

## **SCHOOL LANGUAGE LABORATORIES IN NORTHERN IRELAND**

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A survey was carried out of all schools in Northern Ireland possessing language laboratories. Questionnaires were completed by heads of modern language departments, by a sample of assistant teachers and by a number of pupils. By this means, information was collected about the technical efficiency of the installations, the type of teaching material used in them, the organization of practice sessions and teacher training for laboratory work. Attitudes of teachers and pupils towards laboratory work were also surveyed and it was found that teachers rate the usefulness of the laboratory much more highly than do their pupils. It is suggested that current use of language laboratories in Northern Ireland may not conform to the best educational practice as indicated by research.

Language laboratories were evolved during the Second World War, to help train military personnel in language skills. Now they are used in schools all over the world in teaching languages to children. In theory, at least, a language laboratory has several advantages over a traditional classroom. All pupils simultaneously can listen to tapes and practise without disturbing each other. This maximizes their opportunity to speak the foreign language and gives them almost continuous exposure to correct native-spoken speech. In the most sophisticated type of laboratory (audio-active-comparative), it is possible for the student to record his own voice, listen to it critically and record a second, improved utterance. Students can work at their own pace in this type of installation, monitoring facilities allow the teacher to give attention to each student's learning problems so that the language laboratory contributes towards individualization of instruction. Some disadvantages of the laboratory should also be mentioned. It is very expensive to install and maintain and there can be a high rate of mechanical failure, which frustrates the students and wastes the teacher's time. Although the possibility of correcting one's oral work is in theory a great advantage, in practice many people do not possess sufficient auditory discrimination to pick out their own mistakes and benefit from this facility. In view of these positive and negative factors, it is natural

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that language laboratories should have both their enthusiastic advocates and their detractors. Research evidence about the educational effectiveness of language laboratories goes some way towards reconciling contradictory opinions about them and such evidence has been examined elsewhere in this journal (cf 5).

The present paper is a report of an empirical investigation into the use of language laboratories in Northern Ireland. The two main objectives of the study were to collect factual data about laboratories and to examine attitudes of teachers and pupils involved in language laboratory work.

#### METHOD

##### *Sample*

The Department of Education was asked to provide a list of all the schools in Northern Ireland which possess language laboratories. There were twenty-seven such schools. Questionnaires were sent by post to the heads of modern language departments in all these schools and to a sample of the assistant teachers. Twenty-one of the twenty-seven schools returned the completed forms (a response rate of 77.7%). Sixty-four questionnaires were received from assistant teachers. Questionnaires had also been devised for pupils and these were administered by the researcher personally in a random sample of four schools. Two classes — a high stream and a low stream — were chosen to complete the questionnaires in each school. In each school a different year group was surveyed ranging from first form to fourth form. The first form was in a boys' school, the second in a girls' school, the third also in a girls' school and the fourth form in a co-educational school. The total number of children to whom the questionnaires were administered was 164.

##### *Procedure*

The instruments used in the survey consisted of a battery of three questionnaires.

The questionnaire for heads of departments covered four main areas — the installation of the laboratory, teacher training for laboratory work, the educational use of the laboratory and its technical maintenance. The questions on installation were designed to collect data about the size and type of laboratory in each school, its age and its adequacy for the needs of the school. Those on training asked how the head of department had learned to operate a language laboratory and to what extent he felt the

need for in-service courses either for himself or his staff. The questions on laboratory use established how often and for how long the installation was used by each class and whether these arrangements were felt to be satisfactory. The section on technical maintenance was intended to establish breakdown rates and to find out about maintenance facilities and breakdown services.

The questionnaire for assistant teachers of modern languages covered the areas of teacher training, the technical efficiency of the laboratory and the educational deployment of the laboratory. The first two sections were broadly similar to those in the head of department's questionnaire but were, of course, adapted for teachers. However, the third section was more elaborate and included questions relating to the materials used in the laboratory, their source and their suitability. In addition, teachers were asked about sixth form work in the laboratory and about the usefulness of the installation for each year group. They were asked to give a personal assessment of the value of the laboratory and to say whether it was especially effective for pupils in any particular ability range.

The questionnaire for pupils was designed to find out how useful they felt the laboratory was, how much they liked it or disliked it and their reasons for doing so. They were also asked to evaluate their own linguistic ability and to state whether or not they liked learning a language. A number of questions were included to discover how pupils reacted to the teacher's monitoring and how certain technical factors, such as volume control, affected the learning situation.

All the questionnaires consisted of simple multiple-choice questions which could be answered by ticking the appropriate box. There was a space at the end for the respondent to write in general comments if he wished to do so. The only non-optional open-ended questions were those requesting pupils to give reasons for liking or disliking the language laboratory.

#### *Analysis of results*

The data provided by the questionnaires were analyzed as follows. Firstly, raw scores and percentages for each variable were computed. Secondly, certain important variables were cross-tabulated. And thirdly, chi-square tests were used to determine the degree of association of certain variables. The acceptable level of significance was the conventional one of five per cent.

## RESULTS

*Distribution*

Language laboratories are the exclusive preserve of post-primary schools in Northern Ireland and of these the overwhelming majority are grammar schools. However, three comprehensive and one secondary (maintained) school also possess laboratory equipment. The ratio of grammar schools with a laboratory to grammar schools without one is roughly 13 which is characteristic of Great Britain generally. Northern Ireland therefore has about the same standard of provision as the rest of the United Kingdom.

*Size and type of laboratory*

The questionnaires completed by heads of departments provide the general data about laboratory provision in schools. Without exception, all installations are of the most versatile and expensive type audio-active-comparative. Some schools have more than one laboratory, so that the total number of laboratories in the 21 schools surveyed is 24, rather than 21. In all cases, full monitoring facilities exist and about three-quarters of the schools have booths with built-in desks, which means that visual stimuli can be used during the lesson, or written answers can be provided to oral questions. Surprisingly enough, no less than 65% of schools enjoy the facility of a recording room, hence the work of producing home-made tapes or taking programmes off the air is made easier. The typical laboratory is fairly large 90% have over 30 booths.

*Adequacy for the needs of the school*

When asked whether the laboratory equipment was adequate for the needs of their school, 85% of the heads of departments answered in the affirmative.

*Age of laboratories*

The laboratory is no longer a novelty on the educational scene in Northern Ireland. Seventy per cent of the installations have been in existence for five years or longer.

*The organization of practice sessions*

Assistant teachers were asked for precise details about the way in which the laboratory is used. It is never used more than twice a week by any class and 70% of the schools have a laboratory session once a week for each class. The typical length of a practice session is 30-40 minutes (95% of schools) and this involves teaching a whole class at a time. The facilities

are, in some cases, made available to individual students wishing to study on their own but this is not a very widespread practice, about 40% of schools allow the facilities to be used in this manner. Occasionally the laboratory may be used by departments other than that of modern languages. It is sometimes used for instruction in music and English.

#### *Technical maintenance*

Thirty per cent of the heads of department are fortunate enough to have a resident technician to carry out repair and maintenance work. Of the remainder, 15% say that a technician has to be called in weekly, 25% fortnightly and 30% monthly. Half the heads of department say that maintenance facilities are unsatisfactory or only fair and in the open-ended general comments, the single most frequent observation made by assistant teachers is that the equipment breaks down too often. Forty per cent of the schools employ an individual to do recordings of material for use in the laboratory.

#### *Length of teaching service and attitude to the laboratory*

The assistant teachers who participated in the survey were, in general, far from inexperienced. Seventy-four per cent had been teaching for over five years and 55% had used a laboratory for over five years. It might be speculated that the longer a teacher has been in service, the more conservative he might tend to become and the more negative an attitude he might tend to have towards the language laboratory. In this survey, when teachers' length of service was cross-tabulated with their attitude towards the laboratory, chi-square tests revealed no association between the two factors. It cannot, therefore, be inferred that the longer a teacher has been in service, the more negative his attitude will be towards a technological innovation like the language laboratory.

#### *Teacher training in laboratory management*

An individual assistant teacher may have undergone more than one type of training but the overwhelming majority (84%) claim to have learned 'on the job'. This was the case with 90% of the heads of department. Obviously the teachers feel that this is no bad way to have learned, because 70% of them claim to have found this training adequate. Nevertheless, they tacitly admit that perhaps their competence could be improved still further, 59% claim that they would be attracted by an in-service course on the use and maintenance of laboratories. Heads of modern language departments were asked to rate the expertise of their assistant teachers. 40% felt that all or most of them needed to improve in some way, only 20% of the heads believed that none of the staff needed to

improve his competence and 40% admitted that this would be desirable for some staff. Such improvement could only, of course, be brought about by in-service training, since these teachers are already qualified. It would seem that language laboratory work does not receive much emphasis during preliminary teacher training and only five teachers in the total sample claimed to have learned to use the laboratory at that stage. Yet 27% of the teachers had been in service for less than five years and their training was therefore recent enough for them to have been offered a course in laboratory management. As has already been pointed out, the laboratory is now a phenomenon of several years standing in the province.

#### *Teacher perception of the technical efficiency of the laboratory*

It has been mentioned that a complaint about technical difficulties in the laboratory constituted the most frequently made optional general comment. In the main body of the questionnaire, 64% of teachers asserted that their monitoring was often disturbed by technical difficulty, while 34% stated that this seldom happened.

#### *Teacher opinions about the suitability of labwork for different types of pupils*

Half the teachers believe the laboratory to be particularly beneficial to very bright pupils. Twenty-five per cent feel that it is of equal help to all pupils and 19% think that it helps slow or average pupils most. The laboratory continues to be used fairly extensively right up the school, 55% of the teachers believe that its usefulness does not decrease as the pupils' command of the language increases and 45% of those involved in sixth form teaching still use it regularly, at least once a week. All teachers believe that labwork is desirable with first and second forms but after the third year there is some falling off in labwork.

#### *Materials used in the laboratory*

The primary source of material is a commercial one — tapes purchased in conjunction with a course being used in class. Fifty-six per cent of teachers who use an audio-visual course find that the laboratory is 'quite' or 'very' useful in relation to such a course. The type of commercial material most frequently encountered is grammatical structure drill. This is followed by reading improvement exercises, and, in third place, we have a tie between pronunciation drill and listening comprehension. The teachers were asked to state which exercises they would most like their pupils to do in the laboratory. In first place they put pronunciation practice, in second place listening practice and in third place speaking practice. The exercise

most frequently provided in commercial tapes (grammatical structure drill) came only fourth on the teachers' list. Those teachers who were involved in sixth form work were asked to rank in order of frequency the exercises most often performed in the laboratory with advanced groups and this special list was found to correspond closely to the teachers' own 'ideal' list of functions best served by the laboratory.

In the optional general comments section, the second most frequent complaint, after that about technical difficulties, was that there is a dearth of suitable commercial material. Teachers of Irish have great difficulty in procuring good tapes for their students. Thirty-four per cent of teachers, generally, stated that they produced their own materials due to the unsuitability of those on the market and an equal percentage claimed to produce their own materials out of personal interest.

#### *General evaluation of the usefulness of the equipment*

Half the teachers rated the laboratory 'very useful'. Thirty-eight per cent said it was 'of limited use' and 12% claimed that it was 'indispensable'.

#### *The pupils' responses*

The children's comments about certain non-educational aspects of the laboratory are interesting and revealing. As many as 41% said that they found the seating arrangements and headsets uncomfortable and 17% admitted to being a little scared of it. Otherwise the results are rather more reassuring. Ninety-six per cent found it easy to operate the switches, only 21% said that it was difficult to control the volume or that their booths often broke down.

Turning now to the children's attitudes, as revealed in the survey, we find that 15% claim to like the laboratory very much. Seventy-seven per cent like it only 'reasonably well' or 'not at all'. Questioned about the usefulness of the installation as an aid to learning, 65% of the pupils said that it helped them 'a little'. Twenty-nine per cent found it 'a great deal of help,' whereas only 7% found it no help at all. Pupils are most unlikely to contact the teacher of their own free will during the lesson, this is shown by the high proportion (99%) who said that they used the 'call tutor' facility either 'seldom' or 'not at all'. If they do want the teacher's attention, there is a fair chance that they will have to be patient, because 41% stated that they usually had to wait if they should want to speak to the teacher.

Pupils were, it will be remembered, divided into high and low stream groups. All of these were asked to distinguish between their liking for labwork and their assessment of its usefulness. There was no significant difference between streams in assessment of its usefulness but high stream pupils tended to express liking for labwork to a greater extent than did low stream pupils. Pupils were also asked to rate their own competence as linguists. This was cross-tabulated with pupils' evaluation of the laboratory's usefulness and chi-square tests failed to reveal any significant difference between those who saw themselves as highly competent and those who felt they were average or slow. Poor linguists are therefore just as likely as good linguists to find the laboratory useful. Naturally enough, pupils who liked languages and rated themselves as competent linguists tended to have a positive attitude towards the language laboratory.

The variable of sex is important in accounting for attitudes towards the laboratory. Because numbers in this survey were small it was not possible to analyze sex differences separately for each age group. Taking the four age levels together it appears that girls seem to find the laboratory more helpful in learning than boys do, but boys are more enthusiastic about it and seem to enjoy it, regardless of its educational value.

The children were asked to give reasons for liking or disliking the laboratory. These questions were open-ended. The largest single reason given for liking labwork was that it was a help in foreign language learning. The next most valued attribute was that it gave the pupil independence and enabled him to repeat the tape as he wished. Not far behind this came the reason that it enabled the pupils to listen to authentic native-speaker recordings.

The reason most often given for disliking labwork was that not enough time is given to pupils to make their responses. This was followed by complaints that the laboratory was boring or subject to frequent mechanical breakdowns.

#### DISCUSSION

The results will be discussed in two parts first, I shall look at their implications for laboratory management in a formal sense, and secondly, I shall examine their pedagogical significance.

*Organizational and administrative implications of the study*

Virtually all the installations in Northern Ireland are large enough to accommodate a whole class at a time and the pattern of use is normally a weekly 30-40 minute session for each class. This is undoubtedly convenient from the administrative point of view but educationally such an arrangement may be unproductive. It is significant that, unlike Northern Ireland, Scotland has recently been installing laboratories with twenty booths or less (2), and one underlying reason for this may be the serious doubt that is now being entertained about the ability of students to monitor themselves. If automatic self-correction only occurs with a minority of learners who have acute auditory discrimination, then it becomes an unjustifiable practice to leave many children to work away virtually untutored, due to the physical impossibility of the teacher giving each child more than a few seconds of his time. It is, however, not only large classes which are likely to make effective instruction impossible. Long periods of exposure to intensive language laboratory work have been criticized as unsuitable and counter-productive, especially for younger learners (1, 6). The length of practice session proposed as ideal is fifteen minutes. In addition to size of class and length of lesson, the frequency of laboratory utilization is another factor bearing upon successful results. Lorge (4) found that use of the laboratory once a week often produced results inferior to those achieved without any labwork at all and her research tends to show that if a laboratory is to be used to good effect, then it should be used for a sizeable proportion of the available foreign language instruction time. The present study shows that most classes in Northern Ireland use the equipment once (or at most twice) a week and if Lorge is correct in her conclusions, then this represents a pattern of utilization which is unlikely to give the best possible results.

Some suggestions have been made about arrangements which would overcome problems of organization and lead to more rational and effective use of the laboratory. It is obvious that there can be no question of abandoning or dismantling installations which have cost many thousands of pounds and a proposal has been made by Skene (7) which requires no changes in the existing plant and yet achieves a pattern of utilization which overcomes all the disadvantages of large-class long-exposure sessions. The class is divided into halves and only one half is monitored at a time. While the teacher is working with these pupils, the other pupils are doing listening comprehension exercises from their tapes and are filling in the answers to multiple-choice questions. A 'key' enables them to check their own performance. After a quarter of an hour, the children change round, so that the listening comprehension group now can be intensively monitored by the

tutor. This suggestion could be adopted within a rigid timetable and has proved most successful in introducing flexibility and variety into the language lesson, as well as improving the children's attainment. It does not, however, involve more frequent utilization of the facilities. A possible solution to the problem of inflexible use of laboratories lies in the 'audio-active classroom' option (6) which might be considered as an alternative in schools which are proposing to install language laboratories. This electronic classroom is much cheaper to equip and maintain than an audio-active-comparative laboratory and it would, therefore, be possible to transform a number of classrooms for the same amount of money as it would take to install a full laboratory. Although the students do not have individual tape recorders, the electronic classroom permits intensive language practice, integration of labwork and classwork and an element of choice in the length of the intensive practice period which the pupils have. Daily practice becomes feasible for all classes using audio-active classrooms. These installations are much less subject to breakdown than are audio-active-comparative laboratories and would thus reduce technical maintenance costs.

#### *Educational implications of the research*

Materials used in the language laboratory must be examined critically. They are usually strongly influenced by audio-lingual theory and the assumptions underlying this are not necessarily sound (5). It may be teachers' awareness of the deficiencies of audio-lingual theory which accounts for the curious fact that there is a very poor match between the types of activities which teachers would ideally like to see performed in the laboratory and those which actually take place there. The material most frequently used with junior classes is 'grammatical structure drill', and yet this comes only fourth on the list of functions which teachers believe the laboratory best fulfills. Since the most frequent source of material is commercial rather than home-produced, this means that the course producers do not see eye-to-eye with the teachers in the type of work which they consider most beneficial. Increased liaison between teachers and course makers would seem indispensable if teachers are not to be put in the position of using material of which they do not really approve. Improved pre- and in-service training should increase teachers' awareness of the variety of exercises which are suitable for labwork and teachers should have the courage to be eclectic and inventive instead of merely accepting what is offered. This may mean that they have to produce their own material to a greater extent than at present. A good way of streamlining organization in a modern language department would be to give responsibility for preparing laboratory work to one member of staff who shows interest and aptitude for such a task.

and to lighten his teaching load slightly, in exchange for which he would service the needs of other teachers for laboratory material

Colleges and universities which offer training for future teachers of modern languages should include a module dealing with language laboratory instruction. Although 70% of Northern Irish schools surveyed in the present study have had language laboratories for over five years, it was found that only five teachers out of the total sample had had any preliminary teacher training in the use of laboratories.

When we turn to an examination of teacher and pupil attitudes, we find that the teachers are more enthusiastic about the language laboratory than the pupils. Sixty-five per cent of the children said that it helped them only 'a little' with their studies and 54% said that they liked it 'reasonably well'. On the other hand, 63% of the teachers rated it 'indispensable' or 'very useful' and less than half felt that its usefulness tended to decrease as time went on, no teacher felt that this happened before the third year. Nevertheless, since the pupils' progress is, after all, the end to which all our efforts are directed, some useful purpose might be served by attending to pupils' attitudes and evaluations as well as to those of teachers. The opinions of staff and pupils differ not just in assessing how useful the laboratory is but also in estimating which ability level of pupil finds the equipment most useful. Half the teachers believe it to be best for 'very bright pupils', this view is at variance with the finding of Keating (3) that first year high-IQ students did better when they did not use the laboratory. The pupils in the present study were divided into high and low stream groups and no significant difference was found between the two in their evaluation of the helpfulness of the equipment. It does not, therefore, follow that high stream pupils will find it more useful than low stream pupils, although this appears to be the opinion of the teachers. On the contrary, one could hypothesize that the laboratory may be of particular help to pupils who are not gifted linguists because it enables them to practise privately and intensively and may help to increase their self-confidence. In the present study, pupils were asked to rate their competence at language learning and it was found that their self-rating was not necessarily related to their evaluation of the laboratory's helpfulness. Pupils who rated themselves as slow language learners would appear to find labwork just as useful as the more gifted linguists, this strengthens the suggestion that the laboratory might act as a psychological boost to those less endowed with linguistic expertise.

The variable of sex is one of which teachers need to be aware in so far as it affects attitudes to the laboratory. In general, girls find the equipment helpful but tend not to have a very positive attitude towards it, whereas boys like it but seem to find it less helpful than the girls do. These results show that the children make a clear distinction between their affective and their instrumental relationship to the installation. Once teachers know that girls tend to have a slightly negative attitude towards the machinery, they can be on the look-out for ways of making it more emotionally acceptable to them (and perhaps more worthwhile for the boys who claim not to find it useful).

One other finding from the pupil questionnaire deserves to be noted. The largest single reason which the children give for disliking the laboratory is that insufficient time is given to record their responses. It may well be that we are demanding too much when we require pupils both to think what they ought to say and to record their reply at the same speed as a native speaker. Before they realize that they ought to be repeating, some of the time available for the repetition has already elapsed. Slightly longer pauses for pupil repetition might produce an improved attitude towards the language laboratory and better results.

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