

Teaching Orang Asli Perspectives: An Investigation of Teachers' Perception on Landslide Hazard

Assoc. Prof. Dr Jamilah Hj Ahmad¹ & Assoc. Prof. Dr Habibah Hj Lateh²

Abstract

This study investigates the teachers' perception, understanding and strategies to educate *orang asli* students on landslide hazards. This study also aims to unravel effective strategies to provide information regarding landslides to the community especially the *orang asli* community. A survey and focus group interview were conducted to explore the teachers' experiences, understanding and perception towards the landslide issues. The findings revealed that most of the respondents have general knowledge on landslides. They perceived landslide to be dangerous to their safety and could also harm their economic and social development. Majority of the respondents believe that video as an effective learning tool to educate students on landslides. They also believe that television is the best medium to be used to deliver information on landslides to the community.

Keywords: Landslide, Risk Perception, Environmental Education, *Orang asli* and Focus Group Interview

1.0 Introduction

Along with rapid development, sophisticated technologies, and population explosion, people and the environment are increasingly suffering from the effects of environmental degradation. In recent years, there have been increased cases of natural disasters such as floods, earthquakes and landslides that affect the lives of many. These disasters also involve recovery cost. It is in fact a problem that exists since a long time ago. In a recent incident that occurred in May 2014, hundreds of people have been killed and more than 2000 were missing as a result of a landslide at a mountainous area of north Afghanistan (Harooni, 2014). Malaysia has also experienced several major traumatic landslides at Pos Dipang, Perak; Paya Terubong, Penang; Highland Towers, and Bukit Antarabangsa, Kuala Lumpur that claimed hundreds of lives. Table 1 below listed the landslide tragedies in Malaysia.

¹ School of Communication, Building D13, Universiti Sains Malaysia, 11 800 Pulau Pinang Malaysia. Email: jahmad@usm.my, Phone: 04-653 3320

² School of Distance Education, Jalan Sasaran, Universiti Sains Malaysia, 11 800 Pulau Pinang Malaysia. Email: habibah@usm.my, Phone: 04-6533608

Year	Place/ State	Year	State
1961	Cameron Highland, Pahang	2008	Cameron Highland, Pahang
1993	Pantai Remis, Perak	2008	Kajang, Selangor
1993	Ulu Klang, Selangor	2008	Petaling Jaya, Selangor
1995	Genting Highlands, Pahang	2008	Terubong Jaya, Penang
1996	Gua Tempurung, Perak	2008	Kuala Kubu Baru, Selangor
1996	Pos Dipang, Perak	2008	Jalan Semantan, Kuala Lumpur
1999	Ulu Klang, Selangor	2008	Ulu Klang, Selangor
2002	Ulu Klang, Selangor	2009	Bukit Ceylon, Kuala Lumpur
2003	Bukit Lanjan, Selangor	2011	Ulu Langat, Selangor
2006	Ulu Klang, Selangor	2012	Puncak Setiawangsa, Kuala Lumpur
2007	Kapit, Sarawak	2013	Petaling Jaya, Selangor

Table 1: Landslide tragedies in Malaysia (Khairiah & Habibah, 2012)

Malaysia is geographically outside the Pacific Rim of fire and the country is relatively free from any severe destruction of natural disaster such as earthquake, typhoon and volcanic eruption. However the country is exposed to monsoon floods, landslides and haze problems (Ibrahim & Fakhru'l Razi, 2006). Figure 1 shows the types of natural disaster that occurred in Malaysia. According to Ibrahim and Fakhru'l Razi (2006), besides flooding, Malaysia also needs to deal with landslides. The landslide hazards lead to the damage of roads, building and other infrastructures, block of rivers and a very high cost of recovery each year (Pan, 2012).

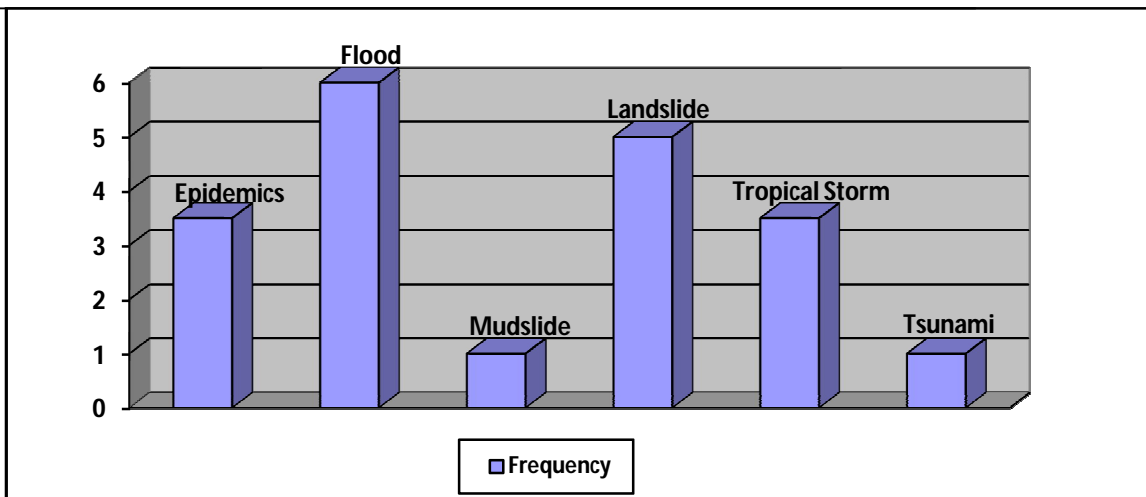


Figure 1: Natural Disaster Types in Malaysia (Ibrahim & Fakhru'l-Razi, 2010)

Natural disasters usually occur due to natural hazards and human activities. However, the causes of landslides are usually related to slope instabilities. The causes of landslides or mass movement are usually due to endogenic and exogenic factors (Costa & Baker, 1981; Alexander, 1992). Figure 2 shows the details of endogenic and exogenic factors that lead to landslide problem

Endogenic Factor

- The steepening of slope.
- The removal of lateral or underlying support.
- Loading of the upper edge of the slope following construction, landfill dumping, land sliding or other factors.
- Changes in slope gradient as a result of faulting, tectonic uplift, or the creation of artificial slopes by grading with construction machinery.

Human activity can be a reason for either internal and external causes, or both active and passive ones over time periods that vary from the immediate (10^{-2} years) to the long-term (10^3 years) (Alexander, 1992).

An earlier research found that the cause of landslides is due to the lack of awareness and knowledge in the hill destruction (Habibah & Vijaya, 2012). Habibah and Vijaya (2012) also stated that the exploitation of the hill by human being for various purposes without taking any consideration the safety and destruction of flora and fauna. Education is indeed the best way to foster environmental awareness and knowledge among the society (Jamilah, Hasrina, Hamidah, & Juliana, 2011; Jamaluddin, 2001). According to Muhammad Rizal et.al (2010), environmental legislation is another measure that could be used to protect the environment from being polluted and abused.

Teachers play important roles in educating the society about environmental problems and natural disasters including landslides. The younger generation needs to be molded with the right knowledge, attitude and behavior pertaining to landslide issues. Hence, the main focus of this article is to perceive the teacher's perception regarding landslides in order to foster students' awareness regarding the hazard of landslide disaster.

The objectives of this study are as follows:

- To discover teachers' general knowledge, understanding, and attitude towards landslide issues.
- To investigate teachers' perception and awareness in landslide hazard in relation to their experience of teaching.
- To indicate teachers' perception of effective communication strategies to deliver information regarding to landslide.

2.0 Literature Review

2.1 Knowledge, Attitude and Practice on the Landslide Issues

Landslide is a natural disaster that can occur beyond our expectation. In the past, it has claimed hundreds of lives and caused losses of millions of Ringgit. Many try to solve environmental problems with different methods, especially environmental education which it is process of environment teaching for people have environmental knowledge and understanding, awareness, attitude, environmental ethics, behaviour and evaluation (Wongchantra, Boujai, Sata, & Neungchalerm, 2008). Public preparedness can be gauged through knowledge, attitude and practice towards landslide issues (Khairiah Salwa & Habibah, 2012).

Awareness, knowledge and attitude are objectives that have become important components in the environmental education (Lavega, 2004). Golob and Hensler (1998) found that behaviours influenced attitudes more strongly than attitudes influenced behaviours.

In order to minimize risk, public preparedness towards disaster is essential as it can prepare them to face and react accordingly when the disaster happens. According to Karnawati & Pramumijoyo (2008), lack of knowledge about landslides is one of the factors that cause huge number of live losses when the disaster occurs. Therefore, environmental disasters knowledge is very important as guidelines.

It is assumed that people who are knowledgeable about the environment and its associated issues are more aware of the environment and its problem and are more motivated to act toward the environment in more responsibly (Zarintaj, Sharifah Zarina, Abdul Samad, & Mahyar, 2013). This is in line with Kollmus and Agyeman (2002) behavioural model which indicates that society should be provided with environmental knowledge to increase awareness and in turn, it will develop more positive behaviour towards the environment (Kollmuss & Agyeman, 2002). Figure 3 describe the relationship between knowledge, attitude and awareness.

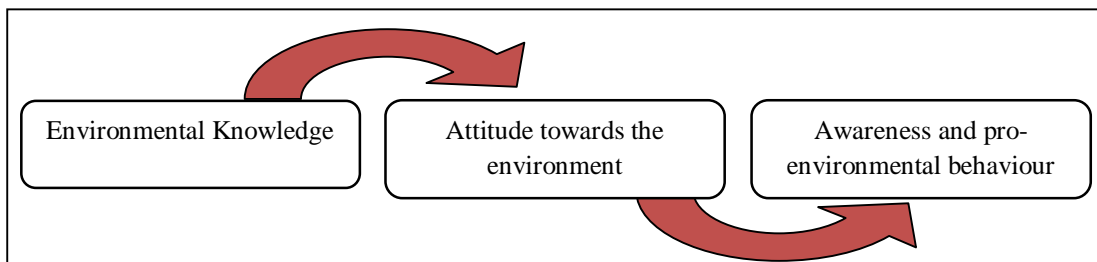


Figure 3: Model of Pro-Environmental Behaviour. Adapted from Kollmuss & Agyeman, 2002

According to Dunlap et. al (2000) factors that related to knowledge, attitude and awareness are age, education and political ideology. Rovira (2000) agreed that environmental consciousness might be influenced by social factors such as social position, age, and level of education.

Education is the key element to reduce natural hazards including landslides and achieving better security in the pursuit of sustainable development (Rouhban & Shaw, 2008). In this regard, teachers should play important roles to nurture the younger generation to be more concerned about the environment. Teachers should also provide good examples to their studentse (Habibah & Govindasamy, 2012). Thus, in regard to this study, it is important to perceive the teachers' and public's perception in order to educate the younger generation on landslides.

2.3Risk Perception

Few researches have attempted to assess public perception on landslide hazards. In order to explore people's current perception and preparedness it is necessary to understand whether they have accessible factual information regarding landslides. The perception of risk involves the process of collecting, selecting and interpreting signals about uncertain impacts of events, activities or technologies (Wachinger & Renn, 2010). If risk perception of people living in risk prone areas is known, effective information strategies on protective measures can be designed by responsible authorities (Pan, 2012; Dai, Lee, & Ngai, 2002).

Lindell and Perry (1994) argued that understanding public perception on natural hazards is necessary in order to impact hazard preparedness. Residents of at risk areas often have inaccurate beliefs about the hazard agent and its impacts, are unaware of available adjustments, and may have erroneous beliefs about the effectiveness of the adjustments of which they are aware. Hence, in assessing people's current levels of risk perceptions and preparedness, it is very important to understand whether they have accessible information (Lindell, 1994).

Some research findings suggest that public perception, awareness and preparedness for a natural disaster is associated with a wide range of socio-demographic characteristics which may play a different role depending on the social and environmental context (Rodeano, Tajul, Mustapa, & Suriani, 2011).

Research conducted by Rodeano, Tajul, Mustapa & Suriani (2011) compiled the socio-demographic characteristics which consist of age, marital status, presence of children living at home, income, education, home ownership and length of residence at the same location. Habibah and Govindasamy (2012) found that student's perceptions of natural disasters are influenced by their age, developmental abilities and experiences.

In short, from the public's perception, the responsible authorities could consider the right strategies to prevent natural hazards including landslides. It is essential to constitute the synergy of government, universities, local administrations, non-governmental organizations, private sector, general public and media with the aim of increasing awareness, knowledge and preparedness about natural disasters (Unaldi, 2008).

2.3 The roles of Teachers to Educate the Students on Environmental Disaster Including Landslides

Environmental issues including pollution, global climate change, and depletion of the world's natural resources, environmental issues threaten individuals, communities, and other living organisms on the planet (Bruni, Chance, & Schultz, 2012). Most of the environmental problems are caused by human beings who lack environmental knowledge and awareness. In this instance, teaching of environmental ethics is important as it can help to raise environmental knowledge and awareness especially among students (Wongchantra, Boujai, Sata, & Neungchalerm, 2008). Education is regarded as the best way to help the students to understand the environmental hazards including landslides. Environmental education is characterised as a process that prepares citizens to prevent and solve environmental problems (Day & Monroe, 2000).

Students need to be exposed to knowledge and awareness about landslides as well as other natural disasters. This requires educators to play an important role in providing knowledge and information to students (Aini, Fakhru'l-Razi, Laily, & Jariah, 2003). It was proved that teacher's attitude, knowledge and behavior towards the environment affect the students' attitude in order to assess their preparedness in guiding and sharing the young generation to adopt a sustainable lifestyle (Summers, 2000; Aini, Fakhru'l-Razi, Laily, & Jariah, 2003).

According to Kato, Nishida and Numaguchi (2014), there are five effective ways to enhance students' abilities in dealing with natural disasters. These include by giving students realistic simulation experiences, repeated drills, a variety of experiences, experience listening to emergency broadcasts and related instructions and use of visual materials.

Relationship between teacher and students is essential to develop trust and a sense of belonging for *Orang Asli* students and therefore consequent engagement in their education (Burgess & Berwick, 2009). In this regard, teachers are considered as the most influential in educating students to preserve the environment (Norizan, 2010).

Teachers need to equip themselves with relevant knowledge, good attitude and lifestyle in order to ensure successful implementation of landslide or environmental education to students. In an earlier study conducted by Habibah and Govindasamy (2012), it was revealed that more than 20 percent of teachers were lacked of landslides knowledge and below 50 percents of the teachers had average knowledge of the issue. There are various ways that can be used to equip teachers with necessary knowledge and skills including through in service –training programmes to give emphasis on environmental aspects; encourage involvement of teachers in environmental related activities or co-curriculum at the school; establish linkage between the school and corporations or organizations with environmental interest; and organize talks, seminars and visits (Aini, Fakhru'l-Razi, Laily, & Jariah, 2003).

At present, there is no specific subject in the school curriculum about risk mitigation and disaster preparedness. But students are able to learn about the environment in History, Geography and Science subjects (Habibah & Govindasamy, 2012). Most of these subjects however emphasise only on the development of knowledge aspects related to the definition and the cause of natural disasters such as landslides, soil erosion, earthquake and volcanic eruption (Karnawati & Pramumijoyo, 2008).

Thus, teachers should find out other alternatives to educate students on the importance of preserving and conserving the environment and natural disasters.

Karnawati and Pramumijoyo (2004) suggested that educational institution should provide an attractive method for teaching and learning of geohazard mitigation and preparedness. Practical exercises for emergency responses need to be adapted in the existing curriculum. Knowledge of geohazard can also be integrated in the Geography, Sciences, Language or Religion syllabuses (Karnawati & Pramumijoyo, 2008). Global Precipitation Measurement Mission suggested that teachers should engage students with hands on project such as landslide mini lab experiment and expose them with short video of landslide real tragedy. From these activities, students will have the opportunity to learn and monitor the causes of landslide hazard. It is also important to note that, in teaching orang asli students, teacher's relationship with students is important. According to Alberta Education, they are several effective approaches that can be implemented to attract the attention of aboriginal students in any issues especially natural disasters such as using variety of approaches and learning materials. The effective approaches can be used for the same purpose which is to educate students of orang asli about landslide and other environmental problems.

3.0 Methodology

This study was conducted using qualitative approach. Data was obtained through focus group interviews which were conducted in April 2014 at Sekolah Kebangsaan RPS Banun in Gerik, Perak. The school was one of the *orang asli* public schools in the country and some of its students have experienced landslide tragedy before.

Twelve teachers participated in this study; seven males and five females. The researcher sent an invitation letter to the school and requested the Principal to nominate suitable teachers to become research participants. Data was collected in three parts. In the first part, each participant was given a set of semi-structured questionnaire to perceive their general knowledge about landslide. In the second part, they were exposed to a landslide video. The eight minutes length video aims to give information on landslide. In the last part, the participants were divided into two groups that consisted of seven and eight members respectively. Each group was provided with a set of questions to be discussed among members.

The main questions to be answered in each group were; 'List down some of the natural disasters that have occurred in Malaysia?', 'How often do you get involved in activities that related to the environment?', 'What is your role as a teacher in addressing environmental issues such as landslide to the students?', 'According to the video, how do you find the video in terms of content and presentation?', 'In your opinion, is the video effective in order to educate students on landslides?', 'Who do you think the right person to play the role in delivering information regarding environmental problems like landslide to the society?' The main goal of the focus group interview was to discover the teachers' perception on the most suitable strategy to educate students about landslides. The interviews were audio recorded and transcribed verbatim.

4.0 Results and Discussion

The findings of this study are discussed based on the research objectives.

4.1 To discover Teachers General Knowledge, Understanding, and Attitude or Practice Towards Landslides Issues

The findings of this study reveal that majority of the respondents agreed that floods, landslides, and tsunami are among the natural disasters that occur in Malaysia. The respondents' knowledge on landslides was tested based on the landslides signs. The focus group interview session proved that all the participating teachers have general knowledge about landslides. They understand the nature of landslide hazards and how it occurs. However, majority of them only know basic signs of landslides and only two out of 12 respondents answered all the 10 landslide signs correctly.

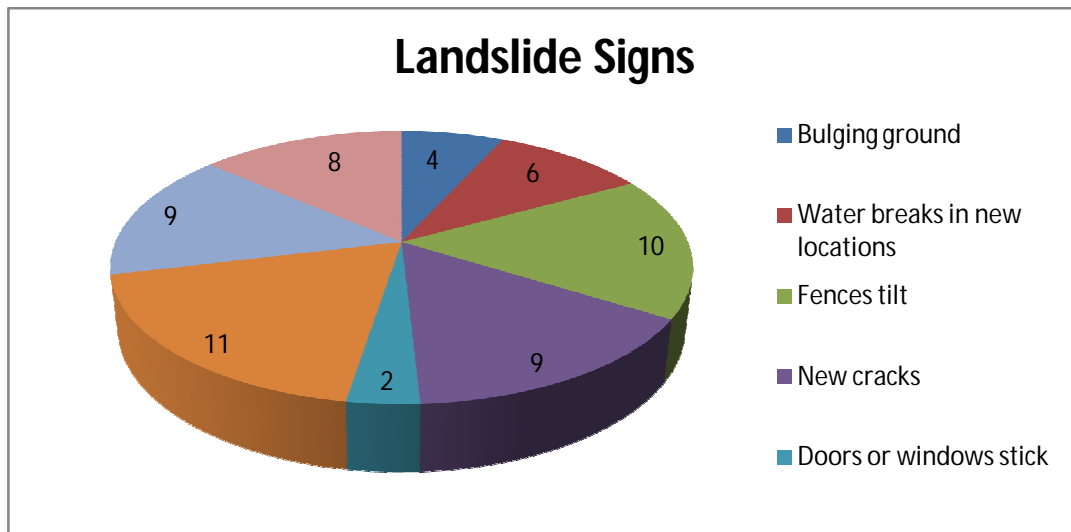


Figure 2: Landslide Signs

The discussion also highlighted respondents' knowledge on landslide cases that have happened in Malaysia. Majority of the respondents are aware of the Highland Tower, Pos Dipang and Bukit Antarabangsa tragedy that occurred in 1993, 1996 and 2008. But, they are unsure if the other locations such as Ulu Langat, Petaling Jaya, Pulau pinang are prone to landslide.

The findings also reveal that, most of the teachers are showing positive attitude towards landslide issues. They are keen to know more about landslide and how to prevent it from happening. Besides, most of the teachers are frequently involved in activities that relate to environmental preservation such as recycling, trees planting, and organizing environmental campaign. All of them also agree to take action by informing the responsible authorities if they witness any landslide occurrence. From this study, it can be concluded that the participating teachers are practicing good attitude towards the environment.

4.2 To Investigate Teachers' Perception and Awareness in Landslides Hazards in Relation to Experience of Teaching

It is important to understand teachers' perception on landslides issues. The findings indicate that all the teachers believe that landslides are hazardous natural disaster that could harm lives and properties. Most of them do not agree with the statements that landslides in Malaysia are not critical and there is no need to control development on hill slopes. They think that mass media are useful tools that provide information regarding landslides. Five respondents (R11, R9, R7, R5, and R3) indicated that, besides mass media, they also get information about landslides from non-government organisations (NGO). Four other respondents stated that landslides awareness campaigns are essential as they can learn more through these events. Most of the respondents said that they prefer newspaper (printed media), television (electronic media) and Facebook (social media), as media tools to get information about landslides.

This study found that none of the teachers has landslides experience. Though, they are aware that landslide could happen to anybody regardless of their social status, especially those who stay at landslide prone areas. This study also found that some of the participating teachers are not aware of specific factors that contribute to landslides occurrence. Among the factors that can cause landslides include river erosion, ocean waves, vibration from traffic and machinery and earthworks which altering the shape of the slopes. Human activities such as construction, agriculture and logging may also cause landslides. Most of the teachers agree that landslides are caused by natural phenomena such as heavy raining, and human activities especially hill slope developments. It is important for the teachers to seek the most effective strategy to educate the students on landslides and safety.

4.3 To Indicate the Most Effective Strategies to Deliver Information Regarding Landslides to the Students

The findings of this study show that most of the respondents prefer using video as their teaching material. Video is a useful tool that can be used to disseminate landslides information. They believe that video is a more effective teaching and learning tool compared to other tools such as flyers or posters. The teachers added, video is more suitable especially for orang asli students because some of them are illiterate, so it provides a good platform for them to learn.

During the focus group session, the teachers brainstormed some ideas to improve the video so that it suits for educational purposes. Many of them suggested that the video include elements like footages of landslide incidents, its impacts, and how it can occur to provide easy understanding for students.

Most of the teachers also believe that animation is an effective way to capture students' attention. According to the fourth respondent (R4), the video must be attractive and provide detailed information. We should add on some graphic animation to show how landslides occur. It is also important to make the video more interesting and not to depend much on still images. However, two respondents (R2 and R5) disagree with the idea to convert the video into animation. In their opinion, animation is not suitable because landslides tragedy is something serious. They suggested that, the video must provide serious and traumatic sound to indicate that landslides are tragic, and everybody should be aware of the consequences of such hazards. All the teachers agree to discuss about the landslides issue with their students if they are provided with the educational video.

All respondents believe that both public and private sectors should be responsible for slope safety and they should take their roles seriously. The findings of this study indicate that most of the teachers are not aware of the responsible authorities to be referred to in case if they encounter landslides events.

Some of the teachers think that it is beneficial to use television as a medium to publicise and educate the public on landslides. However, younger teachers have different perspective as they find that social media such as *Facebook*, *Twitter*, *Instagram*, *Wechat*, *Whatsapp* are more important in disseminating messages to the public. Though, they believe that in the society of *Orang asli*, television and word of mouth are the most effective ways to spread the news.

In conclusion, this study shows that most of the teachers of *Sekolah Kebangsaan RPS Banun* possess general knowledge about landslides and are aware of other environmental issues in Malaysia. They also believe that landslides are natural disasters that can harm lives and properties. Most of them think that video is a useful learning tool for students in schools. They also think that television is an effective tool to reach the mass.

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