. Website.



Figure 4. Bousai Terakoya Session Poster Source: Photo taken by the first author.

The Fire Department aimed to hold Bousai Terakoya in the local community and contacted the chairman of the Yokohama-bashidori Shopping District, offering an unused stall for the session. During the interview, the Fire Department stressed that they encounter challenges in organizing events with residents. They stated, "*Three companies coming together, we might do something good.*" Initially, they visited preschools, nurseries, and kindergartens in the area to organize evacuation drills for fire safety and discuss the use of fire engines. As Bousai Terakoya began, they sent invitations to nearby schools to participate in the session. Then, the kindergarten teachers from the invited school received the information and content in advance and determined whether the younger or older children, or both, could attend. They accompanied the students to the venue on foot. Figure 4 shows the poster of Bousai Terakoya. Bousai Terakoya invites preschools, nurseries, and kindergartens in the area to participate in the session.

3. Results

3.1. Overview of Bousai Terakoya

Figure 5 illustrates the framework of Bousai Terakoya. It employs an input, process, and output dynamic to educate children about disaster prevention. The session starts with an input, presented as a picture book or a video created by the organizers. Next comes the process, in which students can answer quiz games, engage with AR experiences, and wear uniforms that aid in their understanding of disasters.

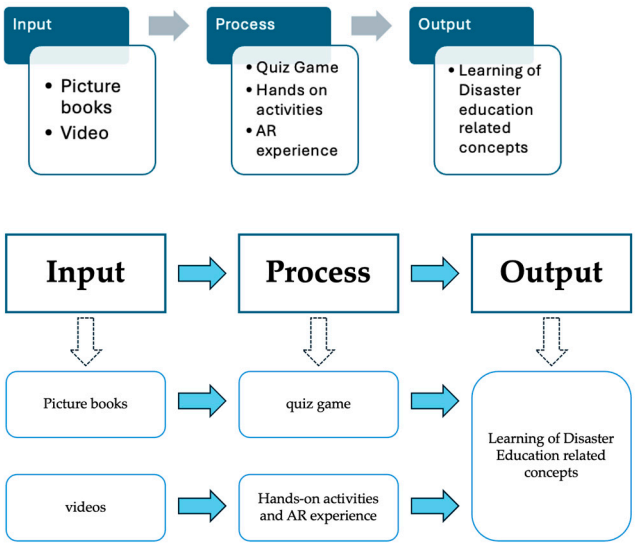


Figure 5. Framework of Bousai Terakoya Source: Authors' Illustration.

The Bousai Terakoya sessions were held four to six times a year, determined by the Fire Department's schedule. They noted that the picture books used in the sessions are based on timing and the seasons, emphasizing that June experiences heavy rain, while October and November are associated with fire. From January to March, the focus is on earthquakes, particularly citing the Great Hanshin Earthquake, the Noto Peninsula Earthquake, and the Great East Japan Earthquake as examples.

The staff at NOGE Printing Corp. conducts the storytelling session. One picture book addresses the impending typhoon, which may lead to landslides and flooding. The story emphasizes the importance of going to the evacuation center to protect and save oneself. Next is emergency care, as the Fire Department discusses what is inside an ambulance and presents a video on when to call for an ambulance in case of an emergency.

After the storytelling session, a quiz game was conducted. It presents practical and real-life disaster scenarios, allowing students to share their insights on the best actions to protect and save themselves. The facilitators encouraged the students to explain why specific actions are deemed correct or incorrect. The session concludes with a practical experience. Students have the chance to wear a firefighter or medic uniform. They can also try using Augmented Reality (AR) and handle medical equipment such as a stethoscope, oximeter, and blood pressure monitor. It is worth noting that some students mentioned that the items are typically seen and used by their grandparents. One student became anxious and scared to use the equipment because of the sound it produces. One of the facilitators pointed out that using the items is like playing a video game, which helped the student feel at ease.

3.2. Child's Experience in Assessment Tool

Figure 6 shows the implementation of the assessment tool. The drawing activity was conducted to allow kindergarten students to express their ideas by answering the question, "*What is the most important item for you in times of disaster*?" The activity began with a brief explanation of the drawing process. The students were prompted to answer the question and select only one item from the provided drawings. Various disaster materials were shown to the students. They had 30 min to complete the task. A total of 19 participants engaged in the activity; however, only 14 students submitted their drawings. Table 4 shows the items chosen by the students. PET bottles and band-aids were the top choices, with four each. Three students chose flashlights, while one student selected chips, one chose a first aid kit, and one picked a teddy bear. The PET bottle and bandages reflect the child's understanding of water's importance in daily life, a point emphasized during the sessions. Band-Aids serve as a common household and school item that they can easily access to treat a minor cut or wound from playing, which can give them a sense of safety and protection.



Figure 6. Implementation of the Assessment Tool Source: Photos taken by the first author.

Table 4. Essential Item during a disaster Source: Compiled by the authors.

Item	No of Students
PET bottle	4
band aid	4
flashlight	3
chips	1
first aid kit	1
teddy bear	1

3.3. The Management of Bousai Terakoya

Table 5 illustrates the key findings from the interview conducted with the organizers of Bousai Terakoya. The Yokohama Fire Bureau states that it oversees the administrative functions of Bousai Terakoya. They are responsible for scheduling, sending invitations to the schools, and managing logistics for the session. Additionally, they coordinate the venue for the session, which includes the Yokohamabashi Shopping District and the Minami Library, located near their institution. As firefighters and disaster prevention professionals, they provide information about disasters that will be utilized during the session. NOGE Printing Corp. supervises the creative aspects of the session, producing picture books and other materials for the activity, including worksheets and puppets. They are well-versed in promoting and advertising, as well as offering visual direction for the session. The invited kindergarten reviewed the session's contents in advance, which were sent by the Fire Department, to determine who could participate. Then, the teachers escorted their students by walking with them to the site, assisting them in attending the session.

Table 5. Key Findings in the Interview Source: Compiled by the authors.

Institution	Management of Bousai Terakoya	Key Lessons from Bousai Terakoya	Challenges	Future Directions
Yokohama Fire Bureau	Performs Administrative function and session logistics	Resource utilization and community engagement	Manpower limitation (expert pool) and limited space	Improve teaching method and coordination
NOGE Printing Inc.	Oversees creative aspects and produces session material	Societal contribution and local engagement	Manpower limitation; reputation concerns	Digitize content and explore more stories about disaster scenarios
Kindergarten school	Reviews session content and escorts students to location site	Diverse learning sources and local community exploration	Child safety, and teaching approach (adult-like)	Suggest more meeting for feedback and improvement

3.4. Key Lessons of Bousai Terakoya

The Yokohama Fire Bureau realized that they could leverage each other's resources by providing connections and networks to support one another. This also promoted the activities conducted by the fire department by engaging with the local community and utilizing facilities, particularly the revitalization of local assets such as the shopping district in response to COVID-19 restrictions. NOGE Printing Corp. emphasized that this enabled them to contribute to society as a business entity and foster engagement with the local community. The invited kindergarten schools acknowledged that this provided students

with the opportunity to learn from various sources. They could also explore other locations in the local area by walking. They recognized that small initiatives could raise awareness about topics such as disaster education.

3.5. Key Challenges of Bousai Terakoya

The Yokohama Fire Bureau has identified that, due to limited space within the institution, a request for access to space must be made to other organizations. They noted that they lack sufficient artistic skills for creating educational materials and have limited knowledge and expertise because of the wide range of topics in disaster education that require input from other specialists.

The NOGE Printing Corp. has recognized its limited manpower, which has led the team to feel overwhelmed as they balance their various roles and responsibilities within the company while implementing the program. They also noted challenges in coordinating with the Fire Department due to annual personnel changes. They highlighted that this turnover makes them feel that each year is a fresh start. Additionally, they mentioned that the content of the picture books should be improved to reach a broader audience and areas. Notably, the local community has a negative perception stemming from the company's identity as a profit-driven entity rather than one focused on knowledge production. During the interview, staff expressed difficulty in engaging the local community due to preconceived notions such as "there is no work to be done here" and "they are here for business and money." They acknowledged that, for a private company like theirs, engaging with the local community is a challenging task. Furthermore, they raised concerns about the financial expenses associated with running the initiative and the need to generate income to sustain it. They emphasized that the company's president considers the activity important but acknowledges the costs and duration of this effort.

The kindergarten teachers expressed concerns about children's safety while traveling to the session venue, despite it being within walking distance from the school. During the interview, one of the teachers noted that using realistic objects can trigger anxiety in children if they have negative memories associated with those items. They observed that the language used in the session is too complicated for the children to understand. They emphasized the importance of using gentle and clear language when communicating with the children, rather than complex terminology.

3.6. The Future Directions of Bousai Terakoya

The Yokohama Fire Bureau emphasized the need for improved methods to engage children and activities to assess their understanding. They expressed their desire for better coordination with teachers, including making advance arrangements and determining the best way to teach the material. They hope for increased collaboration with others who possess expertise, given the various themes that can be explored in disaster education.

The NOGE Printing Corp. aspires to digitize the contents of picture books and create new stories that discuss different scenarios. For instance, stories that explain how and why fire occurs. Additionally, there are lifestyle differences between the children and their parents that can influence risks and how to adapt to these changes, such as stories about everyday activities. They emphasized that preparation for emergencies should begin with conversations about daily life. They also wish to share the lessons learned and discuss how they can promote conversations at home. Do children talk about these lessons with their families? This approach can foster learning not only among students but also with their parents. Notably, grandparents may not listen to their parents but do listen attentively to their grandchildren. Lastly, they hope to integrate other school subjects into disaster

learning, citing Home Economics, where students can learn to prepare food in anticipation of disasters.

The kindergarten teachers suggested scheduling additional meetings to reflect on the activity and discuss comprehensive improvement methods. They noted that a survey could be created and distributed within the day, allowing for immediate feedback after the session. They recommended that the survey should go beyond the Japanese translation, which can be given to parents and caregivers, as their students come from various nationalities, to address their linguistic needs. Announcements in advance can help teachers determine which students can attend the session and inform them of the expectations for the activities.

3.7. The Learning Outcomes of Bousai Terakoya

The Yokohama Fire Bureau stresses the importance of teaching children from a young age that they live in a country and region prone to disasters. The characters in the picture book show students how to respond to these risks and learn about other hazards in different areas. They also mention that once students understand the risks, they can share this knowledge with their parents, grandparents, and family, helping to raise awareness. This understanding helps them feel safe and worry-free during disasters. They explain that learning about risks becomes a habit when started early. They highlight that many dangers can be prevented and that being prepared makes things easier. Students learn to protect themselves and what matters most to them. Importantly, they can make their own decisions, judge situations for themselves, and act safely.

Furthermore, NOGE Printing Corp. has emphasized that children can protect themselves to save their lives when their parents are not around. This is an important skill to have in case of an emergency. The kindergarten teachers have highlighted that students can discuss various situations, make friends, and learn from one another. They can understand that scary or dangerous things can happen in life. This knowledge can prompt important actions in the event of a real disaster.

3.8. Improvements to Bousai Terakoya

The Yokohama Fire Bureau emphasized that instead of using a quiz game to assess students' learning, they have used a dollhouse as a model where students can ask questions about various scenarios. NOGE Printing Corp. noted that the picture books promote discussions about disasters. They revised some of the book's content and started experiments such as creating newspaper slippers, preparing emergency kits, conducting scientific experiments, and talking about life in an evacuation shelter.

3.9. Parents' and Caretakers' Insights About Bousai Terakoya

A survey questionnaire was given to the parents or caretakers of participants at Bousai Terakoya after each session and then collected. Eighteen responses, representing 27%, were received. The questionnaire had four sections designed to gather insights on the following: parents' attitudes toward the disaster education program existing in the country, parents' perceptions toward Bousai Terakoya as a learning program for their children to learn about disaster education, parents' views on their child's experience participating in Bousai Terakoya, and the impact of Bousai Terakoya on their family's action plan during disasters and the future directions to improve the delivery of Bousai Terakoya.

Figure 7 shows parents' and caretakers' attitudes toward the disaster education program. Seventeen participants agreed it is important, while one remains undecided. Everyone agreed that supporting local government agencies in disaster education is essential. They all agreed on the importance of attending classes about disaster prevention, which teaches them how to protect themselves and their families during emergencies. Fifteen

agreed that accessing resource materials for disaster prevention is crucial, while two are undecided, and one disagreed.

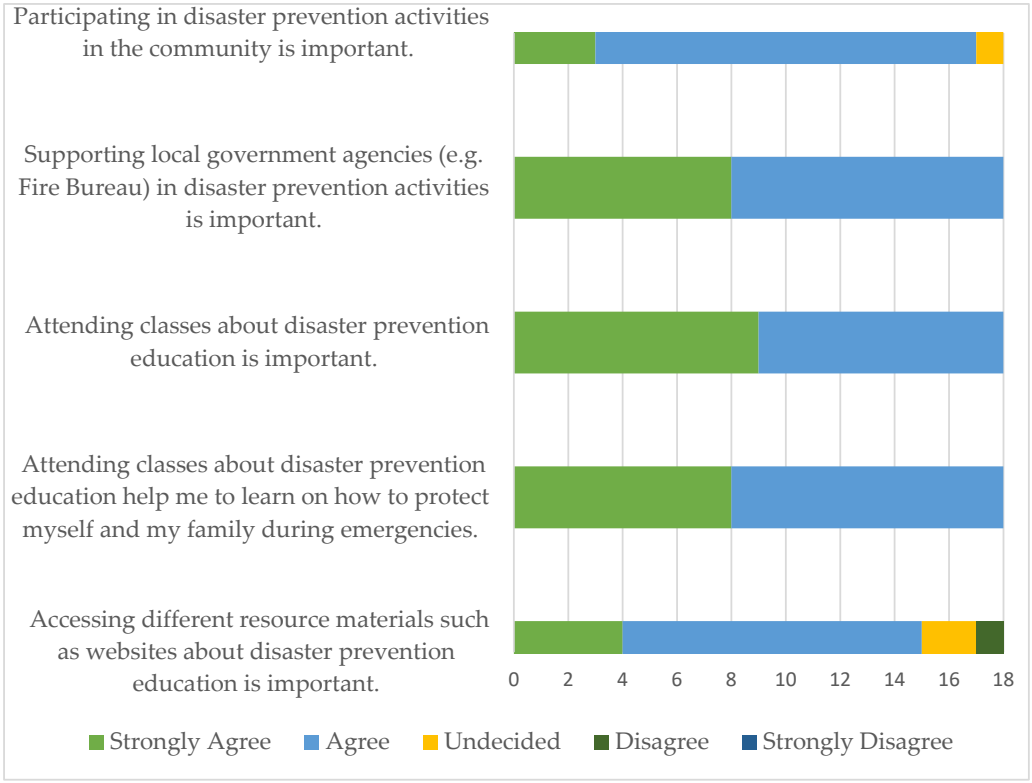


Figure 7. Parents/Caretakers' Attitude Towards Disaster Education Programs Source: Researchers' Illustration.

Figure 8 shows the perceptions of parents and caretakers about Bousai Terakoya. Thirteen agreed, while five were undecided, that their child's view on disaster education changed after participating in Bousai Terakoya. Notably, eight respondents said yes, while nine said their view on disasters changed after their child's involvement in Bousai Terakoya. Additionally, ten agreed, one disagreed, and six were undecided about their child's participation influencing their perspective on disasters. Importantly, thirteen agreed, two disagreed, and three were undecided that their child's involvement in Bousai Terakoya helped them prepare for a disaster.

Next, the parents/caretakers' perspective on their child's experience in Bousai Terakoya. Of the 16 respondents, 13 reported attending Bousai Terakoya once, while two said they attended twice, and two indicated they attended two or more times. Additionally, 13 respondents stated their children discussed their experience in the session at home, while 5 respondents reported that they did not. Figure 9 shows the topics their child shared after attending the session. From the 13 respondents, 10 respondents have chosen that stories heard from the activity are being shared by their child as the top choice. Next, three respondents have chosen lessons learned from the activity. Also, three respondents have selected that their child started asking questions about disasters. Meanwhile, two respondents have selected the interest in learning about disasters, and two respondents chose wearing a firefighter's uniform as the topic mentioned by their child at home.

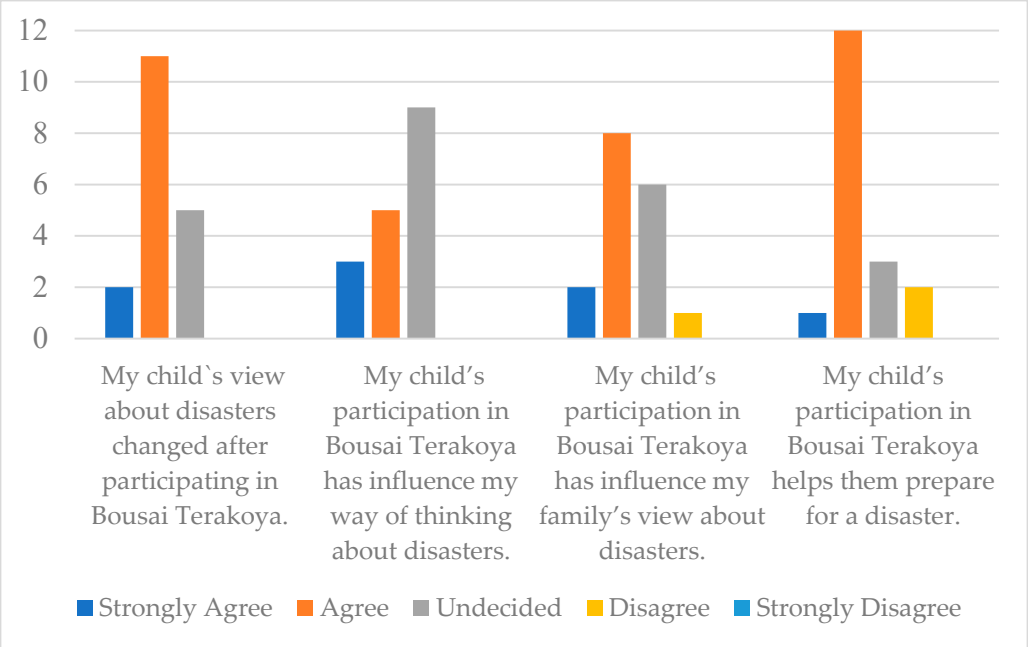


Figure 8. Parents and Caretakers' Perception of Bousai Terakoya Source: Authors' Illustration.

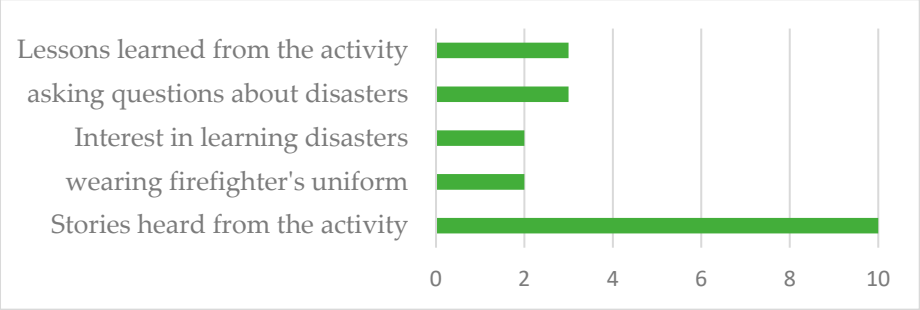


Figure 9. Child's Talk of Bousai Terakoya at Home Source: Authors' Illustration.

4. Discussions

This section explains the key drivers driving innovation in disaster education programs, Barriers to Innovating Disaster Education Programs, and contributing drivers to the development of disaster education.

4.1. Key Drivers Driving Innovation in Disaster Education Programs

4.1.1. External Circumstances

Providing children with relevant education on natural hazards and preparedness in a child-friendly school setting can help reduce their vulnerability to disasters [48]. Additionally, the extent to which schools offer learning opportunities outside their premises can increase students' knowledge and skills. This expansion has significantly shaped the trajectory of innovation, particularly about disaster experiences, institutional goals, and societal contributions. Disaster experiences offer valuable lessons and practices that inform educational curricula [49]. The country's past disasters influence the timing of introducing disaster themes in Bousai Terakoya. Program organizers have been working proactively together with a clear goal to achieve. A disaster-aware cooperative system requires local community engagement in disaster education programs [50]. This is achieved through the active collaboration of Bousai Terakoya organizers, who utilize their resources, skills, knowledge, and network to carry out the program.

4.1.2. Logistical and Human Resources

Each institution has utilized its logistics and human resources to implement the program. The available human resources handle administrative and management tasks while applying their expertise, particularly in disaster management concepts provided by the Yokohama Fire Bureau, as well as the creative input from NOGE Printing Inc. and the early childhood skills of kindergarten teachers. Stories can provide meaning, build resilience, and spark children's imagination about disasters [40]. This is exemplified by the picture books created by NOGE Printing. These stories depict examples of disasters and scenarios that have occurred, which are suitable for kindergarten students to understand. Children's books on climate change can help students grasp complex scientific concepts that affect their daily lives [51]. The stories produced by the printing company enable students to understand various disaster scenarios through child-friendly and creative storytelling, often using animals as main characters.

Notably, the innovative use of Augmented Reality (AR) enhances students' understanding of disasters. VR and AR in disaster education effectively visualize risks, help children internalize experiences through simulations, and encourage real-world action [52]. It provides students with a safe way to make real-time decisions, as simulation gives them chances to practice and improve their skills.

4.1.3. Community Engagement

The active participation and partnership of the local community have significantly contributed to the program's success, which encourages community innovation. This engagement fosters better dialog to improve the teaching and learning of disaster education. Additionally, the program provided kindergarten students and teachers with the opportunity to explore their local community. Integrating local culture and community solidarity enhances awareness, preparedness, social cohesion, and community resilience in the face of disasters [53]. This is exemplified in Bousai Terakoya, where students and teachers engage with the local community during their participation, providing a unique way to understand their environment outside of school. They visited nearby shopping centers and libraries as part of their disaster education efforts. Local communities and citizens often do not appreciate disaster education by the state or experts due to limited resources, time, and interest [54]. The initiative that Bousai Terakoya offers allows community members to observe projects initiated by both the public and private sectors. It not only creates opportunities to learn about disaster education but also serves to promote their organization.

4.2. Barriers to Innovating Disaster Education Programs

The limited research involving children and young people may result from complex methodological challenges related to access and recruitment [55]. This also extends to the limited number of disaster prevention programs available for early childhood education. The study found that access to human and logistical resources is the biggest challenge. The barriers to innovating disaster education programs can be grouped into parental involvement, resource availability, safety concerns, and anxiety about the project. The limited participation of parents in the project results in a lack of follow-up activities at home, which restricts the learning of disaster concepts to the program itself. The survey results indicated that despite ongoing disaster education programs for kindergarten students, parent participation remains low, and families' disaster prevention practices are passive.

Additionally, the limited physical space and human resources of the organizers pose challenges to their administrative and management responsibilities in implementing the task. Their office spaces are not suitable for running the program because the participants of Bousai Terakoya are children, and the formal setup may not foster an engaging environ-

ment. Their institutional responsibilities conflict with their work, and prioritizing office duties has clashed with their responsibilities to implement the program. Meanwhile, during the program, kindergarten students have limited time to share their ideas and thoughts. The organizers felt pressure to maintain students' attention span and stick to the scheduled time with the kindergarten. However, this approach also presents external risks, such as road accidents and safety concerns for children traveling to the venue, especially for kindergarten teachers.

Furthermore, reference [49] suggested that implementing disaster education requires collaboration with the local community to ensure its effectiveness. This is a challenge that the program's organizers face. Their anxiety, stemming from internal management issues and external pressures to maintain the project's innovation, relevance, and longevity, presents a significant obstacle. For example, the funding needed to create picture books is seen as a challenge since traditional picture books are less marketable due to the rise of e-books.

4.3. Contributing Drivers to the Development of Disaster Education

The development of disaster education programs for children depends on several key drivers. A vital element is having clearly defined, well-organized task management within institutions, which supports efficient and systematic program implementation. The programs also foster strong partnerships among schools, local communities, and industries, encouraging a coordinated, community-centered approach to disaster preparedness. Exploration-based activities help children better understand their local environment and associated risks. Parental and caregiver involvement is essential in reinforcing disaster awareness, ensuring consistent learning through discussions at home. Additionally, setting clear educational goals—especially those focused on self-protection and family safety—creates a solid foundation for early disaster education. These elements are crucial not only for immediate program success but also for guiding ongoing improvements and future expansion of disaster education efforts.

Furthermore, Japan's current kindergarten education policy encourages children to learn how to respond appropriately during disasters. The Bousai Terakoya offers a unique approach, allowing students to participate in interactive and hands-on learning experiences that connect their local community, past disasters, and current situations to improve their decision-making skills early on, with support from teachers and organizers involved in the program.

Figure 10 shows the conceptual framework for the future of disaster education, specifically designed for kindergarten students within the Bousai Terakoya context. The main actors—namely, schools, the public and private sectors, parents, and students—act as frontliners to spark kindergarteners' interest in disaster education. Schools, along with the public and private sectors, should focus on building collaborations and partnerships with local communities and disaster experts to develop relevant, current programs and workshops suited for children. Parents can participate in community or school social activities to improve their disaster knowledge and create extension activities at home to maintain learning. Teachers can improve their DRRM teaching methods through professional development programs offered by the Ministry of Education, which aim to encourage more teacher participation and enhance instructional strategies for children. These initiatives will lead to innovative teaching methods that combine digital and traditional approaches, ultimately increasing students' knowledge and skills in safety and protection. They can then share their learnings with others, promoting a culture of safety. The process flows back to the source, encouraging students to discuss and reflect on what they have learned.

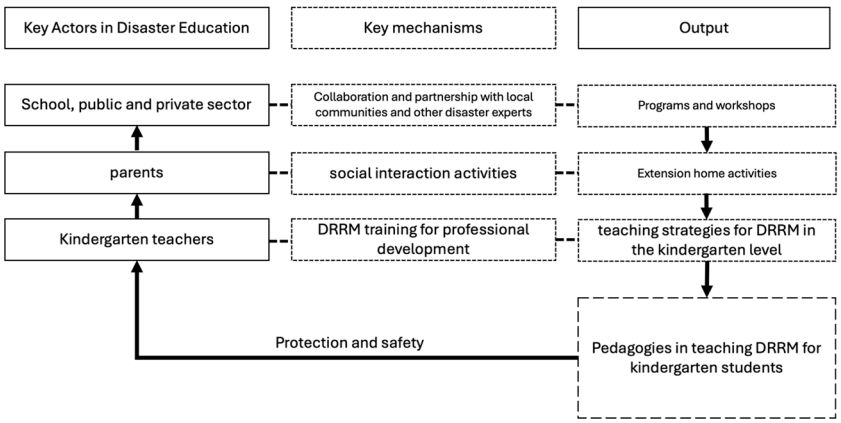


Figure 10. Conceptual Framework for the Future of Disaster Education for Kindergarten Source: Author's Illustration.

5. Conclusions

This study explores innovation in disaster education, focusing particularly on the kindergarten level in Japan. It looks at how innovation can adapt to meet changing needs and challenges as students' needs and educational goals evolve. Climate change has caused numerous disasters, making the world more uncertain. Early risk detection helps students make informed choices and develop behaviors that benefit their future. The research shows that external drivers, logistics, human resources, and community involvement are key drivers of innovation in disaster education programs. Barriers include parental involvement, lack of resources, safety worries, and anxiety about the initiatives. Understanding administrative processes, community collaboration, and educational goals can support the development of disaster education programs for children. Bousai Terakoya provided opportunities for various communities and institutions to collaborate, sharing resources and expertise while exploring local environments. Teaching children how to protect themselves and their families is a main goal of kindergarten disaster education. Knowing the child's environment helps create more effective teaching methods for disaster education. The study recommends establishing evaluation systems to assess initiatives like Bousai Terakoya. This evaluation can assist in improving government-led DRR initiatives focusing on the early childhood education level. It also calls for the development of platforms and programs to encourage collaboration among different institutions, along with professional development efforts focused on teaching disaster education to kindergarten students. The result of the survey provides a positive response from the parents/caregivers in terms of supporting disaster education programs for children. However, employing other strategies to encourage them to design a family's action plan for disasters should be encouraged.

Bousai Terakoya offers ways to tackle challenges caused by climate change and provides a path toward achieving education for sustainable development. Japan actively promotes initiatives for sustainable development. Bousai Terakoya supports several Sustainable Development Goals, such as SDG 4 Quality Education, SDG 11 Sustainable Cities, SDG 13 Climate Action, and SDG 17 Partnerships for the Goals. It innovates disaster education methods, especially in early childhood education, to improve learning quality and raise children's awareness of disaster risk reduction. Using local community facilities creates opportunities not only for children but also for organizers to engage with the community. This enhances collaboration and encourages better synergy within the community. Thus, this synergy can contribute to achieving a more sustainable society for children to thrive in the future.

Limitations and Suggestions for Future Research

A major limitation of this study is that it concentrates on documenting the innovative aspects of teaching and learning disaster education for children, particularly at the kindergarten level, within a specific community-based initiative in Yokohama, Japan, over one year from 2024 to 2025. The study records and analyzes how these elements can influence the development of disaster education for children. It aims to focus on only one specific case during this one-year timeframe. We plan to focus on the topic of innovation in teaching disaster education to young children, which is still in the nascent stage. We hope our study can spur more initiatives, and this can lead to better discussions and encourage researchers to connect it with other disaster-related topics in the future to provide more comprehensive research. We acknowledge that one of the limitations of the study is that the generalizability of the survey is relatively small. This is due to logistical and time constraints that the authors have experienced. We would like to create better ways to gather data and participation from the parents/caregivers who are the respondents of the survey in the future.

The study is conducted within the Japanese context, and its findings are relevant to disaster education programs in other countries. The results offer valuable insights for developing innovative teaching methods and initiatives tailored to children, such as those in kindergarten. This study captures public–private initiatives on child-centered disaster education to improve the teaching and learning of DRR in early childhood education. The case of Bousai Terakoya can serve as a framework for future initiatives.

Author Contributions: Conceptualization, M.T.P.P. and R.S.; methodology, M.T.P.P. and R.S.; software, M.T.P.P.; validation, M.T.P.P. and R.S.; formal analysis, M.T.P.P. and R.S.; investigation, M.T.P.P. and R.S.; resources, M.T.P.P. and R.S.; data curation, M.T.P.P.; writing—original draft preparation, M.T.P.P. and R.S.; writing—review and editing, M.T.P.P. and R.S.; visualization, M.T.P.P.; supervision, R.S.; project administration, M.T.P.P. and R.S. All authors have read and agreed to the published version of the manuscript.

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Institutional Review Board Statement: We would like to clarify that the research titled "Innovation in Disaster Education for Kindergarten: The Bousai Terakoya Experience", although it involves the use of a survey, does not require approval from an ethics committee or institutional review board (IRB), for the following reasons:1. Nature of the Survey: The study does not involve data collection from humans or animals. The survey exclusively gathers information at the organizational level, focusing on technological capabilities, infrastructure, and processes within organizations. All questions pertain strictly to organizational aspects and do not inquire about personal opinions or behaviors, ensuring that no sensitive or personal data is collected.2. Absence of Personally Identifiable Information: The research does not involve any personally identifiable information, nor does it involve activities that could affect the privacy, safety, or personal performance of employees. The data pertains solely to organizational aspects and does not involve personal or private matters.3. No Human Subject Research: The study does not engage individuals as research subjects, nor does it involve any medical, psychological, social, or behavioral interventions. Additionally, it does not include or affect vulnerable populations, placing it outside the scope of ethical review requirements for human subject research.4. Informed Consent and Transparency: All researchers who participated in the survey were fully informed of the nature and purpose of the study. Transparency was maintained throughout the process, ensuring that participation was voluntary, non-invasive, and strictly related to organizational data.

Informed Consent Statement: Informed consent for participation was obtained from all subjects involved in the study.

Data Availability Statement: The Dataset is available on request from the authors.

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Conflicts of Interest: The authors declare no conflicts of interest.

Appendix A

Survey Questionnaire (English)

I. Please shade the (◯) for your answer.

Which of the following best describes your gender?	• Man • Woman • Non-binary • My gender is not listed • Prefer not to say
What is your age?	• 20 s ~ • 30 s ~ • 40 s ~ • 50 s ~ • 60 and up
Work status	• employed ○ public ○ private ○ self-employed • unemployed

II. Indicate how strongly you agree or disagree with each statement by placing a circle (◯) in the space provided. Please complete every item.

Statements	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
1. Participating in disaster prevention activities in the community is important.					
2. Supporting local government agencies (e.g., Fire Bureau) in disaster prevention activities is important.					
3. Attending classes about disaster prevention education is important.					

4. Attending classes about disaster prevention education help me to learn how to protect myself and my family during emergencies.
5. Accessing different resource materials about disaster prevention education is important.
6. My child's view about disasters changed after he participated in Bousai Terakoya.
7. My child's participation in Bousai Terakoya affects my views about disasters.
8. My child's participation in Bousai Terakoya affects our family's view about disasters.
9. My child's participation in Bousai Terakoya improves my understanding about disasters.
10. My child's participation in Bousai Terakoya improves our family's understanding about disasters.
11. My child's participation in Bousai Terakoya helps me to prepare for disasters.

III. Please shade the (◯) for your answer.

1. How many times has your child attended the Bousai Terakoya activity?	• 1 • 2 • 3 or more
2. Does your child talks about his experience in the Bousai Terakoya at home?	• Yes • No
3. If your answer is Yes in number 2, which of the following best describes your child's experience participating in Bousai Terakoya?	• My child talks about the stories he heard from the activity. • My child shares about wearing the firefighter's uniform. • My child becomes interested in learning about disasters. • My child starts to ask questions about disasters. • My child discusses the lessons he learned from the activity. • Others (Please specify: _____)
4. Does your child talks about the lessons he learned in the Bousai Terakoya at home?	• Yes • No

5. If you answer yes to number 4, which of the following best describe the lesson your child learned in Bousai Terakoya?	• Stories and characters from the books • Different hazards • Disaster situations • Protecting and saving oneself • Others (Please specify: _____)
6. Has your family's view towards disasters changed after your child participated in Bousai Terakoya?	• Yes • No
7. If you answer yes to number 6, which of the following best describe your family's view towards disaster?	• My family thinks disasters are part of our life. • My family thinks that we can do something to protect ourselves. • My family thinks that we can contribute to protect our friends. • My family thinks that we can help other people to be safe from disasters.
8. Has your family's action towards disasters changed after your child participated in Bousai Terakoya?	• Yes • No
9. If you answer yes to number 8, which of the following action best applies to your family?	• My family talks about disasters. • My family discusses how to prepare when a disaster happens. • My family discusses how to protect ourselves during disasters. • My family shares ways on how to be safe from disasters.

IV. Please write your thoughts on the following questions.

1. Are there any topics about disaster prevention education that you wish your child could learn while attending Bousai Terakoya?

_____
_____
_____

2. Please write down your suggestions to improve the implementation of Bousai Terakoya.

_____
_____
_____

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