

THE ORGANIZATION OF REMEDIAL INSTRUCTION FOR SLOW-LEARNING PUPILS *

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Pupils (N 48) identified on the basis of teachers judgments and performance on standardized tests as being low in scholastic attainment were assigned at random to one of two experimental treatments a special full time remedial class or a part time remedial class or to a normal class which acted as a control group. The pupils spent two years in the group to which they were assigned. At the end of one year, the two remedial groups performed better on tests of reading and arithmetic than the control group. On a test of spelling only the full time remedial group performed significantly better than the control group. At the end of the second year while over all differences on attainment between groups were again found differences between pairs of groups were no longer significant. Over all there was a tendency for the full time remedial group to perform somewhat better than the part time remedial group.

It has long been recognized that a significant number of children, who though not mentally subnormal, experience serious problems in learning. In almost every class, one is likely to come across at least a few children who have great difficulty in acquiring one or more of the basic scholastic skills — reading writing, spelling or numerical computation. In some classes, the number of such children may be quite large. In schools in poor socio-economic areas, for example, a large proportion of the pupils may exhibit learning disabilities to a greater or lesser extent.

The provision of some kind of curriculum modification for such pupils raises problems, especially in a relatively large class. Teachers obviously find it difficult to find the time to give slow learning pupils the extra attention and time they need. In the past, teachers often attempted to deal with this problem by having pupils, whose attainment was below average repeat a year's classwork (7). The available evidence, however, suggests that this may not be a very satisfactory procedure, either in

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terms of the pupil's attainment or in terms of the possible effects on his personality (8) More recently, other systems have been adopted to assist the child with learning difficulties In one such system, pupils who are backward are removed from their ordinary class and placed in a full time remedial class Such classes are usually small and, since all the pupils are backward, the teacher can concentrate all his efforts on the remediation of learning disabilities An alternative system allows the pupil to remain in his ordinary class for most of the time, but he leaves it for periods to spend time with a remedial teacher This system has at least two apparent advantages over the special class It is cheaper to operate since one teacher can deal with many more pupils on a part time basis than on a full time basis And secondly, it means the retarded pupil is more integrated into the normal running of the school, since he spends most of his time in a normal class

While the relative merits of different forms of remediation have been debated widely, empirical evidence relating to the issue is sparse There has been a number of studies in the United States in which comparisons have been made between the performances of children in fully segregated classes, in partially integrated settings and in regular classes As well as examining the scholastic attainment of pupils in these studies (e.g., 1, 4), other possible effects of class placement on pupils have been examined, such as self concepts of pupils (4, 9, 10), adjustment at school (6) and post school adjustment (3) The findings of such studies, however, lack consistency (cf 11), a fact that reflects, no doubt, the wide variety of conditions with differing objectives and curricula, under which special education programmes operate In the absence of any studies in Ireland, the present study was carried out as a pilot experimental investigation into the scholastic effects of different forms of organization for remedial instruction which exist in this country Three of the systems described above were investigated—the full time special remedial class, the part time remedial class, and the ordinary class, with no special provision for dealing with slow learners

METHOD

Subjects of the investigation

The study was carried out in a boys' national school in a poor city area which had a reputation for having a high rate of educational failure The results of standardized tests administered at the beginning of the study to all pupils in standards 3 and 4 support the view that educational retardation was a feature of the school Table 1 sets out mean attainment ages and mean quotients based on the Schonell Graded Word Reading

Test, the Schonell Essential Mechanical Arithmetic Test (Form A) and the Schonell Graded Word Spelling Test (A) (13) for pupils in 3rd (N 41) and 4th (N 45) standards. One pupil in each class was absent during testing. To obtain a general measure of verbal ability, the English Picture

TABLE 1

MEAN AGES AND MEAN SCORES (READING ARITHMETIC SPELLING)
OF ALL PUPILS ELIGIBLE FOR INCLUSION IN EXPERIMENT

	N	Mean CA	Mean Subject Areas			Mean Subject Quotients			Mean Overall Quotient
			Read	Arith	Spell	Read	Arith	Spell	
Standard 3	41	10.2	7.5	8.0	7.8	74.1	79.3	76.2	76.3
Standard 4	45	10.8	8.2	8.3	8.11	76.0	76.4	76.0	76.2

Vocabulary Test 2 (2) was administered to a random sample of 26 pupils from the two classes. The mean standardized score for the group was 75.96 (SD 11.07), scores ranged from 60 to 100.

In addition to obtaining the above test data, the teachers of standards three and four ranked all pupils on the basis of their general school attainment. Ratings by teachers were then compared with rankings in terms of mean attainment quotients derived from the standardized tests. Our interest was in the pupils with the lowest ratings, it was for such pupils that the experimental treatment was planned. Having decided that 16 children would be assigned to each treatment, we wished to identify the 48 children who seemed most in need of remedial assistance. Thus we selected the 48 with the lowest mean attainment quotients. Ratings by teachers and those based on tests were found to be largely in agreement. There was disagreement between the test identification and teacher identification in the case of two third standard pupils, following discussion with the teacher, it was clear that he did not regard these as in need of any additional help and so these pupils were excluded from the experimental group. There were four cases of disagreement in the case of fourth standard pupils. Discussion with the teacher resulted in two of these being excluded from the experimental group, it was agreed that the other two needed some special treatment. Places vacated by the pupils in the selected group were filled by pupils who ranked lowest among the pupils in the original non selected group.

The mean score on the English Picture Vocabulary Test 2 of the selected pupils (M 76.09, SD 10.76) did not differ from the mean of all the pupils

in the classes from which they had been selected

Each of the 48 pupils selected was assigned at random to one of three groups. One group of 16 pupils formed a special full time class, the second group remained in their ordinary classes but received part time remedial teaching. The third group remained in their ordinary class and acted as a control group.

Treatments

Full-time remedial class Pupils spent all their time in this class. The curriculum was primarily cognitive/scholastic in orientation. Emphasis was placed on the development of basic skills in reading and mathematics, and the remediation of deficiencies in these areas. There were 16 pupils in the class.

Part time remedial class The curricular emphasis was similar to that in the full time class. Each pupil spent three quarters of an hour each day in the class, the rest of the day was spent in his ordinary class. Eight to ten pupils were in the remedial class at any one time. The teacher dealt with seven groups of pupils a day, a total of 48 pupils drawn from several classes in the school.

Normal class The ordinary classes which the control pupils attended followed the normal primary school curriculum. There were 34 pupils in standard 3, and 36 in standard 4 (including pupils attending the part time remedial class).

Pupils were allocated to treatments at the beginning of the school year and continued in the groups to which they were assigned for two years, i.e., through standard 4 and 5 for one set of pupils and through standards 5 and 6 for the remainder.

Variables investigated

The dependent variables in the study were measures of attainment in reading, mechanical arithmetic and spelling. The tests used were the same as those used in the allocation of pupils.

Reading Schonell Graded Word Reading Test,

Arithmetic Schonell Essential Mechanical Arithmetic Test

Spelling Schonell Graded Word Spelling Test

Pupils were tested at both the end of the first and the end of the second year of treatment. For arithmetic and spelling, alternative forms of tests were used in alternate years.

Records were also obtained on the school attendance of pupils during the study.

RESULTS

Attainment

Tables 2, 3 and 4 set out quotients for the two experimental and the control groups derived before the study began, after it had been in operation for one year and after it had been in operation for two years

TABLE 2

READING QUOTIENTS OF FULL-TIME REMEDIAL,
PART-TIME REMEDIAL AND CONTROL GROUPS

	Remedial Full time			Remedial Part time			Control		
	N	M	SD	N	M	SD	N	M	SD
Pre treatment	16	69.5	10.7	16	66.6	8.5	16	61.9	10.2
After one year	16	74.6	11.6	16	70.0	9.8	15	59.1	9.9
After two years	13	75.7	12.1	12	68.1	13.8	12	61.9	11.3

TABLE 3

ARITHMETIC QUOTIENTS OF FULL-TIME REMEDIAL,
PART-TIME REMEDIAL AND CONTROL GROUPS

	Remedial Full time			Remedial Part time			Control		
	N	M	SD	N	M	SD	N	M	SD
Pre treatment	16	72.1	7.0	16	72.6	7.9	16	68.3	4.8
After one year	16	73.4	6.6	16	72.8	7.2	15	65.3	5.7
After two years	10	72.6	7.4	13	67.4	6.7	12	59.8	3.1

TABLE 4

SPELLING QUOTIENTS OF FULL-TIME REMEDIAL,
PART-TIME REMEDIAL AND CONTROL GROUPS

	Remedial Full time			Remedial Part time			Control		
	N	M	SD	N	M	SD	N	M	SD
Pre treatment	16	70.3	12.9	16	70.1	9.6	16	62.5	10.8
After one year	16	77.4	10.6	16	71.2	7.4	15	62.8	10.2
After two years	10	70.3	12.1	13	64.9	10.9	12	56.3	9.9

A series of analyses of variance was carried out to examine the significance of differences between the three groups at each stage at which testing was carried out. It should be borne in mind that the numbers were small for these analyses and decreased in the final stage of the study, due to absences and losses from the groups (cf Tables 2, 3 and 4)

Pre treatment scores Analyses of variance revealed no difference between groups in quotients achieved in the three subjects

After one year Significant F values ($p < 01$) were found in the case of all three subject areas. Scheffé (12) post hoc analyses revealed that while the two remedial groups did not differ significantly from each other in reading, both groups differed significantly from the control group. (The difference between the control and part time groups was at the 05 level, that between the control and the full time groups at the 01 level.) The situation was exactly the same for arithmetic. In the case of spelling, only one difference was found to be significant, that between the full time group and the control group ($p < 01$)

After two years Again significant F values were found for all three subject areas. The significance of the F value was at the 01 level for reading and at the 05 level for arithmetic and spelling. Post hoc Scheffé analyses did not reveal any significance differences between groups

School attendance School attendance for the pupils is set out in Table 5

TABLE 5

SCHOOL ATTENDANCE (NUMBER OF DAYS) OF
FULL-TIME REMEDIAL PART-TIME REMEDIAL AND CONTROL GROUPS

	First Year (195 days)		Second Year (191 days)	
	Mean No	%	Mean No	%
Remedial Full time	168.5	86.4	153.8	80.5
Remedial Part time	179.1	91.8	171.0	89.5
Control	164.9	84.6	154.8	81.0

DISCUSSION

The assumption on which extra remedial assistance is provided for slow learners is that such pupils will benefit from the additional attention provided. In general, the present investigation supports such an assumption

While before the provision of remedial help, the three groups of pupils did not differ significantly from each other, by the end of the first year, those attending a remedial teacher, either part time or full time, were performing significantly better on tests of reading and arithmetic than were the pupils who had remained full time in their normal classes. The difference in the case of spelling was not so great. Only the full time remedial group was significantly ahead of the control group. While the part time remedial group performed better than the control group, the difference between the groups was not statistically significant.

At the end of the second year, the differences between groups were not so obvious. Over all differences between groups were again found, but it was not possible to identify specific inter group differences that reached an acceptable level of statistical significance. Here it should be noted that sample sizes had decreased, requiring larger differences to achieve statistical significance. The general trends at the end of the second year remain the same as at the end of the first. In no case does the mean score for the control group reach that of the experimental groups.

It is difficult to make inferences on the basis of changes in score from one testing to another (5). However, the general pattern may be noted. Increases in quotients during the first year were general for the two experimental groups, however, these increases were not maintained during the second year. In fact, decreases in quotient, as compared with performance at the end of the first year, were recorded for all mean scores with one exception (reading in the full time remedial group). Thus, interpreting the quotient scores on their face value, one finds that while the two experimental groups maintained a differential in their scores *vis a vis* the control group, they failed to maintain such a differential *vis a vis* the standardization population.

Figures on attendance were obtained since there is some evidence that school attendance is related to scholastic attainment (14). The nature of the relationship, however, is not clear. It may simply mean that time missed from school leads to poor attainment. Or poor attendance may be a symptom of a more general lack of interest in education. In the present study, there is a tendency for attendance to fall off for all groups in the second year of the study. The greatest fall off occurs in the case of the full time remedial class. The high level of attendance of the part time remedial group is of interest. One wonders to what extent it might be a function of the satisfaction of the group with school and with the kind of provision that was made for them.

In general, the full time remedial group performed better than the part time one in the present study. The full time group also, of course, was

more expensive to maintain than the part time one. While in the former group one teacher was required for 16 pupils, in the latter, the remedial teacher, in conjunction with a class teacher, handled 48 pupils. The relative cost in terms of effectiveness of the two approaches is in need of further investigation *. It should also be borne in mind, of course, that different pupils may require different kinds of provision.

In considering the findings of this pilot investigation, its limitations should be kept clearly in mind. For one thing, the study was confined to one school, with only one teacher per treatment. Thus there was no control of the teacher variable. Secondly, the number of pupils involved was very small. Thirdly, the measurement of effects was limited to a number of scholastic areas, no attempt was made to assess pupils' attitudes, interests, satisfaction or self perceptions. Finally, no detailed information was obtained on the treatments provided. The fact that significant trends were detected, however, does provide a firm basis for investigation on a larger scale. Such an investigation could provide useful guidelines in the matter of policy in the allocation of resources for remedial work with slow learning pupils.

* For example the provision of full time remedial classes (three classes each handling 16 pupils) for a unit of six class room teachers who teach on average 36 pupils would cost about nine per cent more in teachers salaries than the provision of one teacher serving the same number of pupils (48) on a withdrawal basis. The former arrangement would require $7\frac{2}{3}$ teachers, the latter seven teachers. Extra space costs would also be involved in the former case. Relative costs would vary with size of school and pupil teacher ratio.

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