DOCUMENT RESUME

ED 044 059 FL 001 958

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TITLE A Study of Language Laboratory Teaching in German.
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PUB DATE Mar 66
NOTE 18p.; Publication No. 7 in "Didakometry" Series

EDRS PRICE EDRS Price MF-$0.25 HC-$1.00
DESCRIPTORS Audiolingual Methods, *Educational Experiments, *German, Grade 7, *Language Instruction, *Language Laboratories, Language Skills, Methodology, Modern Languages, *Secondary Schools, Student Attitudes, Teaching Methods

ABSTRACT

This report contains experiment results obtained from a comparative study of two groups of seventh grade students learning German in Sweden. The main objectives of the investigation, which lasted one school year, are: (1) to investigate possible achievement differences in German between similar groups of students when one group is instructed mainly in the language laboratory and another group in the classroom only, and (2) to investigate possible differences in attitudes between the two groups. Results are expressed statistically in 10 tables and illustrated graphically through 11 additional diagrams. (RL)

special-topic
bulletin from

DEPARTMENT OF
EDUCATIONAL AND
PSYCHOLOGICAL RESEARCH

SCHOOL OF EDUCATION
MALMÖ, SWEDEN

didakometry

Jivén, L. M.:

A STUDY OF LANGUAGE LABORATORY TEACHING IN GERMAN

No. 7 March 1966

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A STUDY OF LANGUAGE LABORATORY TEACHING IN GERMAN

Abstract. - This report contains results from a study of language laboratory teaching in German. Two groups of pupils in grade 7 have been trained in German, one group mainly in the language laboratory and one group in the classroom only. Achievement and attitude changes of the two groups have been compared.

PROBLEM

The language laboratory is said to be a useful aid in language training. However, there is rather little systematically collected information about how this new aid works in various types of instructional situations. The aim of this study is to give additional information on the use of the language laboratory. The present report is a summary of three more detailed studies (Jivén, 1964, 1965 a, 1965 b). In these studies changes in certain achievement and attitude variables as a function of training methods have been investigated.

The main objectives of these investigations, which lasted one school-year, are:

1. To investigate possible achievement differences in German between equivalent groups, when one group is instructed mainly in the language laboratory and another group in the classroom only.
2. To investigate possible differences in attitudes between the two classes.

SUBJECTS

The pupils of two seventh grade classes at the School of Education in Malmö, Sweden, served as subjects. They were studied during the school-year 1963 (fall) - 1964 (spring). The two classes were comparable with respect to the following variables: intelligence, attitudes towards language laboratory instruction, attitudes towards German, and verbal ability.

EDUCATIONAL MATERIAL

The two classes used the same textbook (Ekholm-Erb & Grunewald, 1963). The material for language laboratory training was constructed by B. Ekholm-Erb and is now published in somewhat modified form. (Ekholm-Erb & Grunewald, 1966; Ekholm-Erb & Jivén, 1966.)

PROCEDURE

The experimental class (EC) was given instruction two lessons a week in the classroom and three lessons a week in the language laboratory. The training in the laboratory was prepared for by instruction in the classroom. The exercises consist of texts which are read aloud in German. During the exercises the pupils first have to listen to the text. Then they listen to each sentence of the text separately and repeat the sentence. After that they are given shorter sentences to be imitated and questions concerning the text to be answered.

During the instruction in the language laboratory - which is of the AAC-type - the pupils have worked in the following way. At the beginning of the lesson the program has been presented to the pupils from the

teachers console and recorded on the pupils' tapes. After this the pupils themselves have been able to work with the exercises on the individual tape recorders during the lesson. Thus, a certain kind of individualized work with the material has taken place.

The control class (CC) was given instruction in the classroom all five lessons of the week. The same person served as teacher in both the experimental class and the control class. Both classes were studied repeatedly with respect to achievement and attitude variables during the year.

Achievements in German were measured four times. A pre-test was given when the training started in the fall. At the end of the fall term a new achievement test was administrated, and at the beginning of the spring the same test was repeated. At the end of the spring a new achievement test was given. During the fall term the pupils were tested three times with an attitude inventory, at the beginning of the term, at the middle of the term, and at the end of the term. During the spring term the pupils were tested with the same attitude inventory at the end of the term. The tests are described and illustrated in detail in Jivén, 1964, 1965 a, and 1965 b.

The pupils' answers to the oral tests have been scored by two scorers, working independently of each other. The mean correlation between the two scorers is r = 0.87 for the fall tests and r = 0.84 for the final spring tests.

RESULTS AND DISCUSSION

Results concerning achievement changes will be given first and after that results concerning attitude changes.

1. Analysis of achievement changes in German

The pre-test (PT) contains three sub-tests, labelled here PT:1, PT:2, and PT:3.

PT:1 The pupils have to look at one picture at a time. For each picture, a question is given in Swedish what the picture is about.
E.g. "Bild 1. Vad är det?" (That is: "Picture 1. What is this?") The answer has to be given in the German language.

PT:2 The same pictures are given, but the questions are now asked in German.
E.g. "Bild 1. Was ist das?" The answer has to be given in German.

PT:3 The pupil's task is to imitate separate sentences spoken in German.
E.g. "Das ist ein Fenster."
In sub-test 3 three aspects of the achievements have been graded separately:
a. word form (includes right case, gender, and number forms)
b. sound formation, i.e. pronounciation of the single words,
c. intonation.
In tests PT:1 and PT:2, the pupils got one point if they answered right and zero if they answered wrong. In test PT:3 each aspect was given a score on a 5-point scale, where 5 refers to the best achievement. The values for aspects a, b, and c have been added together, and this sum is here called d.

Table 1 shows the results from the experimental class (EC) and the control class (CC) on the pre-test. Differences between distributions have

been tested by means of Mann-Whitney U-test (z) concerning PT:1, and PT:2 where the distributions are skewed, and differences between arithmetic means by the t-test concerning PT:3.

Table 1. Results in EC and CC on PT

	EC (n=16)		CC (n=22)			
	m	s	m	s	z	t
PT:1	1.38	2.32	1.18	2.25	0.40	
PT:2	2.19	2.21	1.73	2.67	1.12	
PT:3a	27.88	10.99	37.32	9.09		-2.79^{xx}
PT:3b	23.69	9.05	28.68	7.32		-1.81
PT:3c	27.06	9.09	31.09	6.97		-1.49
PT:3d	78.63	27.79	97.09	20.73		-2.26^{x}

According to table 1, there are no significant differences between the two classes concerning the sub-tests PT:1 and PT:2. (However, there is a tendency that EC is better than CC in these tests.) In test PT:3 there is a significant difference between the two classes with respect to word form. There is also a significant difference between the two classes concerning the aspect d, but as this is the sum of a, b, and c the difference probably depends on a. (The tendency here is that CC is better than EC.) These tendencies have to be remembered when interpreting the results of the later achievement tests.

At the end of the fall and at the beginning of the spring the pupils were tested concerning grammatical knowledge (gr), sound formation (sf), and intonation (it).

In the six grammar tests (gr), the pupils had to solve problems of different types, e.g.:

a. Was ist das? Answer: Das ist ein Klavier.
b. Wie ist das Klavier? Answer: Es ist schwarz.
c. Was für ein Klavier ist das? Answer: Das ist ein schwarzes Klavier.

At the end of the fall there were no significant differences between the two classes in the grammar tests concerning arithmetic means. However, there are significant differences between variances in two tests (gr 1 and gr 3). When differences between distributions of these tests are tested by means of Mann-Whitney U-test (z) there are no significant differences. When the pupils had to read a text aloud there was one significant difference between the two classes according to sound formation. Concerning intonation there are no significant differences.

Table 2. Results in EC and CC at the end of fall term

	EC (n=18)		CC (n=22)			
	m	s	m	s	t	z
gr 1	26.06	9.98	28.41	6.57	(-0.87)	-0.29
gr 2	13.22	4.82	12.64	4.41	0.39	
gr 3	14.28	5.04	15.45	3.04	(-0.89)	-0.33
gr 4	6.83	1.98	7.23	1.70	-0.67	
gr 5	5.44	1.92	4.41	2.27	1.50	
gr 6	6.28	2.49	6.18	1.77	0.14	
sf 1	12.22	2.15	14.86	2.10	-3.84^{xxx}	
sf 2	25.78	5.44	27.18	3.87	-0.93	
it 1	12.94	2.59	14.41	1.85	-2.05	
it 2	26.17	4.92	26.59	4.41	-0.88	

Abbreviations used: gr = grammatical knowledge; sf = sound formation; and it = intonation.

The same tests were given at the beginning of the spring term. On that occasion there were no significant differences at all between the two classes neither between arithmetic means nor between variances. However, there is a tendency that CC is better than EC. This is the case in seven out of ten tests, at the end of the autumn and at the beginning of the spring.

Table 3. Results in EC and CC at the beginning of spring term

	EC (n=21)		CC (n=24)		
	m	s	m	s	t
gr 1	27.14	8.58	29.83	6.16	-1.04
gr 2	13.48	3.65	13.96	3.18	-0.46
gr 3	14.14	3.92	14.71	3.06	-0.53
gr 4	7.24	1.74	9.25	1.71	-0.02
gr 5	5.24	1.63	4.92	1.29	0.71
gr 6	5.90	2.47	6.54	1.91	-0.95
sf 1	13.62	2.32	14.65	2.22	-1.48
sf 2	28.52	4.95	27.63	4.21	0.63
it 1	14.00	2.51	14.22	2.54	-0.28
it 2	29.62	4.57	28.63	4.49	0.71

Abbreviations used: See table 2.

There is one fact here that may seem somewhat surprising at a first glance and that is that CC was better than EC with respect to sound formation (sf 1) at the end of the fall term. Often one has heard the opinion that the language laboratory should be advantageous because it can give the pupils a better opportunity to practice sound formation and intonation than they have in the classroom. In the present case however, there was no difference in the quality of the imitation model. The same teacher instructed the pupils in the classroom and on the tapes in the language laboratory. Hence, the voice in the classroom was not inferior to the voice on the tape on the teacher´s console. On the other hand, there might have been defects in the transmission of sound from the teacher´s console to the pupils´ booths.

At the end of the spring, new tests were given and the two classes EC and CC were once more compared with each other. On this occasion, however, a randomly sampled group (called RSG) from two schools near the School of Education was also tested. The three groups were approximately equivalent concerning intelligence and grades of German. Tests of reading comprehension (rc), listening (lg), grammatical knowledge (gr), and reading aloud (ra) were given. The tests of reading aloud (ra) were judged concerning sound formation (sf) and intonation (it). The results are presented in table 4. Differences between arithmetic means have been tested by the t-test and differences between distributions concerning ra, where variances are significantly different, by means of Mann-Whitney U-test (z).

Table 4. Results in EC, CC, and RSG at the end of spring term

	EC (n=18)		CC (n=25)		RSG (n=30)		EC-CC	EC-CC	EC-RSG	CC-RSG
	m	s	m	s	m	s	t	z	t	t
rc	19.44	9.34	20.40	9.51	21.03	10.55	-0.31		-0.51	-0.23
lg	25.89	8.44	31.60	8.59	29.90	11.25	-2.07^{x}		-1.27	+0.62
gr	203.83	15.72	204.48	14.08	187.57	19.01	-0.14		+2.97^{xx}	+3.60^{xxx}
ra sf	72.50	18.78	84.44	29.40	75.27	23.94	(-1.45)	-1.34	-0.41	+1.28
ra it	81.94	16.27	91.76	28.34	79.20	22.88	(-1.26)	-1.29	+0.43	+1.83
ra sift	154.44	33.82	176.20	57.14	154.47	46.26	(-1.38)	-1.34	0.00	+1.56

Abbreviations used: rc = reading comprehension
lg = listening
gr = grammatical knowledge
rasf = reading aloud, sound formation
rait = reading aloud, intonation
rasfit = the sum of rasf and rait.

In reading comprehension (rc) there are no significant differences between the groups. In listening (lg) there is a significant difference between EC and CC. CC is better than EC. In grammatical knowledge (gr) there are two significant differences. Both EC and CC are better than the randomly selected group (RSG). Concerning sound formation and intonation there are no significant differences between the three groups.

The significant differences between EC and CC on the one hand and the randomly selected group (RSG) on the other concerning grammatical knowledge might be explained in three ways: (1) the randomly selected group (RSG) was not accustomed to the test items, which were similar to the exercises used in the language laboratory and which were also used by the teacher in the classroom situation (CC) in direct method language teaching. (2) EC and CC are better concerning functional grammatical knowledge than RSG. (3) A combination of the two explanations is also probable.

It is quite clear that EC got significantly lower scores than CC in listening tests. Perhaps the pupils in EC have gained a habit of listening somewhat less attentively to model stimuli because they are usually sitting in their laboratory booths where they cannot see the teacher and the teacher cannot look at them as in the classroom. (On the other hand, the teacher can communicate with the pupils in the language laboratory by means of his microphone on the teacher's console.)

2. Analysis of attitude changes

Attitude changes during the year have been measured by means of two numerical 5-point scales and one scale of paired comparisons. The first scale (called NA) contains five items about the attitude towards the language laboratory. The second scale (called NB) contains items concerning the attitude towards English and the attitude towards German (in order to be able to compare the attitude towards German with attitudes towards another subject). The scale of paired comparisons

(called PC) contains nine school subjects and there are thirty-six comparisons made.

The items in the scale concerning attitudes towards the language laboratory (NA) are formulated in the following way (approximate translations from the basic Swedish text):

1. When I compare a lesson in the language laboratory with an ordinary lesson, I find a lesson in the language laboratory
   ( ) 1. much more amusing
   ( ) 2. a little more amusing
   ( ) 3. neither more amusing nor more tedious
   ( ) 4. a little more tedious
   ( ) 5. much more tedious

2. When I compare a lesson in the language laboratory with an ordinary lesson, I find that in the language laboratory I learn
   ( ) 1. much more
   ( ) 2. a little more
   ( ) 3. the same
   ( ) 4. a little less
   ( ) 5. much less

3. When I compare a lesson in the language laboratory with an ordinary lesson, I find that during a lesson in the language laboratory I become
   ( ) 1. much more stimulated
   ( ) 2. a little more stimulated
   ( ) 3. neither more stimulated nor more tired
   ( ) 4. a little more tired
   ( ) 5. much more tired

4. If I had to repeat the German course which I have read up to now, I should like to have
   ( ) 1. all the lessons in the language laboratory
   ( ) 2. almost all the lessons in the language laboratory
   ( ) 3. as many lessons in language laboratory as usual instruction
   ( ) 4. hardly any lessons in the language laboratory
   ( ) 5. no lessons in the language laboratory

5. If I could choose between instruction in the language laboratory in all subjects and usual instruction in all subjects, I should like to have
   ( ) 1. instruction in the language laboratory only
   ( ) 2. more laboratory instruction than usual instruction
   ( ) 3. as much laboratory instruction as usual instruction
   ( ) 4. less laboratory instruction than usual instruction
   ( ) 5. no laboratory instruction.

In diagrams 1-6 constructed from table 5 one can see the changes in attitudes towards the language laboratory and the instruction there. In table 6 some of the changes from one occasion to another are presented. Diagram 1 illustrates changes in the total scores from the five items added together (Σ NA 1 - 5). From the beginning of fall term the attitudes of EC towards the language laboratory tend to be on the positive side, well below the "neutrality point" of 15; the least positive attitudes being reported at the very beginning. However, there is no significant difference between distributions from the four occasions (table 6). In item NA 2 (where the pupils say whether they learn more or less during a lesson in the language laboratory than during an ordinary lesson), in

item NA 3 (where the pupils say how tired they get of the instruction in the language laboratory), in item NA 5 (where the pupils say what they would prefer if they could choose between instruction in the language laboratory in all subjects and usual instruction in all subjects) the tendency is the same as in the sum of the items, NA Σ 1 - 5 in diagram 1. In no case is there a significant difference between distributions (tested in table 6). Thus attitudes toward language laboratory instruction in German in EC are mainly positive and do not change significantly concerning distributions from one occasion to another. However, in all cases except item 5 the variances become significantly smaller from the first to the fourth occasion; members of the group have evidently become more homogeneous in their attitudes.

The attitudes of CC towards language laboratory instruction have to be seen against the fact that this class has had contact with language laboratory only in test situations and not in ordinary instruction situations. CC is significantly less positive towards instruction in the language laboratory than EC in October and December (table 7). In item NA 3 where the pupils report how tired they get of instruction in the language laboratory, EC is less positive than CC, and in April the difference is significant. Perhaps this can be explained by the fact that the CC pupils find the situation more exciting and varied than an ordinary lesson and therefore find this situation less tiring. The variance becomes smaller from the first to the fourth occasion in CC too. These results indicate that the pupils in CC are mostly less positive in their attitudes towards instruction in the language laboratory when compared with pupils in EC; while still being "on the positive side" in many cases (NA Σ 1 - 5 never above 15). Certain significant differences exist between the two groups. The two groups become more and more homogeneous and this, of course, is not unusual. A group norm is formed and the pupils of the group join the norm.

Table 5. Attitudes towards language laboratory instruction (Form NA), data from measurements in September, October, December, and April

Measurement occasion	EC								t_s^2
	Sept, n = 18		Oct. n = 20		Dec. n = 21		April n = 19		
	m	s	m	s	m	s	m	s	
NA Σ 1-5	13.17	5.08	12.00	4.23	12.33	4.03	12.37	2.68	5.16^{xxx}
NA 1	2.22	1.23	2.15	1.11	2.19	1.01	1.95	0.61	4.47^{xxx}
NA 2	2.67	1.33	2.15	0.91	2.14	0.83	2.37	0.87	3.22^{xx}
NA 3	2.44	1.17	2.40	1.11	2.67	1.08	2.84	0.74	3.03^{xx}
NA 4	2.44	1.17	2.10	1.14	2.19	1.05	2.11	0.85	2.64^{x}
NA 5	3.39	1.01	3.20	0.98	3.14	0.99	3.11	0.91	0.67

Measurement occasion	CC								t_s^2
	Sept. n = 21		Oct. n = 25		Dec, n = 24		April n = 25		
	m	s	m	s	m	s	m	s	
NA Σ 1-5	14.52	3.84	14.40	3.36	14.96	3.84	13.80	2.33	3.51^{xx}
NA 1	2.10	0.89	2.48	1.14	2.50	1.12	2.32	0.88	0.69
NA 2	3.33	0.84	3.08	0.93	3.25	0.83	3.36	0.56	3.05^{xx}
NA 3	2.33	1.13	2.32	0.93	2.42	0.95	2.12	0.65	4.32^{xxx}
NA 4	3.29	1.16	3.12	0.91	3.25	1.01	2.88	0.71	3.46^{xx}
NA 5	3.48	0.59	3.40	0.63	3.54	0.87	3.12	0.95	3.38^{xx}

Abbreviations used: NA = Numerical scale A
EC = Experimental class
CC = Control class

CC ——————
EC - - - - - - -

DIAGRAM 1. NA Σ 1-5 ARITHMETIC MEAN

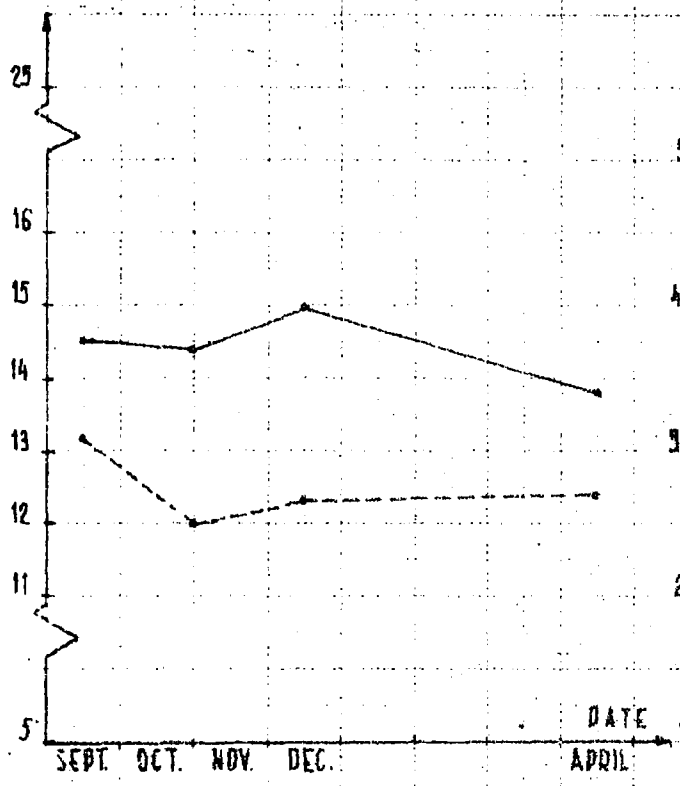


DIAGRAM 2. NA 1 ARITHMETIC MEAN

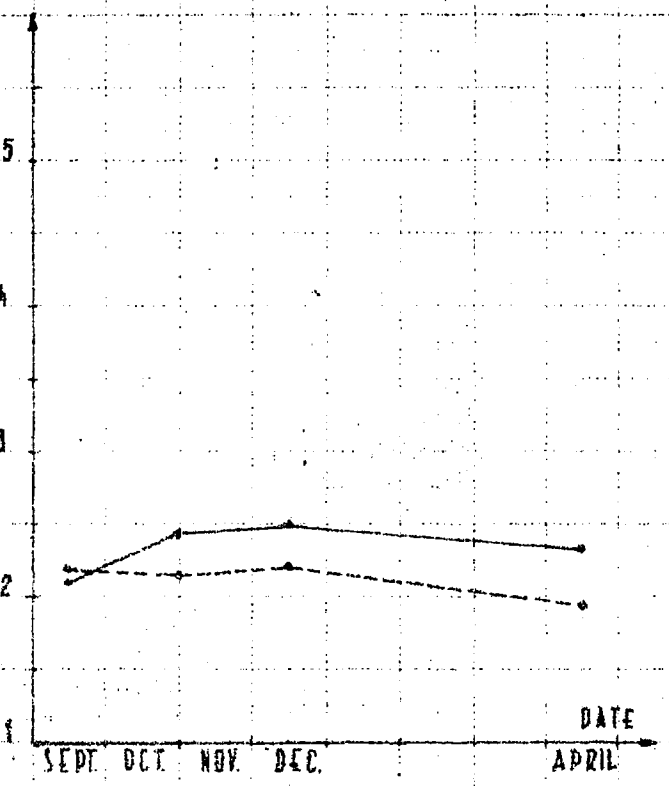


DIAGRAM 3. NA 2 ARITHMETIC MEAN

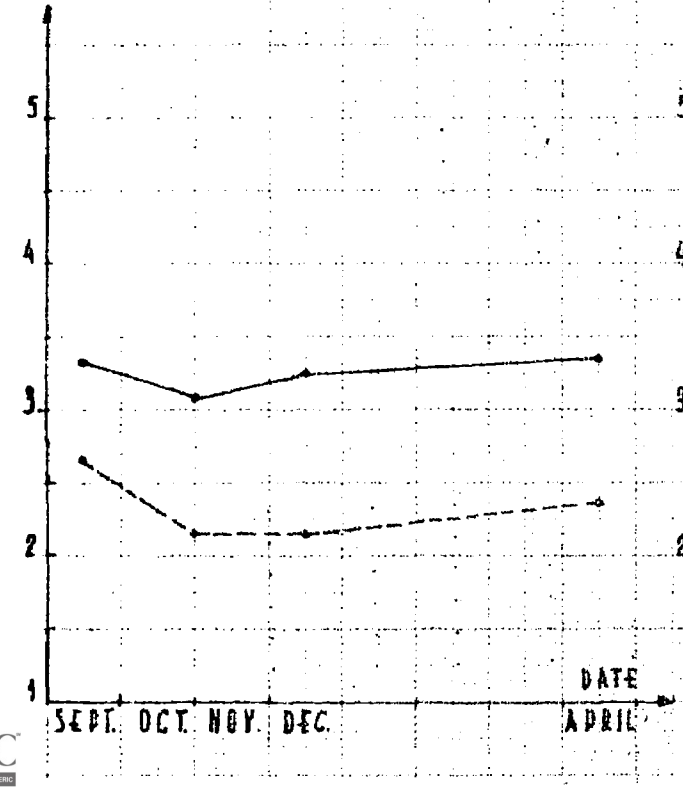
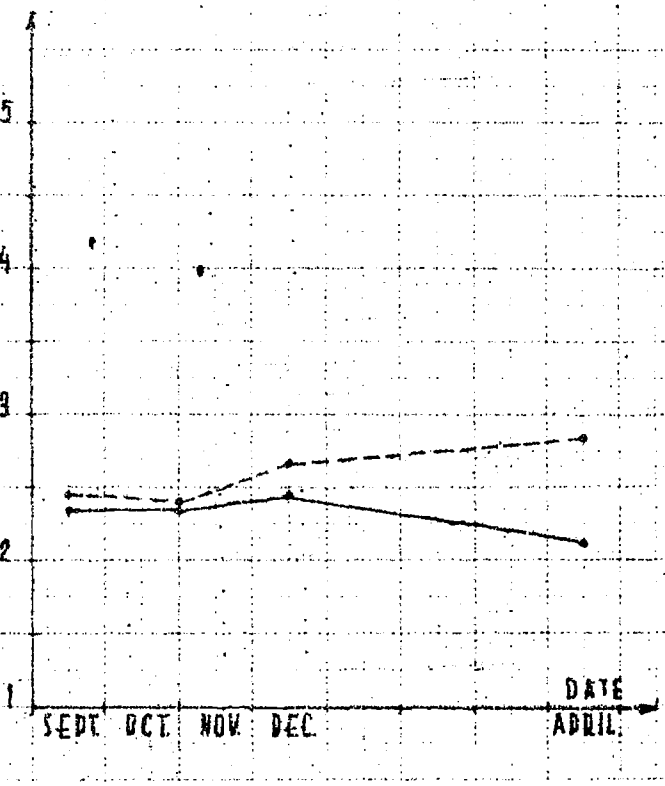


DIAGRAM 4. NA 3 ARITHMETIC MEAN



CC ———————

EC - - - - - -

DIAGRAM 5. NA4 ARITHMETIC MEAN

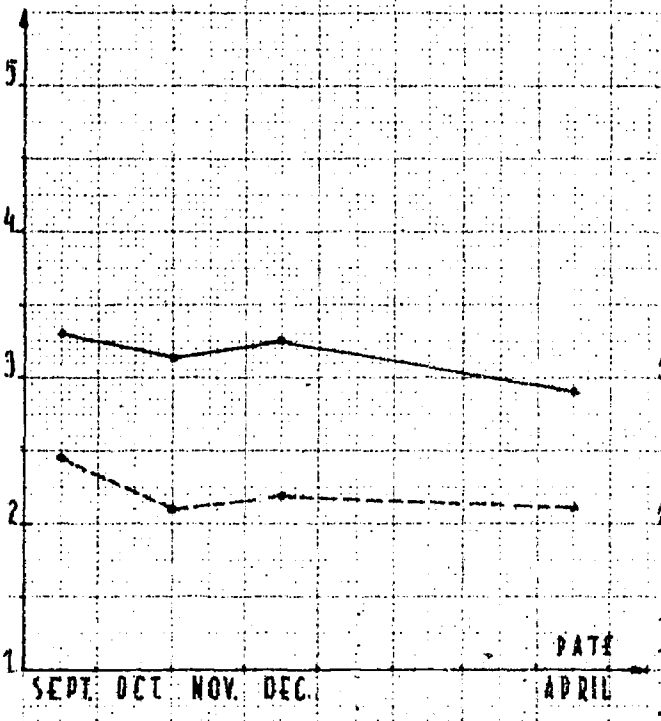


DIAGRAM 6. NA5 ARITHMETIC MEAN

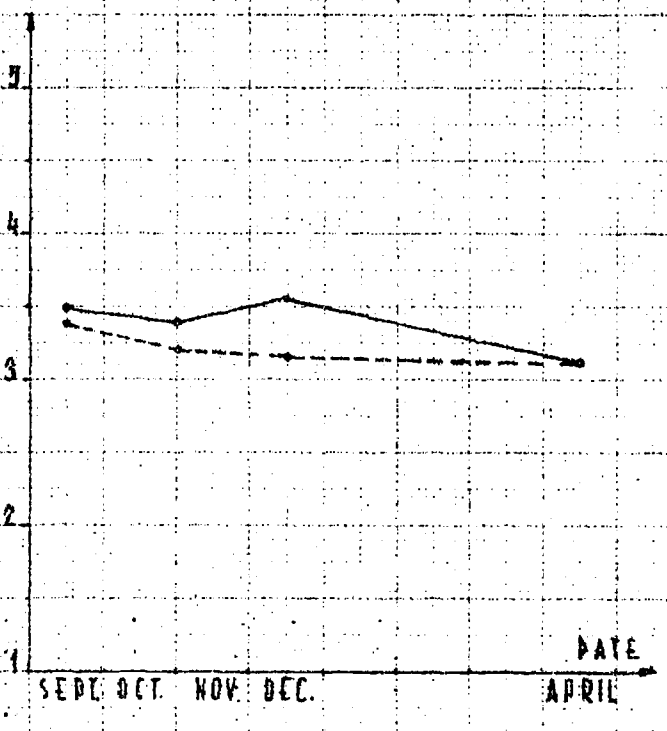


Table 6. NA, tests of differences between distribution on different occasions, Wilcoxon

Measurement occasions	EC											
	NA Σ 1-5		NA 1		NA 2		NA 3		NA 4		NA 5	
	N	T	N	T	N	T	N	T	N	T	N	T
Sept. - Oct.	16	49	12	36	9	7	9	17	10	12	9	16
Sept. - Dec.	17	66.5	9	22.5	8	7	12	35	9	13.5	8	14
Sept. - April	16	64	11	22	10	26	11	22.5	9	16	7	11

Measurement occasions	CC											
	NA Σ 1-5		NA 1		NA 2		NA 3		NA 4		NA 5	
	N	T	N	T	N	T	N	T	N	T	N	T
Sept. - Oct.	21	104.5	19	71	13	38	15	52	16	59.5	12	36
Sept. - Dec.	19	66	14	34	9	19	14	34	15	47.5	11	22
Sept. - April	20	97.5	14	43	11	33	10	22	16	46	11	20

Table 7. NA, tests in differences between EC and CC on different occasions, Mann-Whitney

Measurement occasion	NAΣ1-5	NA 1	NA 2	NA 3	NA 4	NA 5
	z	z	z	z	z	z
Sept.	-1.39	0.18	-1.66	0.28	-2.10^{x}	-0.11
Oct.	-2.34^{x}	-0.99	-2.90^{xx}	0.23	-2.97^{xx}	-0.80
Dec.	-2.22^{x}	-0.85	-3.58^{xxx}	0.80	-2.93^{xx}	-0.16
April	-1.60	-1.22	-3.45^{xxx}	2.64^{xx}	-2.68^{xx}	0.02

The second numerical scale (NB) deals with attitudes towards activities of different kinds in English and German. The items are of the following kind:

	very tedious	tedious	neither amusing nor tedious	amusing	very amusing
( ) 1. Prepare lessons in English	1	2	3	4	5
( ) 2. Listen to German on the radio	1	2	3	4	5
( ) 3. Have tests in English	1	2	3	4	5
( ) 4. Talk in German at school	1	2	3	4	5

In this scale there are 24 items, 12 concerning English and 12 concerning German. Some of the results are given in diagrams 7 - 10 and tables 7-9.

On the whole, the attitudes are rather similar in both classes, for both languages, and for all occasions; they tend to fluctuate around or slightly above the "neutrality point" of 36. English tends to be somewhat more appreciated than German; the difference is significant only in one out of eight comparisons, however (table 10). The attitude development over time has a similar shape for both classes and languages: a slight rise (more

positive) during the first part of the fall term, and then a gradual fall (less positive). From December to April the change is significant for both languages. Most importantly, there are no significant differences between CC and EC, although CC tends to be somewhat more positive (table 9).

Table 8. NB, the difference in attitudes on two different measurement occasions towards German and English respectively, t-test

Measurement occasions	n	EC					
		German			English		
		m_d	s_d	t_d	m_d	s_d	t_d
Sept. - Oct.	18	+2.00	4.52	+1.88	+1.67	3.60	+1.97
Sept. - Dec.	18	+0.61	3.89	+0.66	+1.61	3.68	+1.86
Sept. - April	16	-1.69	5.52	-1.22	-0.06	5.07	-0.05
Oct. - April	18	-4.28	5.85	-3.10^{xx}	-2.83	4.28	-2.80^{x}
Dec. - April	18	-2.44	3.70	-2.80^{x}	-1.94	4.72	-1.74

Measurement occasions	n	CC					
		German			English		
		m_d	s_d	t_d	m_d	s_d	t_d
Sept. - Oct.	21	+1.57	3.69	+1.95	+2.24	3.15	$+3.26^{xx}$
Sept. - Dec.	19	-0.26	4.83	-0.24	+1.68	3.10	$+2.36^{x}$
Sept. - April	21	-1.14	5.78	-0.90	+0.05	4.54	+0.05
Oct. - April	24	-2.88	4.56	-3.09^{xx}	-2.38	4.71	-2.48^{x}
Dec. - April	22	-1.82	4.72	-1.81	-2.27	4.04	-2.64^{x}

Table 9. NB, differences between EC and CC attitudes towards subjects on different occasions, t-test

Measurement occasion	English	German
	t	t
September	-1.58	-1.10
October	-1.73	-1.25
December	-1.77	-1.10
April	-1.59	-1.44

DIAGRAM 7. NB, CC
ARITHMETIC MEAN

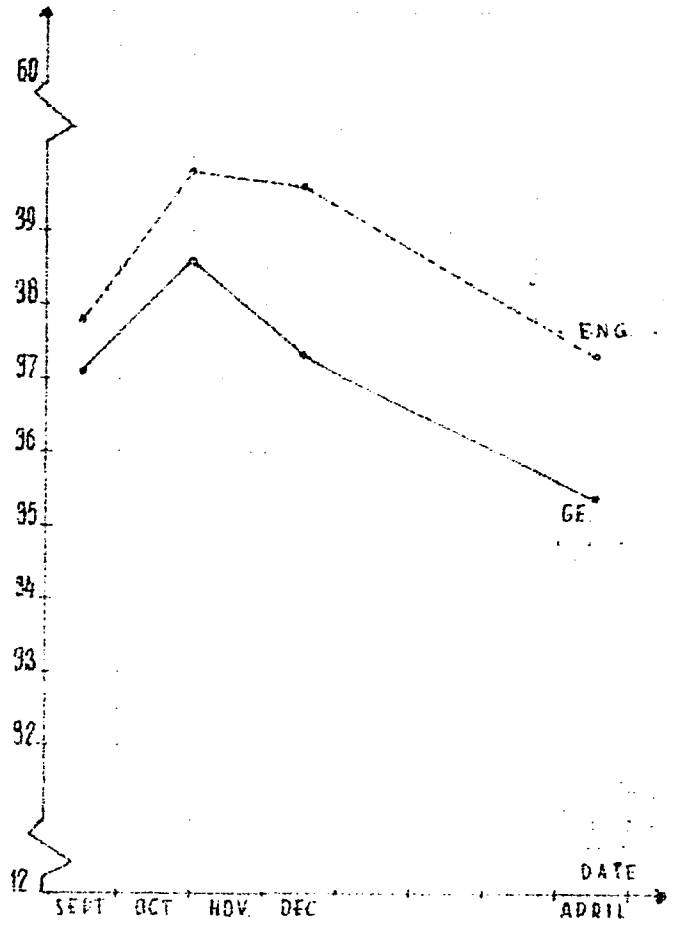


DIAGRAM 8. NB, EC
ARITHMETIC MEAN

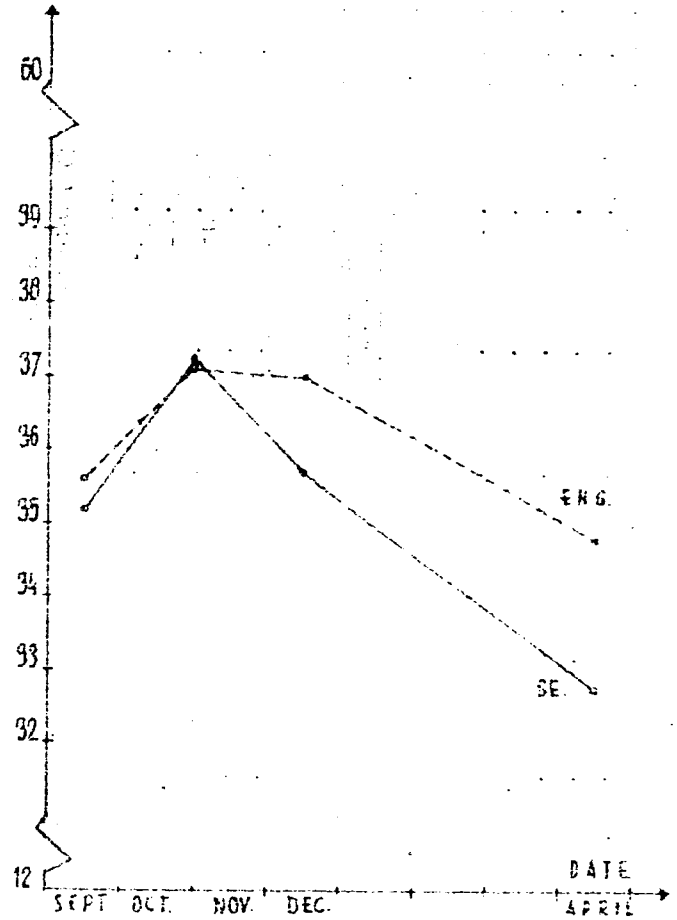


DIAGRAM 9. NB, GE
ARITHMETIC MEAN

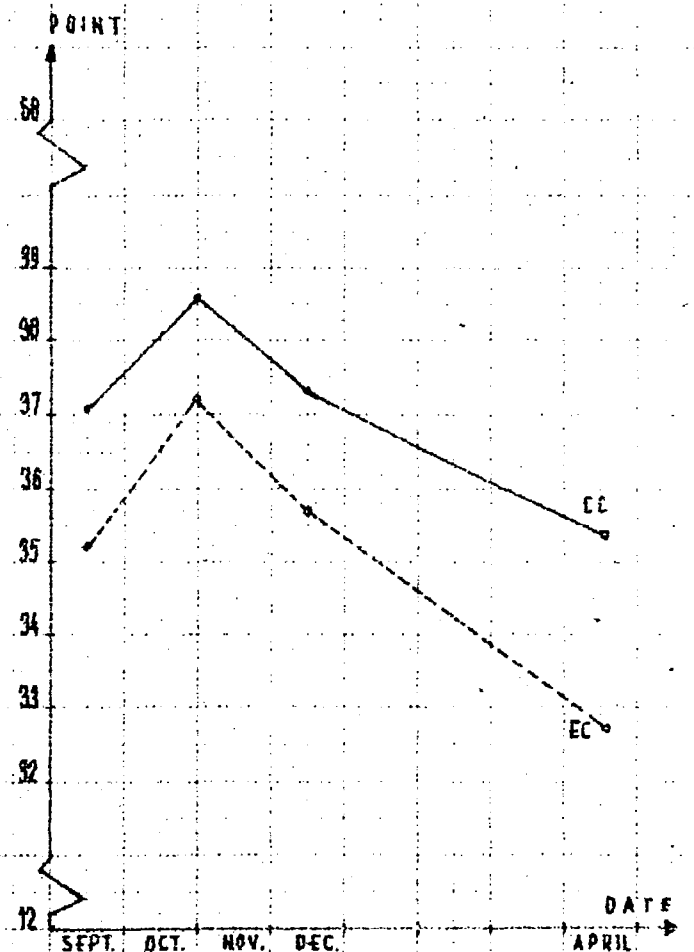


DIAGRAM 10. NB, ENG.
ARITHMETIC MEAN

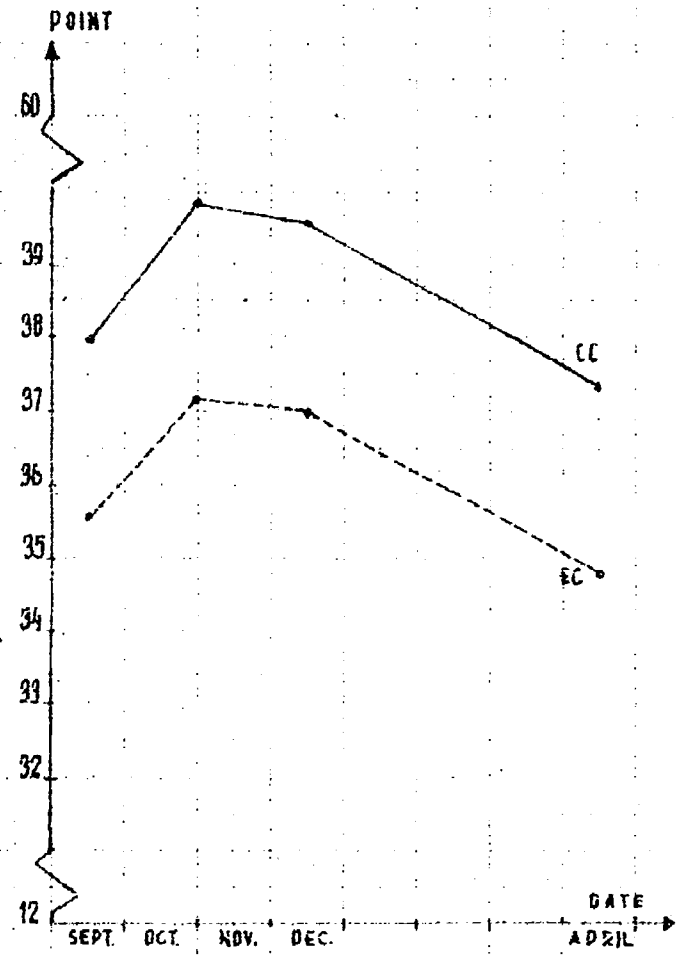


Table 10. Attitudes towards German and English and the differences between the two subjects on different occasions, t-test

Measurement occasion	n	EC						
		German		English		German - English		
		n	s	n	s	M_d	S_d	t_d
Sept.	21	35.20	6.16	35.60	4.77	-0.39	5.18	-0.29
Oct.	25	37.25	3.30	37.15	5.11	0.10	3.86	0.12
Dec.	24	35.70	5.98	37.00	4.93	-1.30	6.17	-0.94
April	25	32.74	6.11	34.79	5.52	-2.05	5.98	-1.49

Measurement occasion	n	CC						
		German		English		German - English		
		n	s	n	s	M_d	S_d	t_d
Sept.	18	37.10	4.45	37.95	4.42	-0.86	5.04	-0.78
Oct.	20	38.60	3.69	39.80	4.88	-1.20	4.72	-1.27
Dec.	21	37.33	3.61	39.58	4.56	-2.25	4.34	-2.54 x
April	19	35.40	5.99	37.36	5.03	-1.96	5.58	-1.76

The questionnaire PC contains nine school subjects. In the pairs each subject is compared with every other subject. The subjects are biology, English, gymnastics, civics, mathematics, Swedish, German, drawing, and religion.

In diagrams 11 and 12 respectively you can see the rank order between four subjects on the four measurement occasions. (Ge means German, E means English, Ma means mathematics, Gy means gymnastics, Bi means biology.) On at least one of the occasions these subjects have been ranked first, second, or third. In EC German has rank position 1 in September, October, and December, but in April rank position 3. In September, October, and December English is 2:nd but 1:st in April. In CC German has the rank position 3 in September, rank position 1 in October, December, and April. English has rank position 2, on every occasion.

Thus during the period under investigation the two classes (EC and CC) become more homogeneous (the variance becomes significantly smaller) in their attitudes towards the language laboratory training. EC tends to be more positive towards language laboratory training than CC, and there are some significant differences. According to one questionnaire, the attitudes towards German tend to be more positive in CC than in EC; however, these are not significant differences.

x x x

To sum up: From the results of the achievement tests one can see that the group which has been trained in the language laboratory (EC) has in no case done better than the group that has been trained in the classroom (CC) only. Differences between the two classes are insignificant except in the listening test (lg) where CC is significantly better than EC at the end of spring.

DIAGRAM 11. EC, PC, RANK ORDER BETWEEN FOUR SUBJECTS AT FOUR OCCASIONS

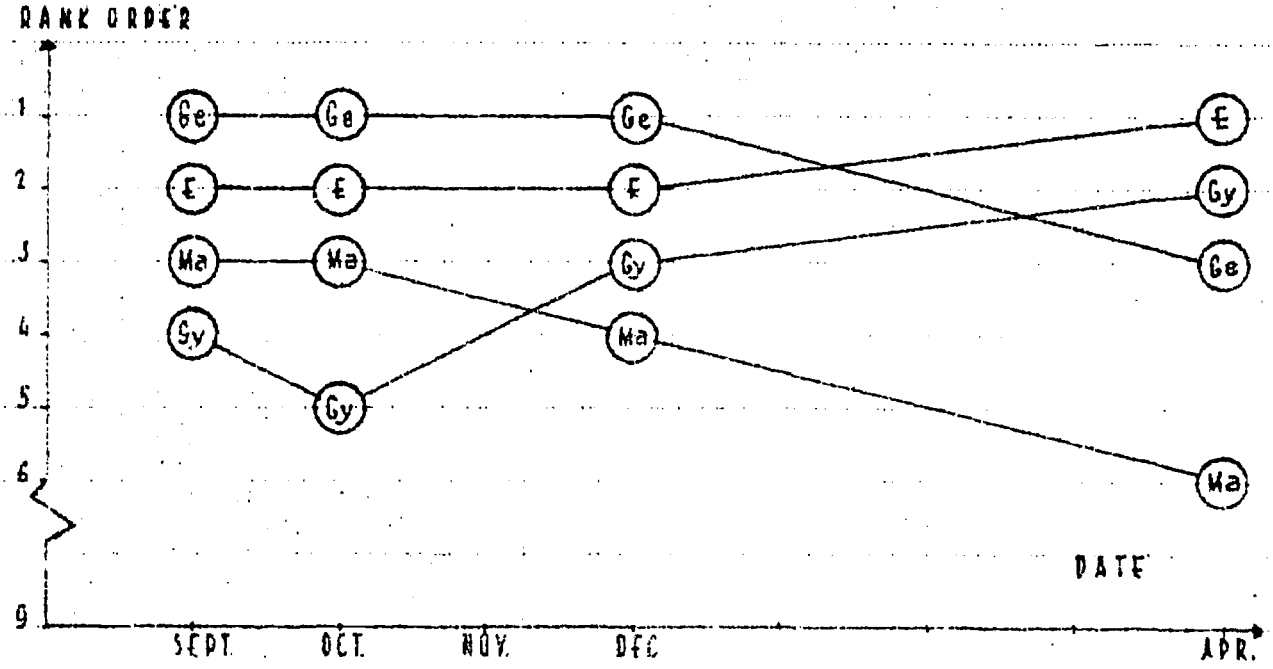
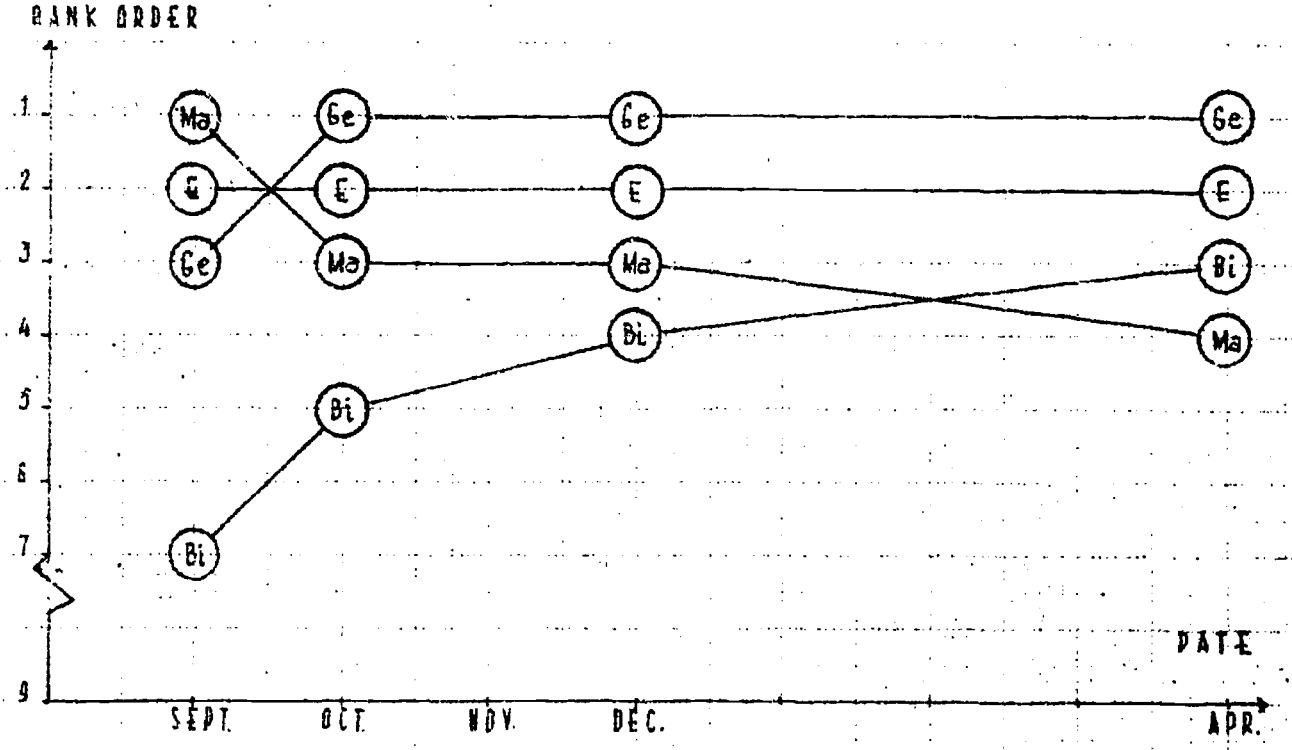


DIAGRAM 12. CC, PC, RANK ORDER BETWEEN FOUR SUBJECTS AT FOUR OCCASIONS



Concerning the attitude changes during the year one can see that, on the whole, the language laboratory group tends to be somewhat more positive towards the use of language laboratories than the group trained in the classroom only. There are no significant differences in attitudes towards German between the two groups.

On the whole, the results given here have shown that the fact that a class has had the opportunity of using a language laboratory does not, by itself, guarantee better achievements. It might also be stressed, however, that neither has the fact that pupils have worked more or less on their own during 3/5 of lesson time for one school year resulted in lowered achievement as compared to a randomly sampled group conventionally attended to by the classroom teacher.

There is no indication, from the present studies, that long-time use of the language laboratory has any detrimental effect on pupil attitudes towards the instructional situation or towards the target language. On the average, the pupils list the target language among the most popular school subjects, and if they had to repeat the German course, they would like to have "almost all the lessons in the language laboratory".

Considering the fact that the language laboratory experience was something fairly new to the teacher and that the material often had to be produced under time pressure, and considering further the fact that the inherent possibilities in a language laboratory of individualizing on different levels of difficulty were not utilized in these experiments (all pupils used the same material), there seems to be reason to favor an optimistic attitude towards the future of language laboratory training.

Obviously, however, dramatic effects will not be achieved automatically or even easily; much additional effort has to go into the process of refining methodologies and much work also into the systematic construction of pupil-adapted instructional materials.

REFERENCES

Ekholm-Erb, B. & Grunewald, G. Deutsch für dich, Teil I. (Zweite Auflage.) Gävle: Skolförlaget, 1963.

Ekholm-Erb, B. & Grunewald, G. Mein deutsches ABC. Buch A. Gävle: Skolförlaget, 1966.

Ekholm-Erb. B. & Jivén, L. Mein deutsches ABC. Übungsbuch A. Gävle: Skolförlaget, 1966.

Jivén, L.M. Försök med språklaboratorieundervisning i tyska. Attityd-utvecklingen. (Pedagogisk-psykologiska problem, nr 18.) Malmö: Lärarhögskolan, 1964.

Jivén, L.M. Försök med språklaboratorieundervisning i tyska. Prestationsutvecklingen (I). (Pedagogisk-psykologiska problem, nr 19.) Malmö: Lärarhögskolan, 1965 a.

Jivén, L.M. Försök med språklaboratorieundervisning i tyska. Prestationsutvecklingen (II). (Pedagogisk-psykologiska problem, nr 23.) Malmö: Lärarhögskolan, 1965 b.