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Factor Analysis of Student Social Skills of Co-curricular Participants at Polytechnic

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ABSTRACT

The objective of this research is to know how big the impact of co-curricular program to social skill. Samples are 59 the students of Politeknik Manufaktur Bandung who follow the activities of co-curricular field of Arts, Special Skills and Sports. Attributes of Social Skills include: Co-operation, Assertiveness, Empathy, and Self-Control. The questionnaire technique using the scale of assessment of Linkert model. The data were analyzed by using factor analysis to find out which factors were dominant and how the ranking variables. The results showed that students of co-curricular participants could form social skills by 66%, while the social skill formation by the co-curricular in the respective fields: art-62.44%, special skills-59.22%, and sports-81, 78%, the rest in the stimulus by other factors that have not been revealed. The co-curricular field of sports contributes the most dominant in the formation of students' social skills compared to other fields. There is a variation in the sequence of dominant factors of social skills variables for each field of co-curricular activity. The dominant of the social skills of each co-curricular programs differs. In terms of art skill, the dominant factor is self-control. In relation to specific technical skill, empathy dominates the factor. Meanwhile in sport skill, the factor is dominated by assertiveness.

1. Introduction

Politeknik Manufaktur Bandung (Polman Bandung) conceptually, has a mission of education program that prepares human resources that can compete in global market, by developing education, technique and production in manufacturing. Polman Bandung hinted that the co-curricular programmed in the academic schedule can shape the social skills of students. According to Ismat and Saleem (2008), Co and Extracurricular activities play a major role in making the broader and most experimental educational system. These activities enhance their competitive spirit, teamwork, team learning, social responsibility and creativity, thereby fostering a thorough development of student personalities.

Social skills are important parts of the ability of human life. Without social skills, human beings can not interact with others in their environment because social skills are needed in society to speak up, give consideration deeply, faster response, complete answers, express evidence that can convince others, not easily give up, demand mutual relationships, and more open in expressing themselves (Abate and Milan, 1985). Co-curricular activities are defined as learning experiences, undertakings, and/or programs outside the classroom that complement those inside the classroom Vos, et. al. (2017). While the distinction between co-curricular and extracurricular activities may be ambiguous, there are some key distinguishing factors between the two. The Glossary of education reform states that generally speaking, co-curricular activities are an extension of the formal learning experiences in a course or academic program, while extracurricular activities may be offered or coordinated by a school, but may not be explicitly connected to academic learning.

Co-curricular activities are voluntary, not part of the college curriculum, are not assessed and do not get credit. In other words, they are activities undertaken inside or outside the school or college building by establishing organized clubs, associations and organizations. Co-curricular activities also include student clubs, sports associations, and cultural activity organizations (Indroasyoko and Sujana, 2017).

The assertion that student participation in the co-curricular program can shape its social skills is a major concern of this research. This research will also explain the social skills profile of students caused by the co-curricular program in general. The purpose of this research is to know how big the impact of co-curricular program either partially or simultaneously to social skill. The results of the study is hoped to be utilized by education managers to recognize and understand the characteristics/social skills profile owned by students from their participation in co-curricular activities on campus.

The values of social skills consist of four dimensions: cooperation, assertiveness, empathy and self-control. These four dimensions were developed by Gresham, et. al. (2011), becoming a measuring tool for testing social skills. The first dimension, cooperation includes behaviors such as helping people, sharing things, obeying the rules, and fulfilling people's requests. The second dimension is the assertiveness of initiative behavior and responding to the actions of others. The third dimension, empathy is a behavior that shows concern and appreciation of the feelings and views of others. And finally the fourth dimension, self-control, that is the behaviors that arise during conflict situations, including appropriate action when facing the things that interfere, or compromise on something.

2. Methods

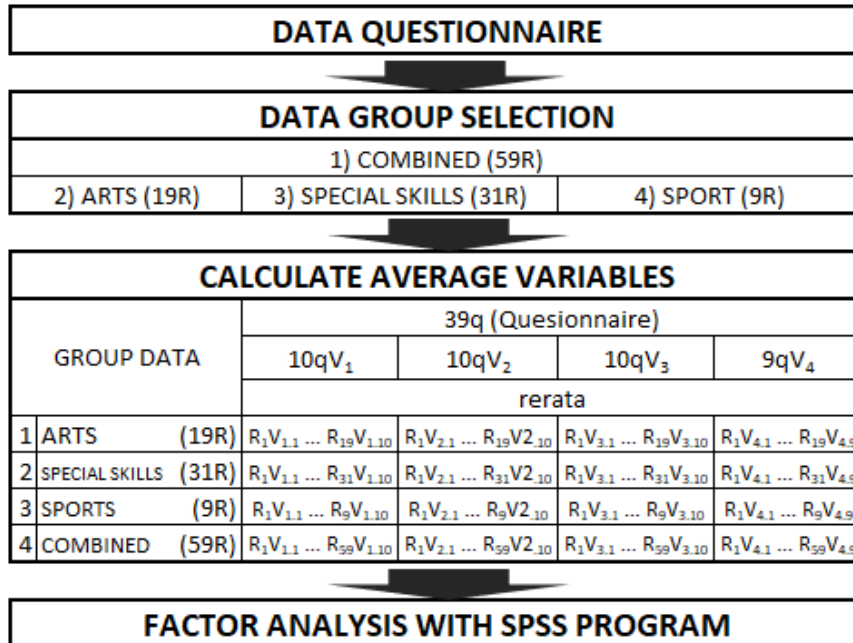
The target population is the students of POLMAN Bandung who follow the co-curricular activities in arts, special skills and sport. Given that the large population in research objects, the sample is taken as follows:

Table 1. Composition of respondents

FIELD OF CO-CURRICULAR ACTIVITIES					
ARTS		SPECIAL SKILLS		SPORTS	
GROUP NAME ^{*)}	RESPONDENT	GROUP NAME ^{*)}	RESPONDENT	GROUP NAME ^{*)}	RESPONDENT
LSS (Sundanese Art)	6	OTOMOTIF (Technique)	5	FUTSAL	5
MANUSIA (Music Band)	7	CNC (Technique)	3	BASKETBALL	4
SBM (Minang Art)	6	HI-C (English Club)	10		
		KMI (Islam Religion)	8		
		PERS (Campus Press)	5		
SUB TOTAL	19	SUB TOTAL	31	SUB TOTAL	9
TOTAL RESPONDENT = 59 PEOPLE / STUDENTS					
*) STUDENT ACTIVITY UNITS					

The Social Skills Attributes were adapted from the Social Skill Improvement System Rating Scale (SSIS-RS) developed by Gresham, et. al. (2011) to measure the validity and reliability tested student's skill index, including the following factors: cooperation, assertiveness, empathy, and self-control.

The data taken are primary data and done by questionnaire technique, that is the circulation of questions about social skills to the variables that are explored by using the scale of assessment of Linkert model, with the range of consecutive assessment: 0=never, 1=seldom, 2=sometimes, 3=frequently, and 4=always. Type of questionnaire used is self administrated questionnaire is a questionnaire that which is filled by the subject of the study ie students. Before the data is processed with the SPSS application, the program is processed according to the stages as described in Figure 1.



R=respondent; q=question; V=variabel

V₁=var.cooperation; V₂=var.assirtiveness; V₃=var.empaty; V₄=var.self control

Figure 1. Data Processing Stage

Factor analysis is a multivariate statistical technique used to reduce and summarize all dependent and interdependent variables. The corresponding relationship between one variable with another is to be tested to identify its dimensions or factors. The explained that factor analysis is useful to know which factors are superior or dominant from some variables to be selected. It can also distinguish priority variables that are ranked based on the results of the analysis.

Factor analysis procedure (Muhammad, et. al., 2018): formulate the problem, construct the correlation matrix, determine the number of factors, rotate factors, interpret factors, select surrogate variables, determine model fit.

3. Result and Discussion

a. Assessing decent variable

From the output of Statistic program, it is obtained the following results:

- 1) *KMO and Bartlett's test*. Preliminary analysis is done by looking at KMO-MSA (Kaiser Meyer Olkin - Measure of Sampling Adequacy), to determine whether or not to continue the process of factor analysis. Factor analysis process continues if KMO-MSA value > 0.5 and significant < 0.05. The output results 0.684, and they are significant for the Art data field group. With the same stages using the statistic program, KMO-MSA values were obtained and significant for other data groups (special skill 0.682; sports 0.69; combined 0.75). All KMO-MSA values above 0.5 are significantl below 0.05 then variables and samples are eligible for further analysis.

- 2) *Anti image correlation*.

Criteria for MSA numbers is above 0,5 which means that variables can still be predicted for further analysis. From anti image correlation data, there is no variable value 0.5. This means that those variables are not extracted and can follow the next process. Table 2 is an example of anti image correlation data (see data encoded 'a') results from art data group.

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Tabel 2. Anti image matrices

		Kerjasama	Ketegasan	Empati	Pengendalian Diri
Anti-image Covariance	Kerjasama	,612	-,121	-,008	-,170
	Ketegasan	-,121	,692	,089	-,176
	Empati	-,008	,089	,496	-,256
	Pengendalian Diri	-,170	-,176	-,256	,337
Anti-image Correlation	Kerjasama	♦ ,807 ^a	-,186	-,014	-,374
	Ketegasan	-,186	♦ ,737 ^a	,151	-,364
	Empati	-,014	,151	♦ ,640 ^a	-,627
	Pengendalian Diri	-,374	-,364	-,627	♦ ,628 ^a

a. Measures of Sampling Adequacy(MSA)

b. Factoring dan Rotasi

1) *Total variance explained.*

According to Table 3 and 4. total variance explained, the four variables analyzed is actually grouped into only one factor, i.e. eigenvalues indicating a number greater than one (2.497). So there is only one dominant factor formed. Factor loadings is the amount of correlation between each variable. Figures under 0.5 correlation indicate a weak correlation indication while above 0.5 indicates strong correlation. In table 3 for the field of art the which value is 2.497. The same process with the statistic program is done for k-special, sport and combined fields, obtained values as in table 4. The values are all (2.497; 2.369; 3.271 and 2.648) > 0.5, which means each variable is strongly correlated with each other.

Table 3. Arts

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2,497	62,435	62,435	2,497	62,435	62,435
2	,756	18,893	81,328			
3	,521	13,014	94,341			
4	,226	5,659	100,000			

Extraction Method: Principal Component Analysis.

Table 4. Special Skills, Sports & Combined

Group	Extraction Sums of Squared Loadings		
	Total	% of Variance	Cummulatiave %
K-Khusus	2,369	59,219	59,219
Olahraga	3,271	81,781	81,781
Gabungan	2,648	66,194	66,194

2) *Rotated component matrix.*

From the data generated, there is no rotation process, due to the factor formed is only 1. Rotation stage would be done if only the factor formed is more than 1.

c. *Component Matrix*

From Table 5 it can be explained that the component formed is only 1 and the values in each variable either per field or merge on the componet column show the value above 0.5. This means that each variable is in the same dominant group and has a high correlation.

Tabel 5. Component matrix

	SENI	K-KHUSUS	OLAHRAGA	GABUNGAN
	Component	Component	Component	Component
	1	1	1	1
Kerjasama	0,782	0,734	0,931	0,803
Ketegasan	0,682	0,726	0,939	0,782
Empati	0,768	0,876	0,912	0,869
Pengendalian Diri	0,911	0,732	0,831	0,798

d. Determining the Factor Labels

From Table 3 and 4 in the 'extraction sums of squared loadings' column cumulative% column, it can be summarized in Figure 2 below:

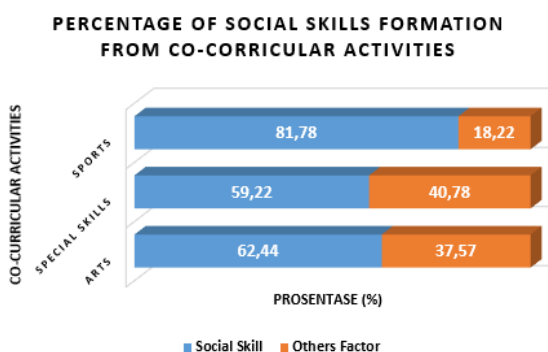


Figure 2. Percentage of Social Skills Formation From Co-Curricular Activities

Figure 2 shows that the formation of social skills by co-curricular fields of:

- 1) Art, amounting 62.44%, while 37.57% is stimulated by other factors that have not been revealed,
- 2) Special skills (K-Special), gaining 59.22%, while 40.78% is stimulated by other factors that have not been revealed, and
- 3) Sports, reaching 81.78%, while 18.22% is stimulated by other factors that have not been revealed.

From the description above, student participation in sport co-curricular activities contributes the most significant value in the formation of students' social skills compared to the art co-curricular activities as well as special skills.

While Figure 3 below shows the contribution of student participation in co-curricular can form social skills equal to 66.19% (rounded 66%) and the rest of 33.81% (rounded 34%) is stimulated by other factors that have not been revealed, both on other variables of social skills as well as other types of co-curricular activities.

PERCENTAGE FORMING SOCIAL SKILLS STUDENTS

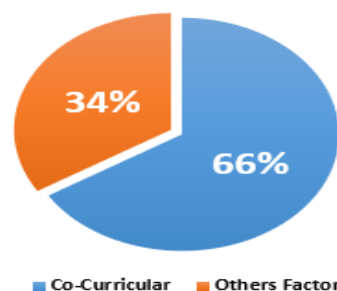


Figure 3. Percentage Forming Social Skills Students

e. Dominant Factors

The following Table 6 shows the sequence of dominant factors of the social skill variables for each field of co-curricular activity and their combined profile. From Table 6 it can be explained that the profile of the dominant sequence of social skills variables from participation in co-curricular activities is as follows:

- 1) Co-curricular of arts, the dominant factors of the variables are: self-control, cooperation, empathy, and assertiveness,
- 2) Co-curricular of special skill, the dominant factor of the variables respectively: empathy, cooperation, self-control, and assertiveness,
- 3) Co-curricular of sport, the dominant factor of its variables respectively: assertiveness, cooperation, empathy, and self-control

As for the combined column, it shows that students who follow co-curricular, its social skill formation is dominated by successive variables: empathy, cooperation, self-control, and assertiveness.

Table 6. Profile of Dominant Factors

DOMINANT SEQUENCE	SOCIAL SKILL VARIABLES			
	CO-CURRICULAR FIELD			COMBINED
	ARTS	SPECIAL SKILLS	SPORTS	
1	SELF CONTROL 0,911	EMPATY 0,876	ASSERTIVENESS 0,939	EMPATY 0,869
2	COOPERATION 0,782	COOPERATION 0,734	COOPERATION 0,931	COOPERATION 0,803
3	EMPATY 0,768	SELF CONTROL 0,732	EMPATY 0,912	SELF CONTROL 0,798
4	ASSERTIVENESS 0,682	ASSERTIVENESS 0,726	SELF CONTROL 0,831	ASSERTIVENESS 0,782

4. Conclusions

The contribution of student participation to the co-curricular can shape social skills by 66%. The formation of social skill by co-curricular art area is 62.44%, special skill area (k-special) is 59.22%, and sports field is 81.78%. Sports co-curricular contribute most dominant in the formation of students' social skills compared to other fields. The dominant factor of social skills variables with participation in co-curricular activities, respectively: empathy, cooperation, self-control, and assertiveness.

Dominant factors of social skills variables per field of co-curricular activities as follows:

- Co-curricular of art, respectively: self-control, cooperation, empathy, and assertiveness,
- Co-curricular of special skill, respectively: empathy, cooperation, self-control, and assertiveness,
- Co-curricular of sport, respectively: assertiveness, cooperation, empathy, and self-control

It is hoped that this research can be developed / refined, so that the research result can be utilized by education manager to recognize and understand the characteristics / social skill profile of the students from their participation in co-curricular activities on campus.

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