

Useful Activities for Improving Awareness and Change of Evaluation by Others in Class for Creating Slides to Present Product

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Abstract

The creation of product presentation slides using PowerPoint was implemented in order to ensure that students acquire the knowledge and information literacy required to use computers. Students created slides presenting products in which they were interested, inserting animation and recording narration. This class combined evaluation and revision activities and implemented active learning and, along with enhancing computer skills, awareness relating to a variety of skills required for problem solving were enhanced in an attempt to cultivate independent thinking skills. In particular, the aim was not only to enhance PowerPoint skills but also to improve expressiveness, planning ability and ability to make proposals. In this paper, contents of the class to create product presentation slides are explained. Its useful activities in improving awareness in the class is reported. It is shown that the evaluation by others significantly improved overall after viewing the post projects.

1. Introduction

New class methods to implement effective classroom practice are proposed in the past. In particular, it is reported that much blended learning is tried and is effective lesson method. Recently, the Central Council for Education in Japan pointed out that a switch to active learning in which students independently detect problems and find solutions is essential and reports that active learning will be implemented in order to promote high quality undergraduate education that stimulates independent study in order to accumulate independent study experience and acquire skills for lifelong learning [1]. Some classroom practice showed that it was possible to develop classes that implement active learning, to enhance problem-solving ability and cultivate independent thinking skills by incorporating to repeat self-evaluation, evaluation by others and revision activities for some tasks for university students [2]. We believe that it is possible to cultivate the skills to solve these problems by creating things that people desire through making things that people can use.

There are some studies concerning storytelling [3] [4] [5]. Students produce works that inform and entertain people by describing real and imaginary events, using graphics, narration, and music in storytelling [6] [7]. In digital storytelling, still pictures such as photographs, figures, and drawn pictures are displayed sequentially to create a storytelling and narrated. Digital stories can be easily reconstructed. Still pictures are easy to handle for the producers of such assignments. Students can reflect upon memories or what they have learned through reviewing still pictures [8].

In required 3-hour/week subjects in the second half of 3rd year, students created projects that looked at the students themselves and asked them to talk about themselves in order to promote self-understanding [9]. This creation process incorporated evaluation and revision activities. It was reported that it was possible to cultivate skills to solve tasks in this class [10]. In addition, level of possible program operation was investigated before and after the class to determine the level of improvement in information literacy through practice. It was shown that literacy in software functions increased by creation of storytelling and operation level of PowerPoint raised especially [11].

The aim of class in this study was not only to enhance PowerPoint skills but also to improve expressiveness, planning ability and ability to make proposals. Classes to create slides to present products were implemented using PowerPoint. This is active learning in which it is not possible for students to complete their project unless they participate actively in classes. Students created slides presenting products in which they were interested, inserting animation and recording narration. Students viewed each other's slides and learned from each other. Mutual evaluation was used for interaction. Students evaluated others and commented. Following this, slides were revised. The students again viewed and evaluated each other's slides. This is attempt that awareness relating to a variety of skills required for problem solving is enhanced and independent thinking skills are cultivated by actively participating in evaluation and revision activities while interacting [12].

Class contents, project contents, creation methods and evaluation sheet contents are explained in the

following. The useful activities in improving attitude are analyzed by cluster analysis and χ^2 test. The evaluation by others is conducted after viewing the pre and post projects and change of the evaluation by others is surveyed by paired t-test. The results are reported. These results are considered.

2. Class design and plan

The target was the IT subject displayed in Table 1, a required subject for the second half of the 3rd year Computer Science course at University A. In this class, students chose their preferred theme from three possibilities and worked on this theme in 15 classes. Approximately one third of the class students attended (29 students). Each class was 90 minutes long and each student created two projects. The class was taught according to the plan in Table 1. The first seven classes were used to create slides presenting products and the next seven classes were used to create slides presenting books. Viewing and evaluations were carried out twice and revisions were carried out once.

This paper reports on the classes to create slides presenting products. The aim of these classes was to ensure that students acquire knowledge about computers they have learned about through classes in which they actually use computers and to utilize this knowledge. Furthermore, students selected the product they were interested in and created six slides with product details and features, why they liked the product, advertising, positioning in terms of competitors' products and proposals to improve the product. Students incorporated movement into the slides using animation so that the contents were easier to understand. Students created the contents of explanations in order to narrate the slides and then recorded this narration to complete slides to be viewed by the whole class. By doing this, written expression as well as expression using images was cultivated. By creating product presentation slides, evaluation activities were incorporated into creation,

awareness relating to a variety of skills required for problem solving was enhanced and independent thinking skills were cultivated.

In the creation of slides, it was important to create explanations to present the product and students were encouraged to think about the composition of product images and photos and how to express them. Students learned the importance of communicating their own thoughts and ideas to other people and thinking about how to convince people to buy the product by placing details, images, animation and narration in the appropriate places. In this class, after creating slides, students viewed the slides, noted the reaction to them and reviewed their projects.

A 39-page experiment booklet was distributed in the first class. Based on this booklet, there was an explanation of the aim of the class, its contents, plan, how to create slides and the experiment method. A sheet (the size of 2 A4 sheets) to fill in was distributed. Students were told to create a product presentation, fill in the right side of the sheet and draw on the left by the next class.

The second class gave an explanation of how to incorporate animation and the students created the product presentation slides.

The third class explained how to write reports and record navigation and students incorporated their animations.

The fourth class had students record narration and complete the product presentation slides. Files with product presentation slides were submitted at the end of this class. The teacher then amalgamated all the projects into one.

The sheet for evaluation by others was distributed in the fifth class, all the projects were viewed and evaluated and the evaluation sheets were submitted. Using the sheet, a teacher annexed others evaluation, sorted the rating level in student numerical order, and arranged and gathered it every student. A teacher registered the file with e-learning and allowed a student to download it. Following this, student revised their projects in reference to the rating level.

Table 1. Class plan

Time	Class plan	Plan related to assignment
1	Explaining Experiment method	Problem description, information retrieval, considering the description to introduce, inputting evaluation sheet 1
2	Creating slides to introduce products	Submission of the entry form, creating slide
3	"	Creating slide, putting the animation
4	"	Creating slide, recording narration, writing report 1
5	Evaluation and correction of slides to introduce products	Mutual evaluation, inputting evaluation sheet 2, modifying slide, writing report 2
6	Evaluation of slides to introduce products and report	Mutual evaluation, inputting evaluation sheet 3, writing report 3
7	Completion of the report and the evaluation sheet	Completing report and evaluation sheet

The revised product presentation slides were viewed again in the sixth class, evaluation was conducted again and evaluation sheets were submitted.

Students wrote one third of their reports for the days before the fourth, fifth and sixth classes and these were returned to the students with suggested revisions during the classes.

Reports were completed in the seventh class and all evaluation worksheets were completed and submitted.

The files of framework for product presentation documents, the framework for reports and evaluation sheet were available to download from an e-learning site. The teacher created the evaluation sheets required for class evaluation activities as evaluation worksheets. These were self-evaluation sheets, sheets for evaluations by others, evaluation sheets evaluated by others, sheets for self-re-evaluation, sheets for evaluation of awareness relating to improved skills and sheets for software skills, etc. Students downloaded the files, filled in the applicable details and submitted them.

The teacher made evaluation paper necessary for the evaluation activity of the class to the worksheet of the Excel file. The contents are three times of self-evaluation, two times of evaluations by others, two times of evaluation evaluated by others, evaluation of awareness related to ability, and degree available to utilize the software.

3. Contents of production presentation slides created by students

The aim of the theme was to think about how to convince people to buy a product such as electronic or industrial goods, by presenting with slides about a product in which the student was interested or that the student recommended that other people to buy it after the student thought about how to convince people to buy it. In the future, hypothetical product development plans can also be considered. Students were asked to select a specific product. Insert images of this product without exception.



Figure 1. Sample of slides to present product

Presentations are composed of six slides as shown in Figure 1. Figure 1 is a sample of the slides to create and was shown to students. The slideshow is no longer than two minutes. Font size is 28 or more, as much as possible.

The contents of the six slides were composed as follows. The title of the production presentation slides that a student created is shown in Table 2.

(1) Product Name and Catchphrase

The title should be a catchphrase such as “(adjective) product” or “X product is (adjective)”. It should be a concrete presentation of a product that is currently on sale.

(2) Product Details

Clearly state product name, company name, product details, model number, year of launch, etc. Include an explanation of what the product does in product details. Explain what kind of object the presentation is about.

(3) Product Features and what the Student likes about the Product

Explain production functions, convenient points and good points, etc. Present what they liked about the product when they used it. Explain the reason for recommending the product and its appeal. Explain impressions from use and convince the viewer to buy the product.

(4) Advertising

Create newspaper/magazine advertising or newspaper insertion advertising. Create advertising by considering ways to appeal to the consumer in order to convince them to buy the product.

Table 2. List of products which a student introduced

Classification	Title
PC	ipad air
	XperiaZVitra
	USB mobile power supply QE-QL202
Robot	pepper
Mobile phone	application of smart phone to wake clearly
	iphone6
Game console	Recommended game console
	XBOX
	Topical game console WonderSwan
	PSP
Game	Escape game that heart is broken
	Innocent
	Love game that plays baseball
	Cranado is the life
Music	Headset which a microphone can be detached from SONARX3
Life article	Small and light cyclone vacuum cleaner
	TOTO Washlet KM series
	Item which is indispensable to a university student
Contact	Have this if you cherish the eye
Sports	Racket which is easy to work of the turn
Motorcycle	125cc Sports motorcycle YZF-R126
	Motorcycle to be able to ride happily
Food	Kuppy Ramune with memory beyond the generation
Drink	Aquarius
	Presso, tea which colors life happily and deliciously
	Plum liqueur

(5) Positioning in Terms of Competitors' Products

Display product sketch, specifications, prices, amount sold, market share, competitor information and points for each company name and product name to demonstrate the position of the presented product in terms of competitors' products. Use graphs and tables to give a visual image.

(6) Proposals to improve the Product

Think about inconvenient points and functions that could be added. On the basis of making a proposal to the company, consider sales strategy and methods to promote sales in order to sell more units than are being sold currently and make proposals to improve the product.

4. Results of analysis

Three types of survey were used in order to understand the learning effects of creating the product presentation slides detailed in the previous section. Awareness relating to skills was surveyed before and after the class and, through these changes, it was possible to understand the level of achievement of the aim of the class. Useful activities for improving awareness was surveyed after the class.

Evaluation by others through two viewings was analyzed to determine the level of revision of projects from these changes. The final written comments from evaluation by others were investigated to determine their level of usefulness as advice.

Below, the results of statistical significance are acceptable with a significance level of 5%. The symbols m, SD, t and p represent mean, standard deviation, test statistic and (significant) probability respectively. Significance levels of 0.1%, 1%, 5%, 10% are represented by ***, **, *, + respectively.

4.1. Results of classification of awareness through cluster analysis using the number of activities that are useful in improving awareness

The 27 student replied activities that were useful in raising awareness among 33 kinds of activity as shown in columns of Table 3. The awareness consists of 30 types. Activities were counted and a 30 row X 33 column cross-tabulation table was created as shown in Table 3. Rows contain 30 types of awareness relating to skills and columns contain 33 types of activities.

Cluster analysis was conducted by taking awareness as its case and activities as variables in this table using the Ward method. Awareness was divided into three clusters from the dendrogram as shown in Figure 2. These were called Groups I – III. The horizontal axis in Figure 2 represents level of

dissimilarity and the vertical axis represents awareness.

Group I has awareness in 19 categories: (24), (25), (12), (28), (29), (6), (22), (14) and (15) for presentation skills and (13), (7), (30), (8), (9), (10), (11), (27), (5) and (21). Average frequency of enumerated activities that were useful for awareness in these 19 categories was 55.5, slightly less than the overall average value but with middle level frequency. Of the above, the frequency of (7), (5), (8), (15), (30) and (11) was comparatively high. From these, Group I can be summarized as “I. Awareness relating to skills from learning to information analysis.”

Group II has awareness in seven categories: (20), (26), (17), (23), (16), (19) and (18). Average frequency of enumerated activities that were useful for awareness in these seven categories was 51.6, a frequency less than the overall average value. Group II had the lowest frequency. Of the above, the frequency of (16), (19) and (18) was comparatively high therefore Group II can be summarized as “II. Awareness relating to listening and evaluation.”

Group III has awareness in four categories: (1), (2), (3) and (4). Average frequency of enumerated activities that were useful for awareness in these four categories was 73.3. Group III had the highest average frequency and it was discovered that



Figure 2. Dendrogram showing awareness clusters obtained from cluster analysis

awareness in all four categories is high in comparison to the 26 evaluation categories and that there were many activities that were useful in improving these kinds of awareness. Group III can be summarized as “III. Awareness relating to computers.”

4.2. Results of classification of activities through cluster analysis using the number of activities that are useful in improving activities

Cluster analysis was conducted using the Ward method for the 30 row \times 33 column cross-tabulation table of Table 3 by taking activities as its case and awareness as its variable. As the result, activities were divided into three clusters from the dendrogram as shown in Figure 3. These were called Groups 1 - 3. The horizontal axis in Figure 3 represents level of dissimilarity and the vertical access represents activities.

Group 1 is composed of 21 categories: 20. Re-self-evaluate product presentation slides, 21. Further re-self-evaluate product presentation slides, 19. Self-evaluate product presentation slides, 23. Re-view other students' product presentation slides, 25. Re-evaluate other students' product presentation slides, 24. Evaluation by others of other students' product presentation slides, 22. View other students' product presentation slides, 31. Rewrite and re-write report, 32.

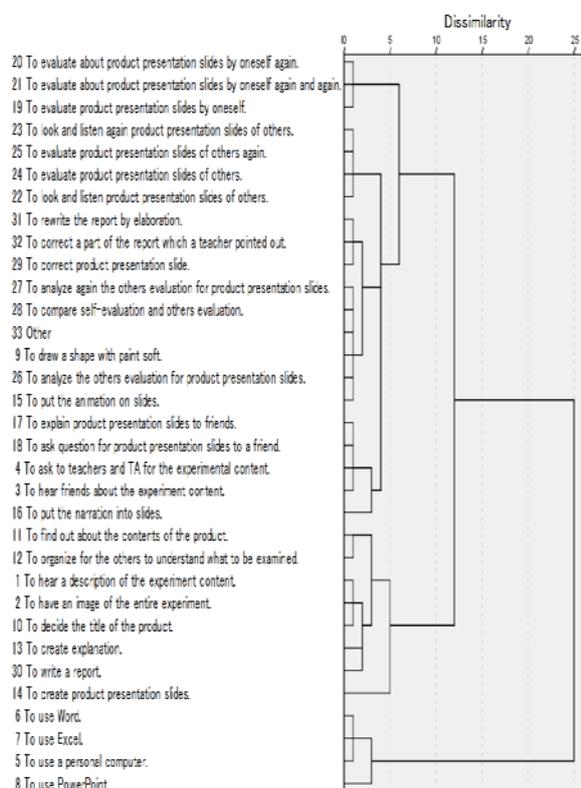


Figure 3. Dendrogram showing activity clusters obtained from cluster analysis

Submit report, receive guidance from teacher and revise, 29. Revise product presentation slides, 27. Analyze re-evaluation by others of presentation slides, 28. Compare self-evaluation and evaluation by others, 33. Other, 9. Create shapes with Paint, etc., 26. Analyze evaluation by others of product presentation slides, 15. Insert animation into slides, 17. Explain product presentation slides to friends, 18. Question friends about product presentation slides, 4. Ask teacher or TA about the contents of the experiment, 3. Ask friends about the contents of the experiment and 16. Insert narration into product presentation. Of the above, the frequency of activity categories 3, 16, 17 and 19 was high therefore Group 1 was named “1. Activities relating to communication and mutual evaluation.”

Group 2 is composed of 8 categories: 11. Research product presentation contents, 12. Organize research contents, 1. Listen to explanation of the contents of the experiment, 2. Form an overall impression of the experiment, 10. Decide the product presentation title, 13. Create the product presentation, 30. Write report and 14. Create product presentation slides. Frequency for almost all categories was high therefore Group 2 was named “2. Activities relating to creating tasks.”

Group 3 is composed of four categories: 6. Use Word, 7. Use Excel, 5. Use a computer and 8. Use PowerPoint. Frequency for all activity categories was high therefore Group 3 was named “3. Activities relating to using programs.”

4.3. Results of analysis of activities that are useful in improving awareness

This is a 30 row \times 33 column cross-tabulation table for awareness and activities. Frequency was aggregated for each cluster obtained in the previous sections and is shown in the top left of Table 4. This table was χ^2 tested as a 3 \times 3 contingency table. The results showed a significant bias in frequency ($\chi^2(4)=558.8, p<.001$). Accordingly, the results of residual analysis are shown in the bottom left of Table 4. Cells for which significance was recognized and which had a positive residual are marked with a * in the bottom right of Table 4.

From these results it was discovered that “1. Activities relating to communication and mutual evaluation” is useful in enhancing “II. Awareness relating to listening and evaluation”.

It was discovered that “2. Activities relating to creating tasks” is useful in enhancing “I. Awareness relating to skills from learning to information analysis”.

It was discovered that “3. Activities relating to using programs” is useful in enhancing “III. Awareness relating to computers”.

Table 4. Results of χ^2 tests and residual analysis of cross-tabulation using awareness and activities clusters

Clusters of attitude and activities	Observed frequency				Expected frequency		
	1. Activities relating to communication and mutual evaluation	2. Activities relating to creating tasks	3. Activities relating to using programs	Total	1. Activities relating to communication and mutual evaluation	2. Activities relating to creating tasks	3. Activities relating to using programs
I. Awareness relating to skills from learning to information analysis	309	519	226	1054	393.1	377.0	283.9
II. Awareness relating to listening and evaluation	275	49	37	361	134.6	129.1	97.2
III. Awareness relating to computers	53	43	197	293	109.3	104.8	78.9
Total	637	611	460	1708	637.0	611.0	460.0
	Adjusted residual				Significance probability		
I. Awareness relating to skills from learning to information analysis	-8.7	14.7	-6.5			***	
II. Awareness relating to listening and evaluation	17.2	-9.9	-8.0		***		
III. Awareness relating to computers	-7.5	-8.3	17.1				***

*** p<.001

4.4. Change in evaluation by others through two viewings

Directly after viewing the projects the first and second time, evaluation by others was conducted with five grades for 17 categories and evaluation sheets were filled in and submitted. Critical remarks were made with five grades: 1. Contents are insufficient and required levels are hardly fulfilled, 2. Contents do not fulfil required levels, 3. Contents almost fulfil required levels, 4. Contents satisfactorily fulfil required levels and 5. Contents exceeded required levels. 27 people responded to both evaluation sheets. Elongation in the two evaluations by others was tested for paired significance difference and these results are shown in

Table 5. The results of paired significance difference for overall average assessment values for both viewings acknowledged significance ($t(442)=19.78$, $p<0.001$). It was discovered that evaluation by others improved overall.

The results of paired significance difference tests for average assessment values for both viewings for each question category showed significant improvement in seven question categories ((4), (5), (11), (14), (15), (16) and (17)) as shown in Table 5. There was a significant improving trend for question category (3).

It was discovered that all four following categories relating to narration improved: (14) Is the speaker easy to hear?, (15) Does the sound of BGM suit the presentation?, (16) Is time distribution appropriate? and (17) Is there ingenuity in the

Table 5. Significance difference tests for two evaluations by others

Classification	Question Items	m	SD	t	p
Explanation	(1) Is the composition of the whole explanation appropriate?	0.14	0.46	1.49	
	(2) Does the explanation accord with a title?	0.08	0.48	0.85	
	(3) Are you interested in explanation?	0.14	0.37	1.82	+
	(4) Is there a contrivance of clarity in explanation?	0.14	0.31	2.20	*
	(5) Do you want to purchase the product which you were introduced?	0.28	0.46	3.00	**
Slides	(6) Does each slide accord with explanation?	0.04	0.42	0.51	
	(7) Is a slide devised to understand explanation?	0.11	0.40	1.32	
	(8) Is the composition of the whole slide appropriate?	0.07	0.41	0.84	
	(9) Is the background of the slide appropriate?	0.11	0.36	1.49	
	(10) Are size and the color of the letter appropriate?	-0.04	0.39	0.52	
	(11) Is the thing using for explanation appropriate?	0.19	0.41	2.22	*
	(12) Is the object performing animation appropriate?	0.04	0.40	0.53	
	(13) Is the target movement performing animation smooth?	0.01	0.38	0.12	
Narration	(14) Is it easy to hear the voice?	1.41	0.66	10.55	***
	(15) Are sound and BGM appropriate?	1.01	0.79	6.29	***
	(16) Is the time distribution appropriate?	0.54	0.83	3.19	***
	(17) Is the narration devised to understand explanation?	1.19	0.84	6.89	***
	Mean	0.32	0.68	9.78	***

narration so that viewers understand the product?. Average assessment values for the four categories overall increased from 2.4 to 3.2. This is thought to be due to the fact that many students were recording narration for the first time and because the recordings were done in fairly lowered voices so that the students seated next to each other did not hear each other recording. At the first viewing, some people could be heard with the speaker volume at maximum and some could not. This can also be estimated from the fact that the students reflected on this and by the second viewing there had been improvement and everyone could be heard.

Next, it was discovered that three of the five categories relating to explanations improved: (3) Is the product presentation interesting?, (4) Is there easy-to-understanding ingenuity in the product presentation and (5) Do you want to buy the product that was presented?. Average assessment values for the five categories overall increased slightly from 3.3 to 3.5.

The following only one of the seven categories relating to slides was discovered to have improved: (11) Were devices used for explanation in the product presentation suitable?. Average assessment values for the seven categories overall changed slightly from 3.35 to 3.42.

4.5. Comments in evaluation by others through two viewings

Students were asked to write the following comments at the end of evaluation by others: Please fill in your thoughts and advice about the product presentation slides. The number of instances of advice for the two viewings were 521/549 and 495/517 respectively and their ratios were 95% and 96%. Advice was almost always written with respect to evaluation by others for both viewings. The average number of characters for both viewings 1 and 2 were 13.0 and 13.2 respectively and there was not much difference.

The contents of advice were as follows: I think that it would be good to make improvements as the characters are small or they are not contained within shapes, the slides change too fast for the number of characters that they contain and I think the background that you are using makes the slides difficult to see. Thoughts were simple such as I think that your approach to narration such as including examples was good, I had never heard of a product like this before and I think the animation was well done. Considering the fact that there were 17 categories to evaluate in the short space of one minute, the comments are considered to be well written. In addition, it is thought that this amount of advice is of use as a reference for the students who were being evaluated. As a result, it is estimated that

there was overall improvement due to evaluation by others as explained in section 4.4.

4.6. Correlation between reports and awareness Second-order headings

The range of report submissions was 4 – 6 and the average number of times that reports were submitted was 4.7. The following three categories had a significant correlation between elongation in awareness and the number of times that a report was submitted. The correlation coefficient r between the average number of submissions of that reports and elongation in (6) planning skills was $r=-0.42^*$. The correlation coefficient between the average number of submissions and elongation in (15) presentation skills was $r=-0.41^*$. Both of them were significant but weak correlations. In addition, the correlation coefficient r with report score was $r=-0.61^*$, a significant but medium level correlation. This means that the fewer number of times a student submitted a report, the bigger their improvement in planning and presentations skills was. This also means that the fewer number of times a student submitted a report, the higher the report score was. There was no significant correlation with improvement in other types of awareness.

The range of character numbers written in the 11 discussion categories of the report was between 970 and 6005 and the average number of characters was 2338.8. The correlation coefficient r between the number of characters in reports and elongation in (8) skills for learning by oneself was $r=-0.42^*$, a significant but weak correlation. This means that the higher the number of characters in a student's report, the lower the level of elongation in learning skills. The coefficient correlation r with elongation in (18) skills to appropriately self-evaluate one's own ideas was $r=0.34$ and this correlation was in a significant trend. This means that the higher the number of characters in a student's report, the bigger the trend in elongation in self-evaluation skills. There was no significant correlation in elongation in other types of awareness.

5. Discussion

5.1 Changes in awareness relating to skills and the reasons for these changes

As explained in section 4.3, all awareness relating to skills categories (1) - (30) were acknowledged to have significance difference. The reason for enhanced awareness was discovered to be that activity cluster "1. Activities relating to communication and mutual evaluation" is useful in

enhancing awareness cluster “II. Awareness relating to listening and evaluation.” The following can be stated to explain in slightly more concrete detail. Activities such as asking teachers and friends about experiment contents, explaining slides to friends, self-evaluation of product presentation slides, evaluation by others, revising and re-writing reports are useful in improving skills in communication, collaborative learning, questioning, evaluation by others and self-evaluation.

It was discovered that activity cluster “2. Activities relating to creating tasks” is useful in enhancing awareness cluster “I. Awareness relating to skills from learning to information analysis.” The following can be stated to explain in slightly more concrete detail. Due to activities such as collecting and organising information, thinking of explanations, creating slides and writing reports, this means that skills for setting tasks, collecting information, learning, thinking, planning, creating, organising and summarizing information and written expression of contents improved and it was possible to execute everything.

It was discovered that activity cluster “3. Activities relating to using programs” is useful in enhancing awareness cluster “III. Awareness relating to computers.” The following can be stated to explain in slightly more concrete detail. By using PowerPoint, Excel and Word on a computer, computer operation skills improved, interest in computers was enhanced, understanding improved, and usage methods and situations expanded.

In this way, by actively involving students in many different interactive activities during and outside of classes, it is considered that it was possible to enhance various skills.

5.2 Evaluation by others

From section 4.4, it was discovered that there was improvement in evaluation by others the second time overall. Slides were created, self-evaluations were made, the slides of other people were viewed and then all the slides were evaluated by others. Using the viewing of the slides of other people and taking evaluation by others into account, students revised their own slides so they were able to produce good projects. Among these, revision was particularly well executed in the order of narration, explanation and slides.

It was discovered that there was improvement in all four categories relating to narration. Many students were adding narration for the first time and, in the beginning, they were recording without really knowing what they were doing. However, they realised the problems after hearing the narrations in the first viewing. They were able to revise ease of

understanding, suitability of sound, suitability of time distribution and devices to make the narration easy to understand with the second recording.

It was discovered that there was improvement in three of five categories relating to explanation. The second viewing enhanced interest in the product, showed devices to make the explanation easy to understand and encouraged viewers to want to buy the product. This is believed to be due to the realisation during the first product presentations that there were some points for which the explanation was difficult to understand and because these were revised.

It was discovered that there was improvement in slides at the second viewing for only one out of eight categories: (11) Suitability of objects used to explain the product presentation. Students learn how to operate PowerPoint in the 1st year and as they had experience of creating slides, they generally knew how to create slides to a certain extent therefore it is thought that they were able to create product presentation slides for this class without much trouble. It is for this reason that only category (11) relating to contents which students experienced in this class seemed to improve.

5.3 Relationship between reports and awareness

The result that the fewer the number of times a student submitted a report, the higher the levels of elongation in planning and presentation skills was obtained. This is estimated to be due to the fact that the harder students worked in a planned manner to create slides and to write and submit their reports, the fewer submissions they made.

Furthermore, it is thought that students who had enhanced presentation skills through activities such as creating ingenious slides, inserting animation and inserting narration when creating slides went on to write ingenious report contents and discussion and made fewer mistakes therefore requiring fewer submissions.

In addition, the result that the fewer the number of times a student submitted a report, the higher the report score was obtained. This means that students with high report scores made less mistakes or errors therefore they required fewer submissions.

The result that the higher the number of characters a student wrote in the report discussion, the lower the level of elongation in learning skills was obtained. This is considered to be an odd result at first glance. However, students who wrote detailed discussions had high learning skills in the first place and already thought things through carefully therefore it is thought that they wrote in detail about what should be discussed. For this reason, the higher the number of characters a student wrote in the report discussion, the lower the level of elongation in

learning skills. Meanwhile, students who were only able to write a discussion with short phrases or just words had low learning skills in the first place and were not able to think things through carefully but by re-writing the discussion three times, they felt that their learning was lacking and that there was a need to further their learning, resulting in elongation in learning skills.

The result of a trend in the higher the number of characters a student wrote in the report, the higher the level of elongation in self-evaluation skills was obtained. It is thought that this is due to the fact that students who wrote detailed discussions already thought things through carefully so, through self-evaluation, they were able to view other student's projects and compare their own project to others objectively and therefore conduct appropriate self-evaluation. It is thought that self-evaluation improved as a result of this.

5.4 Copyright guidance

Students were told to consider copyright conflict during the creation of their projects. For this reason, they were asked to make product names and model numbers clear and to state sources for information and images. In addition, students were told that they must display the addresses of websites used for the slides and the report.

6. Conclusion

Active learning was incorporated to design and hold classes to create product presentation slides using PowerPoint. Students determined the product they wanted to present, researched this product, thought about how to explain the project, created slides, inserted animation and recorded narration. All students viewed each other's slides and learned from each other. Mutual evaluation was conducted and comments were made. Following this, slides were revised and all students mutually viewed and evaluated the slides again. Students mutually interacted and cooperated with other students and by actively participating in evaluation and revision activities in the process of completing their projects, problem-solving abilities were enhanced and classroom practice that cultivated independent thinking skills was reported.

The findings from this class can be summarized as follows.

- (1) Activities relating to communication and mutual evaluation is useful in enhancing awareness relating to listening and evaluation.
- (2) Activities relating to creating tasks are useful in enhancing awareness relating to skills from learning to information analysis.
- (3) Activities relating to using programs is useful in enhancing awareness relating to computers.

(4) The fewer number of times a student submitted a report, the bigger their improvement in planning and presentations skills was. The fewer number of times a student submitted a report, the higher the report score was. The higher the number of characters in a student's report was, the bigger the trend in improvement in self-evaluation skills was.

(5) From χ^2 tests using cross-tabulation on awareness and activities that are useful in its improvement, it was discovered that 1. Activities relating to communication and mutual evaluation is useful in enhancing II. Awareness relating to listening and evaluation and that 2. Activities relating to creating tasks is useful in enhancing I. Awareness relating to skills from learning to information analysis and that 3. Activities relating to using programs is useful in enhancing III. Awareness relating to computers."

(6) The results of significance difference tests for evaluation by others directly after viewing the projects for the two times showed that evaluation by others improved overall.

(7) The results of paired significance difference tests for two evaluations by others for each question category showed that eight categories composed of four out of four categories relating to narration, three out of five categories relating to explanation and one out of seven categories relating to slides improved significantly.

(8) The fewer the number of times a student submitted a report, the higher the level of improvement in planning and presentation skills and the fewer the number of times a student submitted a report, the higher the report score. The higher the number of times a student submitted a report, the lower the level of improvement in learning skills.

In the future, we would like to compare the effects of the above-mentioned storytelling [5] and the effects of this class. We would also like to apply innovation to class methods to improve learning ability for students with a wide range of learning abilities.

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