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Research Article

Analysis of the correlation between satisfaction and dissatisfaction with the use of experimental (practice) teaching aids and purchase motivation: targeting middle and high school teachers in Korea

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Abstract

Background/Objectives: In the era of the 4th industrial revolution, an education which looks at problems from a new perspective is necessary, and it is the ETA that is able to give more attention to that. This study seeks to identify what teachers are satisfied with when choosing and using ETA.

Methods: ETA was classified 4 variables first. A frequency analysis was conducted to confirm the characteristics of the sample, and then through an exploratory factor analysis, it was reviewed whether the measurement tool is appropriate for the purpose. In addition, a reliability test was also conducted to confirm the internal consistency between factors, and finally a multiple regression analysis was done to test the hypothesis.

Findings: ETA's self-quality is considered to be significant in the satisfaction level of teachers who used the teaching tools. However, among the data presented, it was found that the economic part is not significant and was excluded from the factor analysis. In addition, ETA's support quality, which did not exist in the previous studies, is also insignificant for teachers' satisfaction. Educational suitability was determined to be significant for teachers' satisfaction. This means that teachers preferred to select teaching tools suitable for the curriculum and education purpose, and was even satisfied after using such teaching tools. Through this study, the satisfaction of teachers is anticipated to increase if the self-quality and educational suitability of the teaching tools were considered as the top priority in the selection of teaching

tool that will be used in class. Furthermore, in the development of the products, the manufacturers of these teaching tools need to put emphasis on the quality and suitability for educational curriculum, even though this may incur an additional cost.

Improvements/Applications: The part about economics found to be not significant has implications. This means that unlike the general market, the uniqueness of the ETA market must be considered. Therefore, research is needed to confirm the specificity of the ETA market.

Keywords: Education, Experimental teaching aids, Teacher's satisfaction, Educational suitability, Business service

1. Introduction

Education is very important to our lives and is a necessary element for everyone [1]. And in the era of the 4th industrial revolution, it is the time when education that looks at problems from a new perspective is necessary to solve various social problems at hand [2]. Therefore, there is a need for innovation in education to foster active talent who can creatively solve various problems, and not a passive talent training that is focused on acquiring knowledge [3].

South Korea is presenting some of the contents in the 7th educational curriculum. For example, as confirmed by the content, the goal of science curriculum is: to cultivate an attitude to scientifically solve problems in everyday life, and to recognize the interrelationships between science, technology, and society [4].

It is the Experimental Teaching Aid (ETA) that pays attention to this education. Education using ETA induces active participation of students, provides pleasure, and creates a positive educational environment [5]. In addition, social skills (socialization) are developed through the process of interaction with other students, and not only language development, but also artistry, expressive skills, creativity, and exploration skills are improved as well [6]. Moreover, the use of ETA helps in the development of scientific attitude, motivates learning, encourages attention while teaching, and provides a positive environment for creative education [7]. Through these various studies mentioned, the importance and advantages of the ETA can be established.

However, in South Korea's middle school and high school education, there are still a lot of teacher-led uniform infusion or lecture-based classes, and classes based on subject knowledge transfer and problem solving classes dominate [8]. And the middle school and high school teachers in general, tend to not use the ETA well due to the tight educational schedule [9]. It is not just a matter between school and teachers. When purchasing teaching tools, it is difficult to determine whether the price and quality of the ETA is appropriate, and in some cases, it is not

possible to adequately supply the ETA when necessary [10]. Some studies are concerned that they may not be of much help to students' learning [11]. However, the preceding studies and most of the existing studies only include the identifying of standards and status of the ETA, problems with the use of the ETA, and the benefits of the ETA, but there is a lack of research about the aspects on which parts of ETA the teachers are satisfied or dissatisfied with, and it is difficult to find a research that focuses on the middle school and high school teachers in particular.

Therefore, in this study, the ETA will be classified as the quality of ETA itself and ETA support quality as a hardware element, the education suitability part as a software element, and the service quality of ETA manufacturers, and to determine which parts the teachers are satisfied with when selecting and using an ETA.

2. Related Works

2.1. Experimental Teaching Aids (ETA)

Experimental Teaching Aid (ETA) is a generic term for various educational media and is a comprehensive term for specific objects directly used in teaching and learning activities to efficiently achieve educational goals [10].

ETAs are an important element which can maximize its effectiveness while promoting teaching and learning activities as well. And, given that the schools' educational activities are carried out between teachers and students, the ETA is said to be a physical tool that students and teachers can jointly use [12]. Research results show that such positive interaction or communication between teachers and students can increase teachers' competency and positively affect students' willingness and satisfaction to learn [13]. Hence, it can be said that ETA is important not only for the students but also for the teachers.

There are several classifications of ETA according to different researchers. Traditionally, there are studies that classify ETAs as audio aids, visual aids, audio-visual aids, activity aids, and etc. [14]. And there are also studies which categorized ETA as hardware-type devices, software-type non-devices, and audiovisual textbooks and educational media that refer to both classes [15]. Furthermore, ETA is also being used in various subjects. Almost all subjects such as English, Mathematics, and physical education use ETA to conduct classes. However, the subjects that utilizes ETAs the most are science and technology subjects. In this study, ETA is being referred to as an activity aid tool used in Science, Technology/Home Economics, and includes a variety of educational media as well.

When a teacher refers to the precedent studies on the criteria for selecting and using ETA, there were cases in which considerations for ETA selection were categorized without any specific classification, or if classified, it is presented into functional and educational aspects. In this study, based on the preceding research as shown in Table 1, the criteria for selecting and using ETA are classified into large categories such as ETA, Education, and ETA Manufacturers, and these are again classified into ETA Quality, ETA Support Quality, Education Suitability, and ETA Manufacturers' (and distributors) Service Quality.

Table 1. Reference factors for ETA selection

Essa, E. (2002) [16]	Sung Kyung Sim et al (2010) [17]		M. J. Lee, et al. (2012) [18]	Young-jae Lee, et al. (2016) [19]	W. Jun. (2018)[20]	Aung, H H.(2020) [11]
	Functional	Educational				
Developmentally appropriate	Safety	Physical development	Usefulness	Safety	Safety	Relevance
Active	Suitability	Cognitive development	Operability	Subject Compatibility	Subject Compatibility	Suitability
Open-ended	Durability	Creative development	Appearance	Developmental Appropriateness	Multi-Purpose	Simplicity
Give feedback	Economics	Emotional development	Performance reliability	Multi-functionality	Ease of Manipulation	Educative
Multipurpose		Social development	Safety and sturdiness	Ease of Manipulation / Performance Reliability	Economics	Hand experience
Safe and			Repair	Course	Universal	Learner

durable			ability and service	Suitability	Design	centered
Attractive			Multipurpose and need	Economics	Durability	Environment centered
Nonsexist, nonracial				Service	Gender Equality	
Variety				Durability		

ETAQ (ETA Quality) refers to the quality of ETA itself, and is further classified into detailed factors such as safety, functionality, durability, multi-functionality, ease of manipulation, and economics, among preceding studies.

ETAS (ETA Support) refers to various materials such as manuals (handbooks) included in the ETA, with videos added for educational purpose. This was selected as an additional factor since the preceding studies did not include this parts.

ES (Educational Suitability) means that an ETA is capable of the activities required by educational curriculum and corresponds with educational objectives and goals. The ES classified the factors as suitability, creativity, necessity, and usability based on factors such as 'education suitability', 'subject compatibility', 'multi-purpose', 'educative', and 'creative development' among the factors of preceding research.

Business Service (BS) refers to ETA purchases, A/S, delivery, etc. Based on the study [21] that education is a kind of service and can be evaluated using the service quality assessment tool, is determined as detailed factors 'Reliability', 'Assurance' and 'Accessibility (convenience)' among SERVQUAL. PZB classified the quality of service into five factors such as: Tangibles, Reliability, Responsiveness, Assurance, and Empathy, through empirical research [22], and these factors can be modified and utilized according to the situation [21]. In this study, among the five factors of PZB: Tangibles, Responsiveness, and Empathy were excluded, however, Accessibility was added out of the 10 initial dimensions of Determinants of Service Quality. This was determined based on the preceding study that most teachers currently do not go to companies to purchase products directly and rarely meet the employees, and accessibility (convenience) interacts with customer satisfaction [23].

2.2. Teacher's Satisfaction (TS)

Satisfaction is evaluated as the surprise inherent in the experience of purchasing or consuming a product, or the psychological state that appears when consumers' unconfirmed expectations and consumption experiences are combined with consumers' previous experiences is called satisfaction [24]. This satisfaction is the main motivation for people to choose where to buy and repurchase [25], and it can be said that it is an essential factor for online business and traditional business as well [26].

In terms of satisfaction in the education sector, many studies are about the job satisfaction of teachers or satisfaction on the relationship between teachers and learners. However, the Teacher Satisfaction in this study refers to the satisfaction that teachers feel when purchasing ETA and when using it for education, and the survey items are composed of product satisfaction, education satisfaction, and ETA manufacturers' (distributors) service satisfaction.

3. Proposed Method

3.1. Research hypothesis and model

Based on preceding studies, this work has designed a study model as shown in Figure 1 to make an empirical analysis on how ETA Quality (ETAQ), ETA Support (ETAS), Educational Suitability (ES) and Business Service (BS) factors affect Teachers' Satisfaction with ETA.

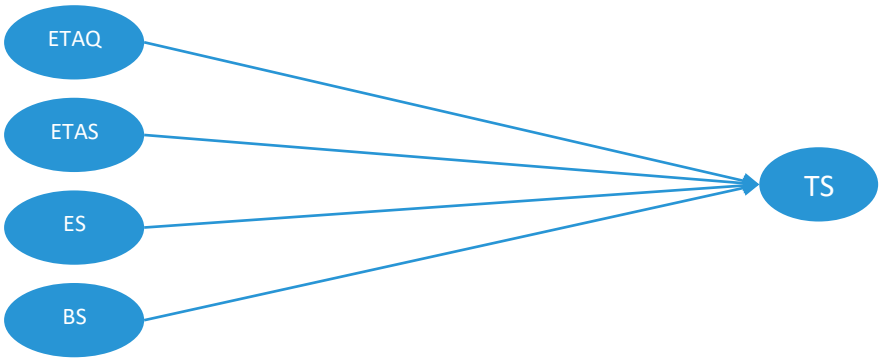

Figure 1. Research Model

Also, based on previous studies, the following hypothesis were established regarding the relationship between variables:

H1: The quality of the ETA (ETAQ) will have a positive (+) effect on teacher's

satisfaction.

H2: The quality of ETA Support (ETAS) will have a positive (+) effect on teacher's satisfaction.

H3: The Educational Suitability (ES) of ETA will have a positive (+) effect on teacher's satisfaction.

H4: The ETA manufacturers' (distributors) service quality (BS) will have a positive (+) effect on teacher's

satisfaction.

3.2. Operational definition of variables

In this study, in order to test the research model and hypothesis that was designed based on previous studies, variables were set as shown in Table 2 below, and operational definitions were made for each variable.

Table 2. Operational definition of variables

classification	Variable name	Operational definition of variables	Reference
ETA	ETAQ1	Purchased ETA is made of safe materials (resources).	Essa, E. (2002) M. J. Lee, et al. (2012) Young-jae Lee, et al. (2016)
	ETAQ2	The results of ETA are excellent.	
	ETAQ3	The ETA has sufficient durability (solidity).	
	ETAQ4	The price of ETA is reasonable.	
	ETAS1	Various educational materials are provided for teachers.	
	ETAS2	The ETA includes manual (handbook) for students to easily follow.	
	ETAS3	The difficulty level of ETA is suitable for students to use.	
Education	ES1	ETA is required for teaching-learning in the subject.	Sung Kyung Sim et al (2010) Aung, H H.
	ES2	ETA is suitable for use in the educational field.	

	ES3	ETA is suitable for the educational curriculum.	(2020)
	ES4	ETA is structured so that students can have a better understanding of the principles.	
	ES5	In addition to the regular curriculum, ETA is suitable for use in classes such as gifted students and invention classes.	
	ES6	ETA can induce students' creativity.	
	ES7	ETA can induce students' interest (fun).	
ETA manufacturer	BS1	ETA company that transacted business can be trusted.	Han, Sang-Doll. (2009) PZB. (1988) Voss, Glenn B. (2007)
	BS2	It is believed that the employees of ETA company receive appropriate support related to their work in the company.	
	BS3	ETA is available for consultation and service support through online and offline.	
	BS4	ETA can receive A/S in a short time.	
	BS5	Delivery of ETA is fast.	
	BS6	ETA is delivered at the correct time (date).	
teacher's satisfaction	TS1	Satisfied with companies that manufacture and sell ETA.	Oliver. (1981) Khan, SA, et al. (2015) Ho, Chin-Fu, et al. (1999)
	TS2	Satisfied with the quality of ETA.	
	TS3	After conducting the class with ETA, the teacher's satisfaction with the class increased.	
	TS4	After taking classes with ETA, students' satisfaction increased.	
	TS5	Education (learning) goals were achieved through education using ETA.	
	TS6	When an error occurs, it is easy to correct it.	

3.3. Sample selection and Survey

The samples to test the research hypothesis were conducted on the middle school and high school science and technology/home economic teachers. Unlike in elementary schools,

middle schools and high schools have teachers in charge of subjects, so there are many opportunities to use ETA for direct education. Specifically, the Science and Technology subjects are suitable as sample because various ETAs are actively used for education. The survey was conducted for a week from November 10 to 17, 2020, and an online survey (Likert 5-point scale, closed-ended type and multiple-choice) method was used. The survey was conducted mainly to the members of middle school and high school teachers' meetings and research councils.

The survey consists of a total of 33 items, including 7 items to obtain demographic data, and 26 items to confirm the quality of ETA and the suitability of education, service quality of ETA companies, and teacher satisfaction. In the questionnaire, efforts were made to increase the reliability by sufficiently explaining the purpose of the study, and a total of 76 teachers responded to the final sample.

3.4. Method of analysis

The IBM SPSS 22 statistical program was used for hypothesis testing. First, frequency analysis was conducted to confirm the characteristics of the sample, and then the exploratory factor analysis – to review whether the measurement tool was well designed for the purpose. In addition, a reliability test was performed to confirm the internal consistency between factors, and a multiple regression analysis was performed to test the hypothesis.

4. Experimental Results

4.1. Characteristics of samples

A frequency analysis was conducted to identify the demographic characteristics of the teachers who responded to the survey of this study, and the results are determined as shown in Table 3 below:

Table 3. Characteristics of samples

Item		Frequency (persons)	Percentage (%)
gender	male	42	55.3
	female	34	44.7
age	twenty	6	7.9

	thirty	21	27.6
	forty	31	40.8
	fifty	18	23.7
years of working	intra-annual	3	3.9
	1 to 10 years	20	26.3
	11 to 20 years	33	43.4
	21 to 30 years	8	10.5
	31 to 40 years	12	15.8
school class	middle school	56	73.7
	specialized middle school	1	1.3
	high school	14	18.4
	special-purpose high school	2	2.6
	autonomous public/private high school	1	1.3
	the others	2	2.6
subject	physics	2	2.6
	biology	6	7.9
	earth science	3	3.9
	technology	47	61.8
	home economics	13	17.1
	the others	5	6.6

(N=76)

In terms of Gender, the male is at a higher percentage of 55.3% compared to female with just 44.7%. For the age group, those who are in their 30s and 40s dominated the survey with a combined percentage of 68.4%. For the work experience, teachers with 1 to 10 years of work experience are at 26.3% and 43.4% for those who have work experience of 11 to 20 years, and these two brackets accounted for the majority of the number of years of working. With this, it can be seen that male teachers in their 30s to 40s with around 10 years of experience use ETA the most. For the School Class, the middle school teachers are at 75%. Therefore, it can be seen that education using ETA is more active in middle schools than in high schools with a large proportion of entrance examination studies. In terms of teacher's main subject, Technology (61.8%) and Home Economics (17.1%) accounted for the largest number with 78.9% in total. This seems to be because the Technology/Home Economics-related teacher meetings was the largest population and the response rate was the highest among the teacher meetings and

research councils that participated in the survey. Although not indicated in Table 3, there are also details on the school location and scale. Most of the schools were located in Seoul (36.8%) and Gyeonggi-do (35.5%). As for the size of the school, 21-25 classes (32.9%) were the most, followed by 11-15 classes (13.2%).

4.2. Validity and reliability analysis

4.2.1 Exploratory factor analysis

In order to analyze the validity of each variable, an exploratory factor analysis was conducted to check whether the measured variables were well grouped into factors of the same constituent concept. Principal component analysis was used for factor extraction, where the number of factors was fixed and analyzed since these factors were determined in advanced through the preceding studies. The VARIMAX method was used among orthogonal rotation methods to clearly distinguish the factors. And as a result of the factor analysis conducted, the ETAQ4 factor, which corresponds to the quality of ETA, was removed because the factor loading value was really low and was not tied to the same item. The result of exploratory factor analysis is shown in Table 4 below:

Table 4. Results of exploratory factor analysis

	Component					Communalities
	1	2	3	4	5	
BS4	.824					.813
BS2	.812					.778
BS1	.800					.753
BS5	.797					.732
BS3	.755					.690
BS6	.638					.624
TS3		.817				.829
TS5		.800				.825
TS4		.684				.742
TS6		.652				.557
TS2		.543				.759
TS1		.539				.705

ES7			.774			.675
ES6			.728			.610
ES5			.720			.724
ES3			.659			.753
ES4			.563			.749
ES2			.553			.743
ES1			.540			.576
ETAS1				.856		.831
ETAS2				.817		.795
ETAS3				.657		.618
ETAQ1					.821	.758
ETAQ3					.584	.753
ETAQ2					.539	.770
Eigenvalues	11.242	2.535	1.782	1.646	.958	
% of Variance	44.966	10.140	7.128	6.585	3.831	
Cumulative %	44.966	55.106	62.234	68.819	72.650	
Kaiser-Meyer-Olkin Measure of Sampling Adequacy = 0.865 Bartlett's Test of Sphericity : Approx. Chi-Square = 1452.884, df = 300, Sig. = 0.000						

The KMO value was measured as 1.865 and the significant value of Bartlett's Test of Sphericity was measured as .000, indicating that the items are suitable for factor analysis. In addition, the loading value of Rotation Sums of Square was measured as 72.65%, so it can be seen that the five factors well explain the total variance of the measured variable. The communalities also exceeded .5 in all the items, and the factor loading value of each factor in the rotated component matrix also exceeded .5. Overall, it can be verified that there is no problem in analyzing using this data.

4.2.2 Reliability analysis

Reliability analysis, as a measurement tool, refers to the degree to which consistent results are calculated when repeated measurements are made, and the internal consistency method is commonly used. Cronbach's Alpha is the most frequently used method for evaluating the reliability of a measurement based on the internal consistency. Cronbach's Alpha has a value between 0 and 1, and the closer it is to 1, the more reliable it is. The result of the reliability

analysis is illustrated in Table 5 below:

Table 5. Results of reliability analysis

Factors	Variables	Cronbach's Alpha if Item Deleted	Cronbach's Alpha
ETA's Quality (ETAQ)	ETAQ1	.811	.788
	ETAQ2	.648	
	ETAQ3	.658	
ETA's Support (ETAS)	ETAS1	.707	.821
	ETAS2	.650	
	ETAS3	.863	
Educational Suitability (ES)	ES1	.884	.890
	ES2	.868	
	ES3	.863	
	ES4	.872	
	ES5	.875	
	ES6	.883	
	ES7	.874	
ETA manufacturers' service quality (Business Service) (BS)	BS1	.890	.911
	BS2	.887	
	BS3	.897	
	BS4	.881	
	BS5	.895	
	BS6	.915	
Teacher’s Satisfaction (TS)	TS1	.873	.890
	TS2	.862	
	TS3	.857	
	TS4	.868	
	TS5	.859	
	TS6	.903	

The second edition of Nunaly's book is often cited for the criterion of Cronbach’s alpha

value, and with reference to this criterion, it is at 0.70 [27]. The results indicated in Table 5, it can be seen that the Cronbach's alpha values for each factor are all above 0.70, so it can be seen that the reliability of all factors is strong. However, the variables ETAQ1, ETAS3, BS6, and TS6 all have a higher 'Cronbach's alpha if Item deleted' value than that of Cronbach's alpha by factor. However, the content of the measured variable is important, and there are cases where the factors are not properly grouped when deleting, and the current Cronbach's alpha value is not low, so the analysis conducted was without deleting. This is based on research [28] that it is not always desirable to increase the alpha value by reducing the number of items, and that the actual reliability may decrease even if the value of alpha appears to increase by reducing the number of items.

4.2.3 Correlation analysis

Correlation analysis refers to a method of analyzing which linear relationship exists between two variables. In other words, it is a method to analyze whether two variables are independent or related to each other. The value representing the magnitude of the correlation is called the correlation coefficient, and the Pearson correlation coefficient is commonly used to obtain the relationship between two variables. The Pearson correlation coefficient has a value between -1 and +1, where -1 means perfect negative linear correlation, 0 means no linear correlation, and +1 means perfect positive linear correlation [29]. The results of the correlation analysis of this study can be found in Table 6 below:

Table 6. Results of Correlation analysis

	ETAQ	ETAS	ES	BS	TS
ETAQ	1				
ETAS	.488**	1			
ES	.517**	.527**	1		
BS	.522**	.510**	.508**	1	
TS	.679**	.525**	.709**	.558**	1
**. Correlation is significant at the 0.01 level (2-tailed).					

In the table, it can be seen that all factors showed a statistically significant positive (+) correlation.

4.3. Test of research hypotheses

Multiple regression analysis was conducted to find out the effect of ETA's own quality, ETA support quality, education suitability, and service quality of ETA manufacturers on teacher satisfaction, and the results are as shown in Table 7.

Table 7. Results of multiple regression analysis

	B	SE	β	t	P	VIF
(Constant)	.297	.321		.925	.358	
ETAQ	.324	.079	.367	4.101	.000	1.626
ETAS	.051	.076	.060	.673	.503	1.624
ES	.434	.092	.427	4.709	.000	1.666
BS	.106	.080	.119	1.325	.189	1.644
R^2=.650, adjusted R^2=.630, F=32.978(p=.000), Durbin-Watson‘s d =2.260						

The result of the analysis shows that all the unstandardized coefficients B values have positive numbers, where the higher the quality of ETA itself, the quality of ETA support, education suitability, and the quality of service of ETA manufacturers, means that the teachers’ satisfaction is also high. However, the ETAS and BS factors are found to be insignificant because the t value was less than ±1.96 and the significance probability (P) of the said factors were greater than .05. Therefore, the hypotheses H1 and H3 were adopted, but the hypotheses H2 and H4 were rejected.

Looking at the β values of the standardized coefficients of ETAQ and ES, it can be determined that ES (.427) has relatively more influence than ETAQ (.367). In addition, coefficients of determination (R^2) is .650, and it can be inferred that the independent variables explain 65% of the dependent variable.

The Variance Inflation Factor (VIF) are all less than 10, therefore it can be stated that there is no multicollinearity problem. And the Durbin-Watson coefficient is 2.260, which is close to 2, and since there is no correlation between the residuals, the independence of the residual term is secured. In addition, the F value was 32.978 (p = .000), which indicates that any of the independent variables had a linear effect on the dependent variable.

5. Conclusion

This study categorizes Experimental Teaching Aids (ETA) into: ETA's own quality and ETA's support quality, which are the hardware element; education suitability, which is the software element, and; service quality of ETA Manufacturers. An empirical study was conducted to determine which part were the teachers are satisfied with when selecting and using the ETA.

First, it has been determined that the teachers' satisfaction with the quality of ETA itself was significant. Through this, it was confirmed that in purchasing an ETA, teachers have high demands for products that are made of safe materials and are properly functioning. However, in the economical part, which was supposedly expected to be significant, it has been determined in the analysis that it did not significantly affect the satisfaction level of the teachers after the actual usage of ETA.

The quality of ETA support, which is difficult to find in previous studies, refers to the materials and instructions (manuals) required for teachers when conducting classes using ETA. Although the educational materials required for education are very important, this item was analyzed as not significant. This can be thought of as not having much meaning in educational materials produced by general companies because middle school and high school teachers only teaches major subjects.

Education suitability is to confirm whether ETA is suitable and necessary for the curriculum and whether it is suitable for inducing interest and developing creativity of students, and in the analysis conducted it was determined that, in relation to this factor, the satisfaction of teachers was the most significant. For teachers, ETA is a means to be able to achieve the purpose and goal of education, and with this, it was confirmed that the use of ETA suitable for education is the most important thing.

It was analyzed that the quality of service of ETA manufacturing (distribution) companies was not significant to the teachers' satisfaction. In general, the reliability and assurance of the company is considered important, however, accessibility related to A/S, easy purchase and delivery, were not significant to teachers’ satisfaction. This is because most teachers purchase ETA online, so they are less likely to visit ETA companies or have face-to-face conversation with their employees. Furthermore, if the ETA is delivered within the exact date needed and if there has been no problem with A/S, teachers may not have any particular complaints.

The implications that can be obtained through this study are as follows: First, it can give teachers insight on purchasing and using ETA. Some teachers say that it is difficult to conduct classes with ETA due to problems such as lack of budget and tight schedule. However, considering that the economics item was analyzed to be insignificant, it cannot be ruled out that

this may be the prejudice of teachers. Therefore, when selecting and using an ETA, the satisfaction of teachers is expected to increase if the quality and educational suitability of the ETA itself are considered first. Second, it is possible to give guidelines for ETA planning and development to companies that produce and distribute ETA. In the current ETA market, as the online market becomes active and competition intensifies, it has become difficult to find differences between products, and it is difficult to develop an ETA suitable for the educational process due to the small-scale and non-professionality of ETA companies. As a result of this study, ETA companies need to focus on developing high-quality products and products suitable for education curriculum even though the cost will be a bit higher.

In this study, a survey for middle school and high school science and technology/home economics teachers was conducted. However, there is a limit to generalizing the results because the number of samples is too small and research has been conducted on a limited number of subjects.

Lastly, the part about economics found to be not significant has implications. This means that unlike the general market, the uniqueness of the ETA market must be considered. However, it is difficult to find a research about this. Therefore, I would like to propose a study that compares the considerations of teachers before using ETA and their satisfaction after use, and identify the specificity of the ETA market.

6. Acknowledgment

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