

Assessing Environmental Education through KBSM Social Sciences Subjects: Three Case Studies

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Abstract

The issue of flood disaster is becoming more prevalent in the present days of Malaysia. Flood is an annual recurring problem and it causes issues of discomfort, economic loss, health and the social well-being of Malaysians. To cope with this hydrometeorological disaster, the authoritative Sendai Framework for Disaster Risk Reduction 2015-2030 (2015) (Hereafter Sendai Framework) identified education as one of the best avenues to cope with flood disaster. This paper focuses on the 4th priority area in the Sendai Framework which aims is enhancing disaster preparedness for effective response and to “Build Back Better” in recovery, rehabilitation and reconstruction. Hence, this paper examines flood education through KBSM social sciences subjects with the idea that the Malaysian secondary school curriculum can help to enhance the preparedness among the students. The social sciences subjects chosen are Geography, English and Moral studies in Malaysian school system. The aim of this paper is to examine the coverage of flood related issues in the KBSM textbooks as well as the ways in which the issues are being discussed and manifested. The methodology used is qualitative content analysis. The findings indicate that in the Malaysian secondary school curriculum, English textbooks have more flood related topics than Moral studies and Geography. The issues discussed in the English textbooks are very current, varied and able to elucidate the synergy of knowledge.

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1. Introduction

Flood is a common annual disaster in Southeast Asia (SEA). It occurs as an overflow from a body of water, extending its usual boundaries, or due to an accumulation of rainwater; flooding or submerging its nearby areas (Mishra and Upadhyay, 2015). It was reported that in 2017, Indonesia experienced almost 640 flood cases, affecting the lives of 1.9 million people, and global news reported roof-high floods in Thailand where militaries

were deployed for relief actions, while two neighbouring states in Malaysia; Kelantan and Terengganu were

inundated and had thousands of its people stranded in relief centres. These locations were said to experience an unusual monsoon season (Quek, 2017 & The Star 2017). This indicates that flood is not only a Malaysian problem, but it is the southeast Asian problem.

The Sendai Framework (2015) states that flood education is the fourth Priority; Enhancing disaster preparedness for effective response and to “Build Back Better” in recovery, rehabilitation and reconstruction. It says that “the growth of disaster risk means there is a need to strengthen disaster preparedness for response, take action in anticipation of events, and ensure capacities are in place for effective response and recovery at all

levels. The recovery, rehabilitation and reconstruction phase are a critical opportunity to build back better, including through integrating disaster risk reduction into development measures”.

2. Literature Review

In the Malaysian context, the East Coast Monsoon has been taking a toll at Kota Bharu, Kelantan for the past few years. 2014 was a year that has made impact on residents of Kota Bharu mentally and physically as the worst flood in history ever occurred in Malaysia. The locals call it ‘Bah Kuning’ because of its high mud content (Quek, 2017).

According to the Department of Irrigation and Drainage (DID) Malaysia, a rainfall distribution has been studied based on prior flood events that take place through time. Abundant rainfall started from 15 to 29 December 2014. There are two phases in this case. Phase one began from 15 to 19 December 2014 with daily rainfall reaching up to 100 mm-300mm mark. Most of the rainfall was spread over most of the east coast of Peninsular Malaysia. Phase two prevails than the first as higher concentration of rainfall was recorded and it started from 20 December to 24 December. The recorded data shows the quotidian rainfall for this phase is up to 500mm mark and were concentrated on the middle section of Peninsular especially at areas of centre parts of Kelantan, Terengganu and Perak.

Recently on 5th November 2017, hours of heavy downpour caused instant flash flood in Penang Island leading to 5 deaths and 3000 people evacuating followed by infrastructural damage and economic loss (Nazir Sufari, 2017). The Federal Territory Kuala Lumpur is prevalent to flash floods every time there is a heavy rain like the 30th October 2017 flood which took a toll on most parts of the city. Almost a kilometer of highway around Bangsar South City development site was affected.

The cause of the flash flood was found to be the clogged drains along that stretch which was a consequence of the Malaysian habit of littering. Furthermore, the heavy rain which began before 2.00pm caused flash floods in several parts of Klang Valley. Bukit Jalil Highway near Alam Sutera was also affected when both the lanes were covered with muddy floodwater. Meanwhile, another flash flood also occurred simultaneously at Taman Tun Dr. Ismail MRT station which caused a massive traffic congestion along Jalan Damansara (Nazir Sufari, 2017).

The frequency and impact of flood are detrimental to all Malaysians. In this paper, we discuss the issues and questions related to the roles of education in flood education. The overarching objective of this paper is to examine the roles of education in terms of helping Malaysian students to understand flood.

3. Methodology

For this project, the strategy of inquiry is mainly qualitative in nature. The reason for applying a qualitative method is because the gamut of this research is to study the underlying meaning and social phenomena of flood. The analytical framework for this research is qualitative content analysis.

Qualitative inquiry, which focuses on meaning in context, requires a data collection instrument that is sensitive to underlying meaning when gathering and interpreting data (Merriam, 1998, p.1). Humans are best for this task. Hence, the texts themselves are the primary instrument for this research. Content analysis is then deemed the best strategy in the study.

According to Titscher, Meyer and Wodak (2000), content analysis is "the longest established method of text analysis among the set of empirical methods of social investigation". Therefore, in this paper, the researcher treats content analysis and textual analysis as interchangeable terms.

McKee (2003) defines textual analysis as “a way for researchers to gather information about how other human beings make sense of the world”. Similarly, Fraenkel and Wallen (2008) define content analysis as a technique that enables researchers to study human behaviour in an indirect way, through an analysis of their communications (i.e. documents).

In this research, we examine three KBSM social science subjects namely English, Moral studies and Geography and the textbooks are as below,

- a. Kalaidevi Arumugam, Chang Keng Ling & Napisah Muhammad. 2016. Pendidikan Moral Tingkatan Lima. Kuala Lumpur: Dewan Bahasa dan Pustaka
- b. Goh Kim Bung, Sariza Md Saleh & Wei Phaik Chin. 2014. Pendidikan Moral Tingkatan Tiga. Kuala Lumpur: Dewan Bahasa dan Pustaka
- c. Tan Phaik Lee & Angelina Ng Kim Leng. 2012. English Form Four. Kuala Lumpur: Mutiara Cemerlang Sdn Bhd.
- d. Annie Lee, Lyla Roberts & Magdelene Chew. English Form Four. Kuala Lumpur: PGI Cipta Sdn Bhd
- e. Baizura And Ghani, Azman Abdullah & Shukri Sulaiman. 2016. Geografi. Kuala Lumpur: Pelangi.
- f. Mohd. Jamil Mohamed, Rodzli Hashim, Omran Sidek. 2016. Geografi. Kuala Lumpur: Mutiara.

In terms of limitation, the researchers have excluded other subjects such as physics, biology, Bahasa Malaysia etc. in this research. This is based on some preliminary interviews with schoolteachers who have suggested that these three subjects contained more flood elements. Besides, the levels of studies are not the main concerned as the researchers were looking at chapters that contains flood elements. It is important to note that some levels of studies do not discuss flood in a particular chapter.

4. Discussion

At the onset, it is important to note that the textbooks for Malaysian KBSM are categorized according to zones.

This implies that, for instance, the textbooks for students in Kedah are different from students in Johor and Sarawak. In other words, there are many prescribed textbooks for any levels and any subjects in the KBSM spectrum. This is to ensure more inclusive and diverse education for all.

In Moral studies, the KBSM moral studies syllabus contains environmental topics where there are four chapters on environment in the textbook. Firstly, chapter 17, 'Flora Fauna Anugerah Tuhan' (Kalaivani et al., 2002) which discusses facts on endangered animal and plant species as well as the reasons why should human beings should protect them. The chapter also discusses agencies, both governmental and non-governmental bodies and their roles such as Perhilitan and World Wildlife Fund for Nature (WWF).

Secondly, in Goh et al. (2014), chapter 18, 'Fikir Dahulu Sebelum Buang', it is a chapter that deals with practices on proper environmental and waste management including the 3R (Recycle, Reuse and Reduce) and the efficient use of natural resources. In chapter chapter 19 'Alam Sebagai Teman', it provides information on the structural solutions to land management including green city planning, proper drainage system to avoid flash floods and environmental law enforcement in Malaysia. Finally, chapter 20, 'Alam Sekitar Berkualiti Tanggungjawab Semua' is a chapter that focuses on preserving and conserving environmental quality (haze in particular) and the lawful bodies behind the measures such as Jabatan Alam Sekitar (JAS). The chapters provide a smooth link from one aspect to the other. This helps students to conceptualise the relevance of the issues.

However, what has been found is that the chapters do not discuss on flash flood. Despite flash flood being an unresolved extensive issue especially in urban areas, it is not well discussed in this subject. Most importantly, this subject is compulsory for Malaysian students. Instead, the textbooks suggest ways to curb environmental problems such as awareness campaign, competitions and case studies.

In addition, the 'Hutan untuk Air, Air untuk Hidup' chapter (Goh et al., 2014) is a campaign discussed in the syllabus. It discusses the issues on water generally. Yet, the discussion does not give an understanding on the reason behind the occurrence of environmental problems. For instance, students' attitudes towards the environment and physical landscape. Besides, due to limited exposure to the dangers of flash floods, students will not be able to understand the seriousness of the disaster and gradually developed the cavalier attitude of Malaysians towards flash flood.

Furthermore, the Moral subject thought in Malaysia contains 36 specific moral values which are aimed to inculcate good mannerism and well-being. Although the teaching and learning processes are very effective, the education defeats the purpose as students are trained on ways to analyse, assess and answer exam questions using

knowledge mainly from the textbooks only. The subject does not instill good values and qualities among Malaysian students to form a moral society. The link between the good deeds and examination is missing. Due to these factors, we are unable to determine if students are able to use the moral values to understand flood.

Besides, based on exercises in the Pendidikan Moral textbook, some of the questions on environment issue are solely on students' knowledge of moral values, examples related to them, laws and official bodies in regard to issues discussed. However, the evaluation of real-life application is missing in the assessment. The way in which the questions were framed required a set of normative answers. This might not be the best method for students to learn about flood. We can conclude that the teaching of moral subjects may not instill knowledge about how to cope flood. This is alarming as moral activities are meant to achieve good grades only.

In this study, the researchers found that the Moral subject may cultivate students with knowledge on how to morally evade flash flood occurrence through examples. For instance, having real-life situations which portray the pros and cons of not taking care of the present drainage systems which are part of the facilities built up by the government authorities are more beneficial to the students. Moreover, the syllabus may include a chapter on ill behaviour of the public that is leading to environmental problems and give more importance on flash flood so that students can understand more about the seriousness of the issue.

Instead of having an examination-based assessment, students must be assessed through more hands-on practices such as discussions, projects and practical situations where they indulge, learn by experience and be part of many social and moral activities on curbing man-made disasters especially flood. As an example, drainage cleaning as a monthly activity around the township. This will be able to give a more realistic understanding to the students.

In short, KBSM Moral studies deliver little fundamental education to bring a positive change in the mindset and beliefs of students on flood disasters which have been one of the most critical environmental problems in Malaysia. Few enlisted measures should be followed by a positive change especially in attitudes.

The second subject is Geography. Lower secondary school students have to take Geography where they are formally assessed in the government examination, Penilaian Tingkatan Tiga (PT3), for the Form 3 students. However, at the upper secondary school level (Forms 4 and Form 5), geography is an elective subject. As a result, few schools in Malaysia offer geography at this level. Hence, only a small population of Malaysian students learn about flood in SPM geography. At the higher level, which is the Sijil Tinggi Pelajaran Malaysia (STPM), Geography is only offered to the arts stream students. For those who opted to pursue their studies at Matriculation

centers, there is no Geography in the matriculation curriculum.

It is believed that Geography is an important subject to provide adequate disaster education, especially on floods, to the upper secondary students. In the current Form 4 syllabus, the chapter on Environmental Issues and Management (Topic 3) exposes upper secondary students to Pollution and Waste Mismanagement (Subtopic 3). These chapters provide a detailed discussion on the topic. These topics provide a greater insight for students to understand the causes of flash floods from different perspectives. For example, poor drainage system caused by littering will lower the rate of water clearance into nearby water treatment plants or lakes. Subsequently, during monsoon season, lowlands on the east coast of Peninsular Malaysia such as Terengganu and Kelantan will be turned into a flood-prone area, which can result in great economic loss, fatalities and casualties. Hence, the knowledge gained from this subject can raise awareness and act as a corrective tool for the Malaysian habit of littering.

Furthermore, this chapter also covers environmental conservations in the last subtopic which educates students on the current mind-boggling technologies that can be applied in reducing the occurrence of flood disasters. For example, the Water Gates in Japan have played a vital role in reducing the occurrence of floods in their nation. Surrounded by water, the island nation of Japan is a flood-prone area. This knowledge from Japan is essential for Malaysian students. The students are able to draw comparison between Malaysia and a more advanced country, Japan.

Thus, Geography may be made a compulsory subject for all upper secondary students to inculcate disaster education in our current education system. This can encourage the young generation of our country to apply the disaster education that they have obtained by engineering new flood-prevention systems which are more effective in curbing flash floods.

The findings show that the Geography syllabus generally provides sufficient knowledge for the students. However, the problem is that not many students do opt for this subject. Hence, Geography is comparatively unable to be a subject that can help in flood mitigation. If the subject is offered to more students at form four, form five and form six, then it may be able to act as one of the anchor subjects in flood disasters.

The third subject is English. In Tan Phaik Lee and Angelina Ng Kim Leng's English textbook for Form Four, there are four chapters which discuss environmental awareness. We would like to emphasize that one particular chapter (Chapter 5), which specifically focuses on dams. Another chapter (chapter 2), is specifically on water and water conservation. The issues discussed that are related to Kenyir Dam in Terengganu and related issues such as land-clearing and drought.

Interestingly, apart from using narratives and pictures to provoke critical thinking on environmental issues, this chapter discusses a poem by AJ Greenwall. This technique is to students to create a mental image on these issues. The poem *Drought* is as below,

Dry
Dust-dry
Sun-baked soil
Craked and barren and bare
The sun beats on and on and on...
Relentlessly from a cloudless sky
Wilting grass withers and dies
and castle stagger on dehydrated legs
too parched – too weak
too tired to stumble on
and day after day
after endless day
the sweltering, murderous sun
beats down!

In this section, the lesson plan requires students to link the idea of drought to dam. The researchers find that this type of question requires higher order thinking skills in order for the students to examine the relationship between drought and dam. The students are required to discuss the functions of dam in mitigating drought.

Similarly, in another English Form Four textbook by Annie Lee, Lyla Roberts and Magdalene Chew (2002), there is a chapter on water conservation. In this chapter, rather than focusing on dams, the topic discusses more on flooding. The lesson includes developing a mini project about dam and its benefits to community in the vicinity. Students are required to conduct research on Kenyir Dam. This mini project is able to provide an arena for students to integrate knowledge from different subjects to discuss flood disasters. For examples, students are exposed to the idea that Kenyir Dam is also a tourism site. As a tourism site, more issues such as housing, transportation and social issues are intermingling.

This chapter fulfils the spirit of KBSM which is an integrated curriculum whereby the issues of flood and dams are discussed in the sciences as well the social sciences. This integration provides student's a new avenue to rethink about a particular issue. The consilience of knowledge learnt can then be integrated.

5. Conclusion

Our main argument in this research is that the KBSM textbooks provide an avenue for students to learn about flood. Students learn about the technicality of flood in the sciences subjects, and the social sciences subjects add on to the lustre of understanding more about flood from different possible perspectives. This indeed fulfils the philosophy of an integrated curriculum.

The findings suggest that Geography and English may be the most appropriate subject which can help to

inculcate knowledge on flood onto students. The restraints may include some educational reform especially for secondary schools. For geography subject, this coincides with Sharifah (2005) who opined that geography is a subject that can help to fight disasters. However, further research may be conducted to illuminate the ways in which Geography can help to combat flood in Malaysia.

The implication of this research is to raise awareness among Malaysian students on the importance of disaster education, especially on flood. We recommend that for further research, the coverage can be wider and more inclusive. The collaboration with Curriculum Development Center (CDC, MOE) will be able to yield more insightful findings.

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