

*Full Length Research paper*

# A model on students' learning motive and satisfaction in the automobile practicum curriculum

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The purpose of this research was to examine the model between learning motive and learning satisfaction of the automobile practicum curriculum in the vocational high school. Moreover this research was to investigate the influence of learning motive and learning satisfaction from the practice score. In order to get the information above, a questionnaire was adopted. It was based on 28 vocational high schools and 1600 students as total are the samples for the questionnaire. The returned questionnaires were 1500 copies and the returned rate was 90%. There were 1400 valid questionnaires and the returned rate was 85%. AMOS and SPSS were adopted to analyze this data. They were included confirmatory factor analysis and one way ANOVA. According to the report, findings showed that there was significant coefficient between learning motive and learning satisfaction from the automobile practicum curriculum. There was significant difference between the practice score and learning motive. There was significant difference between the practice score and learning satisfaction. Finally, based on the above results, this research made suggestions to educational administration, schools and teachers for further research.

**Keywords:** Practicum curriculum, Learning motive, learning satisfaction.

## INTRODUCTION

### Research background and motivation

The 21<sup>st</sup> century will be a human-resource-oriented society—a society which is more organized and knowledgeable. Only when one obtains this orientation can he/she be more competitive. Ministry of Education (of Taiwan) has announced the new curriculum of vocational high school on March 31, 2008. The new curriculum—which was based on the version of 2006 and then revised with the ideas of holistic education and school based—would be practiced after the year 2009, promoting the characteristics of vocation education. After reviewing the main ideas of vocational education reform of the advanced countries, the new curriculum established 15 indicators of core competency, which reinforced the pupils' professional technical competency in order to achieve the goal of vocational education, "practical and practice."

The fundamental education of vocational school was to facilitate pupils' access to the professional vocational competency, train them to be equipped with basic work competency, and, in attempt to establish one's lifelong learning, continue their further study (Ministry of Education, 1998). Moreover, the primary source of the automobile production and maintenance was mainly derived from the department of automobiles of the vocational school, and thus, more importantly, pupils' learning of the department will convey enormous impact on the quality of human resources. The practicum curriculum was the core of the vocational school education, which is subject to the present industry. Pupils' learning motivation and learning satisfaction in the practicum curriculum would significantly influence their professional skills in the future. The learning motivation and learning satisfaction, if incorporated into the practicum curriculum of the department of automobiles, would develop a number of professional automobile producers and mechanists. Thus, the practicum curriculum of the department of automobiles in vocation school education is, among the vocational school areas, an important issue worthy of attentive investigation.

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## Research objectives

The objective of the research was to investigate the relationship between learning motivation and learning satisfaction in the practicum curriculum of the department of automobiles of the vocational school. The objectives demonstrate that:

1. To explore pupils' correlation between learning motivation and learning satisfaction in the practice curriculum of the department of automobiles of the vocational school.
2. To explore the difference of the pupil's score in the department of automobiles of the vocational school towards his/her learning motivation.
3. To explore the difference of the pupil's score in the department of automobiles of the vocational school towards his/her learning satisfaction.

## Research hypothesis

1. Pupil's learning motivation and learning satisfaction in the practice curriculum were not obviously related.
2. There was no significant difference between pupil's scores of the practicum curriculum and his/her learning motivation.
3. There was no significant difference between pupil's scores of the practicum curriculum and his/her learning satisfaction.

## Method and procedure

The method of the research was questionnaire as follow as appendix. First, researchers collected the literature concerning learning motivation and learning satisfaction at home and abroad. Second, questionnaire was adopted to investigate pupils' learning motivation and learning satisfaction of the Grade 11's practicum curriculum in the departments of automobiles in Taiwan. The procedures could be epitomized as below:

1. To collect and analyze the related literature, and then, choose the topic, framework, method, and the design of plan.
2. To review the questionnaire of the related literature, and then choose the research object for the pre-test questionnaire.
3. To statistically analyze the pre-testing questionnaire returned, and then develop the formal version of questionnaire.
4. To statistically analyze the questionnaire returned, and then write the research result, discovery and suggestion.

## Research scope and limit

Limited by time, human resource, and capital, the research scope and limit would be epitomized as below:  
The research scope would be divided into two:

### 1. Research object

The research aimed at exploring relations between learning motivation and learning satisfaction of the vocational school pupils in the department of automobiles in Taiwan and thus, the research object was the Grade-11 pupils in departments of automobiles national wide, excluding the pupils of supplementary vocational high school and the practical skill class (PSC).

### 2. Research limit

Due to the differences of curriculum among the schools, the accuracy and conclusion of the questionnaire would be slightly influenced.

## Literature review

### The status quo of the practicum curriculum of the department of automobiles

There are eight characteristics for the industrial vocational school education, in terms of the goal, curriculum, teaching material, teaching method, assessment, teachers, department, and equipment (Chen, 1985):

1. The educational goal should take social needs and personal development into concern.
2. The curriculum core will directly reflect the technical development.
3. The flexible teaching material is subject to the specialty of each place.
4. The diverse teaching methods are subject to the characteristics of each school.
5. Formative evaluation and summative evaluation are both equally important.
6. The teachers are also the professional technician, teaching expert and the trainer.
7. The recruitment of the department is strictly examined by human labor plan.
8. The equipment is expensive, which becomes a highly-cost investment.

Ministry of Education (Taiwan) has announced the new curriculum of vocational high school on March 31, 2008. The new curriculum—which was based on the

version of 2006 and then revised with the ideas of holistic education and school based concept—would be practiced after the year 2009, promoting the characteristics of vocation education. After reviewing the main ideas of vocational education reform of the advanced countries, the new curriculum established 15 indicators of core competency, which reinforces the pupils' professional technical competency in order to achieve the goal of vocational education, "practical and practice." The vocational school education was subject to reform by the environmental factors, such as the political, economical, social, scientific, and cultural development. The goal of the vocational school was to equip pupils' vocational competency, vocational morality, and the ability for further study, which would aim to facilitate their career development and the fundamental skills of a technician. However, the goal of the department of automobiles was to train pupils' skill competency on the automobile equipment, examination and maintenance (Ministry of Education, 1998). In order to cope with the social needs, the current practicum curriculum has reduced the practice hours from eight or nine classes to the current three or four hours. This would convey a certain influence on practicum curriculum teachers' teaching as well as pupils' learning.

### **Theory and researches on learning motivation**

Learning motivation is an important factor for a pupil's learning (Chang, 1993). The influence of learning motivation on learning was advocated by many theorists and researchers. Lee and Lin's research (2003) whose research object was based on the high school students indicates that the high school students' learning effect could be improved by the motivational regulation strategy to provide guidance and teaching. Thus, it is of prime importance to note that the learning motivation will determine whether the pupil is positive to learn or not. Moreover, if we may, in the period of schooling, make the pupils equipped with learning motivation, pupils will constantly and continuously learn and achieve the self-actualization, even though they have graduated from school. This is, as the research would note, the ultimate goal of education (Chen, 2001). As for the need of job market, pupils' learning motivation in the practicum curriculum should be strong; as for the need of further study, the practicum curriculum should be equally important for the professional subject examination. Based on the two aforementioned factors, pupils' learning motivation should be strong. However, the fact was not what it seems to be. Lai (2003) indicated that, in the students of post-secondary education in Kaohsiung and Pingtung areas, their learning motivation and learning strategy are relatively low and weak. Wu (2001) demonstrated that students of the department of auto-

mobiles bear negative views and attitude towards the whole learning environment and hence, their learning motivation was worthy of researches. To sum up, the learning motivation in the practicum curriculum of the department of automobiles in vocational schools was obviously weak. Thus, it is worthwhile to explore students' learning behavior in the practicum curriculum in order to provide a reference for the teachers of the department of automobiles in practice curriculum teaching and guidance.

### **Theory and researches on learning satisfaction**

"Satisfaction" is an ambiguous and abstract term and it is important to note the definition of this term:

According to Chang's Dictionary of Psychology (1992), "satisfaction" is: a mental status motivated by individual's physical and mental drives, and especially when the goal is behaviorally achieved. Or, it is a mental feeling when the need and desired is fulfilled. According to Webster (1986), it is "The act of satisfying, or the state of being satisfied; gratification of desire; contentment in possession and enjoyment; repose of mind resulting from compliance with its desires or demands". The Oxford English Dictionary (1989) defines this term as "The action of gratifying (an appetite or desire) to the full, or of contenting (a person) by the complete fulfillment of a desire or supply of a want; the fact of having been gratified to the full or of having one's desire fulfilled." Martin (1989) suggests that if one's expectation is equivalent to—or more than—the results achieved, and then he/she will feel "satisfied"; in other words, if the result fails, then he/she will feel "unsatisfied." Moreover, this assumption is embraced by Tough (1979), who argues that "satisfaction" is learner's perception or attitude towards his/her learning. The happy feelings or positive attitude suggests "satisfaction," while the unhappy feelings or negative attitude suggests "unsatisfaction".

To recap the aforementioned definitions, satisfaction suggests a mental feeling and perception, and when the feeling exceeds the expectation and anticipation, it can be called "satisfaction."

The learning satisfaction is subject to changes with the research topic, object, and related variations. Thus, the learning satisfaction of this research is primarily used to understand researchers' perspective on the satisfaction factors and then further induces the dimensions of the learning satisfaction.

### **METHODS**

The research aimed to probe the relationship between of automobiles-department students' learning motivation and learning satisfaction. After surveying the literature at home

**Table1.** Analysis of the learning motivation validity

Factors	Sphere	a	Sum a coefficient
Class values	0.86		0.88
Interests	0.90		
Expectation	0.89		
Self-efficacy	0.87		
Test-anxiety	0.87		

**Table2.** Analysis of the learning satisfaction validity

Factors	Sphere	a	Sum	a
Teacher's teaching	0.88		0.95	
Teaching content	0.88			
Peer relationship	0.82			
Learning	0.81			
Learning result	0.85			

and abroad, the research attempted to induce to formulate the theoretical framework and variations. Also, after reviewing the relevant questionnaire, the researchers designed a research tool to conduct the present investigation, called "Questionnaire for the Automobiles-Department Student's Learning Motivation and Learning Satisfaction." All the statistics collected and induced was offered in the conclusion and suggestion.

The research object was primarily the Grade-11 pupils in departments of automobiles national wide, excluding the pupils of supplementary vocational high school and the practical skill class (PSC). There were approximately 91 vocational schools installed with the department of automobiles in Taiwan; there were around 470 classes; there were about 17,900 students. Stratified random sampling was adopted to select the school samples: four vocational schools were sampled from the 37 schools in northern Taiwan, which occupies the 40% of the whole vocational schools; two vocational schools were sampled from the 34 schools in middle Taiwan, which occupies 17% of the whole vocational schools; one vocational school was sampled from the six schools in eastern and off-island Taiwan, which occupies 6% of the whole vocational schools. Thus, the total schools sampled were 10 schools. It was based on 1600 students as total were the samples for the questionnaire. The questionnaires returned were 1500 copies and the returned rate is 90%. There were 1400 valid questionnaires and the returned

rate was 85%. Then, SPSS adopted to analyze the data.

Cronbach  $\alpha$  coefficient is used to test the cohesion of the questionnaire, and then analyze  $\alpha$  coefficient. If  $\alpha$  coefficient goes higher, then it suggested that the validity of each question is higher. The result analyzed, as shown in table 1 and 2, suggested the positive validity between learning motivation and learning satisfaction in the questionnaire.

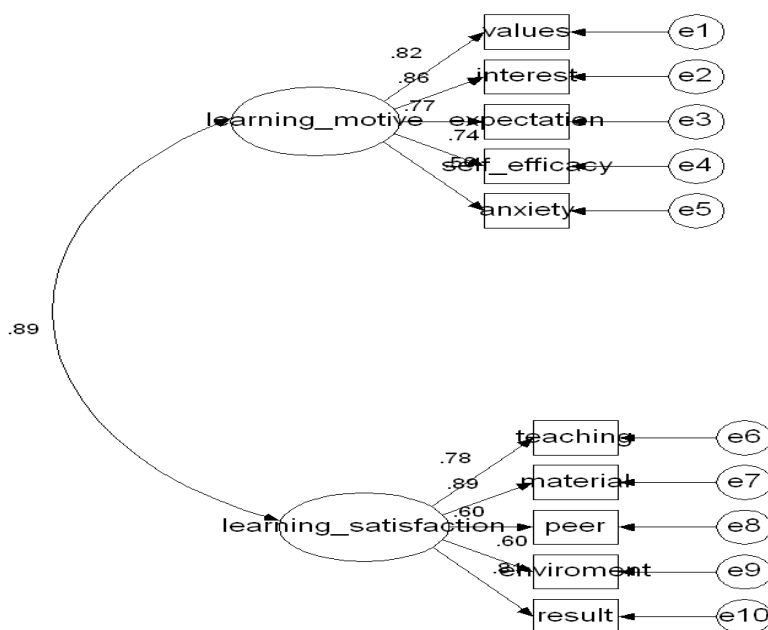
After the questionnaires were returned, the item of each question was put into numerical order and then analyzed as a data. Then, AMOS and SPSS (12.0) were used to analyze the data.

### Confirmatory factor analysis of the study modal

AMOS was used to do the confirmatory factor analysis (CFA), as shown in Figure 1.

There was significant positive correlation between learning motivation and learning satisfaction ( $r=0.89$ ); the compatibility in the structural modal could be indicated as below and shown in table 3:

1.  $\chi^2$  value reached the standard, and suitable with the modal.
2. SRMR value was .04, which was less than the standard .05; RMSEA value was .10, which almost reaches the .08 standard.
3. GFI value, NFI value, RFI value, IFI value, TLI value,



**Figure 1.** The CFA between learning motivation and learning satisfaction

**Table 3.** The model fit between learning motivation and learning satisfaction

Items	Standard values	Real values
X <sup>2</sup> value	The less the better	395.0
SRMR value	<.05	.04
RMSEA	<.08	.10
GFI value	>.90	.93
AGFI value	>.90	.89
NFI value	>.90	.94
RFI value	>.90	.92
IFI value	>.90	.94
TLI value	>.90	.92
CFI value	>.90	.94
PGFI value	>.50	.575
PNFI value	>.50	.71
PCFI value	>.50	.71
X <sup>2</sup> freedom	<2.0	1.8
CN value	>200	148
Error variance	positive	positive
Factor loading	.50-.95	.50-.89

- CFI value were more than .90 standard.
- AGFI value was .89, which was near .90 standards.
  - PGFI value, PNFI value, PCFI value were more than .50 standard.
  - X<sup>2</sup> degrees of freedom was 1.8, which was less than 2.0

- standard.
- The values of error variance were all positive.
  - Factor loading was more than .50 standard. As the above confirmatory factor analysis suggested, the research almost reached the need of the study modal.

**Table 4.** The variance analysis from learning motivation

item	Variance analysis						
	scores		S S	D F	M S	F	Post Hoc
values	(1)90 up	between n within all	110	4	283	19.	1,2> 3,4, 5
	(2)89~80		5	1395	14.	6	
	(3)79~70		151	1399	4	***	
	(4)69~60		56				
	(5)59down n		162 61				
interests	(1)90 up	between n within all	326	4	883	35.	1>2 >3,4, 5
	(2)89~80		7	1395	24	2	
	(3)79~70		230	1399		***	
	(4)69~60		68				
	(5)59 down		263 34				
expectation	(1)90 up	between n within all	208	4	521	30.	1,2> 3,4, 5
	(2)89~80		4	1395	16.	8	
	(3)79~70		168	1399	9	***	
	(4)69~60		19				
	(5)59 down		189 03				
efficiency	(1)90 up	between n within all	323	4	809	45.	1>2 >3,4, 5
	(2)89~80		7	1395	17.	3	
	(3)79~70		177	1399	9	***	
	(4)69~60		69				
	(5)59 down		210 06				
anxiety	(1)90 up	between n within all	158	4	39.	3.6	3,4> 1
	(2)89~80		109	1395	6	**	
	(3)79~70		96	1399	11.0		
	(4)69~60		1115				
	(5)59 down		4				
motive	(1)90 up	between n within all	332	4	827	36.	1,2> 3,4,5
	(2)89~80		42	1395	9	6	
	(3)79~70		225	1399	230	***	
	(4)69~60		433				
	(5)59 down		258 675				

N=1400 ; \*\*P&lt;0.01 ; \*\*\*P&lt;.001

**The variance analysis between students' scores in the practicum curriculum and the learning motivation**

The five spheres and the structural "learning motivation" (F=49.9; P<0.001) reached significant difference. The five

spheres of the learning motivation were "class values" (F=27.0; P<0.001), "interests" (F=46.3; P<0.001), "expectation" (F=30.4; P<0.001), "Self-efficacy" (F=63.1; P<0.001), and "test-anxiety" (F=15.4; P<0.01) as shown in table 4.

**Table 5.** The variance analysis from learning satisfaction

item		Variance analysis					
	scores		S S	D F	M S	F	Post Hoc
teaching	(1)90 up	betwe	124	8	310	12.4	1,2>3,4,5
	(2)89~80	en	3	139	25.0	***	
	(3)79~70	within	249	1			
	(4)69~60	all	46	139			
	(5)59~		261	9			
material	(1)90up	betwe	164	8	410	17.0	1,2>3,4,5
	(2)89~80	en	3	139	24.0	***	
	(3)79~70	within	240	1			
	(4)69~60	all	92	139			
	(5)59~		257	9			
peer	(1)90up	betwe	542	8	135	7.8	1,2,3,4>5
	(2)89~80	en	173	139	13.4	***	
	(3)79~70	within	52	1			
	(4)69~60	all	178	139			
	(5)59~		94	9			
environment	(1)90up	betwe	74	8	18.4	0.75	
	(2)89~80	en	242	139	24.4		
	(3)79~70	within	77	1			
	(4)69~60	all	243	139			
	(5)59~		51	9			
result	(1)90up	betwe	107	8	270	15.4	1,2>3,4,5
	(2)89~80	en	8	139	17.5	***	
	(3)79~70	within	174	1			
	(4)69~60	all	09	139			
	(5)59~		184	9			
satisfaction	(1)90up	betwe	184	8	460	13.3	1,2>3,4,5
	(2)89~80	en	05	139	1	***	
	(3)79~70	within	352	1	344		
	(4)69~60	all	448	139			
	(5)59~		342	9			
N=1400 ; ***P<.001							

### The variance analysis between students' scores in the practicum curriculum and the learning satisfaction

All items in the learning satisfaction do not have significant difference, except "learning environment." The other four items are "teacher's teaching" (F=21.5; P<0.001), "teaching content" (F=27.1; P<0.001), "peer relationship" (F=10.4; P<0.001), and "learning result" (F=15.1;

P<0.001). These four items and the whole "learning satisfaction" have significant difference (F=13.2; P<0.001) as shown in table 5.

### CONCLUSION

1. AMOS suggests that the learning motivation in auto-

mobiles-department students' practice curriculum is significantly related to their learning satisfaction, and the two dimensional factors reach the requirement of the questionnaire.

2. There is significant difference between practice scores and learning motivation

3. There is significant difference between practice scores and learning satisfaction, except for the factor of learning environment.

How to create a better and beneficial learning motivation and learning satisfaction has thus become a main topic that most will pursue. Therefore, this study expected to explore the practicum curriculum of the auto mechanics, and furthermore, wished to guide the actual situation. The students majors of the vocation high school are highly expected to have an effective learning and tackle any challenges from their automobile repairs when they devoted themselves into the workplace.

The research was primarily limited in the practicum curriculum and thus, the future researchers could discuss the related topic by incorporating the professional subjects. After the new version of curriculum guideline of the vocational school in 2010 is practiced, the future researchers could trace and explore whether the modification of curriculum guideline would convey any impact on the students' learning. This may provide a reference for the administrators in Ministry of Education.

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## Appendix

### SURVEY CONTENT

#### PART I. LEARNING MOTIVATION MEASUREMENT

①= very affirmative; ②=affirmative; ③=so far so good; ④=negative; ⑤=very negative

#### I. CURRICULUM VALUES

1. I think the skills we have acquired in practicum class are important. ----- ①②③④⑤
2. I like the content offered by the practicum class.----- ①②③④⑤
3. I think the practicum class is helpful for my future. ----- ①②③④⑤
4. I think the practicum class helps improve my professional skills. ----- ①②③④⑤
5. I think the practicum class is important for my further pursuit of education. - ①②③④⑤
6. I think that what we have acquired in the practicum curriculum can be applied to the everyday life. ①②③④⑤

#### II. LEARNING PURSUIT AND INTEREST

7. I always feel happy to attend the practicum class.----- ①②③④⑤
8. I am so happy to have acquired something useful in the practicum class. -- ①②③④⑤
9. I feel fascinated about the practicum class. ----- ①②③④⑤
10. I'm always looking forward to attending the practicum class. ----- ①②③④⑤
11. I'm always looking forward to each units offered in the practicum class. ①②③④⑤
12. I'm getting more confident to the programs of the practicum class. ----- ①②③④⑤
13. I cannot only improve my skills in the practicum class, but also acquire more updated knowledge. ①②③④⑤

#### III. EXPECTATION ON SUCCESS

14. I expect that I can achieve the criterion expected from the teacher.----- ①②③④⑤
15. I expect that I can perform well in the practicum class. ----- ①②③④⑤
16. I expect that I will perform much better than other classmates. ----- ①②③④⑤
17. I hope that I can have great grades in the skill field test of the practicum class. ①②③④⑤
18. I hope that I am able to have acquired all the contents offered in the class. ①②③④⑤
19. I'll get more concentrated in the practicum class in order to enhance my professional ability. ①②③④⑤
20. I'll study hard in the practicum class in order to create and expand my future career. ①②③④⑤

#### IV. SELF-EFFICACY

21. I am confident enough as to learn the basic concepts offered from the practicum course. ①②③④⑤
22. I am confident enough as to understand the most difficult part of the course. ①②③④⑤
23. I am confident enough as to help classmates understand the questions they have. ①②③④⑤
24. I am confident enough as to understand the complicated content of the course. ①②③④⑤
25. I am confident enough as to obtain good grades in the skill field parts of the course. ①②③④⑤
26. I am confident enough as to master the skills offered in the course. ----- ①②③④⑤

#### V. TEST ANXIETY

27. I'll feel very anxious in the test. ----- ①②③④⑤
28. My heart speed increases in the test. ----- ①②③④⑤
29. I always try to perform well but oftentimes I fail in the test. ----- ①②③④⑤

**Appendix cont.**

- 30. I think I am relatively bad compared with other classmates in the test. ①②③④⑤
- 31. I'm anxious about failing to do well and have to retake the course next year in the test. ①②③④⑤
- 32. I'm anxious about not having sufficient time and performing badly in the test. ①②③④⑤
- 33. I'm anxious about not have sufficient preparation ad failing to obtain better grades in the test. ①②③④⑤

**PART II. SURVEY ON THE LEARNING SATISFACTION**

**I. TEACHER'S TEACHING**

- 1. The teacher is able to tell and explain the content of the course in a detailed way. ①②③④⑤
- 2. The teacher's method of instruction fascinates me in the practicum course. ①②③④⑤
- 3. The teacher's teaching attitude is good in the practicum course.----- ①②③④⑤
- 4. I can accept the teacher's evaluation in the practicum course.----- ①②③④⑤
- 5. The teacher will demonstrate how to operate in order to help us better understand in the practicum course.  
----- ①②③④⑤
- 6. The teacher is able to be attentive to student's response and offer proper feedback in the practicum course.  
----- ①②③④⑤
- 7. The teacher is able to consider the individual difference among the students in the practicum course. ①②③④⑤

**II. COURSE CONENT**

- 8. I am satisfied with the content of the practicum course.----- ①②③④⑤
- 9. I think the arrangement of the practicum course satisfies my need. ①②③④⑤
- 10. I think the content of the practicum course is useful for me.----- ①②③④⑤
- 11. I don't feel bored in the practicum course. ----- ①②③④⑤
- 12. The content of the practicum course greatly helps my skills.----- ①②③④⑤
- 13. I think the content of the practicum course greatly helps my future career. ①②③④⑤
- 14. I think the content of the practicum course goes well with the theory course. ①②③④⑤

**III. INTERPERSONAL RELATIONSHIP**

- 15. I can deal well with classmates in the practicum course.----- ①②③④⑤
- 16. I'll discuss with classmates the practicum course. ----- ①②③④⑤
- 17. I'll work together with group members to finish the assignment or work in the practicum course. ①②③④⑤
- 18. I'll respect classmates in the practicum course. ----- ①②③④⑤
- 19. I think I am popular in the class. ----- ①②③④⑤
- 20. I think the classmates are good companions who help solve problems. --- ①②③④⑤
- 21. I think to attend the practicum class with the classmates is enjoyable.----- ①②③④⑤

**IV. LEARNING ENVIRONMENT**

- 22. I think the numbers of intern factories are sufficient. ----- ①②③④⑤
- 23. I am satisfied with the space and the lighting in the intern factory. ----- ①②③④⑤
- 24. I think the security measure in the intern factory is good. ----- ①②③④⑤

**Appendix cont.**

25. I think the intern equipment of the practicum course is sufficient. ----- ①②③④⑤

26. I think the numbers of the intern equipment offered in the practicum course is sufficient. □□□□

27. I am satisfied with the maintenance of the intern equipment in the practicum course. □□□□

**V. LEARNING ACHIEVEMENT**

28. I can effectively apply what I have learned in the practicum course to the daily life. □□□□

29. I am able to invent new works after the practicum course. ----- □□□□

30. I have obtained a lot of knowledge and skills after the practicum course. □□□□

31. I'll understand the theory course better after the practicum course. ----- □□□□

32. I've learned a lot of learning methods and strategies after the practicum course. □□□□

33. I am able to learn many strategies and methods from the process of intern work. □□□□