

Early Childhood Education: Study on Occupational Safety and Health Knowledge among Elementary School Students

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Abstract. The high number of work accidents in Indonesia requires handling efforts from various indirect aspects; one of the efforts is safety and health education in the student curriculum. A preliminary study of this research aims at identifying the hazard and risk factors in the schools, analyzing the level of student knowledge about safety and health, and observing information from the school about safety and health implementation at school. This research was a descriptive quantitative approach at Siman Elementary School, Ponorogo. The subjects of this research were students in grades IV, V and VI using purposive sampling. Based on the results of the hazard identification, it could be summed up that the highest danger came from the use of chalk, liquid petroleum gas, and bacterial contamination in school canteens and slippery floors. The average of student knowledge about safety and health is at a moderate level (81%). The lowest student knowledge (medium level) in the safety aspect is about safety riding (73%) and the health aspect is about bullying (79%). Siman Elementary School Ponorogo has not been committed to the implementation of safety and health education as there is no command from the provincial level leaders as well as the ministries. The curriculum should include safety and health aspect to familiarize its behavior in early childhood.

Keywords: Safety and Health Education, Knowledge, Elementary School, Students.

1. Background

The source of hazard can occur anywhere. In addition to industry, the hazard source also exists at school where early childhood always activities every day. For young children, school is a second home with teachers as their parents. Students do learning are playing at school. Playing activities both inside and outside the class are natural and an important part of the physical, cognitive, social and emotional development of students (Clements, Lester and Russel, Little H, and Eager D, 2010). Beside *getting* benefits, playing activities also has potential hazards that can threaten student safety. According to Gill, Lester and Russell, Madge and Barker in

Little H and Eager D (2010) the limitation of the child's understanding make it difficult for them to recognize the source of hazards around them.

The issue of child safety is an important thing for parents to do because the results of a journal study in Poland obtained accident data at schools for about 3,274 incidents per 293,000 students each year (Sosnowska and Kostka, 2003). Based on data from the UKS Bernardus 02 Semarang school, in the period of 2015 to January 2016, there were 9 students injured as a result of falling during activities such as walking, running after bathing, exercising and also running in the school areas Widowati and Hutasoit (2017). Besides, the danger of fire in schools can save the lives of children and all people in the school environment, such as the recent fires caused by poor understanding and awareness of the sources of fire hazards. One reason is unsafe connections such as improper use of electricity that involves short-circuiting.

According to the European Commission in Garcia A.B. (2010), the strategy for implementing occupational safety and health is to strengthen a culture of prevention through integration in education, training, and risk management activities. According to Social Security Administration Body, Indonesia had 106,383 cases of work accidents that occurred in 2014. Likewise, there were 110,285 cases, in 2016 101,367 cases in 2016, 123,041 work accident cases were also reported in 2017 (Hasanuddin, 2018).

Therefore, schools must pay attention to the elements of the safety and health of their students to implement school safety management. School is one of the effective media to instill culture from generation to the next generation (Einstein in Walker S.R., 2014). According to Butcher & Manning in Meksamoot, et al (2013) a general definition of a safe school provided a positive environment for students, teachers, staff, and others who are in school without the risks and dangers in order to achieve the educational mission of the school.

In addition, there are professional teachers in the school who have the qualifications to be able to provide lifelong skills to the students. In this study, the authors concern elementary school students. Elementary school students are a period where they experience growth and development very rapidly so that the age of primary school is said to be a golden period throughout human life. Therefore it is hoped that through the instilling of safety education early on, it will be able to instill safe and healthy behaviors from an early age that will continue to be carried out as long as they live.

Based on observations at the Siman Elementary School Ponorogo, there were various sources of hazards and a fairly high level of safety risk, including schools located right on the side of the road, one of the playgrounds student outside the school fence, school stairs causing students to fall, perforated floor and also slippery floor found in the toilet area. Another source of the hazard was liquid petroleum gas in the school canteen. The results of interviews with students showed that they did not recognize the safety signs that have been posted on the school wall. With the early safety education implemented, it will increase knowledge related to safety and health in the school environment. Therefore, it is hoped that all students can implement safety behavior and recognize the existing signs.

Thus, the authors are interested in exploring the level of student knowledge about occupational safety and health aspects in elementary schools. This is a basic of the author's research roadmap to the implementation of occupational safety and health aspects in an

integrated curriculum. This is expected to be an effort to familiarize awareness of risks, so they can anticipate the number of work accidents in the future.

According to Garcia A.B (2010), instilling a culture of occupational safety and health in the workforce in the future, it is necessary to integrate the occupational safety and health aspects in the school curriculum. When the occupational safety and health culture is applied early, they can begin to be aware of the risks around them and learn to make their environment safe, secure and healthy.

2. Method

This research was a descriptive quantitative approach. It was conducted at Siman Elementary School, Ponorogo. The subjects of this research were students in grades IV, V, and VI using purposive sampling. According to Santi and Sugiyanto (2015), the children began to learn important information, anticipate, conclude and integrate two things at the age of 7-11 years.

The instruments used were a questionnaire together with interview sheets for the headmaster and all staff. The questionnaire was a closed question and it consisted of 31 items for safety and 24 items for health. The data were analyzed using Microsoft Excel. The categories of occupational safety and health knowledge were (1) Good: 85-100%, (2) Moderate: 70-84%, and (3) Low: <70%.

3. Result

The following figure is the result of the hazard and risk identification at Siman Elementary School, Ponorogo which are divided into room and sanitarians.

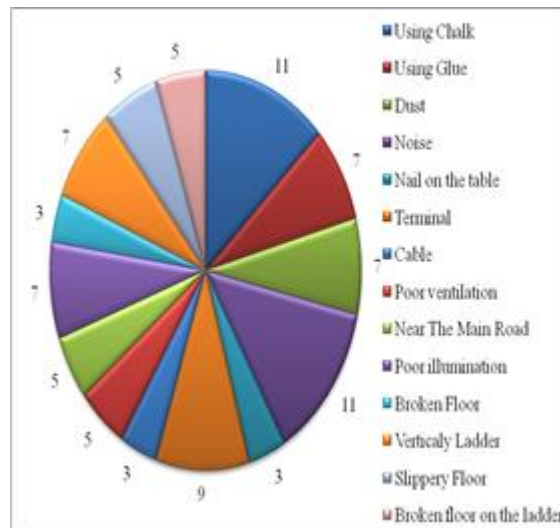


Figure 1: Hazard and risk identification in the rooms at Siman Elementary School, Ponorogo

Based on the picture above, it showed that the highest hazard and risk were in chalk and noise.

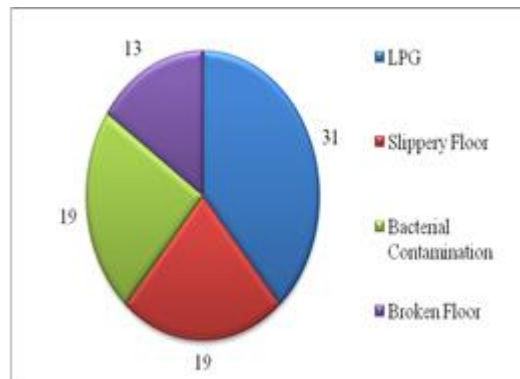


Figure 2: Hazard and Risk Identification in Sanitarian at Siman Elementary School, Ponorogo.

Based on the picture above, it appears that the highest hazard and risk were the use of liquid petroleum gas, bacterial contamination at the school canteen and slippery floors.

The following is the result of the level of safety and health knowledge in the school for each class:

Table 1: Answers in Research Subject about the Safety and Health Aspects.

Class	Aspects		Average	Category
	Safety	Health		
Grade IV	81%	75%	78%	Moderate
Grade V	79%	81%	80%	Moderate
Grade VI	71%	85%	85%	Moderate
Average	77%	80,33%	81%	Moderate

Based on table 1, it can be concluded that safety and health knowledge in grade IV was a moderate category (78%), grade V was in a moderate category (76%) and grade VI was in a moderate category (78%). The distribution of each component was as follows.

Table 2: Distribution of Student's Knowledge Level on Safety and Health in Each Component.

Component	Class (Grade)			Average	Level
	IV	V	VI		
Safety					
General Safety	90%	87%	86%	88%	Good

Safety School	85%	75%	92%	84%	Moderate
Safety Riding	69%	72%	79%	73%	Moderate
The Strangers	90%	89%	100%	93%	Good
Health					
General Health	74%	81%	88%	81%	Moderate
Bullying	77%	76%	83%	79%	Moderate
Health School	84%	96%	96%	92%	Good

4. Discussion

Based on the results of the identified hazards and risks, the highest danger was the use of chalk, noise, liquid petroleum gas, bacterial contamination in school canteens, and slippery floors. Schools needed to make efforts to control the hazards and risks identified as preventive measures against unwanted incidents. According to Ugwulashi (2017), educational facilities should become a strategy for school safety management

The student knowledge average about safety and health at Siman Elementary School, Ponorogo was at a moderate level (81%). If it was seen from each component of the safety questions, student's knowledge of safety riding (73%) was the lowest one. In line with the recapitulation of answer from the questionnaire, it was known that the lowest score was on number 30 about the safety sign in driving as in the graph below:

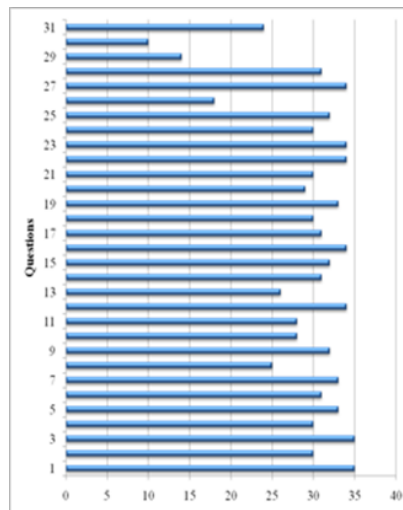


Figure 3: Distribution of Student Answers to the Safety Aspect

According to the Royal Society for the Prevention of Accidents (2012), young people had the highest risk of accidents is in school-age at 10-24 years. This risk substantially reduced after the age of 14 years. The most significant type of injury up to the age of 14 years was fall. The

most significant number of falls for those aged under 14 years occurred at school. The injury rates of particular sport and leisure activities many of which were run in schools and colleges.

According to Widjajanti in Santi and Sugiyanto (2015) the causes of traffic accidents, especially those that occurred in children were (1) child's instincts were still impulsive and inconclusive, (2) they had poor experience, (3) they were physically smaller than adults, (4) they were supervised by their parents, (5) Some studies stated that children's behavior was lacking in perception, concentration, attention, memory, physical and emotional control, lack of knowledge and understanding of traffic procedures, and lack of in behavior patterns in the traffic environment. Therefore, driving safety education needed to be instilled in children from an early age or as early as possible to form a mindset and character accustomed to discipline in traffic (Santi and Sugiyanto, 2015).

In the health aspect, the student knowledge about bullying was still at a moderate level which reached 79%. This was in line with the recapitulation of the answer from the questionnaire. It was known that the student got the lowest score on question number 3 about relationships with classmates in the bullying aspect as in the graph below:

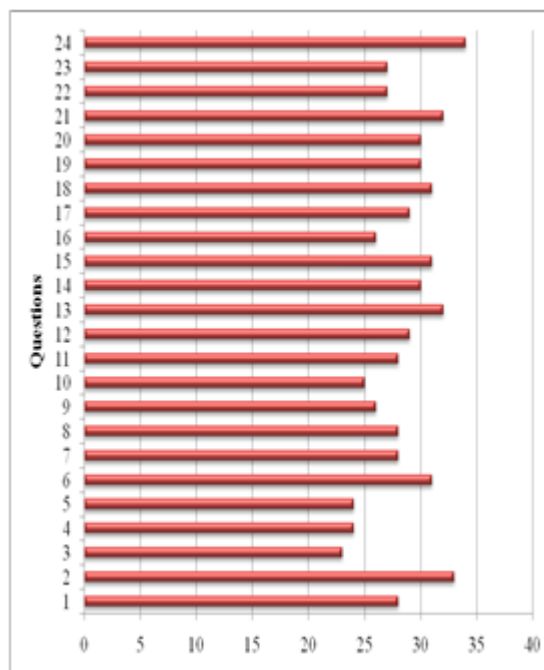


Figure 4: Distribution of Student Answers on Health Aspects

According to Jan A (2015), those who were directly or indirectly involved in bullying were at increased risk of misbehavior, abuse, and absenteeism from school. Bullying among students caused academic performance, mental health problems, and physical injuries. Therefore knowledge about bullying had to be instilled in students from an early age.

The results of interviews with the headmaster, teachers, and students showed the results of achieving the implementation of safety and health in the school based on the European Agency for Safety and Health at Work in Meksamoot, et al (2013). The results are as follows:

Table 3: Current Position of Siman Elementary School on Safety and Healthy Implementation in Schools

Components of Management Leading to a Safe and Healthy School	Siman Elementary School Ponorogo Current Position
Appropriate and dynamic legislation to facilitate the appropriate management of safety	There were no written regulations about school safety management. The safety activities have been carried out incidentally by external.
Effective management of communication among all safety stakeholders	There was no specific program. Nowadays, there are only appeals about the drop off children to avoid the main road.
A safe environment achieved through effective school policy, which was designed, understood and enforced by school leaders	Schools had made a safe and healthy environment even though there was no school safety policy. However, there are still sources of hazard and risk.
Curriculum management to include safety as part of lifelong learning	not available

Based on the analysis of the table above it can be seen that Siman Elementary School Ponorogo did not have a commit regarding the implementation of safety and health education in schools even though students' knowledge of general safety and health was moderate.

Based on the results of interviews with the students, they have understood that some aspects of safety and health were from personal observations and sometimes there was direction from parents and teachers. The top management of an organization had a strong commitment to implementing occupational safety and health as outlined in a policy to be detailed in a systematic work program (ISO 45001, 2018).

Therefore, according to Meksamoot, et al (2018) the Provincial Education Office must have a systematic program for elementary schools by considering the seven management barriers to effective safety in the school: (1) Finance, (2) Time, (3) Leadership, (4) Communication, (5) Stakeholder Understanding, (6) Culture and (7) Commitment. Besides, occupational safety and health aspects also needed to be integrated into the curriculum. According to Widowati and Hutasoit (2017), instructional media is part of the supporting factors of learning in safety education. Based on the results of research conducted by Kusuma, et al (2018) providing socialization about fires and their handling as well as incorporating the material into the subjects became a means of succeeding in increasing student understanding. The Royal Society for the Prevention of Accidents (2012) also stated that the key to implementing a culture of safety and health in students was integrating safety education and risk within the curriculum.

According to Walda and Ballesteros in Kusumaningtias, et al (2016), children in the elementary school were a golden age throughout human life. The knowledge obtained would be embedded and attached in children's memories, so it could be implemented in their habit of life. According to Walda R, Laurie et al in Kusumaningtias, et al, (2016), and Widowati, Hutasoit (2017) schools became the main target of prevention programs and controlled the safety and health hazards together with teachers as the role models.

According to Bassok et al in Wong, Bassok, and Doromal (2018), the majority of parents strongly agreed with early childhood education in the family to instill the risks and hazards faced by their children outside the home. Thus, parents were the most important instilling safety education early. Likewise, parents, the stakeholder, and the school committee could encourage the effective implementation of safety education in schools (Widowati and Hutasoit, 2017).

Through the application of safety education from an early age, it can reduce the number of accidents and make it easier to achieve independence of the occupational safety and health culture as planned by the Ministry of Manpower and Transmigration of the Republic of Indonesia. Hofstede in Bieder (2018) revealed that the cultural inputs received early in life reside deeper in one's cultural core than the inputs received later on.

5. Conclusion

The highest hazard and risks that need to be controlled are the use of chalk, noise, liquid petroleum gas, bacterial contamination in the school canteen and slippery floors. The student's knowledge of safety and health is at a moderate level (81%). The lowest level of student safety knowledge is safety riding (73%) at a moderate level and bullying (79%) for healthy knowledge. Schools have not implemented integrated safety and health education in learning. Students gain knowledge based on their observations and some directions from parents and teachers.

Schools together with stakeholders should issue policies and systematic programs related to safety and health education. It is recommended that the provincial education office, the ministry of education as well as the ministry of manpower and transmigration of the Republic of Indonesia integrate safety and health in the learning subjects of elementary school from an early age to shape the safety and health behaviors.

References

- [1] Bieder C, Laroche H, Journe B, Gilbert C. 2018. *Safety Cultures, Safety Models*. Springer: France.
- [2] Garcia A.B. 2010. Education Health and Safety in Schools. *The International Journal Of Learning*. Vol. 17.
- [3] Hasanuddin, D. (2018) "DICARI: Formula Jitu Penurun Angka Kecelakaan Kerja," *Majalah Isafety*, hal. 14. Tersedia pada: <http://ir.obihiro.ac.jp/dspace/handle/10322/3933>.
- [4] International Standardization for Organissation 45000 Tahun 2018 tentang Occupational Safety and Health Management System.
- [5] Jan A. 2015. Bullying in Elementary Schools: Its Causes and Effects on Students. *Journal of Education and Practice*. Vol. 6 (19): 43-56.
- [6] Kusuma A.D.P, Rahmadani N, Annabila A, Prastiwi T, Ashari M, L. 2018. Sosialisasi Kebakaran Dan Penangannya Pada Siswa Sekolah Dasar Di Surabaya Guna Meningkatkan Self-Readiness Terhadap bencana Kebakaran. *Jurnal Cakrawala Maritim*. Vol. 1 (1): 21-24.
- [7] Little H, Eager D. 2010. Risk, Challenge and Safety: Implications for Play Quality and Playground Design. *European Early Childhood Education Research Journal*. Vol. 18 (4): 497-513.
- [8] Meksamoot K, Surephong P, Yodmongkol P, Srichai P. 2013. Managing School Safety in Thailand: Assessing the Implications and Potential of a Lean Thinking Framework. *SAGE*: 1-17.
- [9] Santi M. Y, Sugiyanto G. Karakteristik Kecelakaan Lalu Lintas dan Pendidikan Keselamatan Berlalulintas Sejak Usia Dini: Studi Kasus di Kabupaten Purbalingga. *Jurnal Ilmiah Semesta Teknik*. Vol. 18 (1): 65-75.
- [10] Sukmaningtias A, Syafiq A, Fikawati S, Lestari F. 2011. Fire Safety Assessment at Five Elementary Schools in DKI Jakarta. *Jurnal Kesehatan Masyarakat Nasional*. Vol. 6 (1): 23-28.
- [11] Sosnowska, S & Kostka, T. 2003. *Epidemiology of School Accidents During A six School-Year Period in One Region in Poland*. *European Journal of Epidemiology*, 977-982
- [12] The Royal Society for The Prevention of Accidents. 2012. *Managing Safety in Schools and Colleges*. Birmingham.
- [13] Ugwulashi C, S. 2017. Educational Facilities: Appropriate Strategy for School Safety Management in Rivers State, Nigeria. *International Journal of Academic Research in Progressive Education and Development*. Vol 6 (2): 11-19.
- [14] Walker S.R. 2014. Perceptions of School Safety among Students in a Rural Oklahoma School. *Tulsa Research Journal*. Vol. 6 (1).
- [15] Widowati E, Hutasoit F, E. 2017. Gambaran Penerapan Safety Education (Pendidikan Keselamatan) Di Sekolah Dasar. *Jurnal of Health Education*. Vol. 2 (1): 66-72.
- [16] Wong, V.C. Bassok D, Doromal, J.B. 2018. *How safe are early childhood education programs? New evidence from the universe of all licensed centers in North Carolina*. University of Virginia.