

Basic Safety Training Influence toward Safety Behavior of Society Empowerment Program Participants

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Abstract: According to KNKT database on November, 30th 2016, there are increasing ship accidents from year to year. There were fifteen accidents in 2016 and eleven accidents in 2011. There are many factors contributing to accidents and one of them is human error. Human error factor contributes 41% as the cause of an accident while technical factor contributes 59%. Therefore, by giving and increasing knowledge, understanding, proficiency and also skill through safety exercises to ship's crew, it could increase safety behavior and minimize human error. This study aimed to observe the basic safety training impact toward safety behavior of society empowerment program participants. It was seen from the different safety behavior before and after the training held in Surabaya Merchant Marine polytechnic. The method used was quantitative approach with pre-experimental kind with one-group pretest posttest design. The research respondents were the society empowerment program participants who never joined the safety training. Based on the data analysis, there was significant difference of safety behavior before and after following the basic safety training. The pretest result of safety behavior obtained 91.0857 whereas the posttest result was 93.47. The basic safety training can be used to realize zero-accident by minimizing the human error.

Keywords: Safety behavior, Basic Safety Training

1. Introduction

Transportation is the vein of Indonesian civil economy. The development and increasing transportation activity in this country is influenced by economy and custom social activity. The increasing activity of transportation nationally also brings impact on increasing incident and accident of transportation.

Indonesia as an archipelago country is very rely on sea transportation to ease citizens on taking a trip to inter-island. The sea transportation usage cannot be apart from the accident risks. Based on KNKT database on 30 November 2016, there were increasing ship's accidents from year to year. There were fifteen accidents in 2016 and eleven accidents in 2011. The high accidents should be responsibility of all parties including government and citizens.

There are several main factors of accidents. One of them is human error. Based on *Tribunnews*, human error contributed 41% of accident while technical error contributed 59%. Therefore, by giving and increasing knowledge, understanding, proficiency and also skill through safety training to ship's crew can anticipate the accident risk and minimize human error as one of the sea accident factors. Geller (2001) in *The Psychology of Safety Handbook* stated that there were three factors contributing to accident such as *environment factor*, *person factor* and *behavior factor*. Those three factors are called *safety triads* (<http://www.migasindonesia.com>, 7 November 2005)

Cooper's opinion was also supported by research result from NSC (*National Safety Council*). The NSC result showed that 88% work accident is because of unsafe behavior, 10% unsafe condition and 2% unknown cause. Unsafe behavior is behavior that could cause an accident such as unused

personal protective equipment, unpermitted work and inability to use the equipment as stated. Nowadays, Ministry of Transportation has free society empowerment training program for rural or less fortunate area that wants to be a prospective sailor. Free training is held to create qualified human resources in sea transportation. The training is one of superior programs in Ministry of Transportation to answer the high need of crews in transportation sector.

Surabaya Merchant Marine polytechnic is as an education institution under Ministry of Transportation that educates prospective sailors through the basic training. It is a program that gives knowledge, understanding, proficiency, and also skill that needed to be existed if the risks appeared. The program also introduces safety equipment, response to dangerous situation, and also risk handling as operational procedure standards. The given safety training is expected to increase participant safety behavior. The safety behavior based on APA dictionary of psychology is an undertaken behavior to prevent and reduce feared catastrophes.

2. Literature Review

2.1 Safety Behavior Aspects

Borman and Motowidlo's (Neal and Griffin 2002) divided safety behaviors into two aspects, those are:

- Safety Compliance:** Safety Compliance is an individual activity that needs to be undertaken in work place. It encircles work procedure and safety protection equipment usage.
- Safety Participation:** Safety participation contributes not only to personal safety but also to supportive safety environment. This behavior encircles a few activities, such as volunteer of safety activity, co-worker assistance related to safety and joined meeting issues.

2.2 Impact Factors on Safety Behavior

According to Neal and Griffin (2004), there were two factors of safety behavior as follow:

- a) The factors that are originally from individual such as commitment, individual differences (accuracy), personality such as permanent character or having tendency to be unlucky.
- b) Work environment such as safety and organizational factor (supervision and work structure).

2.3 Basic Safety Training

Safety training is an activity to gain knowledge about work accident danger, new skill, and educate the workers to face the dangerous potential therefore the workers could have safety behavior and care towards the safety condition at work. They could also retain the safety behavior whether in the office or other environments.

Safety training based on Law, Chan and Pun (2006) is a safety knowledge given to all employees thus they can work safely. Lin and Mills (2001) found that the explicit policy and safety training plays an important role on decreasing the work's accidents. The effective safety research would facilitate employer to strengthen the possessive feeling to a company; hence they would be more responsible on the safety work place.

International convention about training standards, certification and watch keeping seafarer (STCW) requires that seafarers have to be given socialization standards and basis safety training. Those consist of military slangs, first aid, personal life resilience technique, personal safety and social responsibility. This training meant to ensure the sailor awareness about the ship's worker danger. It could also speed up their response in an urgent condition. The basic safety training materials are:

- a) Personal survival technique
It is a personal life resilience technique consists of the symbols identification and safety equipment usage on the ship such as lifeboat, lifebuoy, thermal protective aids, life raft and etc.
- b) Fire prevention and Fire fighting
It is a fire prevention action and how to extinguish the fire on the ship. The teaching material includes the understanding about the fire's types, causes, equipment usage, fire extinguish and resilience.
- c) Personal Safety and Responsibility
It is knowledge about personal safety and obligated duties that had to be done by ships' crew when there are accident and urgent condition. Every ship crew has their own duties.
- d) Elementary First Aid.
It is knowledge about first aid technique when there is an accident before getting the medical aid. Usually, the materials cover first aid basic technique, victim handling, accident identification and human body organ systems.

Basic safety training materials based on the Surabaya Merchant Marine Polytechnic training modul are:

- a) Identification, safety and life resilience
- b) Urgent condition

- c) Evacuation
- d) Lifeboat
- e) Personal safety equipment
- f) Sea personal safety and helicopter equipment
- g) Lifeboat engineer and equipment
- h) Radio equipment
- i) Visual and slogan sign equipment
- j) Best way to use survival craft

2.4 The Goals and Functions of Safety Training

Based on Stattt (2000), the aims and functions of training were;

- 1) Productivity increasing
- 2) Quality increasing
- 3) Quantity increasing
- 4) Spirit and work moral increasing
- 5) Health and work safety increasing
- 6) A chance to be professional worker
- 7) A chance to self-development

2.5 Society Empowerment Program

Society empowerment program is a free program given by government in rural areas and poor communities. It is aimed at people who want to be a seafarer candidate. Based on Transportation training and Education board, the prerequisites are:

- 1) Age is not less than 16 years old
- 2) Having national identity card or others (Family Registers or neighborhood head note letters)
- 3) Health certificate from doctor

2.6 The Influence of Basic Safety Training to Safety Behavior

Safety training is a training to gain work dangerous accident knowledge and new skills to face the danger potential. Hence, the workers have a safe and care performance. In order to help all instructors to effectively and measurably teaching, it needs to create a precise instruction and evaluation. According to Bloom in Kurnia (2011), knowledge could be divided into three fields. Those are cognitive, affective and psychomotor. Each field has their own hierarchy. Therefore the ideal safety training is not only at cognitive field but also the rest fields therefore the workers could do an effective performance without seeing the manual book or other safety rules. It could also create new knowledge that definitely would be useful for them and other organizations as the previous learning result. Reading and understanding the safety procedure is part of cognitive field. The development on safety training in this field could be done on evaluation stage. Employees could compare and choose which one is the most effective procedure. They could also give critics in terms of this issue. Employees could show the independent and commitment in undertaking the work safety procedure daily.

2.7 Hypothesis

The research's hypothesis in this research was the influence of basic safety training towards the safety behavior owned by society empowerment program participants.

3. Research Method

This research used experiential method to test the basic safety training impact. This was undertaken to know the influence of action or treatment given by researcher (Latipun, 2011). The design pattern was one-group pretest posttest design. Basic safety training impact would be seen through different scores, which are pretest (O1) and posttest (O2). Every participant would be the subject research to get pre-test and post-test. The research design as follows:



Note: O1 = pretest score
 X = treatment
 O2 = Posttest score

3.1 Research Variables

This research differentiates two kinds of variables. Those are safety training as fee variable and safety behavior as tied variable.

3.2 Subject

This research's subjects were participants of society empowerment program training consisted of 196 persons. 175 persons never join the safety training and 21 persons ever join the safety training. The sampling method used was purposive sampling. The criterion used was participants who never joined the safety training. Therefore the sample size was 175 persons.

3.3 Data Collection

Data collection was done using questionnaire. Test instrument used was pretest and posttest as a safety behavior scale. This statement scale consisted of favorable statement and unfavorable statement. Those were chosen based on content quality and statistical analysis toward the statement in revealing group attitude. Score given on confirmed scale was as same as standard likert scale (Mustafa, 2009). Below is the scoring liket scale guide:

Table 1: Scores Category

Statements	Scores			
	STS	TS	S	SS
Favorable	1	2	3	4
Unfavorable	4	3	2	1

Safety behavior scale Blueprint

N	Indicator		Favorable	Unfavorable
1	Safety Compliance	Personal Survive Technique	1,23	11,29
		Fire Prevention & Fire Fighting	15.22	9.17
		Personal safety and Responsibility	3.6	212
		Elementary first aid	1920	8.25
2	Safety Participant	Personal Survive Technique	4.32	16.21
		Fire Prevention & Fire Fighting	10.28	15.24
		Personal safety & Responsibility	5.14	7.30
		Elementary first aid	26.31	16.27

Safety attitude scale consisted of 64 statements. Items in safety behavior were designed base on safety behavior aspects and basic safety training material.

4. Results

4.1 Reliability and Validity Test

Validity measurement was done by Pearson Product Moment correlation between grain score and scale score. Whereas, the scale reliability used was coefficient estimation limitation Alpha Cronbach (α) > 0.60

The validation test result of safety behavior scale obtained that from 64 items tested, there was 1 invalid item. That was item 15 with r coefficient of 0.060 smaller than critical r that was 0.148 ($0.060 < 0.148$) and significant score of 0.428 bigger than 0.05 ($0.428 > 0.05$), whereas other 63 items had bigger r coefficient than critical r and smaller probability scores of $\alpha=5\%$. It meant there were significant coefficient between each indicators and total scores.

Valid scale items are used, whereas the invalid are unused. Instrument reliability test was undertaken to validate statement item. Instrument was stated unreliable if it did not reach 0.6. The reliability test result on table 4.3 showed that each reliability coefficient score was >0.6. Therefore, the used instrument has high potential to be consistent.

4.2 Hypothesis Test

Table 2: T-test Trial Result

Basic safety training on safety behavior increasing	Pretest	Post-test	t-counting	t-sale	Sig	Conclusion
Each members	91.0875	93.47	-3,501	-1.960	0.001	There are differences

Source: Process data, 2017

From the table above, it is known that post-test and pre-test obtained t-count of -3.501, whereas t was 1.960 with significant score of 0.0001 smaller than $\alpha=0.05$ (0.001, 0.05). This showed that there was different safety behavior to society empowerment program participants in Surabaya Merchant Marine Polytechnic after and before the basic safety training.

5. Discussion

Based on the analysis result, it showed that there were significant differences between safety behavior before and after the basic safety training in Surabaya Merchant Marine Polytechnic. It showed the increasing safety behavior after the basic safety training. It means that basic safety training is effective. The material given to the participants were Personal survival technique, Fire Prevention and Fire Fighting, Personal Safety and Responsibility, and also Elementary First Aid.

Basic safety training could increase the knowledge and comprehension about safety awareness and also behavior of participants while the material which was delivered by

practice could increase proficiencies and skills to overcome risks and dangers. It is also increasing the prevention and handling problems on daily life. Safety behavior includes safety compliance and safety participation. It is expected that the workers are not only obey the procedure work standards and self-protection equipment, but also play an important role through creating a supportive environment which reminds and invites other persons to pay attention to safety factors, knowledge increasing and skills. The effort could be in the form of seminary, exercise and meeting relates to the issues.

After this program, it is also expected to implement basic safety on daily life such as increasing individual awareness and safety equipment usage such as helmet, jacket and gloves. It also includes reading, understanding and obeying the safety guidance; paying attention to safety signs and safety equipment, urgent stairs position and light fire rescue equipment position; knowing the unsaved risks; willing to advice or invite others to create a safe environment such as reminding companion not to smoke in prohibited area, to use helmet or decide to take simple safety handling.

Based on the analysis above, basic safety training could increase the safety behavior and awareness to do the work as the standards. Participants would understand the techniques and basic concepts in applying effective safety management procedure on daily life. The participants are also able to create save and conducive environment. Therefore, basic safety training is important to be joined by all society elements; therefore the accident causes can be prevented.

6. Conclusion

Based on the data analysis, there are significant differences on safety behavior before and after basic safety training. The pretest on safety behavior resulted 91.0857 while the posttest resulted 93.47. Thus, it means that basic safety training is able to significantly influence the safety behavior to create zero-accident through minimalizing the factors of human errors.

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