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AUTHOR Kari, Jouko; Nojd, Olavi
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ABSTRACT

The aim of this study was to test the hypothesis that the different teacher groups of the Finnish comprehensive school differ from one another in their pedagogical thinking and practices. The authors of this article have conducted teacher in-service-training on integrated curriculum using new educational technology (interactive video and a database on integrated teaching). The subject area was the integrated curriculum based on developmental work coordinated by the supervising teacher. Teachers' thinking and attitudes were surveyed after training in the groups of class-teachers and subject-teachers (N=39). The differences between those groups were tested in 11 variables using the t-test. The main results were as follows: (1) both teacher groups thought that they had received new and reliable information, which cannot be received easily from other information sources; (2) the class-teachers tended to feel working on the interactive video and database more interesting and easier than subject-teachers; and (3) the class-teachers also had received clearer ideas of the working modes in integrated teaching than the subject-teachers. Thus, the hypothesis clearly was supported and useful feedback was obtained of such teaching materials and methods. A copy of the questionnaire is included, and data is presented in six graphs. (Author/MAS)

Interactive Video in the In-service Training of Teachers

Jouko Kari, Olavi Nöjd

Department of Teacher Training
University of Jyväskylä

Seminaarinmäki
Building C
SF-40351 Jyväskylä
Finland

Telephone +358-41-601790
Telefax +358-41-601701

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The aim of this study was to test the hypothesis that the different teacher groups of the Finnish comprehensive school differ from one another in their pedagogical thinking and practices. The authors of this article have conducted teacher in-service-training on integrated curriculum using new educational technology (interactive video and a database on integrated teaching). The subject area was the integrated curriculum based on developmental work coordinated by the supervising teacher, Mr. Eero Sovelius-Sovio.

Teachers' thinking and attitudes were surveyed after training in the groups of **class-teachers** and **subject-teachers** (N=39). The differences between those groups were tested in eleven (11) variables using the t-test.

The main results were as follows:

Both teacher groups thougt, that they had received new and reliable information, which cannot be received easily from other information sources.

The class-teachers tended to feel working on the interactive video and database more interesting and easier than subject-teachers. The class-teachers also had received clearer ideas of the working modes in integrated teaching than the subject-teachers. Thus, the hypothesis clearly was supportedand we also have obtained useful feedback of our teaching materials and methods.

PREFACE

Interactive video like other modern teaching aids and materials will change the role of teachers in the near future. Teachers and pupils must more actively and autonomously search and also modify information, before and during teaching and learning processes. There is also a need to use use modern theoretical models of learning; this means that some teachers clearly also need to change their old teaching routines, and possibly their pedagogical thinking. (Gastkemper 1987, Kari & Nöjd 1991).

Resent research work suggests, that the new technology gave the pupils a means of working more in line with the principles of learning outlined in cognitive and humanistic psychology. At this point, it is interesting to study how young teachers in school will respond to the new challenges presented to them. New ways of learning are already incorporated in the Finnish curriculum work and current pedagogical research.

In the curriculum of the Finnish comprehensive school the idea of integration is a great challenge for teachers. We have some evidence, that the different teacher groups differ in their pedagogical thinking and practices. (Kari, 1988; Kuru 1993).

The integrated curriculum has been in use at the lower level of the comprehensive school (grades 1 - 6) for the past 15 years. At the Normal School of the Jyväskylä University developmental work with the integration of several school subject areas into art education was carried on by the supervisig teacher, Mr. Eero Sovelius-Sovio during 1976 - 1988. Some aspects of this interesting project have also been presented in the international context.(e.g. Skiera 1986, Sovelius-Sovio & Kari 1987)

Nearly all subject areas in this pilot project were fully integrated in the aesthetic education. Only mathematics, foreign languages, gymnastics and handicraft were taught with the usual classroom

teaching methods. Special teaching material (about 700 pages) has been produced by Mr. Sovelius-Sovio for the integrated teaching.

The results of this developmental work and the integrated curriculum has been recorded on a laser-video disc and in a data-base program. All this material has been used since the year 1989 in the in-service training of teachers at Jyväskylä University. This art-education-integration project has aroused concidentle interest in Finland. The audio-visual documentation of the project, in the form of laser-vision disc with the interface programme for the users, opened the possibility to develop new methods for the inservice training of teachers.

We are indebt to Mr. Eero Sovelius-Sovio, for developing the integrated curriculum system. Several institutions and enterprises have also supported our research. The National Audio-Visual center and Nokia Data System (ICL-Data System) have contributed solving some financial problems during the expensive laser-disc production and the hardware aquisition.

1. INTRODUCTION

Attempts to introduce an integrated curriculum will come across heavy barriers at the upper level of the Finnish comprehensive school, because of the subject teacher system. At the lower level, the class teachers can easily build integrated teaching units in their own class. She or he has free hands to plan the time limit for the project, select the suitable working methods, and learning materials for the pupils. At the upper level the coordination between the teachers of the different subject areas may also cause problems.

2. THE THEORETICAL FRAME OF REFERENCE

2.1. Current view of learning in the in-service training of teachers

The working modes in the in-service training of teachers in Finland are increasingly based on cooperative learning. Educational technology opens the possibility to develope new types of learning modes, where the participants of training work shops act to accomplish their individual goals.

The importance of the social-communicative nature of learning teachers' inservice training, guided us to use the small group workshop approach with the interactive video system. On the other hand, the emancipatory - self-reflective learning approach prompted us to select the subject-matter from the area which today is a challenge to the teachers: the integration problem. The learning model based on humanistic philosophy is the combination of both these two learning modes. It has been used frequently in art education. This learning model offers a good possibility of developing students' self esteem. This is a very important aspect in art education, which prompts the students to express themselves by using the artistic means of expression. Consequently we adopted the view of learning represented in the tradition of humanistic-philosophy. The teachers of today need courage and strong self-esteem. If the inservice training can help the teacher in this respect, we have found the right path.

2.2 Instructional design issues

The learning model of cognitive psychology leads the student to proceed in the following learning sequences while working with interactive video:

1. the pupil learns to find information in a large, structured audio-visual database, with the classification system built in the interface program of the IAV-system,
2. the pupil learns to critically select the information relevant to his individual needs and objectives of learning,
3. the pupil learns to modify the information according to the classification system typical for the subject matter area,
4. the pupil learns to use new media for the delivery of the collected and modified information to a known target group,
5. We also believe that friendly but critical evaluation-discussion between teacher and students should take place at critical junctions in dealing with the subject matter.

3. RESEARCH PROBLEM

The main task of our developmental work with interactive video was to introduce a new method into the inservice training of teachers. We wished to test our assumption that the teachers can benefit from in-service training with participation in the interactive course activities. The subject area was the integrated curriculum according to Eero Sovelius-Sovios developmental work.

At the lower level (classes 1-6) of the Finnish comprehensive school, the class teachers can easily build integrated teaching units in their own class. She or he has free hands to plan the time limit of the project, select the suitable working methods and learning materials for the pupils.

Table 1 Interactive video and data-base program as a tool in a work-shop. (the evaluation sheet and the results) A rating of the work-shop with the interactive video and work-shop

C = class-teachers
S = subject-teachers

		1	2	3	4	5
1) I received new information on the topic	C	23	3			
	S	8	5			
2) I received information, which can be used in school teaching	C	4	15	7		
	S	1	6	2	3	1
3) I found well structured information on teaching and learning	C	9	16	1		
	S	1	5	5	1	
4) I received information, which can not be obtained so easily from other information sources (R)	C	21	5			
	S	10	3			
5) The concept "integration" can be learned more easily by other means (R)	C		2	10	12	2
	S		6	3	2	1
6) The information appears to be reliable	C	15	10	1		
	S	3	7			
7) Working with interactive video and data-base was interesting	C	19	7			
	S	4	5	3		
8) Working with interactive video and data-base was difficult (R)	C		3	3	7	13
	S	1	3	6	2	1
9) The interactive video and data-base give a clear idea of the working modes in the integrated teaching	C	11	12	2		
	S	1	9	2		
10) The data-base was boring (R)	C		2		6	18
	S		2	1	7	3
11) The selection of the topics in the data-base was well done	C	5	14	7		
	S	1	2	8	2	

1= I fully agree
2= I agree
3= I cannot say
4= I disagree
5= I fully disagree

R = scale reversed

At the upper level of the comprehensive school (classes 7-9) the integrated curriculum will need to cope with severe barriers because of the subject teacher system. The coordination between the teachers of different subject areas may cause problems.

The objective of this research is also to asses the teacher's attitudes towards to a new method of in-service training and towards the ideas of integration of some subject areas into art education.

4. THE EMPIRICAL STRUCTURE OF THE RESEARCH

The teacher needs guidance as how to begin the planning of the integrated learning system. We have noticed that the ideas of the integration of art education into other subject areas, as implemented by Mr.Sovelius-Sovio, can easily be transferred into the teaching of upper level pupils as well.

The laser-vision disc contains the introductory video program by Mr. Sovelius-Sovio, and three video programs of art education work shops by two student teachers at the Normal School, and over five hundred slides showing the working modes in the art education and samples of the pupils' work. With the interface pogram made by automation technician Mr. Tuomo Nöjd, the teachers can easily in few seconds find and select one from over fifty topics. Every topic presents a theme e.g. "Vikings". This interactive video program is a visual data base, which shows how we can develop the pupils' ability to understand aesthetic values.

The teacher can find the following information in the data-base:

* level for which the material is suitable,
* suggestions for integrated subject areas,
* objectives of the topic,
* subject matter to be learned,
* implementation and suggestions for working methods,
* affective objectives for the pupils,
* software and materials needed during the the work shop,
* tools needed for the work shop,
* recommended source books,
* recommended music, and
* visual materials

The data-base for an integrated curricula will help teachers to overcome some obstacles, which easily may frustrate the teacher who is used to teaching with the conventional classroom teaching methods.

As subjects we had 26 class-teachers and 13 subject-teachers; total N = 39. They studied the mentioned integrated curriculum during in-service training in 1990 - 1993 in Jyväskylä (Institute for Educational Research) and in Heinola (Heinola In-service Training Centre).

With the interactive video program and the verbal data base program the teachers worked independently. They selected from the variety of over fifty topics the integration theme, and planned how to use these ideas in their own work.

Teacher's thinking and attitudes were tested after the in-service training courses. The rating scale can be seen in table 1.

5. RESULTS

The results concerning the class-teachers and subject-teachers are presented in table 1 and in figures 1a - 1c.

We can observe that the evaluation of the both teacher groups are positive (agree) or very positive (fully agree). When we take into account the reversed scales we can also observe that the answers of the class-teachers are more positive on all items than the answers of the subject teachers.

To get more detailed information, we have grouped the 11 items into 5 subscales. Figures 1a - 1c show some of the means, standard deviations and differences between the two teacher groups on these subscales.

Both teacher groups (Fig 1a) reported that they had received new information concerned on the topic, whic cannot be received easily from other information sources. One can observe that all the answers are positive.

On the usefulnes-scale of the "data-bank" the class-teachers tended to answer more positively (Fig 1b). Also on the overall usefulnes of the in-service training the class-teachers differ significantly from the subject teachers in the positive direction (Fig 1c).

Table 1 shows that all subjects, especially class-teachers, feel the working with the interactive video and integration-data-base was easy and interesting. The difference between teacher groups was significant.

6. DISCUSSION

The main hypothesis was confirmed. The pedagogical thinking of the class-teachers is more "progressive". Their attitudes to the integrative ideas of teaching and to the new technology are very positive. Because of the positive thinking and attitudes of both teacher groups to our in-service-training package on integrated teaching, there seems to be a good possibility to use the package in

teachers in-service training also in the future. More and more interactive video discs are produced on the international market and it is possible that some of these discs are more suitable for subject-teachers than for class-teachers or for other teacher or student groups.

Jyväskylä University handed over one laser-vision disc with the interface program and data base program to the National Audio-Visual center, which borrows them to the schools. In various courses the participants have freely copied the data base program of integration ideas.

The experimental work on interactive technology in teaching continues at the Jyväskylä University. At the department of Teacher Training we are especially interested in the topics of art education, biology and historical topics. Some professors in the faculty of Physical Education are also interested in using interactive video-technology in their research and teaching work.

The idea of holistic learning and integration are increasingly spreading to the teaching at the lower-level of our comprehensive school, and more and more as well at the upper level. Our interactive video program has given ideas how to build integrated holistic programs around themes presented in laser-disc or data base. The results of our pilot study show, that the teachers received new information from the integrated curriculum and they received information, which is difficult to get from other sources.

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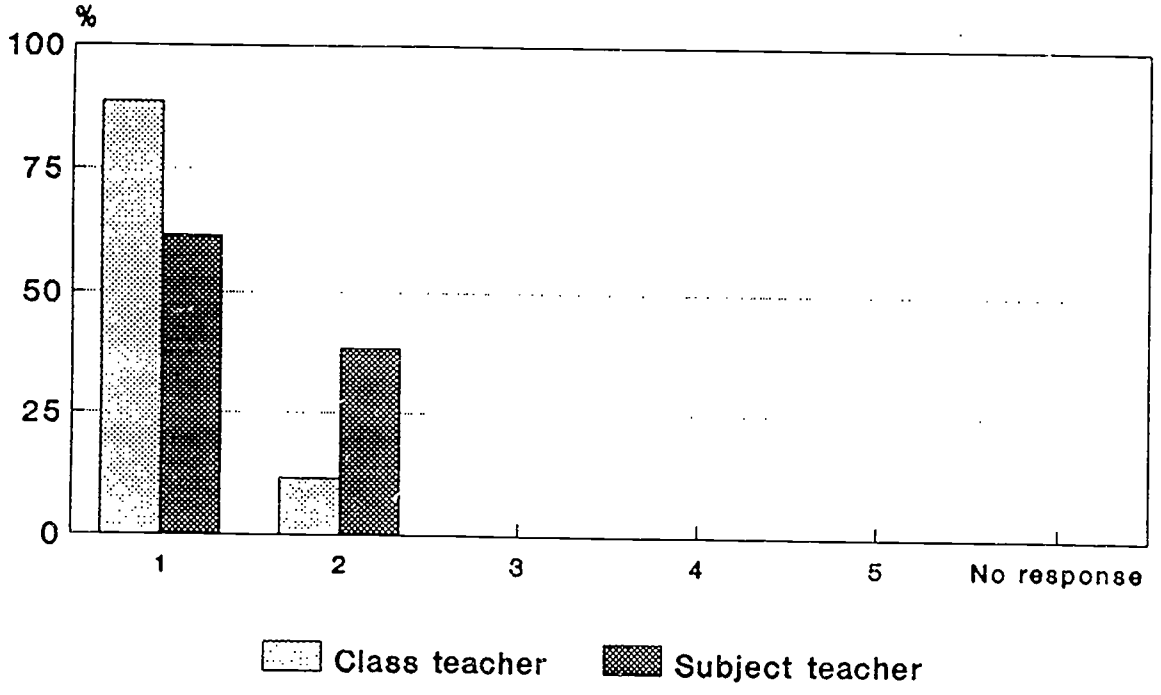
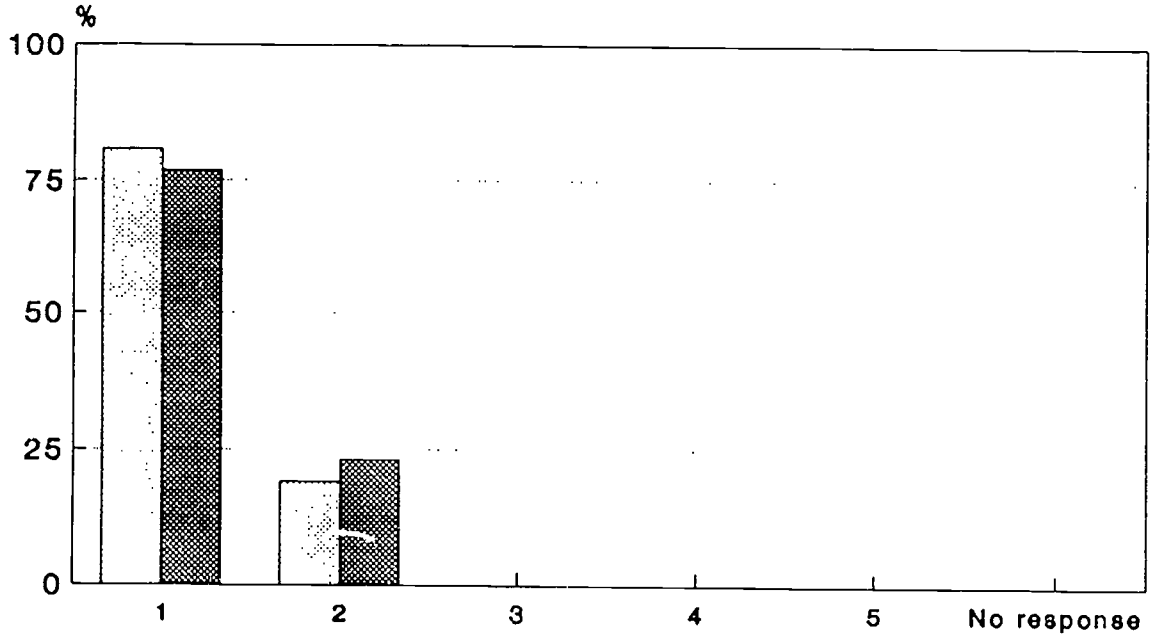
FIGURE 1a Receiving new information (Items 1 and 4)

1. I have received new information on the topic



Mean 1.21 ; s = .41 ; t (C - S) = -2.01 ; p = .05 *

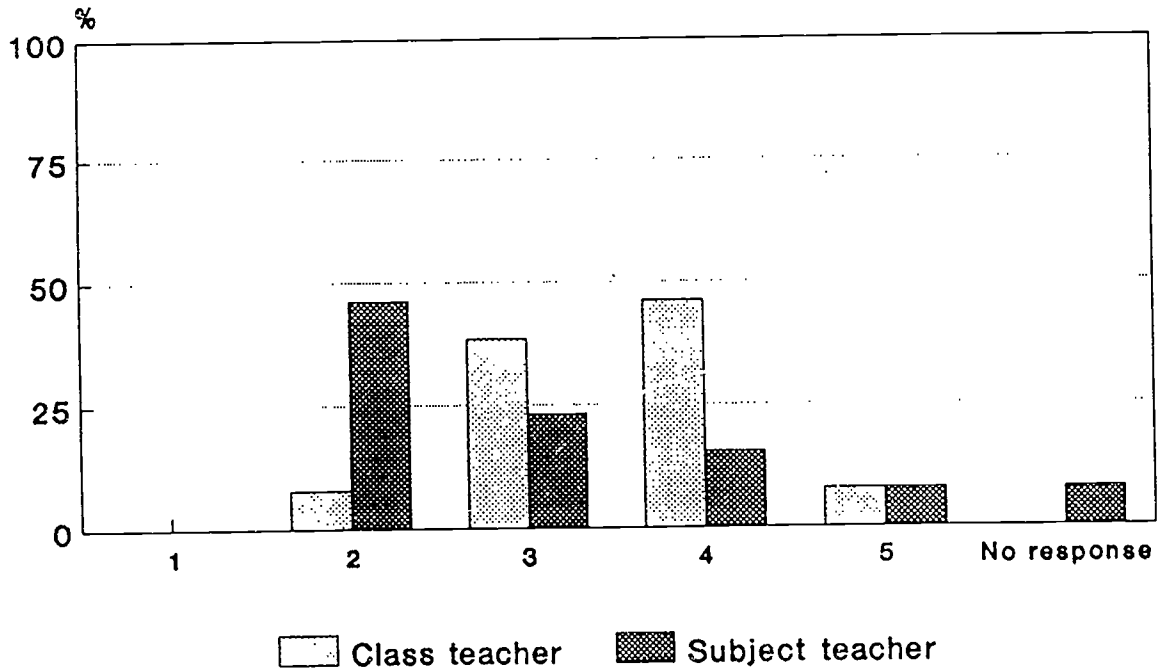
4. I have received information, which cannot be received easily from other information sources



Mean 1.21 ; s = .41 ; t (C-S) = -.27 ; p = .49 Ns.

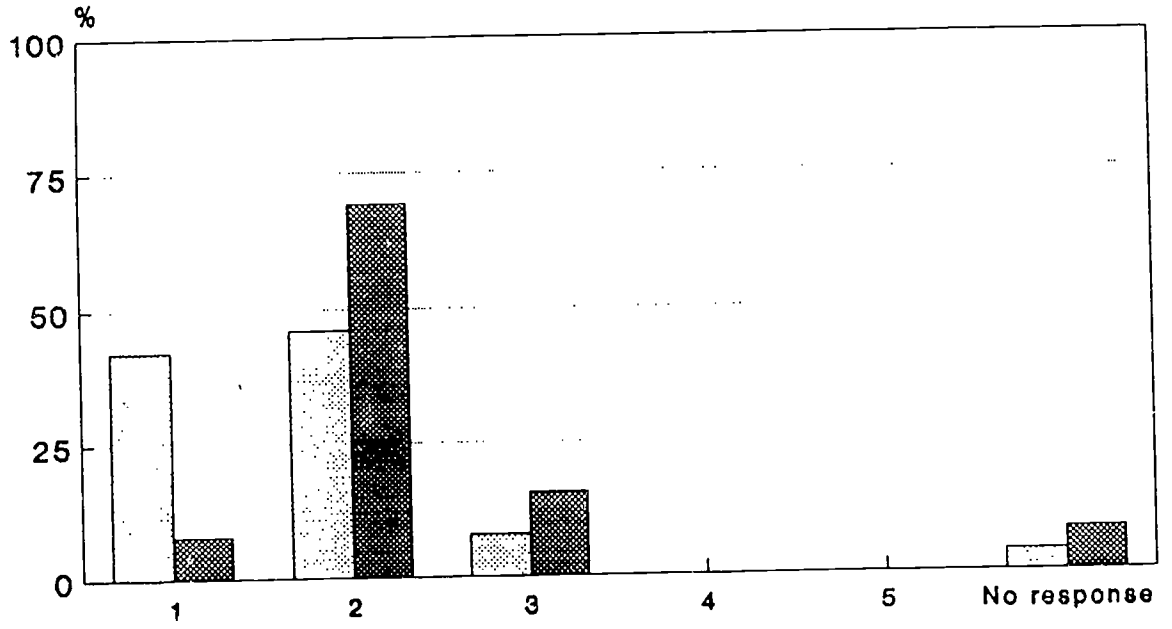
FIGURE 1b The usefulness of the interactive video and data-base to study the topic "Integrated teaching" (Items 5 and 9)

5. The concept "integration" can be learned more easily by other means



Mean 3.54 ; s = .76 ; t (C - S) = 2.37 ; p = .02 *

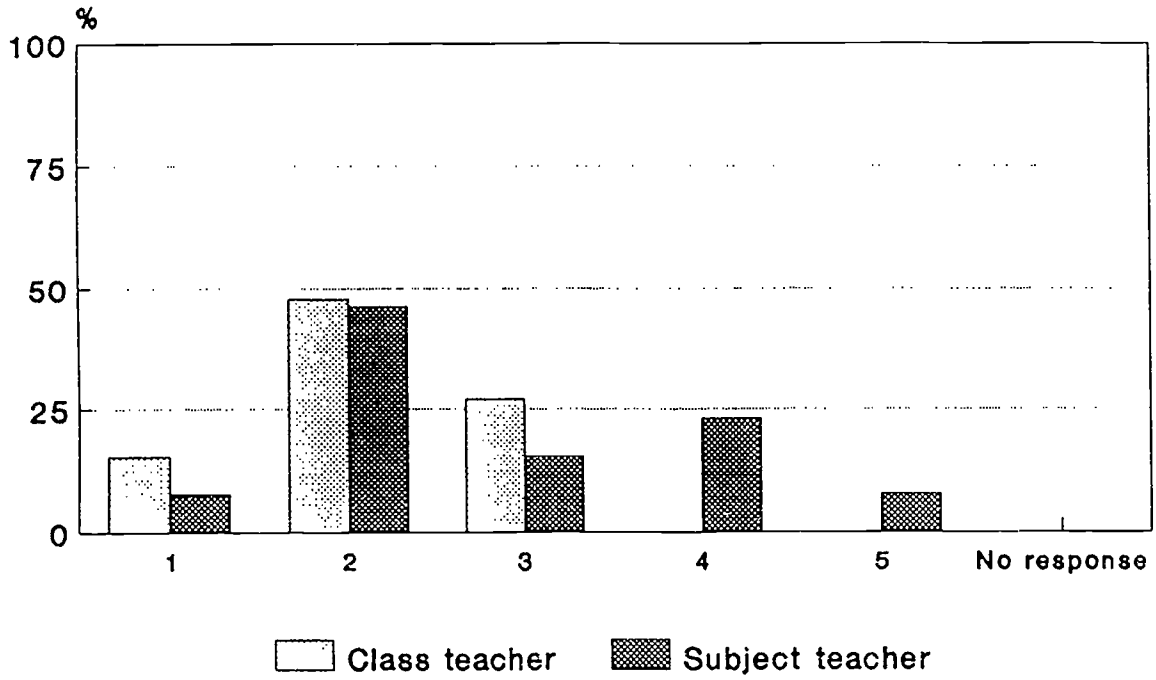
9. The interactive video and data-base give a clear idea of the working modes in integrated teaching



Mean 1.64 ; s = .64 ; t (C-S) = -2.10 ; p = .04 *

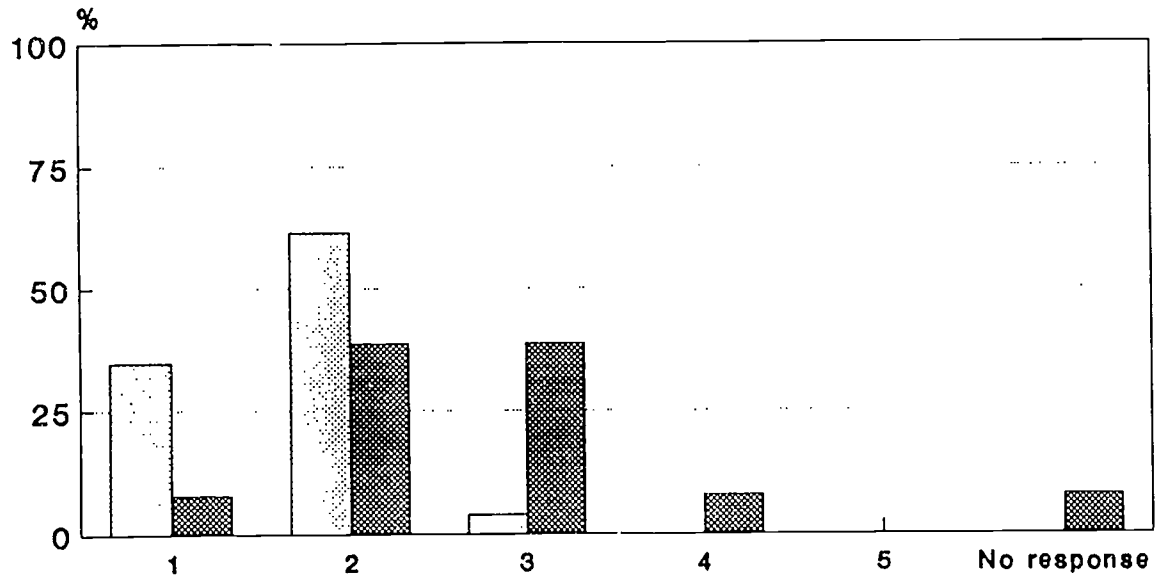
FIGURE 1c The overall usefulnes of this kind of in-service training (Items 2 and 3)

2. I have received information, which can be used in school teaching



Mean 2.12 ; s = .65 ; t (C - S) = -1.88 ; p = .08 ns.

3. I have found structured information on teaching and learning



Mean 1.69 ; s = .55 ; t (C-S) = -3.64 ; p = .001