A Role-play Approach for Privacy Protection Inspiration of Elementary Students

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ABSTRACT

Elementary school students have a little awareness of privacy protection since they do not have many opportunities for systematic education on information and communication ethics. Hence, they are likely to expose their own information to others and sometimes bring on a lot of misuses by using others' information. In this paper, we provide an idea for teaching and learning methods which the elementary school students acquire privacy protection and management methods and raise their practical capabilities. We develop a role play teaching and learning model in connection with various Information and Communication Technology (ICT) activities and establish the instruction plans. Moreover, we apply them to the actual classes at grade five and six of the elementary school students respectively, and finally analyze the results. The proposed teaching and learning method shows that the students participated in a series of learning activities have higher learning effects on awareness of privacy protection than those learned with the conventional methods.

Key words: Privacy Protection, Role-play Teaching and Learning

1. INTRODUCTION

Nowadays, elementary school students who lack of the proper judgment and/or guidance on appropriate cyberspace behaviors are at risk to a range of new social problems such as Internet addiction, unsound contents, suicide sites, misuse and abuse of private information, illegal downloading of software, even cyber terrorism, etc. The Korea Internet and Security Agency has stated that the most urgent issue of all is 'private information leakage and privacy threat'. [1] When using Internet services, elementary school students often share and ex-

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change their identities and passwords with one another. Consequently, damages from the effects of leaked privacy information are growing day by day. However, there are no comprehensive programs dealing with the question of information and communication technologies ethics. Perhaps this is since the establishment of both guidelines and education materials remains an on-going challenge for ethics educators. Thus any improvement in this situation is unlikely since there is few coordinated and comprehensive approach to ethical behaviors in cyberspace.

However, in order for elementary school students to understand the importance and necessity of privacy protection, and practice it from an early age as responsible members of the information society, effective teaching and learning methods are required and the development of various teaching and learning methods should be continued. [2] To aim on this end, we propose a new Role-play teaching and learning model in connection with ICT activities and design a

learning guide plan based on the model. In addition, we apply them to the actual classes of grade five and six in elementary school respectively, for teaching of privacy protection, and finally we analyze the results.

The rest of this paper is organized as follows. The next section describes related work to induce the motivation of the paper. In Section 3, we introduced the design and application of a new role-play teaching and learning model including lesson planning. In Section 4, we applied the proposed model to the real classes in the elementary school. In addition, we analyzed the results through the statistical analysis. Finally, we conclude the paper in Section 5.

2. RELATED WORK

2.1 Role-play Teaching and Learning

A Role-play is 'a method to help someone accept another's viewpoint'. In other words, it is a projection method which allows individuals to appreciate the thoughts and/or feelings of others in a problematic situation, managing problems through looking at attitudes and behaviors, and discussing the consequences of actions. [3]

A Role-play can improve the socialization skills of children by teaching them how to make friends and to live collectively through understanding and tolerance. It can also help students solve problems voluntarily in conflict situations and relieve depression and negative feelings. It can even improve group consciousness since the individuals become aware of the fact that it is possible to derive the best solutions through collaborations.

2.2 Information and Communication Ethics and Privacy Protection

2.2.1 Information and Communication Ethics [4]

Information and communication ethics is concerned with leading a principled existence in the information society. Specifically, it contains the morals and behaviors that people should follow when they are using information and communication technologies. In Korea, information and communication ethics education should be conducted under the following three basic principles.

First, since ethics education not only relates to using information and communication technologies but for cultivating human principles and values required for living in the society in general, it is a kind of living education that should be applicable to all activities conducted at school. Second, it is emphasized that any adverse phenomena be corrected as soon as possible and that students understand that these can be illegal acts. Third, that education for information and communication ethics is practical in nature. It should not simply aim at enabling the understanding of right and wrong but that it can be applied directly to people's actions.

2.2.2 The Content Criteria and Organization Principle of Information and Communication Ethics Education [4]

When teachers design the educational contents for the information and communication ethics in the elementary school, they should consider the following principles and criteria;

First, general content areas of information and communication ethics education for the elementary school should be evenly covered. Second, it is required to consider the level of intelligent and ethical development for the elementary school students. Third, teachers should consider the information environments and the utilizing level of information and communication technology of the elementary school students when they construct the contents. Also the contents should be instructed repeatedly and accumulatively at the same time. Fourth, the contents should be chosen so that emotional, definitional and behavioral inclinations can be integrally cultivated. Finally, the contents should in-

clude the practical real life cases which centers on actual life.[5]

The current educations for information and communication ethics are partly taught through ICT educations, which are conducted in discretional achievement for students in the elementary school. The detailed educational materials suggested on 'Pleasant Computer' lecture are shown in Table 1.

2.2.3 Privacy Protection Education

Privacy information refers to the living personal information and it may identify the individual through the information itself. The scope of privacy information of the elementary school students includes not only general information such as their own names, resident registration numbers, telephone numbers etc, but also family information such as family names, occupations, telephone numbers etc.

Most of the school members lack for recognition on privacy protection and they recognize that they are able to acquire and treat the private information of the students at their discretions for educational purposes. In addition, they lack for understanding on laws, regulations and procedures for usage and provision of privacy information. What is worse, they do not have sufficient technical protection capabilities against intrusion of malicious codes such as viruses, spywares and bots in the school homepage systems.

2.2.4 Behavioral Features related to Privacy Information of the Elementary School Students in Korea

According to the survey results of the grades five and six in the elementary school, the students' behavioral features related to privacy information are given as follows;

(1) The students are using internet games, e-mail, chatting, data search and etc, at least one hour in a day, but only passively deal with spam mails.

(2) The students typically subscribe on eight websites on average but agreed on 'User Commitments' and 'Privacy Protection Policy' without reading carefully when they subscribe on the membership.

(3) Even though they have recognized the importance of privacy information, they neither know how to deal with privacy information leakage nor take active actions such as cancellation of membership subscription.

(4) The students are frequently lending and using others' identities and passwords.

(5) It is a well known that the education of privacy protection comes too late in the elementary school curriculum.

(6) The students do not clearly identify 'things to do' and 'things not to do' on the Internet, which are given in table 2.

Table 1. Teaching Content Stages for Information and Communication Ethics

Area	1st Stage	2nd Stage	3rd Stage
Lives in the Information Society	• Information society and change of life • Neighbors who can meet through computer • Correct posture for using computer • Right etiquette on the cyber space	• Understanding on cyber space • Netiquette and personal ethics • Prevention of internet game addiction • Information protection and cryptography • Protection against viruses and spams	• Cooperative cyber space • Cyber terror and its Prevention • **Understanding and management of private information** • Computer encryption and security program • Copyright protection and necessity • Information society and occupation

Table 2. The list of 'things to do' and 'things not to do' on the Internet

Type	Contents
Things to do	• To utilize of useful learning tools • As a place to meet friends on distant locations • Carefulness, cautiousness during interactive conversation on the network • To respect others' privacy • To use properly on school information such as school entrance, etc. • To be cautious on program downloading
Things not to do	• Password leakage • To answer improver message • To provide privacy information carelessly • To promise a virtual meeting for off-line meeting • Unauthorized reproduction of copyrighted program • Unauthorized intrusion into other's computer • Reproduction of copyrighted materials (publication, magazine, music) • To utilize internet data for personal data

3. DESIGN OF ROLE-PLAY TEACHING AND LEARNING

3.1 Development of Teaching and Learning Model

We propose a model about the design of Role play teaching and learning. As shown in Figure 1, the main flow has 4 steps; recognize the problem, set, prepare and practice role-play, debate and discussion in advanced activities, and investigate and share the experience in generalization. Hence, the proposed one can be shortly called as the PRAG model.

In table 3, we describe the details of the PRAG

Fig. 1. Teaching and Learning Model

Table 3. The details of Role-play Teaching and Learning Model

Steps	Procedures	Teaching/Learning Activities	Types of ICT Activities
Problem Recognition	Identify problem	• To look at a problematic incident • To recognize teaching/learning objectives	Information search Information analysis
Role-play	Set Role-play situation	• To construct scenarios and analyze roles • To decide executors of role	Information generation
	Prepare participants etc.	• To discuss the focus on observer • To set what is to be looked at • To prepare a Role play(property, stage, etc.)	Information guide
	Exercise and presentation	• To execute a Role play	Information generation
	Re-presentation	• To modify a Role play • To suggest the next class of alternative behavior • To represent a right action from the Role play	Information generation & sharing
Advanced Action	Debate and discussion	• To discuss Role play results • To make some projects	Information analysis Web discussion
Generalization	Experience sharing and reflection	• To review activity and discuss again • To reveal behavior principles • To reinforce practice	Web discussion Information generation

model about the steps, procedures, teaching and learning activities and types of ICT activities. The teachers should consider the concrete teaching and learning procedures based on the PRAG model so that the students identify the correct knowledge on information and communication ethics and recognize the practical will. It also emphasizes a re-presentation procedure. [6]

3.2 Application of Teaching and Learning Model

When the PRAG model is applied to the real classes, the main activities and remarks to each step are given as follows.

3.2.1 Problem recognition step

A survey was conducted in the form of a questionnaire to determine the degree of appreciation for privacy protection. By analyzing and comparing the results, a habit related to privacy protection was diagnosed and a way to improve comprehension was found. Teachers would lead students to understand the necessity and importance of protecting personal information through showing some bad stories which illustrate the threat.

3.2.2 Role-play step

Through planning and participating in Role plays, students can learn and understand the problems caused by the lack of privacy protection and try to find a way to solve these problems. Students follow this process during about one month. Then students conduct web discussions between teachers and students, and among students. After that, they redo the Role play activities based on the modified scripts.

3.2.3 Advanced activities step

In a procedure of assessing and discussing the outputs made by a Role play, students can identify right and wrong behaviors. Students then have a group debate and make some projects such as posters, pictures, comics, public advertizement and etc., which are related with privacy protection.

3.2.4 Generalization step

Students share information from advanced activities on websites and are encouraged to protect their privacy through the activities. Individually, students form a detailed plan for privacy protection to ensure their privacy protection.

3.3 Examples of Teaching and Learning Plan

Examples of the lesson plan models for the 1st and 2nd period are shown on table 4 and table 5, respectively according to the proposed the Role play teaching and learning model. Based on this model we conducted the lessons during one month and emphasized the intellectual aspect in the first period and the ethical aspect in the second period.

4. RESULTS ANALYSIS

4.1 Prior Homogeneity Verification

We conduct the survey about the degree of privacy protection recognition subjecting on total 250 students from the classes of grade five and six in 00 elementary school, Busan. As a result of conducting One way ANOVA analysis, average score for each class of total nine classes is indicated as 60 to 66. In this study, we select two classes of grade five and two classes of grade six as comparison class and test class, respectively.

In order to research prior homogeneity verifying between test class and comparison class for each grade, we conduct t-test in Table 6. As you can see, 65.75 scores is obtained from grade five students in the test class and 65.39 scores from comparison class. Besides, 61.53 scores is gained from grade six students for test class and average 64.71 scores for comparison class. Also, there is no significant difference indicated because significance

Table 4. Teaching and Learning Plan for first period

Unit	3. Knowing and management of Privacy Protection		Theme	Privacy Management	
Virtues	Respect and Responsibility		Application Period	1/2 period	
Teaching Model	Role-play Teaching and Learning		Case	Private information leakage	
Goal	1. Students can talk necessity and importance of privacy protect 2. Students know how they can protect and manage their privacy				
Step (Min)	Procedure	Teaching – Learning activities			Aids& Remarks
		Teacher	Student		
Problem Recognition (5')	Identify problem	· Check your privacy protection and management degree, then talk about your thinking or feeling. · Look at the screen let's find what problem is appeared. · What do you think we are going to study today?	s1. I don't know what 'privacy' means. s2. I think I should take care to protect my privacy. s1. Peoplee's private information is used by others, but the owners don't know. s1. How can we protect our privacy better. (etc)		*Information analysis *Result of survey *Short video for an example of privacy leakage damage
		Know how can protect and manage privacy			
Role-play (23')	Set Role-play situation Choose Volunteers and Prepare Practice and Doing	· Let's talk about an experience of privacy protect. · Modify Role play situation and present that in a group. <Ex. Role play Situation> g1. Trouble in front of school g2. In web game site g3. That's my homework g4. Telephone fishing. · Choose a cast for a script and make some properties and stage. · Let's practice! · Execute a play you repaired with your group.	s1. My grandmother lost money to telephone fishing. · Make a situation and write a script. · Make a simple Role-play. · Decide some roles and complete a script together. · Prepare a stage and some props in creative ways. · Define roles and practice. · Presentation · Get feedback from participants.		*Information generation *Handout Scripts *ICT activities –Teacher should monitor students' role-plays to ensure they are related to a moral lesson.
Advanced Activities (7')	Debate and discussion	· What have you learned through group Role-play? · What are you feelings? · Is there anything you found out by group presentation? or anything you want to change? · Share your comments about this theme in cyber school.	s1. We should protect our privacy. s2. I know privacy can be leaked easily. (etc) s1. I will not give my information to others. s2. If I was Miyeon, I would be very sad. s1. Using another person's Id or password is illegal.		*Information sharing –using a board and note paper, students post comments. *Bulletin board *Web discussion –Cyber school/ class home page (http://busanedu.net/)
Generalization (5')	Investigation and share experience	· Tell me a your thoughts and feeling about today's lesson. · Let's solve a True/False quiz about how to protect and manage our privacy.	· I think we should have more interest in privacy protection. · Review (Present a long term task)		*Information generation & sharing *ppt files to introduce the next class and present a long term task.

Table 5. Teaching and Learning Plan for second period

Unit	3. Knowing and management of Privacy Protection		Theme	Privacy Protect
Virtues	Etiquette, Respect		Application Period	2/2 period
Teaching Model	Role-play Teaching and Learning		Case	Online privacy protection
Goal	1. Students know how they can protect and manage their privacy 2. Students can practice the protection and management of their privacy			

Step (Min)	Procedure	Teaching – Learning activities		Aids& Remarks
		Teacher	Student	
Problem Recognition (5′)	Review	· Let's solve a True/False quiz about how to protect and manage our privacy that we learned last class.	s1. We should protect our privacy well. s2 I have to manage my Id or password carefully.	*True/False quiz *Modified Scripts *Information analysis
	Identify problem	· Let's find out something to change in role-play by group discussing. – Why do you think so? – How could you fix it? · Let me tell you what we are going to study today.	s1. I added more narration and dialog. s2. We want to play dramatically when the privacy is leaked out. s3. Because we should not give others our information such as phone numbers or addresses. (etc)	
		Know and practice about protecting and managing privacy		
Role-play (15′)	Set Role-play situation	· Modify Role-play situation and complete a scrip in a group. · Choose a cast for a script and make some properties and stage.	· Set a situation for a repaired case <Ex. Role–play Situation title> g1. Clean cyber land g2. A smile of a friend g3. My privacy, I protect for myself! g4. Thank you Mr. Delivery! (etc.) · Repair a script	*props *Information guide *Teacher should adequately lead students who experienced inverse activities in role–play to express their opinions well.
	Choose Volunteers and Prepare	· Let's practice a simple Role–play. · Execute a play you repaired with your group. (2–3 groups)	· Give characters to roles and practice. · Prepare a stage and some props in creative ways	
	Re-presentation		· Define roles and present with feelings. · Assume a good manner as a watcher	
Advanced Activities (15′)	Debate and discussion	· Please speak your thought after watching other groups' role–play. · Tell me your feeling about being in others' shoes. · What have you learned newly through repaired role–play. · Why do we have to protect our privacy? · How can we manage privacy properly? · Think managing information is important, and make some projects.	s1. We should not give our information to others carelessly. s2. I knew that how the leakage of privacy is a terrific crime. s3. I think I need to manage my privacy well. s4. Documents which have privacy information should be destroyed. s5. I'll change my password of my web site regularly. (etc) ex. posters, pictures, comics, public advertisement (etc)	*Web discussion *Information generation *Information sharing -Cyber school/ class home page (http:// busanedu.net/)
Generalization (5′)	Review activity	· Let's talk about what you learned today. · Is there anything you felt in this class? or anything that makes you difficult?	· I think we should have more interest in privacy protection. · I should not give my privacy to others thoughtlessly. · When we have different opinions in editing our script, I was embarrassed. · We spent less time for practicing than making props, so we've been pressed for time up. · It is fun for me to role play in the classroom. (etc)	*post questionnaire *Information generation
	Experience sharing and reflection	· Then, Make a plan for protecting and managing your privacy. · Now, fill out the questionnaire about privacy.		

Table 6. Compare to prior homogeneity

Subject		N	M	SD	t	p
Grade 5	Test Class	28	65.75	11.68	.13	.90
	Comparison Class	28	65.39	8.40		
Grade 6	Test Class	32	61.53	12.20	1.16	.25
	Comparison Class	31	64.71	9.29		

N: Number of students, M: Mean, SD: Standard Deviation, t: t-value, p: probability

ratio was indicated as p>.05, and we only get the p as .90, .25 respectively. It means that because of the difference between two classes for each grade, the prior homogeneity was secured.

4.2 Change on Recognition Level of Privacy Protection

Table 7 and Table 8 show the analysis of the reaction of the students for both the comparison class and the testing class. For the processing and analysis of questionnaire results, Microsoft Excel and SPSS12 had been used. Confidence level for questions was Cronbach α=.76.

4.2.1 In the Case of Grade Five

As shown in Table 7 and Figure 2, prior recognition levels on privacy protection of the test class and comparison class indicate that there is no significant difference on recognition levels (t=.13, p>.05). However, the significant difference between the test class and comparison class is shown from the results of post recognition on privacy protection (t=2.19, *p<.05). In other words, the recognition level of the test class on privacy protection has been improved more than that of the comparison class.

4.2.2 In the Case of Grade Six

As shown in Table 8, prior recognition levels on privacy protection of the test class and comparison class show no significant difference on recognition levels. And there was no significant difference between the test class and comparison class from the results of post recognition on privacy protection.

Table 7. Recognition Comparison of Privacy Protection of Grade Five

Time	Subject	M	SD	t	p
Before	Test Class	65.75	11.68	.13	.90 (n.s.)
	Comparison Class	65.39	8.40		
After	Test Class	73.93	10.19	2.19*	.03
	Comparison Class	67.93	10.28		

*p<.05, n.s.: non significant

Table 8. Recognition Comparison of Privacy Protection of Grade Six

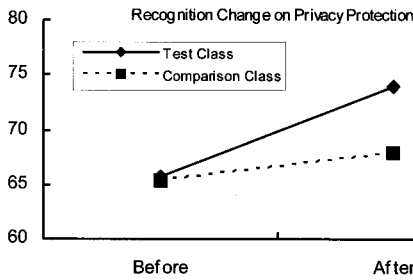| Time	Subject	M	SD	t	p
Before	Test Class	61.53	12.20	1.16	.25 (n.s)
	Comparison Class	64.71	9.29		
After	Test Class	67.72	11.74	.39	.69 (n.s)
	Comparison Class	66.61	10.84		

n.s. non significant

Fig. 2. Recognition Change on Privacy Information Protection

4.3 Change of Recognition Level by Group

For 60 students on the test class, an analysis of the change of recognition levels on the privacy protection before and after the class is made by scoring the answers from the questionnaire. 5 steps were used for each question, which are categorized into Dangerous Group for 54 points or less, Cautious Group for over 54 to 70 points and Normal Group for 70 points or more.

4.3.1 In the Case of Dangerous Group

As shown in Table 9, students in the Dangerous

Group of grade five shows a higher level on both the management area and the intention of practicing before the class, but no any significant difference indicated.

However, for the protection area, 10.17 points is obtained before the class and 13.50 points after the class. The results indicate a higher recognition level on the protection area after the class with p<.05 of significant difference.

Table 10 is the results before and after instruction about students in the Dangerous Group of grade six and significant difference in all areas is indicated. For the management area, even though 15.00 points is obtained from the students in the Dangerous Group before the class, the 23.83 points after the class indicates a higher recognition level on protection after the class with p<.01 of significant difference. For the protection area, 9.25 points is showed from the students before the class and 14.75 points after the class. Both results indicate a higher recognition level on protection after the class with p<.05 of significant difference. Moreover, for the intention of practicing area, 25.08

Table 9. Dangerous Group (grade five, n=6)

Area	Time	M	SD	t	p
Management	Before	13.83	5.46	-2.56	.05
	After	20.33	5.68		
Protection	Before	10.17	2.32	-2.60*	.05
	After	13.50	2.59		
Intention of Practicing	Before	26.17	5.42	-1.32	.25
	After	29.83	6.15		

* p<.05

Table 10. Dangerous Group (grade six, n=12)

Area	Time	M	SD	t	p
Management	Before	15.00	5.67	-3.58**	.00
	After	23.83	5.91		
Protection	Before	9.25	4.25	-2.68*	.02
	After	14.75	4.43		
Intention of Practicing	Before	25.08	4.23	-5.80***	.00
	After	34.75	3.52		

* p<.05, ** p<.01, *** p<.001

points is shown before the class and 34.75 points after the class, which indicates a higher recognition level on protection after the class with p<.001 of significant difference.

4.3.2 In the Case of Cautious Group

As shown in Table 11, as those students in the Cautious Group show a high recognition level on management area (p<.01), protection area, and practicing intention area (p<.05), it can be seen that this class has an effect on the improvement of the recognition level for the students within the Cautious Group on privacy protection.

As shown in Table 12, unlike the Dangerous Group, the results obtained from those students in the Cautious Group of grade six before and after instruction indicates that there is no significant difference in all areas.

4.3.3 In the Case of Normal Group

As shown in Table 13 and Table 14, the recognition levels on privacy protection for all three areas after the class are inconclusive in the case of the Normal Group.

4.4 The Difference of Satisfaction among the Classes

In order to research the difference of satisfaction

Table 11. Cautious Group (grade five, n=19)

Area	Time	M	SD	t	p
Management	Before	22.79	3.34	– 2.94**	.01
	After	25.21	3.24		
Protection	Before	14.53	3.53	– 2.41*	.03
	After	16.42	4.29		
Intention of Practicing	Before	29.89	4.78	– 2.82*	.01
	After	33.47	3.26		

* p<.05, ** p<.01

Table 12. Cautious Group (grade six, n=13)

Area	Time	M	SD	t	p
Management	Before	22.08	2.43	– 1.55	.05
	After	24.46	4.56		
Protection	Before	13.54	3.36	– .90	.39
	After	14.85	4.69		
Intention of Practicing	Before	29.23	3.06	– 2.24	.05
	After	33.31	4.99		

Table 13. Normal Group (grade five, n=3)

Area	Time	M	SD	t	p
Management	Before	29.33	1.16	.00	1.00
	After	29.33	.58		
Protection	Before	23.67	1.53	1.00	.42
	After	22.67	3.22		
Intention of Practicing	Before	34.67	1.16	-.50	.67
	After	35.00	2.00		

Table 14. Normal Group (grade six, n=7)

Area	Time	M	SD	t	p
Management	Before	23.57	2.07	1.79	.12
	After	20.43	5.44		
Protection	Before	15.71	2.93	-.46	.66
	After	16.43	2.23		
Intention of Practicing	Before	33.57	4.96	.75	.48
	After	30.43	8.28		

among different classes, we compare the class satisfaction of two classes by deciding interest, participation, and learning goal achievement. Two sub-elements are set as intellectual elements and emotional elements in the learning goal achievement.

We conduct conventional teaching and learning methods and focus on teacher's explanation for comparison class, and also apply the model suggested into the test class. Following, we analyze the obtained results.

Table 15 shows the results of comparison of class satisfaction from both comparison class and test class after class. The theme of privacy protection is subjecting on grade five students, such as 'Was the teaching and learning method interesting?'. There is a statistically significant difference obtained because of the average 3.14 for comparison class and average 4.07 for test class (p<.05).

In the case of 'How positively participate to whole courses of class activities?', the significant difference is gained as 3.18 for comparison class and 4.14 for test class (p<.001). For 'Have learned the method of privacy protection and management?', the significant difference is observed as 3.61 for comparison class and 4.61 for test class (p<.001). Finally, for 'Become to have practice will about privacy protection?', there is no significant difference obtained because of only 3.61 for comparison class and 4.25 for test class.

Table 16 shows the results of comparing class satisfaction of both comparison class and test class after class. The theme of privacy protection is subjecting on grade six students in the case of interest and intellectual goal achievement. There is no statistically significant difference.

However, for the participation element and emotional goal achievement, 3.81 and 3.88 points is obtained from the test class and 3.35 and 3.32 points from the comparison class, with p<.05 of significant difference.

Table 15. Satisfaction to class results (grade five)

element		Subject	M	SD	t	p
interest		Test Class	4.07	1.18	-2.73*	.01
		Comparison Class	3.14	1.35		
participation		Test Class	4.14	.97	-3.50***	.00
		Comparison Class	3.18	1.09		
goal achievement	intellectual	Test Class	4.61	.63	-3.63***	.00
		Comparison Class	3.61	1.32		
	emotional	Test Class	4.25	1.01	-2.06	.05
		Comparison Class	3.61	1.32		

* p<.05, *** p<.001

Table 16. Satisfaction to class results (grade six)

element		Subject	M	SD	t	p
interest		Test Class	3.59	.98	-1.68	.10
		Comparison Class	3.16	1.07		
participation		Test Class	3.81	.78	-2.14*	.04
		Comparison Class	3.35	.92		
goal achievement	intellectual	Test Class	3.84	.81	-1.63	.11
		Comparison Class	3.45	1.09		
	emotional	Test Class	3.88	.79	-2.42*	.02
		Comparison Class	3.32	1.01		

* $p < .05$

5. CONCLUSIONS

We have illustrated a PRAG model as a way to effectively execute privacy protection education for elementary school students and have designed a lesson plan and applied it to the test classes, the results are extremely encouraging when compared to conventional teaching and learning methods. Thus we have the following results as conclusions.

First, privacy protection education for elementary school students based on the proposed teaching and learning method that utilizes the prescribed Role-play teaching and learning model can be an effective method to increase recognition levels.

Second, due to the effective outcomes from students within the Dangerous Group, constant and special attention from the teacher is required for conducting the classes. Also, the proposed Role-play teaching and learning method can be an effective method for the students within the Cautious Group of grade five and the Dangerous Group of grade six. Furthermore, it would be a suitable, although less effective, instrument for the instruction of students within the Normal Group.

Third, it is indicated that there is a significant difference between the students from test class and comparison class for the interest, participation, and learning achievement to the class fore, a kind of teaching and learning methods based on the proposed Role-play teaching and learning model can

increase the class satisfaction of students that is related to privacy protection.

Fourth, when the Role-play teaching and learning model is applied to the education related to the privacy protection and management for elementary school students, it is indicated that there are more effective to grade five students than grade six students. Therefore, when implementing IT ethical education focusing on practice, this model is more useful for the early third stage (grade five) or the second stage (grade three-four) on the viewpoint of effectiveness.

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