The Effect of Ship Familiarization Program on Education Satisfaction and Career Awareness of Maritime University Students

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ABSTRACT

The aim of this paper is to find out factors that influence positively to satisfaction of education and career awareness of maritime university students. Especially, Mokpo Maritime University has been carrying out a ship familiarization using two training ships since 2006 and students join the program from freshmen. In this paper, we set three hypotheses and made a questionnaire including variables for verification through literature study and interview with experts. We carried out a survey to students of Mokpo Maritime University who participated in SFP(Ship Familiarization Program) in 2014. Also we analyzed data by statistical method. As a result, we extracted 18 questions and categorized 5 factors that administration, contents, instructors, facilities, and education effects of SFP. We found out the relationship between factors for students' education satisfaction and career awareness such as onboard training at junior, job recruiting. We found out the key factors that facilities and education effects of SFP that is a influence on satisfaction of education and plans after graduation by statistical analysis.

Keywords: ship familiarization program, education satisfaction, career awareness

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1. Introduction

In recent, safety is becoming more and more important. Especially, maritime safety has become an important issue since Sewol Ferry Tragedy in 2014. To prevent a similar tragedy, various maritime safety experience programs have been carrying out. For example, Korea Coast Guard is conducting maritime safety education program such as Badaro camp to students of primary, middle and high school. Also, they are carrying out safety experience education to visitors of beach in summer season. There are a number of safety education programs for seafarers as well as these educations for general citizens.

Especially, Mokpo Maritime University is well known with high quality of maritime education institute. They have been conducting a ship familiarization program(SFP) in compliance with internal regulations for freshmen since 2006. However it has not been surveyed about contents, education level and students' satisfaction for SFP so far.

In previous study, there was the research to analyze the problems about the onboard training program(Kim., 2009). He suggested that extension of the period of onboard training, possession of training ship and increase of number for military service privileges to solve the problems of onboard training program. Also, he proposed two plus one education & onboard training system to increase of the effect onboard training on maritime high school(Kim., 2008). Lim and Sin analyzed the education system on the training ship and suggested improvements(Lim, Sin., 2013). Park carried out the evaluation for effectiveness of onboard training for trainees(Park., 2006). Cho and Kim analyzed the difference between satisfaction and dissatisfaction for cadets of engine department(Cho, Kim., 1998).

However, there is no study to analyze the education effect of SFP for freshmen of Mokpo Maritime University who have not fully knowledge about ship since 2006. In this paper, we carried out a survey "What is the important factor of the familiarization program to students for education satisfaction and plans after graduation of university ?"

2. The state of ship familiarization program

2.1 Outline of ship familiarization program

The SFP has been conducted to achieve practical education through studying of ship's function, particular performance for freshmen and sophomore of Mokpo Maritime University since 2006. In the recent 5 years, 2,153 students of whom 1,089 students are for deck cadet and 1,064 students are for engine cadet are completed the education course as shown Table 1.

Table 1. The number of students by taken of SFP

Year	Date	Total cadet	Deck cadet	Engine cadet
2010	2010.6.22~6.24	426	216	210
	2010.6.28~6.30			
2011	2011.6.23~6.26	418	210	208
	2011.6.26~6.29			
2012	2012.6.21~6.23	428	215	213
	2012.6.24~6.26			
	2012.6.25~6.27			
2013	2013.6.20~6.22	447	225	222
	2013.6.24~6.26			
2014	2015.2.23~2.25	434	223	211
	2015.2.25~2.27			
Total		2,153	1,089	1,064

2.2 Contents of ship familiarization program

The professors for SFP have educated practical knowledge to students during ship's navigation for a certain period of time. The training ships, Sae Nuri & Sae Yu Dal, have been utilized practical education through sailing in the coastal area. Students are encouraged the motivation of learning for nautical science or maritime engineering through a SFP and also can be prepared onboard training in junior. The Table 2 shows education contents for a SFP.

Table 2. An example of education contents for a SFP

Classification	Deck department	Engineering department
Education contents	- Responsibility of duty officer - Role assignment - Exchange of duty(watchkeeping) - COLREG - Chart, Publication - Navigational Aids - Navigational equipment - Fixing of ship's position	- Structure of ship - M/E, control equipment - Propulsion system - Generator, Boiler - Purifier system - Heating exchange system - Cooling system

3. Model design

3.1 Setting of model and hypothesis

In this paper, we set up three hypotheses to verify the relationship between satisfaction of SFP and plans after graduation. Therefore, we assigned SFP as an independent variable and education satisfaction and plans after graduation of students as dependent variable in the Figure 1.

Figure 1. A model for study
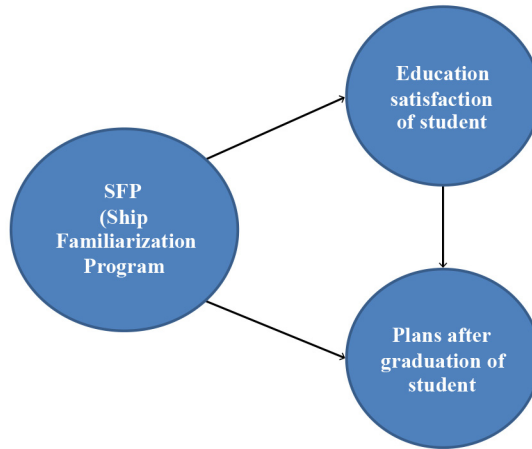
Hypothesis 1(H1) : SFP will influence positive effectiveness to overall education satisfaction.

Hypothesis 2(H2) : SFP will influence positive effectiveness to onboard training and plans after graduation.

Hypothesis 3(H3) : Education satisfaction of participating students to SFP will positive effectiveness to career awareness such as onboard training, plans after graduation.

3.2 Configuration of questionnaire

In this paper, we made a questionnaire in the Table 3 through previous studies and brainstorming with experts to verify the hypothesis. The composition of questionnaire is 27 questions in which 5 questions for administration of education, 3 questions for professors and assistant and facilities respectively, and so on. We measured the value using a Likert scale about questions.

Table 3. A composition of questionnaire

Factors	Number of questions	Contents of question	Measurement
Education administration	5	The time of education, period of education, number of trainees, promotion of education	Likert scale
Education contents	3	Level of education, contents, methodology	
Instructor for education	3	Skill of education of professor, preparation	
Facilities	3	Proper place for education, facility, equipment and resource for education	
Education effect	4	Standard of understanding, clearness of education objectives, attitude of onboard training, career choice	
Education satisfaction	4	Administration system for education	
Career awareness (onboard training, plans after graduation)	6	Influence of onboard training and job, understanding of contents, coincidence of major, achievement of education objectives, benefit of education	
Population statistics	4	Sex, grade, major, 2nd major	Nominal scale

3.3 Analysis of model

We carried out a survey to verify the reliability and validity of factors. In this paper, the subject of investigation are 217 students embarked on training ship Sae Yu Dal who are freshmen and sophomores on the three departments of Mokpo Maritime University. The period of survey is from 23rd to 27th February 2015 and we used 217 answer sheets for data analysis. In this paper, we used SPSS statistics program for data analysis such as frequency analysis, factor analysis, t-test, and multiple regression.

4. Empirical analysis

4.1 Characteristic of sample

We conducted a frequency analysis for characteristic of the subject of investigation. As a result, it's consisted of 194 male students(89.4%), 23 female students(10.6%) and occupied 211 freshmen. According to a department, occupied 117 deck cadet(53.9%) and 100 engine cadet(46.1%) in the Table 4.

Table 4. The result of demographic characteristics

Classification	Contents	Persons	Percentage(%)
sex	Male	194	89.4
	Female	23	10.6
Degree	Freshmen	211	97.2
	Sophomores	6	2.8
Department	Deck	117	53.9
	Engine	100	46.1

4.2 Analysis of reliability and validity

In this paper, we carried out an exploratory factor analysis to verify the reliability and validity among SFP, satisfaction of education and career awareness. Especially, we measured the value of Cronbach's alpha for verification of reliability. The reliability means variance of measured value when checked value about same concept repeatedly, and the standard without an error(Cha., 2001). According to the result of factor analysis, the averaged variance extracted(AVE) of factors are higher than value of 0.4. Therefore, we can consider that the measurement factors are divided well.

4.2.1 Factor analysis of SFP

We made a questionnaire with 18 factors such as administration, contents, instructors, facilities, and so on. And we conducted an extraordinary factor analysis

with a Varimax method. When a KMO(Kaiser-Meyer-Olkin) coefficient is close to 1.0 or higher than 0.5, the factor analysis is reasonable(Chae., 2008).

In this paper, the correlation has meaning between factors obtained a KMO coefficient(0.747) and p value(0.000) by analysis. And a reliability coefficient of 18 factors is higher than 0.5 in the Table 5. We use a Cronbach's alpha value for analysis of reliability. As a result, the value of administration of education is 0.720, contents(0.677), instructors(0.617), facilities(0.621), effects of education(0.685). Therefore, the reliability of defined factors was verified.

Table 5. The result of factor analysis for SFP

Factors	Variable of factors	Cronbach alpha value
Administration of education	1. The season of SFP is reasonable	0.720
	2. The total time of SFP is reasonable	
	3. The composition of group for education is reasonable	
	4. The trainee number of each group is reasonable	
	5. The SFP is well promoted to student in advance	
Contents of education	1. The contents of SFP is proper level to me	0.677
	2. The composition of contents is well arranged	
	3. The execution of contents for SFP is well carried out by plan	
Instructors (Professor and assistant)	1. The teaching ability of professor and assistant is excellent	0.617
	2. The practical teaching skill of professor and assistant is reasonable	
	3. The preparation of professor and assistant for SFP is excellent	
Facilities	1. The place for SFP is reasonable	0.621
	2. The facility and equipment for SFP is well fitted	
	3. The resource and training equipment for SFP is well fitted	
Effects of education	1. My basic knowledge and understanding of ship is elevated by SFP	0.685
	2. My objective of seaman is elevated by SFP	
	3. The time of familiarization education is reasonable	
	4. SFP gave help to me for ship's officer(engineer) or career awareness	

KMO=0.747, Bartlett sphericity test : 198.391, p=0.000

4.4.2 Factor analysis of satisfaction and career awareness

We conducted an extraordinary factor analysis including principle component analysis and Varimax methodology to check the satisfaction and career awareness by SFP. In the satisfaction of education, the correlation between factors has meaningful by a KMO coefficient(0.824) and p value(0.000). In addition, we checked a Cronbach alpha value, and got 0.868, thus the reliability was verified. According to a result of factor analysis for career awareness, a KMO coefficient is 0.815 and p value is 0.000 with correlation, and a Cronbach alpha value is 0.745. So, the reliability was verified.

Table 6. The result of factor analysis for satisfaction and career awareness of SFP

Factors	Variable of factors	Cronbach alpha value
Satisfaction of education	1.Overall, satisfied to SFP	0.868
	2.The administration system of SFP is satisfied	
	3.Satisfied to professor and assistant for SFP	
	KMO=0.824, Bartlett sphericity test : 447.371, p=0.000	
Career awareness (onboard training, plans after graduation)	1.SFP will give help to me for onboard training and job recruiting in future	0.745
	2.I understood to contents of SFP	
	3.The contents of SFP is coincide with my major	
	4.The contents of SFP will give help to me for my major	
	5.I think to achieve the objective of SFP	
	KMO=0.815, Bartlett sphericity test : 412.670, p=0.000	

4.3 Hypothesis test

4.3.1 Hypothesis 1 test

Hypothesis 1(H1) is SFP will influence positive effectiveness to overall education satisfaction, and we carried out a multiple regression to verify proposed a hypothesis 1.

In this paper, we used the tolerance to investigate multicollinearity among variables in the Table 7. The tolerance that influence to satisfaction of education are in the range of 0.598 ~ 0.896, and the VIF value of independent variable is lower than 5.0. So there is no problem to multicollinearity and F value and significance level is 38.100 and 0.000 respectively. Therefore, we confirmed the statistical significance about regression model to verify a hypothesis 1. The significance independent variables are contents, instructors, facilities, effects of education with strong relationship.

Table 7. The verification result of hypothesis 1

	Independent variable	Dependent variable	Unstandardized coefficients		Standardized coefficients	t	Significance probability	Collinearity	
			B	Standard error	β			Tolerance	VIF
H1	Constant	Satisfaction of education	-.294	.324		-.906	.366		
	Administration		.036	.057	.033	.633	.528	.896	1.116
	Contents		.224	.071	.205	3.171	.002**	.598	1.673
	Instructors		.210	.076	.167	2.744	.007**	.673	1.485
	Facilities		.383	.062	.380	6.231	.000**	.670	1.492
	Effects of education		.177	.071	.133	2.476	.014*	.862	1.160

R square : 0.474, Adjusted R square : 0.462, F-value : 38.100, * p < 0.05, ** p < 0.001

4.3.2 Hypothesis 2 test

Hypothesis 2(H2) is SFP will influence positive effectiveness to onboard training and plans after graduation, and to verify a hypothesis 2, we used a multiple regression

method same as hypothesis 2. The tolerances appeared from 0.598 to 0.896 and all of the VIF are lower than 5.0. In addition, F value is 9.812 and significance level is 0.000, and we checked statistical significance of hypothesis 2. Especially, it's analyzed the independent variables with strong relationship are facility, effect of education in Table 8.

Table 8. The verification result of hypothesis 2

	Independent variable	Dependent variable	Unstandardized coefficients		Standardized coefficients	t	Significance probability	Collinearity	
			B	Standard error	β			Tolerance	VIF
H2	Constant	Satisfaction of education	1.063	.302		3.517	.001		
	Administration		.080	.503	.100	1.524	.129	.896	1.116
	Contents		.058	.066	.071	.885	.377	.598	1.673
	Instructors		-.039	.071	-.042	-.553	.581	.673	1.485
	Facilities		.163	.057	.216	2.848	.005**	.670	1.492
	Effects of education		.250	.067	.251	3.757	.000**	.862	1.160

R square : 0.189, Adjusted R square : 0.169, F-value : 9.812, * p < 0.05, ** p < 0.001

4.3.3 Hypothesis 3 test

Hypothesis 3(H3) is education satisfaction of students who participated in SFP will positive effectiveness to career awareness such as onboard training and plans after graduation. We carried out a simple regression to verify a hypothesis 3. Also, we checked F value as 30.533 and significance level was 0.000 to test the statistical significance. As a result of analysis, there is statistical significance between satisfaction of SFP and career awareness such as onboard-training, plans after graduation.

Table 9. The verification result of hypothesis 3

	Independent variable	Dependent variable	Unstandardized coefficients		Standardized coefficients	t	Significance probability	Collinearity	
			B	Standard error	β			Tolerance	VIF
H3	Constant	onboard training and plans after graduation	1.811	.176		10.649	.000**		
	Satisfaction of education		.265	.048	.353	5.526	.000**	1.000	1.000

R square : 0.0124, Adjusted R square : 0.120, F-value : 30.533, * p < 0.05, ** p < 0.001

4.3.4 Summary of hypothesis test

In this paper, we carried out hypothesis test by using a regression method, and found out hypothesis with statistical significance as shown Table 10.

Table 10. The Summary of adopted hypothesis

Classification	Adopted hypothesis
H1	The education contents of SFP will influence to positive effectiveness of satisfaction of education.
	The instructor of SFP will influence to positive effectiveness of satisfaction of education.
	The facility of SFP will influence to positive effectiveness of satisfaction of education.
	The effect of SFP will influence to positive effectiveness of satisfaction of education.
H2	The facility of SFP will influence to positive effectiveness of career awareness (onboard training and plans after graduation)
	The effect of SFP will influence to positive effectiveness of career awareness (onboard training and plans after graduation)
H3	The satisfaction of SFP will influence to positive effectiveness of career awareness (onboard training and plans after graduation)

5. Conclusion

The aim of this paper is to find out factors that influence positive effectiveness to satisfaction of education and career awareness such as onboard training and plans after graduation through questionnaire survey for students. Ultimately, we want to improve the SFP through this study. We set up three hypotheses and made a questionnaire with variables for verification through literature study and interview with experts. We carried out a survey to students who were participated in SFP in 2014 and analyzed data by statistical method.

Firstly, we extracted 18 questions and categorized 5 factors that administration, contents, instructors, facilities and effects of SFP, and got higher Cronbach alpha than 0.6 through a reliability analysis.

Secondly, according to a result of hypothesis1 test, we found out those contents, instructors, facilities and effects of SFP have closely connected with satisfaction of education. In case of hypothesis2, facilities and effects of SFP have been related with career awareness such as onboard training, plans after graduation. But, three factors which administration, contents and instructors has not been an influence on career awareness. So, the improvement of administration, practical contents and instructors' teaching method for enhanced SFP are required. In hypothesis 3, the satisfaction of education and career awareness have been related strongly. Therefore, it is need to be managed a SFP consistently for onboard training and job recruiting.

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