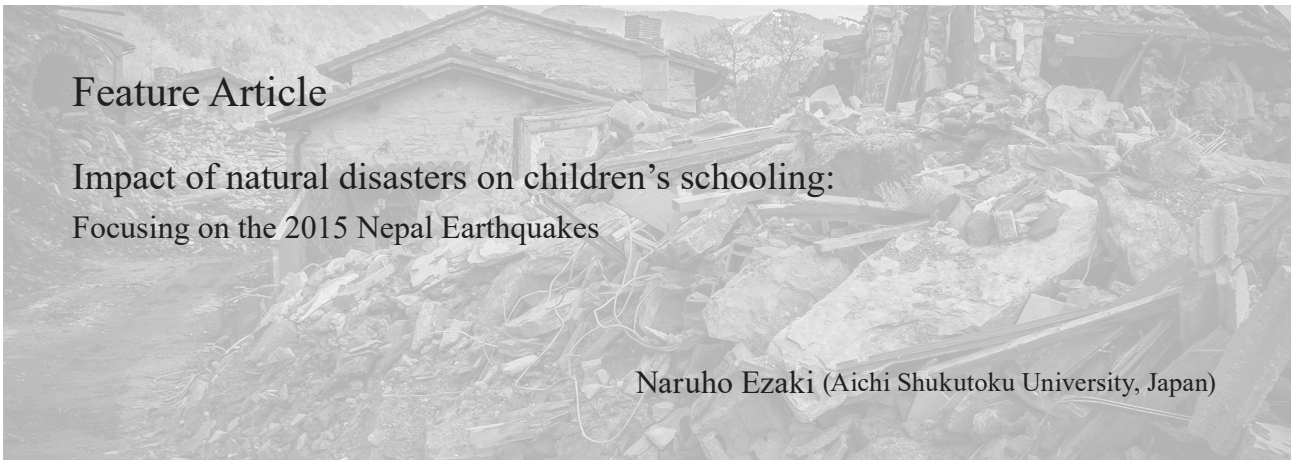

Feature Article

Impact of natural disasters on children's schooling:
Focusing on the 2015 Nepal Earthquakes

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1. Introduction

Various initiatives have been implemented to realise universal primary education since the Millennium Development Goals (MDGs) were disclosed in 2000. As a result, the global enrolment rate in primary education has improved significantly. In 2015, the Sustainable Development Goals (SDGs), which preceded the MDGs, were introduced. One of the explicit key issues therein was improving the quality of education, thus shifting the challenges from quantity to quality in the education sector. Accordingly, children's worldwide movement towards high-quality education has emerged and private school enrolment has increased in many countries.[(1)]

This trend is particularly evident in the Federal Democratic Republic of Nepal (hereinafter Nepal), which is located in South Asia. Primary education has expanded quantitatively, and the net enrolment rate exceeded 95 % in 2011. Furthermore, the country has enjoyed enhanced educational enthusiasm, and the proportion of children enrolled in private schools has been increasing rapidly.[(2)] However, educational disparity between public and private schools is evident. In general, the locals perceive that public schools offer a low quality of education because of factors such as students' poor academic performance and the low quality of teachers.[(3)] On the contrary, private schools are valued for teaching in English, an international language, and students' high academic performance.[(4)] Consequently, many parents prefer to send their children to private schools. This has led to children's movement that places an emphasis on high-quality education and promotes the notion of transferring from public schools to private schools.[(5)]

Against this background, a major earthquake with a magnitude of 7.8 occurred in Nepal in 2015. In emergencies such as natural disasters, normal protective support at individual, household and community levels is disrupted, thus exacerbating the risk of a range of problems.[(6)] Such emergencies also result in the manifestation and exacerbation of vulnerabilities, including poverty, inequality, environmental degradation and weak governance in society.[(7)] Furthermore, existing problems such as social injustice and inequality tend to intensify. Moreover, developing countries usually suffer more damage than developed countries.[(8)]

Natural disasters also have a profound impact on the education sector. Agamile and Lawson[(9)] found that children's school attendance in Uganda decreased by approximately 10 % in areas affected by heavy rains. Similarly, in Côte d'Ivoire, school attendance dropped by about 20 % when the country suffered severe weather.[(10)] In Tanzania, increased child labour and reduced school attendance were observed in families whose income was adversely affected by crop losses.[(11)] Janvry, Finan, Sadoulet, and Vakis[(12)] noted that natural disasters have a considerable impact on certain children, including primary school children, indigenous children, farm children and girls. Moreover, natural disasters are known to have a negative impact not only on access to education but also children's academic performance.[(13)]

The deadline for achieving the SDGs, whose slogan is '*No one will be left behind*', is currently less than eight years. An understanding of the impact of natural disasters, which occur frequently throughout the world, on children's schooling is crucial. Furthermore, comprehending the actual situation in order to respond rapidly and implement medium- and long-term measures and recovery policies is imperative. However, data collection during or after natural disasters is not easy and there is a paucity of research on individual children.

Accordingly, the impact of natural disasters on individual children's schooling is discussed in this paper by employing Nepal, which suffered major earthquakes in 2015, as a case study. The purpose of this study was to derive recommendations to realise the SDGs by first understanding the overall impact of the Nepal earthquakes on the education sector by examining government reports and subsequently conducting an in-depth analysis of the impact thereof by focusing on individual children based on previous studies.

2. Characteristics and education in Nepal

Nepal is a landlocked country located in South Asia between the two major powers of China and India. It covers an area

of 147,000 square kilometres, which is equivalent to approximately 1.8 times the size of Hokkaido, Japan. The country comprises mountains, hills and Terai plains. Moreover, the country boasts Mount Everest, the world's highest mountain. While the highest point on Mount Everest is over 8,000 metres above sea level, in the southern Terai region, some places are less than 100 metres above sea level. This large difference in elevation in the north-south direction is one of Nepal's distinctive features. Kathmandu Valley, which is the country's largest basin, is located in the centre of the country and includes three cities, namely, Kathmandu, Patan and Bhaktapur. Because of Kathmandu Valley's numerous historical monuments, it was made a world cultural heritage site in 1979.

In 2011, Nepal's population was 26.49 million, which constitutes 126 ethnic groups, including Parvate Hindu, Newari and Tamang.[14] Although the country's official language is Nepali, more than 100 languages are spoken, making it a multi-ethnic and multi-lingual South Asian state. While Nepal is recognised by the United Nations as a least developed country (LDC), it is aiming to graduate from LDC status and enjoy middle-income country status by 2030. The multi-dimensional poverty index, which is measured by three dimensions, namely, aspects of education, health and standard of living as well as ten indicators, decreased from 0.133 in 2014 to 0.074 in 2019 as a result of various initiatives.[15] This indicates that 3.1 million people or 12.7 % of Nepal's population have overcome poverty during the last five years.[16] However, in 2020, Nepal ranked 142nd out of 189 countries in the human development index.[17] After Pakistan, whose ranking was the lowest, this was the second lowest in South Asia.

Modern school education in Nepal began in 1951 after the collapse of the Rana regime. At that time, there were 321 primary schools with 8,505 children and an enrolment rate of only 0.9 %.[18] However, by 2020, there were 35,063 primary schools with 3,543,862 children and a 97.1 % enrolment rate.[19] Thus, the spread of education has advanced significantly.

The current school system is an 8-4 system comprising eight years of basic education (Grades 1-8) and four years of secondary education (Grades 9-12). The basic education is compulsory and free. While schools are broadly classified into two types, namely, community and institutional schools, there are also religious schools, including Hindu schools (ashram/gurukul schools), Buddhist schools (gumba/vihar schools) and Islamic schools (madarsa schools). Those who pass the final evaluation are promoted to the next grade whereas those who fail are required to repeat the grade. Furthermore, children are free to choose the school they wish to attend and may change schools because there are no school district regulations as there are in Japan.[20]

3. Overview of the 2015 Nepal earthquakes

On Saturday 25th April 2015, a major earthquake with a magnitude of 7.8 occurred in Gorkha District, Gandaki Zone. Its epicentre was approximately 76 kilometres north-west of the capital Kathmandu. Almost two weeks later, on Tuesday 12th May, a second earthquake occurred in Dolakha District, Janakpur Zone, which is located 83 kilometres east of Kathmandu. Between the first earthquake and 7th June, there were more than 300 aftershocks with magnitudes greater than 4, four of which were greater than 6.[21] Of the 75 districts[22] in Nepal, 31 were affected. Furthermore, the effects on 14 districts,[23] including Kathmandu, Bhaktapur and Sindhupalchowk, were severe.

Many buildings, including houses, historical buildings, schools, health services and sports facilities were destroyed by the earthquakes (Figure 1). While more than 8,500 people died, a further more 22,000 were injured. Moreover, an estimated eight million people, or approximately one-third of Nepal's population, were affected by the earthquakes. The earthquakes highlighted various inequalities in Nepal; for example, economically less affluent rural areas were more adversely affected by the earthquakes than urban areas and more girls died than boys.

Figure 1: Buildings damaged by the earthquakes

4. Impact of the Nepal earthquakes on children's schooling

4.1. Impact on the education sector as a whole

According to the National Planning Commission,[24] damage and loss in the education sector was estimated to be NPR 31,317.9 million (USD 313.2 million) of which NPR 28,063.8 million (USD 280.6 million) was damage to equipment and physical assets. With regard to physical damage, while 25,134

Table 1: The net enrolment rates of primary education in 14 districts before and after the earthquakes

	Before the earthquakes 2014/15 (%)	After the earthquakes 2015/16 (%)
Bhaktapur	96.4	97.2
Dhading	98.0	97.8
Dolakha	94.5	95.7
Gorkha	97.7	97.7
Kathmandu	99.0	98.4
Kavrepalanchowk	98.6	98.0
Lalitpur	94.3	95.3
Makawanpur	97.2	97.3
Nuwakot	97.1	97.6
Okhaldhunga	97.5	97.6
Ramechhap	96.8	97.6
Rasuwa	97.5	97.9
Sindhuli	97.9	98.0
Sindhupalchowk	98.4	97.9

Source: Created by the author in accordance with Department of Education, Ministry of Education, Government of Nepal (2014). *Flash 1 report 2071 (2014-2015)*. Bhaktapur: DoE; Department of Education, Ministry of Education, Government of Nepal (2015). *Flash 1 report 2072 (2015-2016)*. Bhaktapur: DoE.

classrooms were totally destroyed and 22,097 partially damaged in public schools, 953 and 3,983 classrooms were completely destroyed and partially damaged, respectively in private schools.[25] Other damage included toilets and WASH (water, sanitation and hygiene) facilities. Consequently, as decreed by the government, schools in the affected areas were closed from 26th April to 30th May and thus, more than two million children were unable to receive education for more than a month. When some schools re-opened, some children were still unable to resume their studies due to a lack of temporary learning centres and schools to accommodate children whose school buildings had been destroyed. In the immediate aftermath of the earthquakes, concerns about the negative effects of the disaster on the education sector, including a decline in children's motivation to learn and an increase in the number of out-of-school children, were raised.

According to an annual report released by the government,[26] there was not a significant decrease in the net enrolment rate of primary education (Grades 1-5) in the 14 heavily affected districts in 2015 in comparison to that of the previous year.[27] Furthermore, it was above 95 % in all districts (Table 1). The movement of children across districts was cited as a factor thereof in the report. However, it is difficult to ascertain details from these figures because cross-sectional data combines various individual cases and an aggregate is presented. Therefore, to address the limitations of cross-sectional data, the impact of the Nepal earthquakes is subsequently discussed by shedding light on children's actual schooling situation based on studies that have explored individual children from a micro perspective.

4.2 Impact of the disaster with a focus on individual children

4.2.1 Relationship between access to schools and damage to houses

Ezaki [28] examined the impact of the Nepal earthquakes on primary school children's enrolment by focusing on Bhaktapur district, one of the 14 districts that were adversely affected by the earthquakes. There were approximately 1,500 households in Town A, the target area of the study. Many houses were damaged by the earthquakes and emergency relief operations were conducted by international NGOs and donors in the immediate aftermath of the disaster. Although there were relatively few casualties because the disaster occurred during the day on a weekday and many residents were outside, many lost their homes and were forced to live in temporary housing or tents. Their livelihoods and finances were also impacted negatively, including the loss of water wells and livestock. Furthermore, they had to carry the cost of building temporary housing on their own. There are five public schools in Town A, one of which had several buildings rendered unusable. Although none of the children in the target schools lost family members, many of their homes were damaged.

Based on various records of the five schools and results of interviews with children and teachers, Ezaki [29] first compared the monthly number of attendees at the five schools before and after the earthquakes. The results revealed that although only about half of the children attended school immediately after they had re-opened, their attendance at school the following month was almost the same as that before the earthquakes, thus indicating that no significant damage had been done. This concurs with earlier cross-sectional data results.

The relationship between access to school and damage to houses was also analysed by focusing on the period immediately after the re-opening of school when attendance had decreased dramatically. The results showed that while those whose homes had not been damaged severely tended to have high attendance rates, those whose homes had extensive damage were more likely to have poor attendance rates. This finding concurs with previous research. Although a different natural disaster, Gitter and Barham [30] revealed that significant income loss after Hurricane Mitch in Honduras resulted in lower educational attendance.

According to IASC,[31] children who are separated from their caregivers or who are unattended or uncared for during a disaster are potentially at higher risk of suffering a range of problems. Ezaki [32] also noted this in that some of the children who had an attendance rate of less than 25 % during this period had single parents, ill mothers, indifferent parents and/or were orphans. Moreover, although only a small number, some were absent from school for more than three consecutive months or hardly attended school.

Although the impact of the disaster did not have a significant impact on attendance, the damage to individual children's homes as well as their challenging family backgrounds suggest that vulnerable children were placed in a more critical situation after the disaster.

4.2.2 Impact on the children's movement seeking high-quality education

One may question how earthquakes have affected the increasing educational enthusiasm and school transfers from public to private schools for high-quality education in Nepal. Ezaki [33] revealed that more than half of all transfers were from public to private schools, thus indicating dynamism in pursuit of high-quality education before the earthquakes. However, those who sought such transfers decreased dramatically after the earthquakes in the acute period immediately after the disaster as well as the post-acute period.[34] Moreover, because many suffered economic losses, reverse transfers such as those from private to public schools were 5.7 times more likely to occur in comparison to before the earthquakes.

This trend was also observed in West Africa. Elmallakh and Wodon [35] found children from families affected by shocks from natural disasters had to reconsider their school choice. While enrolment in private schools decreased, that in public schools increased. With the dynamism of the demand for high-quality education, it is evident that parents make school choices related to the present circumstances on which natural disasters have a significant impact.

4.2.3 Impact on children's academic performance

Many studies on the relationship between natural disasters and children's academic performance have revealed negative results. One may ask whether the Nepal earthquakes had a similar effect on children's academic performance. Sapkota and Neupane [36] administered a questionnaire to 189 students enrolled in two secondary schools located in Sindhupalchowk District, which is one of the 14 districts that were adversely affected by the earthquakes. The results demonstrated that the average annual test scores of the students decreased by 7 % after the earthquakes. Many of the students' family members had died or been injured in the disaster and most had lost their homes. Besides the closure of schools for more than a month and subsequent learning in temporary classrooms with minimal facilities after the disaster, these human and economic losses were described as major causes.

Meanwhile, a mother's level of education has been found to be an important factor that does not lower exam scores.[37] The influence of a mother's educational experiences on her children's education has also been revealed in previous studies. Mothers with more education are more likely to send their children to school than those with less education,[38] children whose mothers are educated have lower dropout rates,[39] and mothers with more educational experience are more likely to send their children to private schools to afford them the opportunity to enjoy enhanced education.[40] Thus, mothers' care and support is as important in times of disaster as in times of normality.

5. Conclusion

In this paper, the impact of the Nepal earthquakes on children's schooling was discussed based on reports published by the government and findings of previous studies. The results revealed that although the impact of the earthquakes did not appear to be significant when examining only cross-sectional data, such as net enrolment rates and trends in children's monthly attendance, the negative effects thereof became evident when focusing on individual children. In disasters such as earthquakes, children with severely damaged houses, single parents, ill mothers, indifferent parents and families with limited financial resources as well as those who are orphans suffer more adverse consequences because they tend to be prevented from accessing education. Recent earthquakes also had a negative impact on children's academic performance. Moreover, these results concur with those in other countries.

Schools play an important role in restoring a sense of normality to affected communities. Therefore, it is imperative to identify children who cannot even go to public schools after a natural disaster quickly so as to protect them and ensure that they are not excluded from school education. Accordingly, teachers need to monitor children in need of care on a daily basis, communicate with their parents and construct a system that cooperates with bodies such as the Ministry of Education and NGOs. Moreover, activities that heighten parents' awareness are essential because mothers' educational experiences do not only have an influence on access to education but also on their children's academic performance.

In order to realise the SDG's slogan '*No one will be left behind*', it is imperative to focus on individual children so as

to identify their challenges and needs accurately, rather than only examining cross-sectional data. Ezaki [41], as noted previously, revealed that the month after the earthquake, attendance returned to its pre-earthquake level. However, school transfers were affected for a longer period. This suggests that it is important to conduct detailed surveys and research on the long-term damage caused by natural disasters and to monitor the situation.

Although the impact of the Nepal earthquakes on children's schooling based on the cases of Bhaktapur and Sindhupalchowk districts were explored in this paper, these results cannot be generalised to Nepal as a whole. It is thus recommended that further research be conducted in areas with different characteristics.

Notes

[1] United Nations Educational, Scientific and Cultural Organization (UNESCO) (2015). *EFA global monitoring report 2015–Education for all 2000-2015: Achievements and challenges*. Paris: UNESCO.

[2] Central Bureau of Statistics (CBS), National Planning Commission Secretariat, Government of Nepal (2011). *Nepal living standards survey 2010/11*. Kathmandu: CBS.

[3] Joshi, P. (2014). Parent decision-making when selecting schools: The case of Nepal. *Prospects*, Vol. 44, No. 3, 411-428; Subedi, G., Shrestha, G. M., Maharjan, R., and Suvedi, M. (2013). *Dimensions and implications of privatization of education in Nepal: The case of primary and secondary schools* (Education Support Program (ESP) Working Paper Series No. 48).

[4] Same as (3).

[5] Ezaki, N. (2018). Impact of the 2015 Nepal earthquakes on children's schooling: Focusing on individual children's enrolment flow. *Education 3-13, International Journal of Primary, Elementary and Early Years Education*, Vol. 46, No. 7, 867-878; Ezaki, N. (2021). *Impact of the 2015 Nepal earthquakes on individual children's enrolment situation: Seeking 'high-quality education'*. Union Press.

[6] Inter-Agency Standing Committee (IASC) (2007). *IASC guidelines on mental health and psychosocial support in emergency settings*. Geneva: IASC.

[7] United Nations Development Programme (UNDP) (2014). *Human development report 2014: Sustaining human progress: Reducing vulnerabilities and building resilience*. New York: UNDP.

[8] Centre for Research on the Epidemiology of Disasters. (2015). *The human cost of natural disasters 2015: A global perspective*. Brussels: CRED.

[9] Agamile, P., & Lawson, D. (2021). Rainfall shocks and children's school attendance: Evidence from Uganda. *Oxford Development Studies*, Vol. 49, No. 3, 291-309.

[10] Jensen, R. (2000). Agricultural volatility and investments in children. *The American Economic Review*, Vol. 90, No. 2, 399-404.

[11] Beegle, K., Dehejia, R., and Gatti, R. (2006). Child labor and agricultural shocks. *Journal of Development Economics*, Vol. 81, No. 1, 80-96.

[12] Janvry, A., Finan, F., Sadoulet, E., and Vakis, R. (2006). Can conditional cash transfer programs serve as safety nets in keeping children at school and from working when exposed to shocks? *Journal of Development Economics*, Vol. 79, 349-373.

[13] See, for example, Di Pietro, G. (2018). The academic impact of natural disasters: Evidence from L'Aquila Earthquake. *Education Economics*, Vol. 26, No. 1, 62-77; Thamtanajit, K. (2020). The impacts of natural disaster on student achievement: Evidence from severe floods in Thailand. *Journal of Developing Areas*, Vol. 54, No. 4, 129-143.

[14] Central Bureau of Statistics (CBS), National Planning Commission Secretariat, Government of Nepal (2012). *National population and housing census 2011*. Kathmandu: CBS.

[15] National Planning Commission, Government of Nepal (2021). *Multidimensional poverty index: Analysis towards action 2021*. Kathmandu: National Planning Commission.

[16] Same as (15).

[17] United Nations Development Programme (UNDP) (2020). *Human development report 2020–The next frontier: Human development and the Anthropocene*. New York: UNDP.

[18] Dharam, V. (1988). *Education and policy in Nepal: An Asian experiment*. New Delhi: Northern Book Centre.

[19] Center for Education and Human Resource Development, Ministry of Education, Science and Technology, Government of Nepal (2020). *Flash 1 report 2076 (2019-20)*. Bhaktapur: CEHRD.

[20] However, the rules for transferring schools are set out and must be followed.

[21] National Planning Commission, Government of Nepal (2015). *Nepal earthquake 2015 post disaster needs assessment executive summary*. Kathmandu: National Planning Commission.

[22] The administrative divisions have been changed and currently there are 77 districts in Nepal.

[23] Other districts are Dolakha, Gorkha, Nuwakot, Rasuwa, Dhading, Kavrepalanchowk, Ramechhap, Okhaldhunga, Sindhuli, Lalitpur and Makawanpur.

[24] National Planning Commission, Government of Nepal (2015). *Nepal Earthquake 2015 post disaster needs assessment Vol. B: Sector reports*. Kathmandu: National Planning Commission.

[25] Same as (24).

[26] Department of Education, Ministry of Education, Government of Nepal (2014). *Flash 1 report 2071 (2014-15)*. Bhaktapur: DoE; Department of Education, Ministry of Education, Government of Nepal (2015). *Flash 1 report 2072 (2015-16)*. Bhaktapur: DoE.

[27] A similar trend was observed in the higher basic education level (Grades 6-8).

[28] Same as (5).

(29) Same as (5).

(30) Gitter, S. R. and Barham, B. L. (2007). Credit, natural disasters, coffee, and educational attainment in rural Honduras. *World Development*, Vol. 35, No. 3, 498-511.

(31) Same as (6).

(32) Same as (5).

(33) Same as (5).

(34) The acute period means the period immediately after the reopening of school when attendance had fallen dramatically, which was about one and a half months. The post-acute period covers roughly nine months.

(35) Elmallakh, N. and Wodon, Q. (2021). How do shocks affect enrollment in faith-based schools? Evidence from West Africa. *International Studies in Catholic Education*, Vol. 13, No. 2, 245-256.

(36) Sapkota, J. B. and Neupane, P. (2021). The academic impacts of 2015 Nepal Earthquake: Evidence from two secondary schools in Sindhupalchok district. *Education Sciences*, Vol. 11, No. 8, 371.

(37) Same as (36).

(38) UNESCO Institute for Statistics (2005). *Children out of school: Measuring exclusion from primary education*. Montreal: UNESCO UIS.

(39) Lloyd, B. C., Mete, C., and Grant, J. M. (2009). The implication of changing educational and family circumstances for children's grade progression in rural Pakistan: 1997-2004. *Economics of Education Review*, Vol. 28, No. 1, 152-160.

(40) Ezaki, N. (2020). A study of equality of educational opportunity in Nepal using logistic regression analysis. *International Journal of Comparative Education and Development*, Vol. 22, No. 4, 249-262.

(41) Same as (5).