DOCUMENT RESUME

ED 358 818 IR 016 098

AUTHOR Saga, Hiroo
TITLE Japanese Children's Preconceptions of Different Media as Related to Their Learning.
INSTITUTION National Inst. of Multimedia Education, Chiba (Japan).
REPORT NO NIME-RDD-WP-009-[illegible]-90
PUB DATE 1 Mar 90
NOTE 32p.; Paper presented at the Annual Meeting of the Association for Educational Communications and Technology (Anaheim, CA, January 31-February 4, 1990).
PUB TYPE Reports - Research/Technical (143) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS Children; Elementary School Students; Foreign Countries; Grade 5; Grade 8; Intermediate Grades; Junior High Schools; Junior High School Students; *Mass Media Effects; *Multimedia Instruction; Prior Learning; Reading; *Student Attitudes; Teacher Influence; Television Viewing; Writing (Composition)
IDENTIFIERS Causal Reasoning; *Japan

ABSTRACT

Two studies examine the nature of Japanese elementary school and junior high school students' preconceptions about media, the effects of teachers on these preconceptions, and the effect of such preconceptions on learning from instruction in multimedia situations. In the first study, 109 fifth graders reported their preconceptions toward watching television, using a computer, reading, writing, and listening to a teacher in aspects of preference, difficulty, and learning expectancy. Preconceptions about media activities were related to teachers' patterns of media use in classes, and preconceptions were also connected with learning from these instructions. In the second study, 134 eighth graders were asked the same preconception questions, with additional questions on their perceptions of the realism of media and their causal attributions of success and failure in learning from media. These results support those of the first study in suggesting that there is a reciprocal interaction among learners' preconceptions about media, teachers' media utilization, and performance in learning from media. Nine tables and three figures illustrate the discussion. Eight transparencies have been reproduced and included. (SLD)

RESEARCH AND DEVELOPMENT DIVISION
WORKING PAPER 009-E-90

JAPANESE CHILDREN'S PRECONCEPTIONS OF DIFFERENT MEDIA AS RELATED TO THEIR LEARNING

BY
HIROO SAGA

MARCH 1, 1990

NATIONAL INSTITUTE OF MULTIMEDIA EDUCATION
CHIBA, JAPAN

Japanese Children's Preconceptions of Different Media as Related to Their Learning

Hiroo Saga
Associate Professor
National Institute of Multimedia Education
2-12, Wakaba, Chiba-shi
Japan 260

(Note) This paper is based on the project of "Evaluation of Instructional Practices Based on 'Media Mix' Concept" at the National Institute of Multimedia Education, and was first presented by the author at the Annual Convention of the Association for Educational Communications and Technology, in Anaheim, California, in February 1990.

Japanese Children's Preconceptions of Different Media as Related to Their Learning

Hiroo Saga

National Institute of Multimedia Education, Japan
2-12, Wakaba, Chiba-shi, Chiba
Japan 260

Paper Presented at the Annual Convention of
The Association for Educational Communications
and Technology
January 31 - February 4, 1990
Anaheim, California

Abstract

This series of two studies examines the nature of Japanese elementary and junior high school children's preconceptions toward media, the effect of teachers on these preconceptions, and the effect of such preconceptions on learning from instructions in multimedia situations. This problem is in line with Salomon's model for learning from media which stresses a reciprocal influence of learners' perception of situational characteristics and self-efficacy on their investment of mental effort which in turn affects learning. Further examination of this model in actual classroom situations will contribute to improving the ways in which media are utilized for instruction. In the first study, the 109 fifth graders' in three different classes who acted as subjects were asked to report their preconceptions toward watching television, using a computer, reading, writing, and listening to a teacher in three aspects of preference, difficulty, and learning expectancy, which resulted in a similar relationship between the three aspects to that found in American children (Krendl, 1986). When their learning from three classroom instructions using the same television program and other media was evaluated, their preconceptions about media activities were found to be related to teachers' patterns of media use in classes. Furthermore, such preconceptions were also connected with learning from these instructions. In the second study, 134 eighth graders were given the same preconception questions, and additional questions on their perception of the realism of media and their causal attribution to success and failure in learning from media. A similar relationship between the three levels of students' preconceptions of the media was found. Some tendencies were found in terms of the perception of media realism (e.g., TV as more real than other media) and causal attribution (e.g., print and computer more attributed to ability), but further study is needed to obtain a clearer picture of these factors as related to learning from media. An overall evaluation suggests that there is a reciprocal interaction among learners' perceptions of media, teachers' media utilization, and performance in learning from media. Culture in schools may also affect this relationship.

Study One

Purpose

This study examines the structure of children's preconceptions of different media and explores its relationship to teachers' teaching style and the effect of such preconceptions on learning from classroom instructions using media. It is in line with Salomon's model of learning from media in which he assumes "perceived demand characteristics of the task, material, and context are possibly related to perceived self-efficacy, and both affect amount of invested mental effort, which in turn influences learning" (Salomon, 1984, p.649). This model is important for improving cognitive environments using media for instruction and is worth examining in actual classroom settings in different cultures.

Krendl(1986) explored American students' preconceptions of different media activities, and Beentjes(1989) replicated Salomon's investigation of children's investment of mental effort and perceived self-efficacy for television and books with Dutch samples. The present study also aims to compare its results to these preceding studies where possible. This study is essentially a survey of children's preconceptions of five different media activities for learning, but it also explores the role of different types of media utilizaiion by teachers and the effect of such preconcetions on learning from instructions using different media.

Method

Subjects

Subjects were 109 fifth grade pupils and their three teachers in three Kanazawa City elementary schools in Japan. The pupils comprised 58 boys and 51 girls in three different classes; Class A (n=39), Class B (n=37), and Class C (n=33). There was no significant difference between the three classes as to the gender ratio and the Intelligence Test scores.

The three teachers are members of a teachers' research group for educational broadcasting, and have more experience in media utilization than many other teachers. Teacher A is female and has 26 years of teaching experience. Teachers B and C are male with 15 and 14 years of teaching experience respectively. They had classroom instructions which were later used to evaluate childrens' learning. In these instructions the three teachers all used a television program as the main medium and varied supplementary media according to their different aims.

Procedure

1) Three Classroom Instructions: The three teachers conducted their classroom instructions in November 1987, and their pupils'

learning from the instructions were measured. Later it was examined in relation to pupils' preconceptions of media. The classroom instructions are based on the teacher's cooperative design for using a common television program for their classes (Saga, 1989). The three teachers all used the same program, "Digging a Well in the Desert with Bamboo" from a NHK television series, "We are All People on the Earth," but they also introduced other media according to their instructional aims which differed from one another. Pupils' learning from these instructions were measured by means of two sets of true-or-false questions on the program contents (six items on the use of the well-digging technology and seven items on the characteristics of foreign countries in the program). Pupils' free description of what they learned from the program was also categorically evaluated in terms of attainment of the teachers' aims.

2) Pupils' preconception of media: Children's preconceptions of five kinds of media activity were evaluated by the method of paired comparison in the three levels of preference, difficulty, and learning expectancy. The five media activities are watching television, using a computer, reading, writing, and listening to a teacher. The last medium, teacher, is added to the remaining four media which were used in Krendl(1986)'s study. Children were asked to choose one medium from each of the ten possible pairs. The questions were, "which would you rather do..." (preference), "which would be more difficult for you..." (difficulty), and "which would you learn more from..." (learning expectancy). Questionnaires were group-administered in the subjects' own classrooms in March 1988.

3) Background information: Data was also obtained from the pupils on the amount of TV viewing in an average week day, the number of books they read in a previous month, recent IQ scores, and recent school grades on Japanese and Social Studies. From the three teachers, self-reports on their own teaching styles, including the patterns of media use, were obtained. In addition, an evaluation on the teachers' teaching styles was made by a school supervisor who was in a position that allowed impartial observation of the teachers.

Results

1) The structure of children's preconceptions of different media.

First, the children's paired comparison data was examined following Thurstone's transformation procedure as it was used by Krendl(1986). Table 1 shows the raw proportions of preference, difficulty, and learning judgements, and Figure 1 illustrates the interval scales for the five media in the three levels of judgement. In the preference scale, computer was most preferred and writing least preferred. For perceived difficulty, it ranged from writing as the most difficult activity to teacher's lecture the least difficult, and for learning expectancy, it was from teacher as the most expected to writing the least expected.

Insert Table 1 about here

Insert Figure 1 about here

A correlation matrix was calculated based on the individual scores of each pupil for the five media activities on the three preconception levels. The scores were obtained from how many times each medium was selected within each level. The result, shown in Table 2, replicated Krendl's finding more clearly, that is, "the more an activity is preferred, the less difficult it is perceived to be, but the more likely one is to think one will learn from it."

Insert Table 2 about here

---

2. Difference between genders and between classes.

Based on the individual scores for the three preconception judgements, comparison was made between genders and between the three classes. As shown in Table 3, there were no significant differences between boys and girls except in the case of preference for writing, where girls preferred writing more than boys ($p<.05$).

Insert Table 3 about here

However, as shown in Table 4, the difference between the three classes was more signinficant. In the preference level, writing was most preferred by Class A, and the teacher was most preferred by Class B ($p<.01$). In the difficulty level, television was perceived most difficult in Class B ($p<.01$), and writing was perceived most difficult in Class C ($p<.05$). In the learning level, writing was most expected by Class A, computer was most expected by Class C, and teacher was most expected in Class A with Class B close to it ($p<.01$). These results had a general resonance to the teaching style and the pattern of media use of each teacher which was reported from the teachers and an advisor of them.

Insert Table 4 about here

---

3. Relationship with learning outcome.

Children's individual scores on media preconceptions was examined in relation to their learning outcomes from the three instructions which used the same television program and other

different media. Two learning measures were introduced for this. One is the total number of correct answers to the two sets of true-or-false questions on the program contents (point 13 is the highest). The other is a categorical evaluation of pupils' free description for whether they attained the teachers' instructional aim or not. Since the scores to the first measure were not normally distributed, children were divided into a high-group (those who took full points; n=30) and a low-group (those who took points under 11; n=37).

As shown in Figure 2, significant differences between the two groups were obtained for three preconception scores: 1) the preference for teacher's lecture with the low-group being higher than the high-group ($t=2.1$, $df=65$, $p<.05$), 2) perceived difficulty of teacher's lecture with the the low group being smaller than the high-group ($t=2.4$, $df=65$, $p</05$), and 3) learning expectation from television with tne low-group being smaller than the high-group ($t=2.1$, $df=65$, $p<.05$). As for the categorical evaluation of children's free description, the preference for the teacher's lecture was higher for those who were evaluated as not having attained the teachers' aim (n=50, mean=2.6) than for those who were evaluated as having attained the teachers' aim (n=54, mean=2.1) ($t=2.1$, $df=102$, $p<.05$). Care should be taken in interpreting these results, since the instructional aims and procedures except the common use of a TV program were different among the three teachers.

Insert Figure 2 about here

---

4. Correlation with background variables

Correlations between the children's preconception scores and other background variables were calculated, which resulted in the following significant correlation coefficients: negative correlations between the preference for TV and the amount of reading books and the grades received in Japanese Language courses, positive correlation between the preference for reading and the amount of reading books, positive correlation between the perceived difficulty of reading and IQ scores, negative correlation between the perceived difficulty of computer and the school grades of Social Studies, and negative correlations between the learning expectancy from writing and IQ scores and school grades of Japanese and Social Studies.

The first measure of the learning outcomes, understanding of the TV program, was significantly correlated with the grades in Japanese ($r=.22$, $df=102$, $p<.05$), and with the perceived difficulty of teacher's lecture ($r=.20$, $df=102$, $p<.05$).

5. The three teachers' teaching styles

From the teachers' self-reports and their advisor's observation, the three teachers are very likely to have the following characteristics: Teacher A in Class A emphasizes

reading, writing, and television, and organizes her instruction more structurally than the other teachers; Teacher B emphasizes chilren's spontaneity and manages his class in a warmer manner than the other teachers; Teacher C emhasizes the use of television and computer, and leads his class most strongly among the three teachers.

Discussion

First, children's preconceptions of different media were generally similar to those of American samples (Krendl, 1986). In this study, listening to a teacher was added to the four activities of television, computer, reading, and writing, which were used in the American study. On the preference scale, computer was most preferred by both Japanese and American fifth graders. Japanese children preferred teacher next to computer, but the remaining three activities were ranked in the same order from television to reading and writing at the least-preferred-end in both samples. For the difficulty judgement, both samples perceived writing most difficult followed by computer, reading, and television. Japanese children perceived the teacher as even less difficult than television. On the learning scale, Japanese children expected most of teacher. Computer and reading followed this in both samples, but the remaining two activities showed different orders with less expectation of writing than of television among Japanese children while the reverse was the case for American children. This might suggest that the three Japanese classes emphasize the instructional use of television more than the six Tennessee elementary schools from which the subjects were randomly selected. While such influence of classroom culture on the perception of media would be possible, the general tendency of children's preconceptions of different media was similar across the two countries.

Moreover, it was repeatedly found that the more an activity is preferred, the less difficult it is perceived to be, but the more likely one is to think one will learn from it. Although this is a correlational relationship and not a causal one, the magnitude of this relationship was much stronger than in Krendl's (1986) study. In the present study, the activity of listening to a teacher was added to the other four activities, and still the same relationship was obtained, suggesting that Salomon's model which was based on television and book could possibly be extended to include other media activities.

However, gender differences found in American samples were very small in the present study. At grade five, children might not have developed a strong distinction between genders in terms of media acitivities in schools. Rather significantly, children's characterization of media differed greatly according to their classes, which suggests possible effects of teachers' different patterns of media use on how their pupils think about each medium.

The difference among children in the three classes for their

preconceptions toward media were related to teachers' different styles of instruction in their classes which were reported by the teachers themselves and an advisor who led their group. The pupils in Class C perceived television to be less difficult and expected more learning from computer than other pupils. This class is led by teacher C who is more active in using these media than other teachers. The pupils of teacher B who manages his class in a warmer manner than the other two preferred listening to a teacher and expected learning from a teacher more than other pupils. The children in Class A where the teacher emphasizes the use of print preferred writing more, perceived it less difficult, and expected more learning from it than the other children.

On the other hand, the present study obtained only an exploratory finding concerning the effect of these preconceptions upon learning outcomes. Children's degree of understanding of a television program which was the common element in the three instructions was related to children's preference to listening to the teacher. Children who preferred listening to a teacher more showed lower level of understanding the program content. Listening to a teacher was perceived least difficult among the five media activities in this study. This resembles to the status of television in Salomon's (1984) study where television was preferred to and perceived as easier than reading, which, as he discusses, leads learners to invest less mental effort and then affect learning. To further interpret the above result along this line is rather dangerous, since this study was not based on a well-defined experimental design and neither was any measure for invested mental effort introduced. In fact, there is a possibility that the content questions were unfavorable to Class B where the pupils had more affinity for the teacher than other classes.

In spite of this weakness, however, the finding that children's preconceptions of different media activities are related to teachers' different styles of media use is the most significant outcome of this study. This leads us to expect that there is a reciprocal interaction among learners' perceptions on media, teachers' media utilization, and learning performances from media.

Study Two

Purpose

This study partly replicates the first one using junior high school students in order to find out whether the structure of the learners' preconceptions regarding different media is constant across different age groups. In addition, an attempt was made to examine the nature of other aspects of learners' cognitive contexts in learning from media. These aspects include the perception of realism of media and the causal attributions to

success and failure in learning from media. The relationship of these measures to students' general achievement is also examined.

Method

Subjects

Subjects were 134 eighth graders in three classes of a junior high school in Otsu city, Japan. As a background of the present study, it is worth mentioning that,in this school, a comprehensive curriculum has been introduced in which all the students form small study groups to conduct research projects on various topics around Lake Biwa, the largest lake in Japan near which the school is located. Their research covers a wide range of topics such as history, industry, art, water, biology, geology, and ecology. In 1988, during which this study was conducted, the groups of students started their projects in May and had a school conference to present their research outcomes to other students in October. During this period, they used various media as tools for learning and making presentations.

Procedure

A set of questions were given to the subjects in December, 1988 to measure 1) their preconceptions of the media, 2) their perception of realism of media, 3) their causal attributions to success and failure in comprehending the media, and to get some background data on the amount of their TV viewing, and the number of books and comic books they read.. The questionnaires were group-administered in the subjects' own classrooms. Their IQ scores and the grades of school achievement were also obtained.

The same questions as used in the first study were given to measure subjects' preconceptions of the five media activities in three dimensions of preference, difficulty, and learning expectancy. For the perception of realism, a set of 5-point scale questions ranging from "not lifelike at all" to "very lifelike" were asked for film, comic book, teacher's lecture, computer, TV (news, story, instructional program), and print (news, story, instructional material). The causal attribution questions were asked for success/failure in learning from teacher, TV, book, and computer as attributed to one of the four choices of ability, effort, general ease/difficulty, and specific ease/difficulty. For example, subjects were asked "A student like you saw a TV program and understood it well (did not understand it). Why do you think that student understood (didn't understand) the TV progam?" Four items for the choice were "because that student was able (was not able)," "because the student tried (didn't try) hard," "because TV is always easy (difficult)," and "because that TV program was easy (difficult)."

Results

1. The structure of preconceptions of different media.

As in the first study, the students' paired comparison data was analyzed according to Thorstone's procedure. Table 5 shows the raw proportions of preference, difficulty, and learning judgements, and Figure 3 illustrates the interval scales for the five media in the three levels of judgement. The most preferred medium was television followed by computer. Writing was perceived most as difficult followed by computer with television being the least difficult. Students most expected to learn from a teacher's lecture, followed by television.

Insert Table 5 about here

Insert Figure 3 about here

Table 6 shows a correlation matrix calculated by the same procedure as used in the first study. It was repeatedly found that preference was negatively correlated with difficulty, and positively correlated with learning expectancy, and that difficulty was negatively correlated with learning expectancy.

Insert Table 6 about here

---

2. Perception of realism of media.

Table 7 shows the means and SDs of indivisual scores for the perception of realism of media which range from 1 (low realism) to 5 (high realism). In general, television was perceived as more real than other media, but it depended on what kind of contents it conveyed, news, story, or instructional program. When the correlations between the media items were calculated, there were significant positive correlation between film, cartoon books, stories on TV, and stories in print, as well as between teacher, news and instructional program on TV, and news and instructional material on prints. A gender difference for cartoon books was found with girls being higher than boys (means=2.6/2.1, $p<.01$). Class differences were found for film, computer, and story on TV with the same one class being higher than the other two ($p<.01$) for every item.

Insert Table 7 about here

---

3. Causal attribution to learning from media.

Table 8 shows the ratios of causal attribution to success and failure in comprehending teacher's lectures, television, books, and computer. As a whole, effort was selected more than other causes for both success and failure. This is especially strong

for teacher's lectures. Computer and books are more attributed to ability than other media. TV is more attributed to external demand (ease/difficulty).

Insert Table 8 about here

---

4. Difference for preconception scores between genders and between classes.

As in the first study, preconception scores for the five media in the three leveles were compared between genders and between classes. For the gender difference, the preference for television was higher in girls (mean=3.1) than boys (mean=2.8) ($F=6.9$, $df=1/131$, $p<.01$) and the preference for computer was higher in boys (mean=2.8) than girls (mean=2.2) ($F=5.7$, $df=1/131$, $p<.05$). Difference betwee the three classes was only significant in the case of learning expectancy from television ($F=3.6$, $df=2/131$, $p<.05$).

5. The relationship with school achievement and general intelligence.

The subjects' total grades of five major subjects (10 point scale evaluation for each subject) were used as a measure of learning performance and their recent IQ scores were obtained as an index of general intelligence. Table 9 shows the correlation coefficients between these and other measures. The school achievement was positively correlated with the expectancy of learning from teachers, and perceived reality in teacher, computer, and instructional materials in prints, and negatively correlated with the amount of TV viewing. IQ was negatively correlated with the perceived difficulty of television and positively correlated with the perceived difficulty of reading.

Insert Table 9 about here

As for the relationship with causal attribution, only the success case of television was significantly related to the school achievement. When the subjects were divided into a high-achieving group (n=68) and a low-achieving group (n=66), the distribution of their choice differed significantly (chi square=9.4, $df=3$, $p<.05$) with the high group having attributed the success more to the ease of the TV program and the low group more to one's effort.

Discussion

First, the relationship between the three levels of students' preconceptions of the media was similar to that of the fifth graders of the first study, hence suggesting a general structure of media perception across age groups. This is the structure of

negative correlation between preference and difficulty, positive correlation between preference and learning expectancy, and negative correlation between difficulty and learning expectancy. However, some differences found in the order of the media on the preference and learning scales may suggest the possible influence of the different environments in the two studies.

To summarize the findings on other measures, TV was perceived to be more realistic than other media, but like print, the perceived degree of realism depended on the type of contents. As for the causal attribution to learning from media, effort was selected, on the whole, more than other causes for both success and failure. Comprehending TV was attributed more to the ease or difficulty of the medium. Success in both print and computer was more attributed to ability, and failure in them to the specific difficulty of the media. Comprehending a teacher's lecture was more attributed to one's effort or lack of it.

Gender differences were found in the realism of comic books (Girls>Boys), the preference of TV (Girls>Boys), and the preference of computer (Boys>Girls). In addition, difference between the three classes was found in the realism of film, computer software and story in TV, and the learning expectancy from TV. These gender and class differences suggest possible influence of daily environments and exchange among peer groups.

Students' school achievement was positively correlated with the expectancy of learning from teachers, and the perception of reality in the teacher, computer software, and print, suggesting a reciprocal interaction between students' achievement and the school culture emphasizing teachers' lecture and print materials rather than visual media. Moreover, lower achieving students attributed the success in compreheding TV more to their efforts than higher achieving students, suggesting different perceptions of learning from TV between higher and lower achievers.

Through this study, some discrete findings were obtained on each measure, the corresponding process for which is expected to influence learning from different media in a reciprocal manner. However, these findings only explored the surface of the mechanism. In order to have clearer ideas on the effects of learners' cognitive contexts of using different media on their learning, further research is needed in which well-defined cognitive contexts are used as independent variables and learning performances from media as dependent variables.

References

Beentjes, J.W. (1989). Learning from television and books: A Dutch replecation study based on Salomon's model. ETR&D, 37(2), 47-58.

Krendl, K.A. (1986). Media influence on learning: Examining the role of preconceptions. ECTJ, 34, 223-234.

Saga, H. (1989). Japanese group of teachers cooperatively

designing the use of educational television. Working Paper 003-E-89, Research and Development Division, National Institute of Multimedia Education, Chiba; Japan.

Salomon, G. (1984). Television is "easy" and print is "tough.": The different investment of mental effort in learning as a function of perceptions and attributions. Journal of Educational Psychology, 76, 647-658.

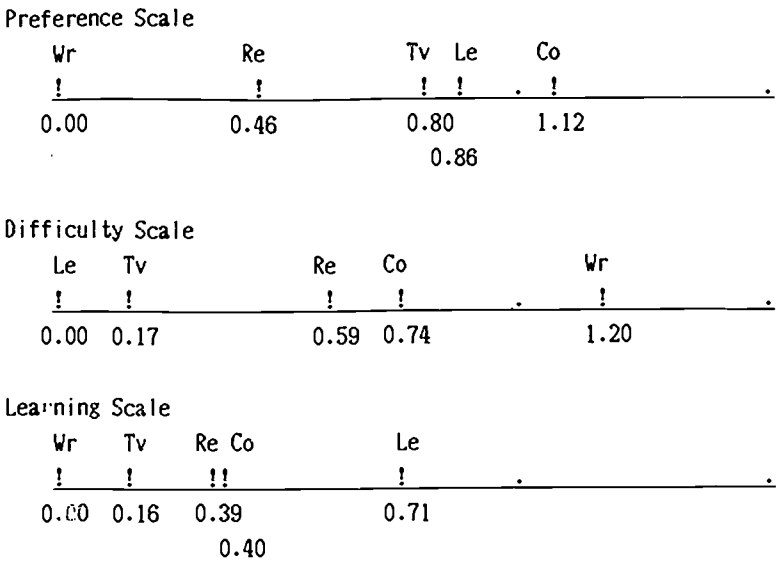
Table 1. Raw Proportions of Preference, Difficulty, and Learning Judgements

Preference	TvP	ReP	WrP	CoP	LeP
TvP	---	.32	.23	.71	.47
ReP	.68 [1)]	---	.29	.71	.68
WrP	.77	.71	---	.84	.84
CoP	.29	.29	.17	---	.39
LeP	.53	.32	.17	.62	---
Difficulty	**TvD**	**ReD**	**WrD**	**CoD**	**LeD**
TvD	---	.71	.84	.67	.44
ReD	.29	---	.83	.57	.20
WrD	.16	.17	---	.40	.14
CoD	.33	.43	.60	---	.27
LeD	.56	.80	.86	.73	---
Learning	**TvL**	**ReL**	**WrL**	**CoL**	**LeL**
TvL	---	.60	.39	.61	.73
ReL	.40	---	.28	.52	.69
WrL	.51	.72	---	.58	.73
CoL	.39	.48	.42	---	.57
LeL	.28	.31	.27	.43	---

Tv=television Re=reading Wr=writing
Co=computer Le=teacher's lecture
P=preference D=difficulty L=learning

1) Reading down each column shows how many people chose each activity. e.g., 68% chose television over reading.

Figure 1. Activity Judgement Scale for Prefernce, Difficulty, and Learning



Tv=television Re=reading Wr=writing Co=computer Le=teacher

Table 2. Correlations of Preference, Difficulty, and Learning

	TvP	ReP	WrP	CoP	LeP	TvD	ReD	WrD	CoD	LeD	TvL	ReL	WrL	CoL	LeL
TvP	1.00														
ReP	-.31**	1.00													
WrP	-.45**	-.02	1.00												
CoP	.11	-.50**	-.43**	1.00											
LeP	-.46**	.02	.10	-.50**	1.00										
TvD	-.37**	.02	.18	-.03	.24*	1.00									
ReD	.17	-.29**	-.14	.22*	-.05	-.40**	1.00								
WrD	.27**	-.10	-.45**	.24*	-.07	-.30**	.23*	1.00							
CoD	-.05	.17	.25**	-.36**	.13	-.19	-.41**	-.48**	1.00						
LeD	.11	.11	-.01	.11	-.35**	-.29**	-.09	-.12	-.33**	1.00					
TvL	.36**	-.09	-.19	-.03	-.07	-.28**	.11	.21*	.02	.01	1.00				
ReL	-.07	.45**	.12	-.29**	-.09	-.01	-.23*	-.22*	.21*	.14	-.26**	1.00			
WrL	-.08	.05	.42**	-.35**	.09	.10	-.01	-.30**	.19*	-.10	-.29**	.03	1.00		
CoL	.02	-.23*	-.39**	.64**	-.24*	-.03	.17	.33**	-.41**	.15	-.10	-.43**	-.54**	1.00	
LeL	-.26**	-.10	.17	-.16	.42**	.25**	-.10	-.14	.13	-.26**	-.34**	-.21*	-.05	-.24*	1.00

*p<.05 **p<.01 df=107

Table 3. Mean Preference, Difficulty, and Learning Judgment by Gender

Preference	Television	Reading	Writing	Computer	Teacher
Grand Mean	2.27	1.64	0.85	2.86	2.38
Boy (N=58)	2.36	1.78	0.62	2.90	2.35
Girl(N=51)	2.16	1.49	1.12	2.82	2.41
test(df=107)	t=0.92	t=1.41	t=2.50*	t=0.27	t=0.31
Difficulty	**Television**	**Reading**	**Writing**	**Computer**	**Teacher**
Grand Mean	1.34	2.11	3.13	2.38	1.05
Boy (N=58)	1.31	2.22	3.16	2.35	1.00
Girl(N=51)	1.37	1.98	3.10	2.41	1.14
test(df=107)	t=0.27	t=1.36	t=0.31	t=0.25	t=0.88
Learning	**Television**	**Reading**	**Writing**	**Computer**	**Teacher**
Grand Mean	1.67	2.11	1.37	2.14	2.72
Boy (N=58)	1.76	2.10	1.21	2.24	2.69
Girl(N=51)	1.57	2.12	1.55	2.02	2.75
test(df=107)	t=0.82	t=0.06	t=1.47	t=0.74	t=0.26

*p<.05

Table 4. Mean Preference, Difficulty, and Learning Judgment by Class

Preference	Television	Reading	Writing	Computer	Teacher
Grand Mean	2.27	1.64	0.85	2.86	2.38
Class A(N=39)	1.97	1.80	1.28	2.51	2.44
Class B(N=37)	2.24	1.43	0.76	2.84	2.73
Class C(N=33)	2.64	1.70	0.46	3.30	1.91
test(df=2/106)	F=3.03	F=1.18	F=6.57**	F=2.91	F=5.13**
Difficulty	**Television**	**Reading**	**Writing**	**Computer**	**Teacher**
Grand Mean	1.34	2.11	3.13	2.38	1.05
Class A(N=33)	1.21	2.15	2.80	2.64	1.21
Class B(N=37)	2.00	2.03	3.24	2.00	0.73
Class C(N=33)	0.76	2.15	3.39	2.49	1.21
test(df=2/106)	F=11.22**	F=0.22	F=4.16*	F=2.14	F=2.77
Learning	**Television**	**Reading**	**Writing**	**Computer**	**Teacher**
Grand Mean	1.67	2.11	1.37	2.14	2.72
Class A(N=39)	1.49	2.31	1.80	1.44	2.97
Class B(N=37)	1.57	1.87	1.32	2.35	2.89
Class C(N=33)	2.00	2.15	0.91	2.73	2.21
test(df=2/106)	F=1.83	F=1.35	F=5.09**	F=7.44**	F=5.44**

**p<.01 *p<.05

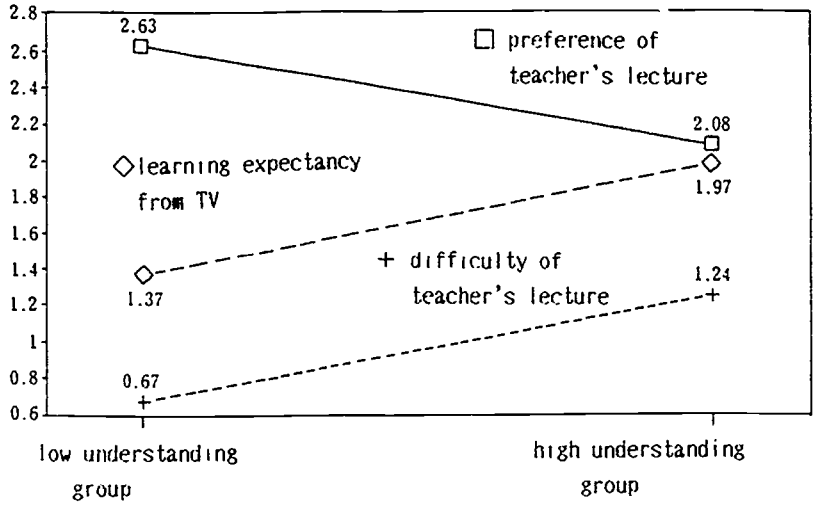


Figure 2. Preconceptions as Related to Understanding the TV program

Table 5. Raw Proportions of Preference, Difficulty, and Learning Judgements (8th graders)

Preference	TvP	ReP	WrP	CoP	LeP
TvP	---	.19	.16	.53	.32
ReP	.81[1)]	---	.23	.69	.68
WrP	.84	.77	---	.75	.79
CoP	.47	.31	.25	---	.44
LeP	.68	.32	.21	.56	---
Difficulty	**TvD**	**ReD**	**WrD**	**CoD**	**LeD**
TvD	---	.77	.91	.86	.64
ReD	.23	---	.85	.70	.26
WrD	.09	.15	---	.47	.16
CoD	.14	.30	.53	---	.21
LeD	.36	.74	.84	.79	---
Learning	**TvL**	**ReL**	**WrL**	**CoL**	**LeL**
TvL	---	.47	.40	.45	.53
ReL	.53	---	.40	.43	.67
WrL	.60	.60	---	.49	.65
CoL	.55	.57	.52	---	.66
LeL	.47	.33	.35	.34	---

Tv=television Re=reading Wr=writing
Co=computer Le=teacher's lecture
P=preference D=difficulty L=learning

1) Reading down each column shows how many people chose each activity. e.g., 81% chose television over reading.

Figure 3. Activity Judgement Scale for Preference, Difficulty, and Learning

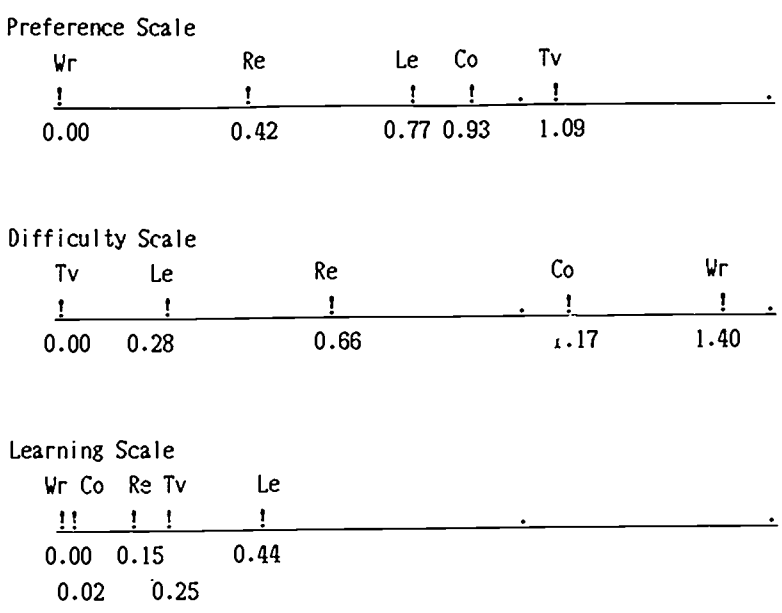


Table 6. Correlations of Preference, Difficulty, and Learning

	TvP	ReP	WrP	CoP	LeP	TvD	ReD	WrD	CoD	LeD	TvL	ReL	WrL	CoL	LeL
TvP	1.00														
ReP	-.24**	1.00													
WrP	-.45**	-.04	1.00												
CoP	-.01	-.38**	-.35**	1.00											
LeP	-.31**	-.13	-.02	-.53**	1.00										
TvD	-.38**	.06	.16	-.08	.25**	1.00									
ReD	.01	-.28**	.02	.05	.15	-.32**	1.00								
WrD	.16	.04	-.35**	.14	-.03	-.41**	.14	1.00							
CoD	.18	-.01	.10	-.29**	.09	-.19*	-.24**	-.39**	1.00						
LeD	.00	.17	.03	.23**	-.43**	-.08	-.43**	-.17	-.39**	1.00					
TvL	.38**	-.11	-.16	-.05	-.05	-.15	-.01	-.08	.13	.07	1.00				
ReL	-.05	.37**	-.02	-.16	-.05	.07	-.22*	.01	.04	.07	-.35**	1.00			
WrL	-.18*	-.00	.27**	-.07	.01	.07	.01	-.07	-.03	.02	-.52**	.02	1.00		
CoL	-.01	-.13	-.21*	.50**	-.28**	-.03	.09	.13	-.31**	.19*	-.05	-.43**	-.25**	1.00	
LeL	-.14	-.07	.13	-.31**	.42**	.05	.10	-.01	.23**	-.37**	-.07	-.12	-.27**	-.45**	1.00

*p<.05 **p<.01 df=131

Table 7. Perceptions of Realism of Media

Media	Mean	SD	Gender diff.	Class diff.
Film	2.80	0.95	n.s.	p<.01[2]
Cartoon	2.31	0.98	女>男[1]	n.s.
Teacher	3.90	0.88	n.s.	n.s.
Computer	2.80	1.03	n.s.	p<.01[3]
TV (news)	4.49	0.69	n.s.	n.s.
TV (story)	2.94	0.88	n.s.	p<.01[4]
TV (instructional)	4.13	0.76	n.s.	n.s.
Print (news)	4.11	0.88	n.s.	n.s.
Print (story)	3.10	0.85	n.s.	n.s.
Print (instructional)	3.90	0.90	n.s.	n.s.

N=133 (Male=71; Female=62), (Class A=44; B=45; C=44)
Score Range: from 1 (not lifelike) to very lifelike (5)
1) Mean for Female=2.58; Mean for Male=2.07; P<.01
2) Class A=3.21; Class B=2.67; Class C=2.52
3) Class A=3.14; Class B=2.33; Class C=2.93
4) Class A=3.32; Class B=2.84; Class C=2.66

Table 8. Causal Attribution to Learning from Media

	Teacher's lecture		Television		Book		Computer	
Cause	Succ.	Fail.	Succ.	Fail.	Succ.	Fail.	Succ.	Fail.
Ability	8.2%	5.2%	11.9%	11.9%	24.6%	16.4%	42.1%	30.8%
Effort	83.6	75.4	50.7	53.7	67.9	53.7	42.9	39.1
General Ease/Diff.	2.2	2.2	13.4	2.2	0.7	6.0	3.8	6.8
Specific E./Diff.	6.0	17.2	23.9	32.1	6.7	23.9	11.3	23.3
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

N=134
Choices for Success (Failure);
[the student] has (not) ability/ [the student] made (didn't make) an effort/
[the medium] is always easy (difficult)/ [the material] was easy (difficult)

Table 9. Correlations with School Achievement and IQ

	School Achiv.	IQ		School Achiev.	IQ
TvP	-.14	-.15	real/film	.08	-.01
ReP	.13	.14	real/cartoon	-.11	-.10
WrP	-.05	.08	real/teacher	.20*	.04
CoP	.09	.11	real/computer	.22*	.15
LeP	-.04	-.17	real/TV news	.03	-.06
TvD	-.08	-.21**	real/TV story	-.07	-.05
ReD	.15	.18*	real/TV inst.	.14	-.04
WrD	.12	.13	real/print news	.09	.03
CoD	-.07	-.14	real/print story	.03	-.08
LeD	-.09	.08	real/print inst.	.20*	.06
TvL	-.11	-.09	Amount/TV View.	-.27**	-.09
ReL	-.00	.03	Amount/Book read.	.04	.07
WrL	.04	.07	Amount/Cartoon r.	-.10	-.04
CoL	-.09	-.05	School Achiev.	1.00	.55**
LeL	.17*	.05	IQ	.55**	1.00

*p<.05, **p<.01 df=132

aectOHP

JAPANESE CHILDREN'S PRECONCEPTIONS OF DIFFERENT MEDIA AS RELATED TO THEIR LEARNING

GENERAL PURPOSE:

- TO UNDERSTAND MEANINGFUL CONTEXTS OF USING MEDIA FOR LEARNING.
- FOR THIS PURPOSE, FOCUS ON LEARNERS' COGNITIVE CONTEXTS WHEN USING MEDIA.
- BECAUSE RECENT STUDIES SHOW: LEARNERS' PERCEPTIONS OF MEDIA AND PERCEIVED SELF-EFFICACY AFFECT THE AMOUNT OF MENTAL EFFORT WHICH THEN INFLUENCES LEARNING (SALOMON, G).

TWO STUDIES IN ACTUAL CLASSROOMS:

1. FIFTH GRADERS IN THREE ELEMENTARY SCHOOLS IN KANAZAWA.
2. EIGHTH GRADERS IN A JUNIOR HIGH SCHOOL IN OHTSU.

STUDY ONE

SUBJECTS:

- 109 FIFTH GRADE PUPILS IN THREE CLASSROOMS
- THEIR THREE TEACHERS

MEASURES:

- LEARNING FROM THREE INSTRUCTIONS
  - UNDERSTANDING OF A TV PROGRAM
  - ATTAINMENT OF TEACHER'S AIM
- PUPILS' PRECONCEPTIONS OF;
  - WATCHING TELEVISION
  - READING
  - WRITING
  - USING A COMPUTER
  - LISTENING TO A TEACHER

  IN THREE LEVELS OF;
  - PREFERENCE
  - DIFFICULTY PERCEPTION
  - LEARNING EXPECTANCY
- BACKGROUND INFORMATION

  (FOR PUPILS)
  - AMOUNT OF TV VIEWING, BOOK READING
  - RECENT IQ SCORES, SCHOOL GRADES

  (FOR TEACHERS)
  - SELF-REPORT OF TEACHING STYLE
  - OBSERVATION FROM AN ADVISOR

Three Different Instructions

1. Mr. Matsuda

Main: Traditional Technology of Digging a Well by Bamboos

(contradictory)

Sub : Modern Technology and Car Export

Goal: Notice What We are Forgetting in Traditional Technology

2. Mr. Mitamura

Main: Night Meeting of the Group Studying the Digging

(supportive/development)

Sub : People in Africa Working for Water

Goal: Notice People's Pleasure and International Cooperation

3. Mr. Okabe

Main: Japanese People Digging a Well by Bamboos

(supportive/another viewpoint)

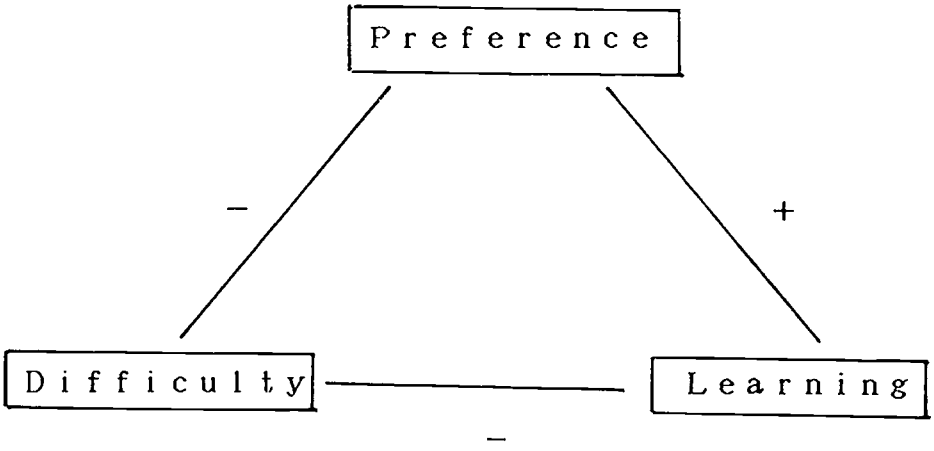
Sub : Pelple's Pleasure and Voices of the Young Cooperators

Goal: Notice the Human Hope of Young Cooperators

PUPILS' PRECONCEPTIONS TOWARD MEDIA AND THE ROLE OF TEACHERS IN MULTIMEDIA UTILYZING SITUATIONS

1) Similar Tendencies Between Japanese and American Children for Their Preference, Perceived Difficulty, and Learning about Different Media Activities

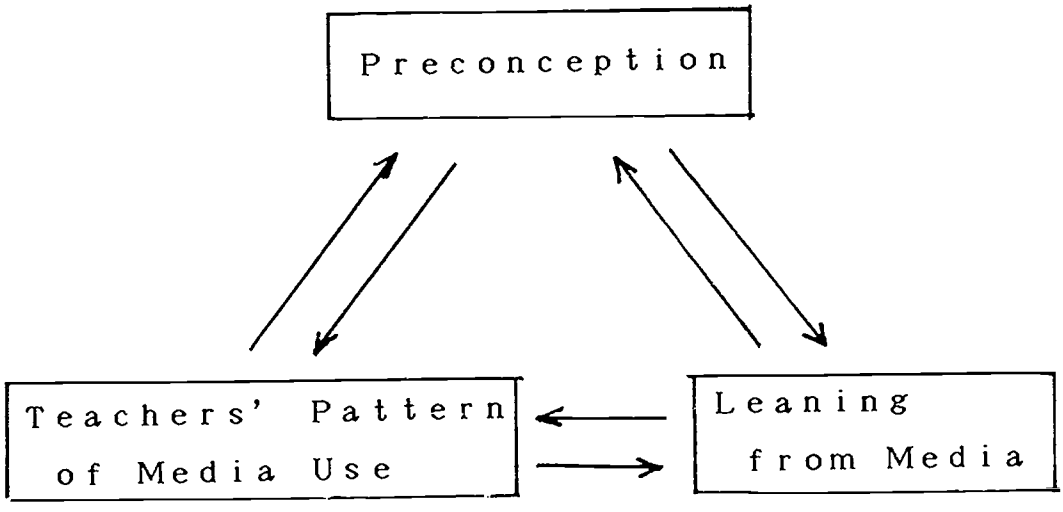
2) The Structure of Preconceptions



3) No Sex Differences in Japanese Children

4) Differences Found Between Classes Suggesting Teachers' Role

5) Suggested Reciprocal Effects



STUDY TWO

SUBJECTS:

- 134 EIGHTH GRADERS (THREE CLASSES OF THE SECOND GRADE IN A JUNIOR HIGH SCHOOL)

MEASURES:

- STUDENTS' PRECONCEPTIONS OF;
  - THE FIVE MEDIA ACTIVITIES
  - IN THE THREE LEVELS
- THEIR PERCEPTIONS OF REALISM OF;
  - FILM
  - CARTOON
  - TEACHER
  - TV-NEWS, STORY, INSTRUCTION
  - PRINT-NEWS, STORY, INSTRUCTION
- THEIR CAUSAL ATTRIBUTION TO SUCCESS AND FAILURE IN COMPREHENDING;
  - TEACHER
  - TELEVISION
  - BOOK
  - COMPUTER
- BACKGROUNDINFORMATION
  - AMOUNT OF TV VIEWING, BOOK READING, & CARTOON READING
- SCHOOL ACHIEVEMENT AND IQ

JUNIOR HIGH SCHOOL STUDENTS' PRECONCEPTIONS OF MEDIA AND CAUSAL ATTRIBUTION TO LEARNING FROM MEDIA

SUMMARY OF THE FINDINGS

1) THE SAME STRUCTURE OF THE THREE PRECONCEPTION JUDGEMENTS AS FOUND IN THE FIFTH GRADERS
   - PREFERENCE (−) DIFFICULTY
   - DIFFICULTY (−) LEARNING
   - PREFERENCE (+) LEARNING

   WITH SOME CHANGES IN THE ORDER OF THE MEDIA ON PREFERENCE & LEARNING

2) TV PERCEIVED MORE LIFELIKE THAN OTHER MEDIA, BUT IT DEPENDS ON TYPES OF CONTENTS.

3) GENDER AND CLASS DIFFERENCES IN SOME MEASURES

4) ATTRIBUTION TO LEARNING, GENERALLY, MORE TO ONE'S EFFORT
   - TEACHER & BOOK: MORE TO EFFORT
   - COMPUTER: MORE TO ABILITY
   - TELEVISION: MORE TO EASE

5) SHOOLE ACHIEVEMENT POSITIVELY CORRELATED WITH LEARNING EXPECTANCY FROM TEACHER AND PERCEIVED REALISM OF TEACHER

JAPANESE CHILDREN'S PRECONCEPTIONS OF DIFFERENT MEDIA AS RELATED TO THEIR LEARNING

CONCLUSIONS

1. SUGGESTED RECIPROCAL EFFECTS BETWEEN LEARNERS' PRECONCEPTIONS, TEACHERS' PATTERN OF MEDIA USE, & LEARNING FROM MEDIA

2. SUGGESTED SCHOOL CULTURE EMHASIZ-ING TEACHERS' TEACHING & PRINT

3. NEED TO FURTHER EXAMINE SALOMON'S MODEL IN ACTUAL SITUATIONS

4. NEED TO EXAMINE ASPECTS OF SCHOOL CULTURE IN RELATION TO LEARNING FROM MEDIA

5. NEED TO REFINE CONCEPTS & MEASURES AND CONDUCT EXPERIMENTAL STUDIES WITH MENTAL ACTIVITY & LEARNING AS DEPENDENT VARIABLES

放送教育開発センター

〒260 千葉市若葉2丁目12番