PRESIDENT'S EDUCATION INITIATIVE

APPENDIX C

Large class teaching
Multilingual teaching
Multigrade teaching
Whole School Development

CLASS SIZE AND PUPIL ACHIEVEMENT: A LITERATURE SURVEY

Kholofelo Sedibe

A report of a literature survey commissioned by the joint Education Trust (JET)

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List of Acronyms

DET   - Department of Education and Training

ESL   - English as a Second Language

HoA   - House of Assembly

HoR   - House of Representative

HOD   - Head of Department

INSET   - In-service training

LEA   - Local Education Authorities

LSEN   - Learners with special educational needs

NGO   - Non-Governmental Organisation

PRESET   - Pre-service training

PTR   - Pupil-teacher ratio

Tables

CONTENTS PAGE

Page

SECTION ONE: INTRODUCTION

This literature survey on large class teaching and pupil achievement has been commissioned by the Joint Education Trust (JET). JET is compiling comprehensive source documents on a range of topics to help inform its work for the Presidential Education Initiative. This survey will be one such document, and it will be used to inform national and provincial education departments in their policy and planning for teacher development.

The survey covers the following:

- international literature: grouped into developed and developing countries, with a discussion of areas of consensus and disagreement
- an outline of the South African context relevant to large classes
- South African literature: with a discussion of areas of consensus and agreement
- South African projects: a review of a survey undertaken on projects which are looking at the issue of large class teaching
- a brief concluding discussion.

The approach to the survey

In undertaking this survey, a structured approach to the literature was developed. The approach which was adopted is described under the following headings:

- the rationale for the study
- the scope of the literature review
- the conceptual framework.

Rationale

It is a matter of debate amongst different education stakeholders worldwide as to whether class-size affects pupil achievement. Is small always better, and if so why? Do large classes inevitably produce poor results?

In South Africa, although the issue of class size and pupil achievement forms part of the popular debate about education quality, i is fairly new in the academic debate and has not, as yet, attracted a great deal of research attention. The struggle for equal education was focused historically on issues such as the availability of resources, and equal teacher salaries across all racial groups. The politics and economics of the day dominated issues of class size, student achievement and educational quality. The purpose of this review is, therefore, to highlight the pedagogical, organisational and management aspects of the class size issue by drawing on the experiences and research findings conducted in other countries and to consider these in relation to local experience and practice.

Scope of the Review

Large classes have been a reality for the vast majority of South Africa's pupils. This situation is aggravated by the fact that for many pupils enrolled in farm schools or in remote rural areas, classes also combine a number of grades. Since JET has commissioned other work on multigrade teaching, this survey focuses exclusively on large class teaching and pupil achievement. It is also restricted to large class teaching in primary and secondary schools, with emphasis on schooling in the general, compulsory phase (that is, Grade 0 to Grade 9).

Since education in the compulsory phase is of greatest concern, and large classes are more prevalent in public schools, this survey does not consider non-formal education or education in the private sector. However, the survey does include references to studies which combine work from tertiary, primary and secondary institutions (e.g. the Lancaster-Leeds reports) to complement the general shortage of published work regarding class size and student achievement, and to provide relevant insights into innovative strategies and methodologies for coping with large classes. There is also a description of one: pre-school study in Japan. This is cited because it explains so clearly the impact of culture and societal attitudes on class size.

Conceptual Framework

In approaching this review, four key issues were addressed. The first concerns the focus of the review: what is being looked for in the literature? The literature survey will show that there are a number of factors and variables which impact both on the reasons for large classes and their effects.

This review concentrates on the correlation between class size and pupil achievement, and does not consider other equally important matters, such as the overall quality of education. Second, in analysing the literature, a clear distinction has been maintained between class size and pupil teacher ratios (PTRs). The third issue which had to be resolved is a definition of a 'large class'; and fourth what is meant by 'pupil achievement'?

PTRs Versus Class Size

The distinction between PTR and class size is this: PTR is the total number of pupils, divided by full-time teaching personnel (OFSTED, 1995); class size reflects the number of pupils allocated to one or several teachers per teaching time-table slot. Any attempt to use both concepts without acknowledging that the two have fundamental differences is misleading (Mokgalane & Vally, 1996: 13). According to Hofmeyr and Hall (1995: 29) class size is generally larger than PTR because PTR calculations are inclusive of principals, deputies, departmental heads and librarians who have administrative responsibilities and spend less time in teaching activities (see also Valerien, 1991: 10-13). Therefore, approximately six additional pupils need to be added to the prescribed PTRs of 40:1 for primary and 35:1 for secondary schools.

Throughout this survey, this distinction is made clear, though in much of the research which is described a less robust approach is adopted, and PTR and class size are sometimes confused.

What is a large class?

There is no agreement or standard definition in the literature as to what constitutes a large class /group. Different countries and people have varied perceptions of what constitutes a small, ideal or large class. These perceptions are influenced by experience, educational theories and philosophies. In Ryan and Greenfield's words:

> "there is no such a thing as a small or large class. Because a 'small' class of 30 may prove to be as effective as a 'small' class of 20. The opinion of the teacher is probably what determines 'small' or 'large'. This opinion, in turn, is dependent on such things as:
>
> (a)   the size of the class relative to other classes in the school or district;
>
> (b)   the size of the class relative to the teacher's experience and training;
>
> (c)   the level of schooling;

According to Valdrien (1991: 9-10), in developing countries a class of less than 60 pupils is not necessarily large. While the Lancaster-Leeds (see Coleman, 1989) reports indicate that the perceived average large class for teachers/lectures is 46-49, this size of class is smaller to that experienced daily by many teachers in countries such as Nigeria, Indonesia and Japan. Mortimore and Blatchford (1995) claim that a class of 30-35 could be considered large by the British teacher, but experience would be the determining factor. However, classes of 30-35 could be `ideal' for the teacher whose daily experience is to deal with classes of 60 pupils and more. Thus, Coleman (1989) concluded that experience: shapes perception and perception influences experience.

For the purposes of this survey, a large class is defined as 40 pupils or more. Two considerations have led to this choice. First, in its 1995 discussion paper, South African Education Sector: Strategic Issues and Policy Options, the World Bank recommends that primary schools be planned on a basis of 40 pupils per classroom Second, the findings of the School Register of Needs Survey suggest that with the norm used by the former departments of education of 1.6 square metres per pupil, few schools will be able to accommodate classes of 40 pupils or more. Even with a generous allocation of space at 1.4 square metres per pupil, many schools would still be unable to cater for classes of 40 pupils and more. For example, in KwaZulu-Natal, 980 of 5 216 schools would be able to accommodate classes of 40 plus pupils with a space allocation of 1.4 square metres per pupil. In the Eastern Cape, only 400 of the 4 676 schools would be able to house such classes (van der Linde & Strauss; personal communication: April 1997).

Pupil performance/achievement

Pupil performance and achievement can be assessed in a number of different ways. The literature which has been reviewed describes research studies which have tended to use standardised and ad hoc achievement tests and observation of classroom behaviour. The measures employed to assess achievement are criticised in the literature, and some studies suggest that conclusions are flawed, because, for example, too narrow a view of achievement has been adopted. In particular, qualitative outcomes are often ignored. In this literature survey, the measures which have been used to assess achievement are simply described, and no critique of the methodology is offered.

SECTION TWO: INTERNATIONAL LITERATURE

Introduction

The section is divided into the following:

(1) a review of literature from the following developed countries, USA, UK, Japan, Australia and Canada;

(2)   a consideration of literature which describes the experiences of developing countries; and

(3) a review of a comparative study of maths and science achievement in both developing and developed countries.

In their major study, discussed below, Glass & Smith (1978) suggest that the literature on class size and achievement can be categorised into four major periods. This categorisation provides a useful context for the literature survey. The periods are:

- ✍ The pre-experimental period (1895-1920): the literature is largely narrative and descriptive.

- ✍ The primitive experimental period (1920-1940): research is beginning to make qualitative distinctions between large and small classes. The findings of most research studies of the period conclude that reductions in class size have no effect on achievement. Research into class size was discontinued due to World War II.

- ✍ The large group technology period (1950-1970): empirical research into class size was undertaken, primarily at tertiary level. The research findings demonstrated that class sizes could be doubled, and even tripled, without undermining the effectiveness of college education.

- ✍ The individuation period (1970 - present): research during this period has concentrated on the effects of small classes and individual instruction.

The literature which has been reviewed is drawn primarily from this last period. The descriptions of the literature fall into two broad categories: those which describe the methodologies and findings of research studies and those which comment upon such research projects. The literature is arranged in chronological order.

DEVELOPED COUNTRIES

The United States of America (USA)

Glass, G.V. & Smith, M.L. 1978. Meta-analysis of Research on the Relationship of Class Size and Achievement. San Francisco: Far West Laboratory for Educational Research and Development.

Purpose

To examine the relationship between class size and achievement by reviewing critically systematic and unsystematic studies on the issue.

Period

The meta-analysis covered studies conducted between 1900-1978.

Sample

±80 studies from the original ±300 collected documents were included in the study. The studies yielded 725 comparisons which involved nearly 900 000 pupils (p.20). The sample of studies analysed was based on journal publications (65.4 per cent); book publications (15.7 per cent); theses (8.3 per cent) and unpublished sources (10.6 per cent).

Methodology

The studies included in the meta-analysis address class size and student achievement through the processes of human instruction. "The first step in coding studies is to identify those properties of studies that might interact with the relationship between class-size and achievement. There is no systematic and logical procedure for taking this step" (Glass & Smith, 1978: 10). Questions such as "how does the class size and achievement relationship vary as a function of age of pupils or how does it vary between reading and maths instruction?" (p. 10) were used to carry out statistical descriptions of achievement levels.

Findings and Discussion

✎ 47.2 per cent of the 80 studies were based on elementary research: of these 19.9 per cent were language-based and 11.6 per cent were mathematics-based.

- ✍ 725 `results' were analysed according to age bands: 7.7 percent of pupils were 5-6 years of age; 7.6 per cent were 7-8 years of age; 27.3 per cent were 9-10 years of age; 12 per cent were 11-12 years of age. The age bands continued to 19 years plus (2.8 percent).

- ✍ 49 per cent of the 725 comparisons were based on empirical and systematic studies, referred to as controlled studies.

- ✍ The reviewed studies used two types of achievement measures, 318 (43.9 per cent of the 725 comparisons) used standardised testing and 407 (56.1 per cent) used ad hoc measures.

- ✍ It is estimated that the achievement levels of elementary pupils when taught in small classes of 1-10 pupils would rise to between 60 and 70 per cent, whereas in classes of 20-40 pupils it would drop to between 48-50 per cent. For secondary students, achievement for classes of 1-10 students was between 65-80 per cent, and for classes of 20-40 students it was between 48-55 per cent.

- ✍ 60 per cent of the comparisons favoured small classes and 40 per cent favoured large classes or did not find any relationship between class size and achievement. In conclusion, Glass & Smith (1978: 45-46) stated that

  "a clear and strong relationship between class size and achievement has emerged. The relationship seems slightly stronger at the secondary grades than the elementary grades; but it does not differ appreciably across different school subjects, levels of pupils' IQ, or several other obvious demographic features of classrooms. The relationship is seen most clearly in well-controlled studies in which pupils were randomly assigned to classes of different sizes. Taking all findings of this meta-analysis into account, it is safe to say that between class sizes of 40 pupils and one pupil lie more than 30 percentile ranks in the central regions of the distribution. The difference in achievement resulting from instruction in groups of 20 pupils and groups of 10 can be larger than 10 percentile ranks in the central regions of the distribution. There is little doubt that, other things (being) equal, more is learned in smaller classes".

Cahen, L.S & Filby, N.N. 1979. "The class size/achievement issue: new evidence and a research plan". Phi Delta Kappan. March, pp 492-495 and 538-539.

The authors summarised the findings of the Glass and Smith (1978) report. They stated that the achievement measures included in the meta-analysis were unsatisfactory because they only captured

quantifiable outcomes. They argued that it is important to investigate other achievements which could be measured qualitatively, as will be done in the next Smith and Glass meta-analysis. They further stated that before decisions about reduction in class size are made, alternative measures (such as the use of unemployed teachers and community volunteers) and the trade-offs should be weighed carefully in order to justify the costs involved in the reduction of class sizes.

Smith, M.L & Glass, G.V. 1979. Relationship of Class Size to Classroom Processes, Teacher Satisfaction and Pupil Affect: A Meta-analysis. San Francisco: Far West Laboratory for Educational Research and Development.

Purpose
To outline the effects of class size on classroom processes, teacher satisfaction and pupil affect and achievement.

The project was a follow-up to the 1978 Glass and Smith report. The meta-analysis of the project included studies which were deemed `unsuitable' for the previous report and a few extra from the previous study. The methodology was focused on the effects of class size on the qualitative processes of learning and teaching.

Sample
The analysis consisted of ±60 studies with a total of ± 300 comparisons.

Findings and Discussion
The achievement differences between small and large classes were insignificant in the systematic studies, but they were significant according to the unsystematic and uncontrolled studies. The differences in pupil achievement produced in both systematically controlled and unsystematic studies amounted to about 10 percentage points, even at the extreme points of class size, (less than 5, or more than 50 pupils).

The authors claimed that even with these small differences in levels of achievement
    "... one may still have confidence that class size is related to pupil and teacher affect and instructional processes.

opportunities to adapt learning programs to the needs of individuals. Many teachers avail themselves of these opportunities; others would need training to do so. Chances are good that the climate is friendlier and more conducive to learning. Students are more directly and personally involved in learning.

Class size affects pupils' attitudes, either as a function of better performance or contributing to it. In smaller classes, pupils have more interest in learning. Perhaps there is less distraction. There seems to be less apathy, friction, and frustration.

Class size affects teachers. In smaller classes their morale is better; they like their pupils better, have time to plan, diversify; are more satisfied with their performance. Does this mean that class size is merely a selfish, political issue for teachers? Or is the happier teacher the one who performs better? This we cannot unravel, except to cite the other evidence - that the smaller the class is the greater the effect on the instructional process, on pupil affect, and on achievement" (Smith & Glass, 1979: 45-46).

Glass G.V et al. 1982. School Class Size: Research and Policy. London: Sage Publications.

The book contains summaries of the findings of the Far West Laboratory for Educational Research Studies. Glass et al stated that the implications of the research findings were not well received by all education stakeholders. Economists and administrators had a concern with class reduction because in many USA districts in the 1980s, education budgets were cut and about 80-85 per cent of the budgets were spent on teacher salaries. Teachers and parents, on the other hand, would prefer small classes. The contradictory demands and positions only implied that sacrificial trade-offs, to finance class size reduction, would have to be made, or financial investment would have to go into other alternative measures to improve educational quality within large classes.

Vanble, M.E & Gilman, D.A. 1988. A Study of the Relationship Between Class Size and Achievement. U.S. Department of Education.

Purpose

The purpose of the study was to examine the relationship between Indiana's PRIME TIME (1984-1985) test results and the Smith and Glass (1978 & 1979) class size/achievement model which states that, as class size decreases, achievement increases.

Sample

The study included 10 sets of data (involving t 25 000 grade one pupils) from PRIME TIME schools spread across Indiana. The data consisted of test scores

results of over 2 OW grade one classes ranging from classes of 4 (the smallest) to 43 (the largest) pupils.

Methodology

6 different types of tests which measured maths and reading achievement were administered to grade one pupils who have spent their kindergarten year in the PRIME TIME experiment. The tests were the Iowa 400, Iowa 300, Metropolitan Achievement Tests, SRA Achievement, and the Stanford and Gates-MacGintee. The results from the 10 sets of data were plotted on graphs and compared, to the Smith and Glass model.

Findings and Discussion

Of the 10 sets of data, only 3 reported a positive relationship between decreased class size and increased achievement. It is therefore clear that there is no relationship between decreased class size and increased student achievement, or alternatively, the Glass and Smith model is not based on achievement measured through test scores.

The authors state that research evidence indicates that there are many factors contributing toward achievement, namely, appropriate teaching methods, positive teacher attitudes, availability of instructional materials, discipline, thorough planning and less administration, additional learning materials and individual attention. The fact that teachers seldom change their methods of instruction in both small and large classes should not be ignored. They conclude by stating that "reduced class size is necessary, but not sufficient, to increase achievement scores".

Slavin, R.E. 1989. "Achievement effects of substantial reductions in class size", in Slavin R.E (ed). School and Classroom Organisation. London: Lawrence Erlbaum Associates. pp 247-257.

Slavin reviews critically the Glass and Smith (1978) findings for significantly favouring small classes and the Educational Research Service (ERS: 1978) for reporting (neutrally) inconclusive results. He criticises the Glass and Smith report on the grounds that it based its conclusion on 14 studies. Of the 14 studies, some were based on one-to-one, up to one-to-five tutorship programmes. He

says the most trivial study which produced significantly high achievements for small classes was based on tennis lessons. According to his evaluation of the 14 studies, even in smaller classes of 14-17 pupils, student achievement would increase from .06 to .08 average mean effect. He therefore concludes that the findings of the Glass and Smith report do not challenge the "idea that reducing class size, even halving it to approximately 16 students, has no substantial impact on student achievement" (Slavin, 1989: 249).

He goes on to criticize the ERS report which based its conclusion on an unsystematic review of the class size and achievement literature. The review clustered the literature into three categories: those supporting small classes; those that said there is no relationship between class size and achievement; and those supporting large classes, and then counted the number of studies in each category without regard for the characteristics or qualities of the studies.

On the basis of the above, he arrives at the conclusion that "it is important to improve instruction in the regular classroom by implementing effective instructional strategies ... (for) we do know enough at this point .... that simply reducing class size is not going to solve the achievement problems of at-risk students, at least until class size is reduced to one for some portion of students' school days" (Slavin, 1989: 255-256).

McGiverin, J et al. 1989. "A meta-analysis of the relation between class size and achievement". The Elementary School Journal. Vol. 90(1), pp 47-56.

Purpose
To examine the effects of Indiana's project PRIME TIME (1984-1988) on reading and maths achievement test scores of grade 2 pupils who completed two years in a state-supported reduced class size programme.

Sample
The sample included 6 PRIME TIME schools which yielded 10 studies and 3 non-PRIME TIME schools which yielded 4 studies.

Methodology
The results of the randomly selected PRIME TIME schools were compared with the results of non-PRIME TIME schools. The two groups were selected using the same broad criteria and both groups were randomly selected.

The methodology of the study was complex and involved the analysis of such factors as the economic background of pupils and the level of education of their parents. In the study three different types of tests were used: the Cognitive Abilities Test (CAT) from kindergarten to grade 12, the Iowa Tests of Basic Skills (ITBS) used from kindergarten to grade 9, and the Stanford Achievement Test (SAT) developed for kindergarten to grade 12. These tests were divided into the different levels of schooling, and in this instance the grade 2 levels were administered to the pupils. School achievement results from 1978-1985, were obtained and compared with the results of the PRIME TIME large class (26.4 pupils) and small class (19.1 pupils) experiment. The results were computed using the "Fisher inverse chi-square model".

Findings and Discussion

The grade 2 pupils who were in the PRIME TIME small classes performed better (by .34 standard deviation) than those in large PRIME TIME and non-PRIME TIME classes. The overall conclusion was that a reduction in the size of the class for younger pupils has academic gains. However, the effectiveness and sustainability of the achievements warrant further investigation.

Tomlinson, T.M. 1989. "Class size and public policy. politics and panaceas". Educational Policy. Vol, 3(3), pp 261-273.

The author states that the class size debate is essentially a debate between economists and administrators on the one hand, and parents, teachers and pupils, on the other. As in many countries, the economic dimension of the debate is that the reduction of class size by a few pupils does not greatly improve educational results, and reductions by large numbers are too costly. Teachers and parents argue that the quality of education relies on the effective implementation of small classes for the first few years of schooling. Hence, he states that "teachers swear by small classes, parents prefer them, and anybody against them must be against children" (Tomlinson, 1989: 262).

Tomlinson indicates that in the USA, primary classes with 25-29 pupils have dropped from 37 per cent (1981) to 28 percent in 1986. In high school, classes with 30 pupils and more have dropped from 44 per cent (1961) to 22 per cent in 1986. He also acknowledges that different studies have produced different results in support of, or against, small classes. Among those are the PRIME TIME study, the Project STAR and the Glass and Smith (1978) meta-analysis. According to Tomlinson, although these reports concluded that when class sizes are reduced to less than twenty pupils, educational achievements increase, slightly or substantially, there are many issues at stake. For example, the Project STAR report indicated that small classes benefit pupils from high socio-economic backgrounds more than pupils from low socio-economic backgrounds. However, the benefits seemed to disappear in subsequent mainstream or large classes. The Glass and Smith (1978) report has also been criticised by Slavin (1989) for having stated that small classes increase the educational performance of secondary school students, in the absence of substantial literature to support this view.

On the basis of the contradictory findings of the literature, Tomlinson concludes by stating that the answer to the class size debate appears to lie with the characteristics of teachers themselves, and such factors as the use of cross-age peer tutoring and the better use of instructional technology. Hence:

> "problems in learning are not resolved by placing arbitrary limits on the number of pupils that can be taught in the same room. Rather, improving the substantive and pedagogical quality of instruction in a context that permits flexible and efficient use of resources - class size among them - will better enable schools to meet both the intellectual and social needs of our children and the professional goals of their teachers. For, in the end, teachers must learn to teach effectively within the diversity that accompanies our mixed culture; they will do it not better with 15 students than with 25 if they are not well educated themselves" (Tomlinson, 1989: 270).

Finn, LD & Achilles, C.M. 1990. "Answers and questions about class size: a state-wide experiment". American Educational Research Journal. Vol. 27(3), pp 557-577.

Purpose

To examine the effects of the Tennessee's Student Teacher Achievement Ratio (Project STAR: 1985-1989) on the maths and reading achievements of grade 1 pupils who have completed two years of the programme in different class sizes.

Period

The experiment was conducted between 1985 and 1988.

Focus

Kindergarten to Grade 3.

Sample

An overall sample of 76[1] elementary schools were involved. The total number of classes was 328 with about 6 500 pupils.

Methodology

Pupils and teachers were randomly assigned to classes of three different sizes. The size of the small class consisted of 13-17 pupils, the regular class had 22-25 pupils and the other regular class had 22-25 pupils with a teacher aide. The schools were categorised further into inner-city (17), urban (8), suburban (16) and rural (38). The analysis included 6 570 pupils who were spread across 331 classes (122 small, 111 regular, and 98 regular with aide). Some pupils and teachers in the last two classes were re-allocated from the regular with aide to the regular class and vice versa.

Three types of testing were used at the end of each year. These were the Basic Skills First (BSF), the Stanford Achievement Tests (SATS) and the Self-Concept and Motivation Inventory (SCAMIN). The results of the above tests, and overall pupil performance, were computed using the MULTIVARIANCE programme.

Findings and Discussion

There is evidence that the pupils in grade 1 benefited from small classes. The difference between regular classes, and regular classes with a teacher aide, was not significant. The results also indicated that white pupils in small classes achieved better results in both maths and reading than minority pupils. Although the location of schools did not account for any significant differences, minority pupils from high socio-economic backgrounds performed better than their lower socio-economic counterparts.

The authors state that even if there is evidence to support small classes, the questions of why and how small classes are better merit further investigation. They also argue that

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1   According to the number of participating schools in each geographic location, 79 and not 76 elementary schools participated in the study.

before decisions are made to reduce the size of classes, alternative measures should be considered, and their cost and likely impact weighed against the cost of class size reduction.

Word, E et al. 1990. Student/Teacher Achievement Ratio (STAR); Tennessee's K-3 Class Size Study: Final Summary Report 1985-1990. Tennessee: Tennessee State Department of Education.

The STAR Project was an experiment to investigate the relationship between class size and student achievement. The initial large scale experiment was launched in 1985 in 78 schools with an overall sample of 328 kindergarten classes. The total number of classes was divided into 128 small classes (t 1 900 pupils), 101 regular classes (± 2 300 pupils) and 99 regular with full-time teacher aide classes (t 2 200 pupils). To render the findings of the experiment valid, 22 comparison schools were requested to administer the same tests that the project schools administered. The comparison schools yielded a total of f 51 regular classes.

Due to increasing enrolments and pupils leaving the project schools, in grade I some pupils in the regular and regular with aide classes were re-assigned to either classes. In total, 34 classes had such irregularities. However, the results of these classes, whether included in the calculations or not, did not change the final results of the experiment substantially.

The table below captures the sample of the experiment across the different grades of schooling and the location of the participating schools.

Table 1: Project STAR Participating Schools (1985-1989)

Location of Schools	Kindergarten	Grade 1	Grade 2	Grade 3
Inner-City	17	15	15	15
Suburban	16	15	15	15
Rural	38	38	38	38
Urban	8	8	7	7
Total	78[2]	76	76	75

Word *et al*, 1990: 6

[2]The total number of participating schools was 79, not 78. The calculation errors in this report and in the Finn and Achilles (1990) article are those of the authors, not mine.

All schools located in the metropolitan areas were classified as inner-city or suburban. Schools with more than half of their students on free or reduced cost lunch (indicative of low income family background) were defined as inner-city and those in the outlying areas of the metropolitan cities were classified suburban. Non-metropolitan schools were classified urban if they served (or were situated in) urban communities, and the rest were classified rural.

During the experiment, data was collected on age, race, sex, free/reduced lunch and test scores. Data was also collected on how teachers teach in different class sizes, about student-teacher interaction, the number and distribution of special educational children, pull-out programmes, and adult (other than the teacher) participation in the instructional programme.

The guidelines of the experiment were that the project should not disrupt the schools' random allocation of pupils and teachers to classes (except in the grouping of pupils according to ability and the assignment of teachers), and that the project should not dictate change in curriculum, materials and schedules.

Achievement Results

- The project's kindergarten small classes outperformed the regular and regular-aide classes. However, the performance of pupils in the latter two classes was almost the same.

- In grade 1, small classes continued to produce better (statistically and educationally significant) results on standardised tests and the BSF test of reading and maths. Regular classes with aides performed significantly better (by t 11%) than regular classes.

- In grade 2, small classes continued to outperform the other two classes. The achievement levels between the regular and the regular-aide classes narrowed to an insignificant difference again.

- The small class advantage was more evident in kindergarten and grade 1, and it decreased thereafter.

- In conclusion, Finn et al (1989), stated that:
  `"these data confirm that a small class effect, while not immense, is found in two basic subject areas, at four grade levels, and in all four school settings ... Few, if any, other classroom level interventions have been identified that have a consistent impact of this sort. This research leaves no doubt that small classes have an advantage over larger classes in reading and mathematics in the early primary grades. This experiment yields

an unambiguous answer to the questions of the existence of a class-size effect, as well as estimates of the magnitude of the effect for early primary grades" I Dr Jeremy Firm (co-author)].

? However, the authors acknowledge that class size did not have an automatic impact on pupil achievement. They attributed the performance of pupils in small classes to particular teaching practices and characteristics, such as:

- Creative Writing, Hands-on Experiences, Learning Centres, Use of Manipulatives
- Good Listening, Immediate Feedback, Monitoring, Pre-planned Instruction, Good Organisational Structures
- Assertive Discipline, High Expectations, Peer Tutoring, Re-teaching
- Effective Communication with Parents, Love of Children
- Enthusiasm, Flexibility, Patience, Sense of Humour

Robinson, G.E. 1990. "Synthesis of research on the effects of class size". Educational Leadership. April, pp 80-90.

The author summarises the findings of the Glass and Smith (1978), Smith and Glass (1979), and the Project Star (1985-1989) reports. He concludes that even if research evidence supports the reduction of class size for kindergarten to grade 3 pupils, educationally and economically disadvantaged pupils and minority pupils, it should not be used to justify `general policy', in isolation from other significant economic, demographic and political factors (Robinson, 1990: 90).

Odden, A. 1990. "Class size and student achievement: research-based policy alternatives". Educational Evaluation and Policy Analysis. Vol. 12(2), pp 213-227.

Odden summarises the findings and critiques of various studies on class size and achievement. Amongst them are the Glass and Smith (1978) analysis, the Education Research Service (ERS) report and the Project STAR report.

The author states that instead of full-scale reductions in the size of classes, alternative strategies could be developed. These might include reduced classes for targeted groups of pupils for certain periods every day, and for reading and maths. He also suggests that sometimes classes could be regrouped into large and small classes to enable pupils who perform below average to be taught

in small groups by their teacher, or an additional teacher assistant. Pre-kindergarten education, peer or volunteer tutoring, co-operative learning and staff development are among the less-expensive but effective strategies recommended for the improvement of pupil achievement (Odden, 1990: 219-223).

Although there is no research evidence to support the reduction of class size in high schools, Odden states that (in the USA) class size could be reduced for English classes for students at risk of failure. He believes that the interaction of several of these strategies could be less costly and more effective than class size reduction across the board.

Finn, J.D & Voelkl, K.E. 1992. "Class size". The International Encyclopaedia of Education, 2nd edition.

In addition to summaries of the Glass and Smith (1978), the Project STAR and the PRIME TIME reports, the authors distinguish between three types of approaches used in the study of class size. The first is the ecological approach, which traces class size and its effects on achievement over a period of time. Studies which use this approach are able to compare countries and within-country trends over a long/short period of time. However, they overlook significant but particular variables which could impact on class size and achievement.

The second is the cost-related approach. This approach takes into consideration the cost of reducing class size, with regard to teacher salaries and classroom provision. In this approach the educational per-capita expenditure is weighed against pupil achievement, and sometimes the socio-economic background of the pupil is calculated as a significant variable in the assessment of performance. Many of the studies which used this approach did not find any significant relationship between class size and pupil achievement.

The classroom-focus research is the third approach. Studies which fall in this category were conducted by Slavin (1978) and Smith and Glass (1979). Such studies often focus on, and emphasise, qualitative processes - such as the teaching and assessment styles of the teacher, the effect of class size on pupil achievement and teacher workload. Although the findings of the

studies which fall in this category favour small classes, it is argued that the issue of class size is complex, and that it is difficult to unravel the range of variables which impact on pupil achievement.

Prais, S.J. 1996. "Class size and learning: the Tennessee experiment - what follows?". Oxford Review of Education. Vol. 22(4), pp 399-414.

This article is a critical review of the Project STAR's findings. Prais raises concern about the inconsistency of the report. He indicates that about 6 per cent (i.e. 108) of the STAR pupils were moved from small classes to regular classes in the middle of their kindergarten year. However, in the analysis, the achievements of those pupils were not calculated separately to check if their performance was higher or lower than that of pupils who were in small classes throughout the project. He further states that in the second year of the experiment some pupils were re-allocated to either regular classes with an aide or to regular classes only. He assumes that the re-grouping could have been influenced by the ability of the pupils. Thus pupils with low ability could have been assigned to regular classes with an aide. If so, the hypothesis could account for the almost equal achievements of both groups, which implies that teacher aides contributed toward the achievements of the low-ability pupils.

Prais also queries whether, in the subsequent years of the project, pupils were again randomly allocated to ensure that they would not continue to learn in similar classroom environments. When re-analysing the achievements of former Project STAR small class pupils in terms of value-added learning, he discovered that their achievements had dropped significantly. He concludes that pupils who were in the STAR's small classes learnt less in subsequent regular classes.

Although he acknowledges that small classes increase the achievements of pupils with serious learning difficulties, he challenges the STAR's general conclusion that small classes increase pupil achievement for kindergarten to Grade 3 pupils, since the abilities of the pupils who participated in the project were not assessed at the beginning. He believes that in the UK, teacher aides or assistants could be a more cost-effective investment for the improvement of educational quality than class size reduction.

United Kingdom (UK)

Blatchford, P & Mortimore, P. 1994. 'The issue of class size for young children in schools: what can we learn from research?". Oxford Review of Education. \/0!. 20(4), pp 411-428.

The aim of the paper was to review literature on the relationship between class size and achievement in order to arrive at conclusions fairly representative of the "conflicting, inconclusive and disappointingly meagre" findings of the different studies on the issue.

The authors' reflection on teacher-pupil ratios (PTRs) and class sizes for primary and secondary schools between l482uodl442indicate that small classes (l (P20)in primary schools have declined from 20.4 per cent in 1982 to 11.3 per cent in 1992; at the secondary level they have dropped from 45.3 per cent in 1982 to 43.0 per cent in 1992. Classes of 21-30 pupils have increased in number. In primary schools in 1982, they constituted 57.1 per cent and in 1992 they had increased to 67.2 per cent. In the same period in secondary schools, they increased from 45.7 per cent to 51.6 per cent. The authors indicate that, generally, PTRs and class sizes in the UK have increased. They also emphasise the fact that PTR's are always lower than class sizes by about 6 pupils.

The authors are agnostic about the effects of changes in class size on pupil achievement in the UK, but consider the contradictory findings of the USA studies. They agree with those authors who emphasize the need to research the effects of class size on the learning and teaching processes. On the basis of such research findings it would be relatively easy to explore alternative measures to improve pupil achievement. They acknowledge that the relationship between class size and achievement has never been researched empirically and systematically in the UK (Blatchford and Mortimore, 1994: 4l8). They also acknowledge that class sizes and PTRs in general will continue to increase, due to budget constraints and the 1988 Education Act, which linked school funds to pupil numbers. They conclude with an appeal to education researchers and policy-makers to invest time and money on class size and achievement research, and on the evaluation of "more limited initiatives" in order to establish "sound information" on the issue.

Bennett, N. 1994. "Giant leaps on a small scale". Times Education Supplement (TES). Dec., p6.

The writer argues that the Government's persistent claim that "there is no evidence linking class size and pupil achievement" is ironic since Britain had never carried out any systematic and empirical research into the relationship between the two. The writer states that the claim is used by Government to allocate more funds to secondary schools and less to primary schools, even though requests to reduce existing disparities have been made. Seemingly agreeing with the criticised Project STAR's findings, the writer questions the Government's commitment to investing in teacher assistants when the Project STAR's findings indicated that teacher assistants contribute little or nothing to pupil achievement. The writer argues that smaller classes in the first years of schooling would improve; quality and could be justified on cost grounds.

Mortimore, P & Blatchford, P. 1995. "High time for small talk". TES. February, p17.

In addition to a summary of their previous paper (Blatchford & Mortimore, 1994), the writers state that the introduction of a new "national curriculum and associated assessment arrangements" have meant that teachers in large classes would spend more time on preparation and marking. Although the UK National Commission on Education[3] stated "that within the next five years no primary schools should have classes bigger than 30, and that this should be 20 in deprived urban areas and in schools which have high proportions of children whose mother tongue is not English", the average percentage of primary classes of more than 30 pupils had increased from t 10.0 per cent in mid 1980s to ± 28.0 per cent in 1994. In 1994 the average class size for the UK was 26.9 pupils and "according to international comparisons the UK had one of the highest PTRs of all industrialised countries".

They acknowledge that the findings of the Project STAR are not absolute and generalisable, but they appeal to education authorities to distinguish between "across-the-board reductions in class size, which may well be too expensive, and targeting class size reductions at the earliest years in school, which will be both cheaper and happen to be supported by research evidence".

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3   This was a privately funded initiative, not a Government sponsored commission.

Mortimore, P. 1995. "The class size conundrum". Education. September, pp 10-11.

The writer reiterates points made in the previous Mortimore and Blatchford articles. He expresses surprise at the performance of pupils in countries such as Korea, Japan, Singapore and Malaysia despite their large classes (40+ pupils). He nevertheless assumes that the achievements of pupils in these countries could be attributed to the pupils' attitudes to school, their behaviour, the level of respect accorded to teachers and the general cultures of these countries. His appeal to Government is that "we should recognise that teachers, as well as pupils, have needs and that, even if clear gains cannot be identified in direct measures of student achievements, we should acknowledge the strain of managing, monitoring and providing adequate feedback for large groups of pupils, particularly in areas of social and economic disadvantage".

Dean, C & Rafferty, F. 1995. "Protests loom over class sizes". TES. September, pl.

Due to education budget cuts, an estimated 4 500 teaching jobs were lost in 1995 alone. Moreover, the steady increase of class size had resulted in minimum space for manoeuvre in classrooms. Consequently, the National Association of School Masters Union of Women Teachers (NASUWT) threatened to go on strike if their proposal regarding the reduction of workloads was not taken seriously. Many more short articles (which contained debates about the class size and achievement/quality issue) in which parents and teachers expressed their strong resentment against large classes were published. The anger and frustration of these groups is captured in the titles of the articles listed below.

Dean, C. 1995. "New pupils join the crush". TES. September, p3.

Burst, E. 1995. "Successful but desperately squashed". TES. September, p4.

EB. 1995. "Parents turn into a fighting force". TES. September, p5.

Dean, C. 1995. "Thousands are in classes of 41-plus". TES. October, p10.

Merrick, N. 1995. "Life does not begin at 40: classes of 36 children or more do not equal a quality education". TES. October, p10.

Office for Standards in Education (OFSTED). 1995. Class Size and the Quality of Education. A report from the Office of Her Majesty's Chief Inspector of Schools. London: OFSTED Publication Office.

The report contains this cautionary note:

> "Inspectors working for OFSTED are not academic researchers specifically investigating the effects of class size. Their interest is first and foremost in evaluating the quality of the school, taking into account the conditions in which the teaching and learning take place" (OFSTED, 1995: 2).

Purpose

"To make use of OFSTED inspections data to examine the possible relationship between class size and the quality of pupils' learning; relate the findings from inspection to those of recent research on class size; and consider the implications of this evidence for teaching and the management of education" (OFSTED, 1995: 4).

Sample

The data used in the study was collected from inspection records of 594 secondary comprehensive schools and 1 173 primary schools. The schools were inspected during 1993/94 and 1994/95.

Methodology

The researchers scanned international literature on class size and achievement. They indicated that the unsystematic work of the 1967 Plowden report (UK) arrived at the conclusion that high achievement levels were associated with large classes. Researchers assumed that the findings could have been influenced by the fact that Government funding for remedial classes, and for Local Education Authorities (LEAs) with a high proportion of pupils from socially disadvantaged backgrounds, was significantly high. They further assumed that surplus funds allocated for these groups may have been used to improve PTRs, and the allocation of more experienced teachers to large classes may have had a positive effect. They contrasted the findings of the Plowden report with those of the Project STAR.

The inspectors used schedules to record information about the subject being taught, the number of pupils in class and the average ability of the pupils. At the end of every lesson the inspectors described its quality, and gave the lesson an overall grade.

On the basis of the information gathered through the inspection schedules, the relationship between class size and achievement was analysed. These findings were compared to those of other studies and general conclusions were drawn.

Findings and Discussion

In primary schools the quality of teaching and learning in the different class sizes is captured in Table 2 below.

Table 2: Percentage of Lessons Graded Good or Better (Primary Schools)

Class Size	Number of Classes	Quality of Learning %	Quality of Teaching %
1 to 5	450	43.7 (39.1 - 48.3)	42.8 (38.2 - 47.4)
6 to 10	463	41.7 (37.2 - 46.1)	40.0 (35.5 - 44.5)
11 to 15	629	40.6 (36.8 - 44.5)	40.5 (36.7 - 44.4)
16 to 20	1 263	39.4 (36.7 - 42.1)	36.3 (33.7 -39.0)
21 to 25	4 779	38.2 (36.9 - 39.6)	37.9 (36.5 - 39.3)
26 to 30	11462	36.8 (35.9 - 37.6)	36.6 (35.7 - 37.4)
31 to 35	6 322	38.8 (37.5 - 40.0)	37.6 (36.4 - 38.8)
36 and over	968	42.2 (39.1 - 45.3)	39.2 (36.2 - 42.3)
Total	26 336	38.1 (37.5 - 38.7)	37.4 (36.8 - 38.0)

OFSTED, 1995: 27

In secondary schools lessons with the highest good/better score were those in classes of 36 students and above. The difference between the scores of the groups of 36 students and above and those of 1-5 and 6-10 students was about 6.0 per cent and 12 per cent respectively. The overall results are in Table 3 below.

Table 3: Percentage of Lessons Graded Good or Better (Secondary Schools)

Class Size	Number of Classes	Quality Learning %	Quality Teaching %
1 to 5	325	48.3 (42.9 - 43.7)	47.1 (41.7 - 52.5)
6 to 10	1 280	42.3 (39.5 - 45.0)	45.4 (42.7 - 48.1)
11 to 15	3 449	35.2 (33.6 - 36.8)	41.5 (39.8 - 43.1)
16 to 20	6 269	34.3 (33.1 - 35.5)	38.5 (37.3 - 39.7)
21 to 25	12 940	36.7 (35.9 - 37.5)	38.7 (37.9 - 39.5)
26 to 30	15 377	43.2 (42.5 - 44.0)	42.0 (41.2 - 42.8)
31 to 35	2950	47.5 (45.7 - 49.3)	44.8 (43.0 - 46.6)
36 and over	91	55.0 (44.7 - 65.2)	57.8 (47.6 - 67.9)
Total	42 681	39.6 (39.2 - 40.1)	40.8 (40.8 - 41.3)

OFSTED, 1995: 34

✍ 69.2 per cent of the medium class size (28 pupils) lessons reported to be excellent were described as containing a mixture of individual and group work, and whole class teaching. The finding indicated that "pupils' achievements depend far more on effective teaching than on class size alone" (OFSTED, 1995: 40).

✍ The findings also demonstrated that, if properly organised, managed and used, teacher assistants could contribute toward higher achievements. 26.0 per cent of the lessons graded excellent/good in primary classes of 31+ pupils had teacher assistants and only 10.0 per cent with the same class size were graded unsatisfactory/poor. In classes with 20+ pupils the lessons rated unsatisfactory/poor constituted 31 per cent. (OFSTED, 1995:43).

✍ The report's general conclusion is that since there is no simple link between class size and achievement, teachers, LEAs and central Government would have to consider seriously the costs of reducing the size of a class (even by one pupil), and weigh the effectiveness of alternative measures, such as the greater use of teacher assistants and instructional'. technologies.

Passmore, B. 1995. "Small is best, but not for everyone". TES. November, p6.

In the article, Chris Woodhead, chief inspector of schools, apologised for the unsubstantiated claim made in the OFSTED report regarding class size and achievement. He acknowledged that although the report did not focus on class size in particular, the impressions and perceptions of the inspectors about class size possibly influenced their judgements. He concluded that "there is no statistically significant correlation between class size and the quality of learning, ... but we accept that larger classes make more demands on teachers".

Hopkins, D. 1995. "This year's model". Education. November, p 16.

The writer both commends and criticises the work of the Office for Standards in Education (OFSTED). He criticises the OFSTED's findings on the basis that they took "an impoverished and limited view of teaching". According to Hopkins, quality teaching is divided into teaching skills, teaching models and the quality of the teacher. He indicates that the findings of the OFSTED report were based on the assessment of teaching skills only. He appeals to the OFSTED inspectors to incorporate the discourse of learning models and teacher qualities (such as the ability to generate and sustain a good relationship with pupils) in future inspection information.

He generally agrees with the report's conclusion that resources should be devoted to within-school staff development and mentoring, instead of class-size reductions. He states, however, that if learning were to be improved through class-size reduction, funds would have to be directed to primary schools. He feels that the OFSTED inspection data contributes significantly "to the debate on raising standards of student achievement".

Budge, D. 1997. "Big doubts over small classes". TES. January, p13.

[This piece is based on Prais's (1996) article reviewed above, at the end of the USA survey. The piece demonstrates that even though the UK has not researched the relationship between class size and student achievement, the issue continues to be of interest and concern to the UK audience].

Japan

Tobin, JJ et al. 1987 "Class size and student/teacher ratios in the Japanese pre-school". Comparative Education Preview. Vol. 31(4), pp 533-549.

Purpose
The purpose of the study was to gain insight into the management strategies and classroom processes used by teachers in Japanese pre-schools.

The study was triggered by the fact that Japanese pupils out-perform their American counterparts, even though they are in classes of 30-40 pupils from pre-school, whereas the regular PTR for USA pre-schools is between 14:1 and 18: 1.

Sample
The original study consisted of 12 pre-schools spread across Japan (Tokyo, Hiroshima, Osaka and Kyoto), China and the United States. The findings of this report were based on studies of two Japanese (Kyoto-based) pre-schools and a video tape of one USA pre-school.

Methodology
Three video tapes of pre-school classes in the two countries were made. The videos on Japanese pre-schools were edited into u30minute video. The edited video and the USA video (based on a class of 10 pupils) were shown to Kyoto teachers, parents, administrators and pupils, one after the other with intervals in-between for questions and comment.

During intervals the viewers were asked questions and their discussions, responses and non-verbal reactions were video-taped. The videos were shown to Japanese. parents, teachers, children and administrators in the other three towns. Comments from 280 Japanese pre-school parents, education students, administrators and teachers were recorded.

Findings and Discussion
✍ It was discovered that the Japanese do not regard large classes as an issue for

quality instruction; they regard them as a way of life. Their class sizes are partially representative of their corporatist and group culture and it is these cultural practices which shaped their education philosophy (Tobin et al, 1987: 549).

✍ In contrast to the USA individuation model (known as the pastoral care system), the Japanese believe that there should be a clear divide between home and school. At home, children could have all the individual attention they need, but at school they must learn to survive within, and cope with, the pressures of group-life. That way, they will learn shakaisei (social consciousness) and shudan seikatsu (group-life) [p.542].

✍ Noise and chaos are viewed as normal and desirable. According to one Japanese teacher, "to be a child is to be wild and noisy" (p.541).

✍ Japanese teachers are trained to teach large classes and detachment is emphasised (p.539).

✍ Japanese pre-school teachers were reported to be very young. They are usually employed at the ages of 20-22 and they generally work for 3-5 years before they marry and give up teaching. "Unmarried young women, including pre-school teachers, are expected to be energetic, cheery, cute and girlish" (p.539).

The implications of the study for the United States, according to the authors, are that where PTRs are high, instead of attempting to stick to the individual-oriented, small-group teaching style, it might be better to attempt the Japanese large-group teaching techniques. These include, "delegating authority to children, intervening less quickly in children's fights and arguments, and having lower expectations for children's noise level and comportment"(p.547).

Locastro, V. 1989. Large Size Classes: The Situation in Japan. Lancaster-Leeds Research Project.

Purpose

✍ To investigate the attitudes and expectations of English second language (ESL) teachers regarding class size.

✍ To investigate the relationship between the above and the perceived problems of

teaching and learning in large classes.

? To investigate the relationship between class size and institutional policies.

Sample

The report is based on responses to four types of questionnaires - the "Numbers Questionnaires", the "Policy Questionnaires", the "Difficulties Questionnaires" and the "Student Questionnaires". The first three questionnaires were designed by the Lancaster-Leeds language learning group and the last one was designed by the author.

Initially, 96 responses were collected from teachers and lecturers from three urban locations, Tokyo, Nagoya and Kyoto. Only 47 were judged to be valid (as one question was misunderstood and incorrectly answered resulting in the exclusion of the other 49), and the conclusions of the study were based on the valid responses. The participants in the study were from secondary public schools (40-50 students per teacher) and private secondary schools and universities (class size range from 20 students to 100).

133 responses were collected from University students and only 94 were judged valid. The students came from two universities.

Methodology

Three types of questionnaires designed by the Lancaster-Leeds research groups and one designed by the .author were administered to the groups in 1988.

Findings and Discussion

? 33 of the 47 teacher-lecturer respondents were accustomed to teaching in classes of 41-60 students.

? The average class size taught by the respondents was 38, just below 39 pupils, the point at which class size became problematic.

? 35 of the 97 student respondents had experienced learning in classes of 40-49, 12 had experienced classes of 200-209 and 8 had experienced classes of 300-309. Contrary to their experiences, 51 student respondents preferred to be in classes of 11-20; only 4 preferred to be in classes of 41-50 and 51+.

- ✍ 88 of the respondents thought that a class of 1-10 was "too small"; and a "too large" class was defined as consisting of between 21-30 students by 27 respondents; between 31-40 by 22 respondents; between 41-50 by 19 respondents; and 51+ by 24 respondents.

- ✍ The institutions from which the teacher respondents came did not seem to have specific policies on class size. The Ministry of Education's general policy of 40-50 students per class/teacher was generally implemented across public schools and universities.

- ✍ The overall conclusion was that teachers and students are accustomed to teaching and learning in English second language (ESL) classes which are slightly or significantly higher than their perceived ideal classes. Since the teacher and student respondents experienced difficulties in large classes, Locastro suggested that attempts should be made to relate large classes to appropriate methodologies and practices.

Australia

Larkin, A. I & Keeves, J.P. 1984. The Class Size Question: A Study at Different Levels of Analysis - ACER Research Monograph No. 26. Hawthorn, Victoria: Australian Council for Education Research.

Purpose
"To examine the ways in which class size affected other facets of the educational environment of the classroom. In particular, it was intended to assess the work of Glass et al (1982) in a specific classroom setting and provide an explanation of their findings" (Larkin & Keeves, 1984: 77).

Period
The data examined in the study were collected in 1969 in the Australian Capital Territory around Canberra.

Focus
The focus of the original study was on the teaching and learning of mathematics and science in Year 7, the commencement of Australia's secondary schooling and the equivalent of South Africa's grade 7 (standard 5).

Sample

The 1969 study observed 1986 students in 72 classrooms, however, a small random sample of 231 students was used for the intensive investigation of students' home background. The 72 classrooms were drawn from a total population of 76 classrooms and 2 348 students in 15 schools.

Methodology

"In 1969, all the students took an initial science test at the beginning of the secondary school year. At the end of the same year, the students were again tested in mathematics and science, but they were also asked to complete a general information booklet in order to obtain information on the student's home background, and an attitude questionnaire concerned with attitudes to both science and mathematics, liking of school and school learning, academic motivation and self-regard" (p.16).

Observations of the nature of teaching and learning in both maths and science classes were carried out during the second and third terms of the year. In the same periods, teachers were interviewed and a field-tested attitude questionnaire was administered.

Measures related to the classroom environment were divided into the structural and the process dimensions. In the structural dimension the characteristics of the teacher, the school and the student were recorded separately. The characteristics included such factors as teachers' age, sex, level of training, marital status, years of experience, sex of class, degree of streaming of the school and the size of school (p. 88-91). The process dimension was concerned primarily with classroom processes such as various forms of assessment, amount and frequency of homework given, use of educational materials and classroom management techniques (p. 91-93).

The classes fell into seven categories: 5 classes had 15-19 students, 2 had 20-24, and 8 had 25-29 students. The number of classes with 30-34 and 35-39 students were 27 and 22 respectively. Only 7 classes had 40-44 students and 1 had more than 45 students.

The analysis was undertaken at three levels, namely, the class, the student and the student within class levels. The first level is significantly related to the class size and achievement issue whereas, the latter two are partially/indirectly related and were analysed in relation to

achievement but independent of class size. The level of analysis which was not included in the study is the school level. The exclusion of this level was due to the fact that its significance towards a study of class size and achievement could not be established.

Discussion, Debate and Analysis

The 1969 data on which the study is based were collected by JP Keeves, and have since been recorded in his unpublished PhD Thesis (1971) and several publications in 1972 until 1974. Although the original data were not based on experimental research studies, it was hoped an analysis and interpretation of such data will contribute toward an understanding of "The Class Size Question" from an Australian perspective.

The authors reflect on the contradictory and inconclusive nature of the class size and achievement literature. Although they cite few examples of international maths, science and reading studies[4], they acknowledge that mainly USA studies, have contributed toward the class size and achievement debate. The Glass and Smith meta-analysis has revitalised the debate by supporting the assertion that small classes. increase achievement and large classes decrease it. Contrary to the Glass and Smith conclusion was Keeves' (1972) finding that in Australia, "the larger the class, the greater gain in achievement during the year" (p.10).

In an attempt to clarify the contradictions of the literature with regard to achievement, Larkin and Keeves also analysed the context of the 1969 data. Their analysis of the data led to the assumption that less able, remedial and minority students were assigned to small classes (p.19), and more able students and students with a positive attitude toward maths and science were assigned to large classes. This is supported by the fact that the majority of the schools from which the data were collected used streaming procedures (p.78).

[4]   The examples of international studies cited in this book are:

Comber, L.C & Keeves, J.P. 1973. Science Education in Nineteen Countries. International Studies in Evaluation, Vol. 1. Stockholm: Almqvist & Wiksell.

Huskn, T (ed). 1967. International Study of Achievement in Mathematics,-Vol. 2. Stockholm: Almqvist & Wiksell. Peaker, C.F. 1975. An Empirical Study of Education in Twenty-one Countries.- International series in Evaluation, vol. VIII. Stockholm: Almqvist & Wiksell.

Thorndike, R.L. 1973. Reading Comprehension in Fifteen Countries. International Studies in Education III. Stockholm: Almgvist & Wiksell.

Findings

✍The achievement gains of students in large classes were considerably higher than the average ability of the students. It appears that the characteristics and attitudinal interactions of the students in these classes were a stronger determinant of achievement than class size and classroom processes - since most teachers did not change their methods of instruction in classes of any size (p. 44-45). The ability of the students, not class size, influenced the use of various teaching styles and the amount of homework given. In science classes in particular, large classes were associated with negative student attitudes.

✍The effects of class size on individual students indicated that students in large classes had high occupational and educational aspirations. The competitive environment of the classroom, and the positive attitude toward the subjects may have contributed toward high achievements in large classes.

✍"At the class level, self-regard appeared to result from the overall home status (determined through the father's occupation) of the class, while at the individual level, the student's own academic performance appeared to be the most influential factor" (p. 55).

✍At the student within class level, both father's occupational status and student's prior achievement enhanced occupational and educational aspirations. There were less substantial differences on self-regard due to these prior effects. However, belonging to a high-status class would not enhance self-regard, unless supported by superior achievements (p.58).

✍Although high-status and more able students did more homework, in some classes high-status students did more homework than able students.

✍According to a reciprocal model of attitude analysis, "large classes enhance the student's aspirational levels and in turn, improved aspirations enhance achievement" (p.68). If class sizes dampen the student's aspirations, they will lead to a deterioration in achievement.

✍In conclusion, the authors state that since their findings contradicted those of Glass et al, it is clear that the findings of the Glass et al meta-analyses have not put the class size issue to rest.

Bourke, S. 1986. "How smaller is better: some relationships between class size, teacher practices, and student achievement". American Educational Research Journal. Vol. 23(4), pp 558-571.

Purpose
The purpose of the study was to investigate the relationship between class size, teacher practices and student achievement.

Sample

A sample of 33 government (public) elementary schools in the Melbourne metropolitan area was selected. A total of 63 Year 5 teachers were involved. Class size ranged from 12 to 33 pupils per teacher. Some ± 10 per cent of the 63 classes had less than 20 pupils per teacher and about 60 per cent of the classes had 25 pupils or less. The average class size was 25.2 pupils.

Methodology

Data on a range of teaching practices, pupil achievement and attitudes, and pupil, teacher, school and classroom contextual backgrounds were collected by observation and questionnaire. Teaching practices and classroom interactions were recorded over 12 weeks. Every class was observed for 8-10 lessons.

Findings and Discussion

- It was discovered that factors which contributed toward achievement in different class sizes were the ability of the pupils, family background, expected level of education and attitudes towards mathematics.

- Class size was a factor of the location of the school and the socio-economic status of the school's catchment area.

- In small classes, whole-class teaching was used frequently. Teachers were also able to assess the performance of the pupils through oral tests, homework and lengthy assignments, and they had more direct interaction with the pupils.

- In large classes, group teaching was used frequently and students asked questions for clarification. Although teachers grouped students for instructional purposes, it seems teachers spent more time explaining and lecturing.

- The concluding finding of the study was that the size of class was not the determinant factor, but teachers' practices were.

Canada

Shapson, S.M et al. 1980. "An experimental study of the effects of class size". American Educational Research Journal. Vol. 17(2),pp14l l52.

Purpose

The purpose of the study was to investigate the effects of four class sizes (16, 23, 30 and 37) "on teachers' expectations; the attitudes and opinions of participants (students and teachers); student achievement in reading, mathematics, composition, and art, student self-concept; and a variety of classroom process variables (e.g. teacher-pupil interaction, pupil participation, method of instruction)" (p. 141).

Sample

11 schools from 3 districts in Metropolitan Toronto participated in the two year study. A total of 62 fourth and fifth grade classes took part, and only teachers with two or more years of teaching experience were salami Ile 62 classes were broken down into 16 each of class sizes 16 and 23, and 15 each of class sizes 30 and 37.

Methodology

• Teachers and students were randomly assigned to the four different class sizes. In the second year of the study the students and teachers were re-allocated to ensure that the participants did not spend the two years in classes of the same size.

• Observation schedules were completed by trained observers. The schedule was designed to capture such information as teacher-pupil interaction, method of instruction, physical conditions of the classrooms and the use of educational aids.

• The "Indicators of Quality" instrument was also used for observational purposes. The instrument "taps four categories of classroom activity: individualisation, interpersonal regard, creative expression, and group activity. It consists of 51 items, each describing one 'positive' and one 'negative' classroom activity purported to signify the quality of education" (p. l44).

The Canadian Tests of Basic Skills and the North York Self-Concept Inventory tests were administered and the results were analysed. Samples of pupils' art work and compositions were collected together with responses to the pupils' and teachers' questionnaires.

Findings and Discussion

- ✍ There were no significant effects of class size on the indicator of quality scores.
- ✍ Teachers had very high expectations and positive attitudes towards small classes.
- ✍ Teachers did not change their methods of instruction in the different class sizes. In both small and large classes, their approach was mass-orientated.
- ✍ Class size did not affect students' self-concept and attitudes towards school negatively.
- ✍ Class-size had no effect on academic achievement on the areas of reading, vocabulary, mathematics problem-solving, art and composition. The only significant achievement differences between small and large classes were in mathematics-concept scores.
- ✍ The authors were reluctant to dispute the Glass and Smith (1978) conclusion that small classes yield significantly high academic achievements since the literature upon which the analysis was based had very small classes (i.e. less than 16 pupils per teacher). They indicated, however, that "rather than suggesting that class size does not make any difference, this study demonstrates that within a narrower range of class sizes (i.e., 16 to 37), it makes a large difference to the teachers but little difference to the students or to the instructional methods used (p. 151).

Areas of Consensus and Disagreement

The relationship between class size and achievement has been researched predominantly in the USA. With the exception of Japan, research studies in other developed countries have been influenced by the contradictory findings of USA research. Consequently, the following summaries on the areas of consensus and disagreement reflect, to a large degree, the USA perspectives on the relationship between class size and achievement.

Areas of Consensus

Despite disagreement on some aspects of the research findings, and criticisms of the methodologies used, (e.g. Glass and Smith, 1978; Project STAR - in Finn & Achilles, 1990, Word et al, 1990; PRIME TIME - McGiverin, 1989; Slavin, 1989; Praise, 1996), research findings suggest the following:

- ✍ Small classes are likely to improve the achievements of kindergarten - grade 3 pupils (Glass & Smith, Project STAR and PRIME TIME), pupils from economically and educationally disadvantaged backgrounds (Project STAR & Mortimore) and pupils with special educational needs.
- ✍ Small classes are likely to produce the greatest gains in achievements in maths and reading in the first four years of schooling.
- ✍ Large classes increase the workload of teachers and they affect teacher morale negatively (Passmore, 1995; Smith and Glass, 1979).

It is agreed, however, that reductions in class size do not have an automatic impact on pupil achievement. According to Finn and Achilles, Slavin, Tomlinson and the OFSTED report, teacher training and teacher practices are important in improving the achievements of pupils, in spite of the size of the class. This view is supported by the findings of Tobin et al who state that, despite the fact that Japanese pre-school classes are larger than American ones, Japanese pupils perform better than American pupils because their teachers are trained to teach large classes.

Research studies on class size and student achievement also agree that, as reductions in class size cannot be across the board - because of resource constraints, it is important to target specific levels of schooling, and subjects most likely to benefit from smaller classes. Moreover, research indicates that class size reduction must not be adopted as a general policy in isolation from social, economic and political circumstances,.

Instead of advocating class size reductions as a policy objective in itself, the research findings encourage education decision-makers and educationists to weigh the cost-effectiveness of alternative quality measures to improve the effectiveness of class teaching.

This survey has concentrated on primary and secondary education, but the research of Gullo and Button (1993) is worthy of note. This suggests that class size and socio-economic background do not negatively influence the performance of children who have had pre-kindergarten experience.

Areas of Disagreement

The conclusion reached by Glass and Smith, that reductions in class size in secondary schools result in higher pupil achievement, has been challenged. According to Tomlinson (1989), gains in pupil achievement linked to smaller classes claimed by Project STAR, PRIME TIME and Glass and Smith, are not sustained when pupils transfer subsequently to mainstream classes. He argues that the evidence to suggest a correlation between small classes and improved pupil performance is not convincing. Tomlinson is supported by Slavin's (1989) re-analysis of the Glass and Smith studies.

A second area of disagreement centres on one of the more significant conclusions of the Project STAR. This stated that there were not significant differences in pupil achievement between those in regular classes, and pupils in classes supported by a teacher-aide. The OFSTED report, and Prais' review of the USA data, conclude that the contribution of teacher-aides to student achievement is high.

A theme which is germane to much of the literature is that class size is one of a number of measurable and non-measurable variables that have to be taken into account in any consideration of quality teaching and pupil achievement. Many of the commentators argue that class size alone is not a determinant of pupil achievement.

DEVELOPING COUNTRIES

Introduction

In developing countries, the issue of class size and pupil achievement has not attracted a great deal of research attention. Educational research and discussion have tended to focus on the effects of the rapid expansion of educational provision and quality improvement. Within these areas, class size and achievement is a significant, but relatively small issue. For this survey, the literature has been scanned to isolate discussion on class size and achievement.

World Bank. 1988. Education in Sub-Saharan Africa: Policies for Adjustment, Revitalisation, and Expansion. Washington D.C.: World Bank.

The report describes the dilemma of many Sub-Saharan countries in coping with the twin problems of population growth and the goal of universal access to primary education. Average primary enrolments rose from 36 per cent in 1960 to 75 per cent in 1983. Since 1970, enrolments have increased by 9.0 per cent each year. By the end of the century, the primary and secondary school-age population throughout Africa will increase by 3.3 per cent. At this rate, enrolment will not keep pace with the average growth of the school-age population.

In the light of education expansion, and the need to maintain and improve educational quality, the report considers a range of policy options. There are two important conclusions for class size and achievement. These are:

> ✍ It is important to invest in the provision of basic instructional and learning materials, curriculum development, in-service training of teachers and the use of instructional technologies, such as radio. In order to keep up with average enrolment rates without increasing teacher salaries (which already consume between 85 and 95 per cent of education budgets in Africa), it is stated that average PTRs could be increased, though classes should be no larger than 50 pupils. The report suggests that this can be achieved by increasing the workload of the teacher through the double-shift system.

Thus the report does not advocate quality improvement by making classes smaller in number. The World Bank argues that reducing classes to between 25 and 50 pupils will "influence pupil achievement modestly or not at all. But since most classrooms are not designed for more than 50 pupils, classes much larger than 50 pupils should probably be discouraged" (p.40).

? Other measures which should not be regarded as priorities, because they have little influence on the quality of education, are the construction of high quality buildings and the introduction of televisions and computers in classrooms. However, the World Bank acknowledges that poor infrastructure and increased PTRs may have a negative impact on pupil and teacher morale (p.43).

Lockheed, M.E & Verspoor, A.M. 1991. "Improving learning achievement", in Improving Primary Education in Developing Countries. Washington, D.C.: Oxford University Press (World Bank). pp 39-89.

The authors discuss five broad types of intervention to improve learning achievements. These are: (a) improving the curriculum, (b) increasing learning materials, (c) increasing instructional time, (d) improving teaching, and (e) increasing the learning capacity of pupils. Thus they consider strategies to improve pupil achievement which do not involve reductions in class size.

Curriculum

The authors argue that minor curriculum adjustments are ineffective. Appropriate and sequenced instructional programmes for each subject should be thoroughly planned, implemented and monitored.

Teaching and Learning Materials

Different developing countries have varied policies on the provision of teaching and learning materials. For example, in 1986 in Uganda, textbooks were provided by the state and in Burkina Faso they were purchased by individual pupils and teachers without subsidy (p.54-55). In general, few people in developing countries have access to appropriate teaching and learning materials.

They state that textbooks, teacher guides and other instructional materials, such as posters and audio tapes, are a cost-effective investment for the improvement of learning achievements. Although there have been isolated cases of accelerated learning with computers, it is cautioned that computers are too expensive and there is insufficient evidence to support their widespread adoption.

Instructional Time

In developing countries, instructional time is often reduced during admission periods at the beginning of the school calendar year, largely as a result of ineffective administrative procedures, such as poor arrangements for the distribution of exercise books, and the allocation of pupils to classes. Absenteeism, strikes and late-coming worsen the situation. The authors consider the argument that lost instructional time could be compensated for by reductions in class size in order to increase contact between teachers and individual pupils. Although small classes (-20 pupils) were supported by, among others, Glass and Smith (1978 and 1979), the cost of reducing class size in developing countries is beyond education budgets. Lessons could be learned from countries such as Korea, which has produced good results in classes of more than 50 pupils (p.60-61). Instead of reducing class size, standards for instructional time must be set and maintained.

Other

The last two policy interventions dealt with are the improvement of effective teaching on an ongoing basis (INSET) and the provision of state-funded health services and nutritional programmes for disadvantaged children.

Lockheed and Verspoor conclude by stating that it is important to weigh alternatives on the basis of their effectiveness and costs. Thus interventions such as placing computers in the classroom, and lowering the student-teacher ratio from 40:1 to 20:1, are unlikely to be as cost-effective as investing in textbooks, micronutrient supplementation, and interactive radio instruction ..." (p.88).

Valerien, J. 1991, Innovations for Large Classes: A Guide for Teachers and Administrators. UNESCO Publication.

The guide was prepared originally for a workshop held at the Regional Office for Education in Africa (BREDA) for primary education officials and specialists. Its purpose is to list and discuss a number of "innovations or solutions that can be introduced in the classroom, school or other educational establishment by teachers ... (and) measures or innovations that can be introduced at various levels of the education system by administrators and managers" (Preface).

In developing countries, and in Africa in particular, large classes of 60 pupils and more are a "non-contingent structural feature" of many education systems. Factors contributing towards large classes include the lack of schools in some areas; bad location of schools; population growth; school size as a determining factor of principals' salaries; and a reduction of teaching duties for principals and HODS. Due to the social demand for compulsory general education, large classes are a "necessity" because they accommodate increased enrolment without adding significantly to costs. However, "the conditions in which they operate are a source of numerous risks that must be eliminated" (p.13).

Despite the realisation that large classes are a necessity, they are often regarded as a "stopgap" solution to the enrolment crisis, and they are viewed negatively by many teachers and communities. Consequently, the measures undertaken to deal with them are "of an occasional or ad hoc character and they seldom form part of a coherent, structured policy appropriate to the situation" (p.13).

The author's position is that the conventional child-centred and teacher-dominated approaches to large classes are either impossible or inadequate in a large class. Instead of advocating class size reduction, the author suggests the use of peer tutoring and the adoption of the double-shift system. However, such approaches cannot be imposed on teachers and learners, and their adoption will not improve quality automatically. It is important, therefore, that such measures be complemented with the appropriate re-organisation of school time-tables, modified curricula and adequate teacher training. Appropriate teaching and learning materials (such as textbooks, exercise/work books and teacher guides) and methodologies are important for the successful implementation of new

curricula and teaching arrangements. The guide cites examples of flexible time-tables, the better utilisation of existing premises and other innovations.

Some of the innovations outlined above apply to both teachers and administrators. Without systematic and prioritised planning, isolated innovations can be chaotic. Moreover, the success of many classroom innovations depends on central support, and the transformation of aspects of the education system as a whole.. Equally, the fulfilment of centrally planned innovations depend on successful implementation at the school and classroom level (p.33).

Where innovations are planned, it is wise to introduce these gradually, and over a period of time, because the simultaneous introduction of too many innovations may lead to confusion, failure or rejection (p.24).

Kumar, K. 1992. "Does class size really make a difference? - exploring classroom interaction in large and small classes". RELC Journal. Vol. 23(1), pp 29-47.

Purpose

It had been assumed "that what is of crucial importance for language learning in the classroom is opportunities for learners to negotiate during meaningful interaction" (p.31). The purpose of the study is therefore to determine the effects of class size on language learning opportunities in the classroom.

Sample

The study was based on two small classes (-25 students) and two large classes (t 45 students) in which English was taught as a subject in the Indian middle school level.

Methodology

Observation and description were the main instruments of the study. In the first phase, a large class, in which less traditional teaching methods (such as role-play) were used, and a small class, in which language was taught more formally, were observed. In the second phase, the learning and teaching activities for the classes were reversed. During observation, the number and duration of interventions by both teachers and students were counted.

Findings and Discussion

The study indicated that pupils made more interventions and were more engaged in the less formal lessons, whether taught in large or small classes. When English was taught more formally, in both small and large classes, pupils were more passive and teacher-talk was dominant. In the active classes, the level of pupil interest was high, but in the traditional classes there was a sense of boredom and monotony amongst the teachers and pupils.

It was concluded, therefore, that class size does not determine the quality of interactive language learning. It is the nature of the teaching and learning activities, and the role and attitude of the teacher, which influence the pattern of pupil participation.

Hanushek, E.A. 1995. "Interpreting recent research on schooling in developing countries". The World Bank Research Observer. Vol. 10(2), pp 227-246.

Purpose

To determine factors contributing toward school effectiveness, measured in terms of pupil achievement. The underlying question of this meta-analysis was: "do the resources purchased and used by the schools systematically improve student performance?" (p.229).

Period

The analysis was conducted in 1992.

Methodology

The analysis was based on 96 studies of school effectiveness conducted in developing countries. These were classified into ± 6 categories, some studies falling into more than one. The detailed methodology was not described in this paper.

Findings and discussion

The summary findings are illustrated in Table 4 below:

Table 4: Research Findings in Developing Countries

INPUT	Number of studies	Positive	Negative	Statistically insignificant
Pupil-teacher ratio	30	8	8	14
Teacher's education	63	35	2	26
Teacher's experience	46	16	2	28
Teacher's salary	13	4	2	7
Expenditure per pupil	12	6	0	6
Facilities	34	22	3	9

Hanushek, 1995: 230

The analysis of the studies reveals the following:

- ✍ Teacher education, experience and school facilities are more important than other factors. Facilities refer not just to buildings and plant, but to learning resources as well.

- ✍ In the 30 studies on PTRs, an equal number favoured small and large classes.

- ✍ An unsuccessful attempt was made to analyse the influence of curriculum issues and instructional methods, but conclusions could not be reached because of the difficulties in establishing compatibilities between different countries.

- ✍ This study was undertaken in 1992. In the previous year, there were estimated to be 100 studies on school effectiveness in developing countries. The author cautions against making broad generalisations based on diverse studies because they fail to capture the uniqueness of countries and institutions and do not take sufficient account of variables. The writer also stresses the need for good planning, whatever the level of resources, and argues for the value of experimentation and evaluation to test innovative pedagogical, organisational and management models.

World Bank. 1995. South African Education Sector: Strategic Issues and Policy Options. Discussion Paper.

The main issues discussed in the paper are the increased demand for primary and secondary education, the decline in quality at both levels of schooling, the shortage of school facilities and budget constraints.

It is stated that quality cannot be improved through reduction in class size because "international research indicates that although learning is enhanced in classes smaller than 25 pupils, there is very little difference in learning outcomes in classes with between 25 and 40 pupils. Where there are over 40 pupils per class, however, achievement falls" (p.15). On the basis of this research evidence, and the fact that reducing classes to 20 pupils is financially impossible, it is suggested that the provision of classroom space in all primary schools should be on the basis of 40:1 and in secondary schools on the basis of 35:1.

The suggested PTRs would reduce the cost of classroom provision. But since the estimated classroom backlog of 65 000 (calculated according to these ratios) is likely to remain a problem for many years to come, it is suggested that available school facilities will need to be used optimally. The double-shift and platoon systems are recommended. It is realised, however, that these systems may be rejected by black people on the basis that they were selectively imposed under apartheid and they represent "second-class education".

Community participation, in cash or in kind, is also recommended to encourage communities to take some responsibility for school maintenance and security. Where new facilities are provided, it is suggested that these should not be influenced by the old Department of Education and Training (DET) and House of Assembly (HoA) models. Efforts should be made to build schools with adequate classroom space, given the actual class/group sizes.

Several other areas of intervention to improve the quality of primary education are considered. Teacher training, both PRESET and INSET within an integrated continuum, is the key area. Other interventions include the provision of relevant and adequate instructional materials, health services and food rations in areas of need.

In conclusion, the World Bank argues that "general schooling - especially primary schooling - is the most equitable, and the most cost-effective, investment the state can make in education. The key is to make such investments as effective as possible by focusing on the inputs that enhance learning" (p.6).

Areas of Consensus

The literature dealt with in this section is concerned primarily with the broad issues of expansion and quality. The discussion about class size and pupil achievement which has been extrapolated needs to be read in this context. Two main areas of agreement have emerged. First, investment needs to focus on measures which will improve the quality of education. Such measures include the provision of adequate teaching and learning materials; the adoption of the double-shift and platoon systems; the in-service training of teachers; the systematic improvement of the curriculum; and the use of instructional technologies, mainly interactive radio.

Secondly, although it is argued that small classes and high quality buildings affect the morale of teachers and pupils positively, it is not advisable to invest in small classes and high quality buildings because there is little evidence to support the relationship between these factors and school effectiveness and pupil achievement. Investment in small classes and new infrastructure requires more funds than are affordable., and if such investments were to be made, they would preclude the introduction of the quality measures which are discussed above.

Areas of Disagreement

No areas of disagreement emerged in the survey, but again it must be stressed that the literature was not concerned primarily with large classes and pupil achievement. It is, however, interesting to note that the World Bank's views of what constitutes a large class have changed over time.

LITERATURE THAT INCLUDES DEVELOPING AND DEVELOPED COUNTRIES

Beaton, A.E et al. 1996. Mathematics Achievement in the Middle School Years: IEA's Third International Mathematics and Science Study (TIMSS). Boston College: TIMSS International Study Centre.

Purpose
To provide policy makers, educators, researchers, and practitioners with information about educational achievement and learning contexts (p.1).

Sample
45 countries participated in the study, 30 of which were developed countries, ± 12 were in transition and ±5 were under-developed countries. The number of students who participated in the study exceeded half a million.

Focus
The study focused on maths and science teaching and learning in grades 6-9.

Methodology
The IEA teams conducted tests at the end of the academic year in each of the different countries. The tests comprised a range of truths topics, e.g. fractions, geometry, algebra, measurement. Information related to the home environment of students and their attitudes towards maths and science was gathered. The teachers were requested to provide information on attitudes, the abilities they thought necessary for achievement, the use of textbooks, calculators and other resources, amount of homework given, preparation hours, etc.

Class size was among the many factors taken into consideration when comparing the results of the pupils.

Findings
- There was a strong relationship between achievement and the availability of extra mathematics resources from the pupils' homes. There was also a direct correlation between achievement and access to books and parental support.
- In grades 7 and 8, Singapore out-performed all participating countries. In rank

order, the best performing countries were Korea, Japan, Hong Kong, Flemish-speaking Belgium and the Czech Republic.

? Kuwait, Colombia and South Africa were amongst the lowest scoring countries. In the middle of the range were countries such as Sweden, New Zealand, England and the USA.

? In the USA and England, it was reported that calculators are used almost everyday in class, whereas in the Republic of Korea, calculators were seldom used.

? In Korea and Columbia respectively, 93.0 per cent and 48.0 per cent of pupils were in classes of 4.0 and above, and in Hong Kong, Singapore and Japan, 90.0 per cent of pupils were in classes of over 30.

? Middle performing countries such as the USA and England had smaller classes, with only 16.0 and 20.0 per cent respectively of pupils in classes of 30+.

? In some countries, a mixture of whole-class teaching, group work and individual learning were used for instructional purposes. In Japan and Korea, however, whole-class teaching; was experienced by 80-90 per cent of pupils.

Discussion

The TIMSS report supported the complexity of the relationship between class size and achievement. According to the authors, there are just too many measurable and non-measurable variables which contribute toward achievement. These include, among others, class size, availability of resources, attitudes and instructional behaviour.

Ross, K.N. 1997. "Research and policy: a complex mix". IIEP Newsletter. Vol. XV(1), pp 1-4.

This article reviews the TIMSS report. It suggests there could be other non-measurable variables which contributed to the performance of the highest scoring countries, and quotes as possible examples, the widespread use of private tuition; the polite and co-operative behaviour of people; and the homogeneity of populations in Japan and Korea. The article concludes with an appeal to decision-makers in education, that they should not make hasty decisions based on the TIMSS report. Other similar studies "which will explore relationships within the data at the school, classroom and student level" need to be undertaken.

SECTION THREE: THE SOUTH AFRICAN CONTEXT RELEVANT TO LARGE CLASSES

Introduction

To understand class size, one should look at a range of factors that could impact on it. In the international context, Valerien (1991) states that in addition to the social demand for universal education, class sizes are influenced by such factors as land issues, economic growth and deficit, population density and urbanisation, school size as a determining factor of principals' salary as well as reduction of teaching duties especially for principals, deputies and heads of departments (HODS), to mention but a few. With this in mind, the determining factors of class size in the South African context will be explored.

Class sizes in South Africa are generally large but vary widely from urban to rural areas, township to suburb, and even school to school. This situation is the result of a complex interplay of historical factors, demographic changes, economic factors and policy decisions. Moreover, social attitudes and expectations have also influenced class size.

The influence of all these factors on class size will be examined below. For ease of discussion we have categorised them but in practice they are closely inter-related.

Historical Factors

Apartheid education policies had a major impact on class size because they resulted in a racial hierarchy of inequality. The 10 per cent of white pupils at the apex of the pyramid were a privileged elite by comparison with the mass of African pupils at the base. While the standard of Indian education was closest to white education, so-called `coloured' education was somewhere in the middle of the range, and African pupils who constituted 78 per cent of all pupils were the most disadvantaged.

Free and compulsory primary education for whites up to Standard 6 was introduced between 1912 and 1920 in the different provinces and later this was extended to age 16 or Standard 8. By 1974 education became free and compulsory for coloured people to age 16 or standard 8 (grade 10). Although education was not compulsory for Indians until age 15 before 1973, approximately 99 percent of Indian children between the ages of 7 and 13 were in school. Despite the fact that there was no compulsory education for African people and they had to pay school fees, about 64 per cent of African children in 1970 attended school voluntarily.

However, owing to a shortage of classrooms the double shift system was introduced massively, and in some cases, there was also platooning. Whereas in the double shift system, the same group of teachers teaches two shifts of children, in platooning the same school buildings are utilised by two different groups of teachers and children at different times of the day. Despite these strategies, African classes typically contained more than 60 pupils.

The following table illustrates the disparities that existed between the racial groups with regard to pupil:teacher ratios at the height of apartheid. However, it must be noted that the addition of private schools with small PTRs to the white public schools would have had the effect of decreasing the average white PTR. During the baby boom era in white government schools, typical PTRs were in fact higher than the table suggests.

Table 5: Average PTRs in Public and Private Schools (1977)

AVERAGE NUMBER OF PUPILS PER TEACHER IN PUBLIC AND PRIVATE SCHOOLS 1967 - 72				
Year	Whites	Coloureds	Asiatics	Africans
1967	22,1	31,8	28,5	57,0
1968	22,2	32,2	27,6	57,4
1969	21,9	32,0	27,6	57,5
1970	21,3	32,0	27,9	59,4
1971	20,6	31,3	27,2	59,0
1972	20,0	30,8	27,0	58,5

Malherbe, 1977: 252-259

In the last decades of apartheid, the average PTR for African pupils improved from 60+:l in the 1970s to 49+:1 after the mid 1980s. This improvement was the result of mounting political pressure for a more equitable distribution of resources which led to increased school building and teacher supply (Hartshome, 1992:39; Hoftneyr and Hall, 1995). However, the double shift system was continuously in use in the 1980s and even in the 19905 in African schools, in particular (Hartshome, 1992: 43; Hofmeyr and Hall, 1995).

Demographic Factors

Macro trends

South Africa is a developing country with the same demographic trends as other developing countries: a high rate of population growth, a young population and increasing urbanisation. The crisis of provision in African schools during apartheid rule derived from the historical and ideologically-based neglect of African education, as well as the high natural increase of the African population and the rapid expansion of African schooling.

While the average birth rate of the white group declined in the 1970s to 2 per cent and that of the coloured and Indian populations slowed to around 2.5 and 2.7 per cent respectively, the African growth rate remained high at 3.1 per cent.

This resulted in considerable pressure on the African schooling system. In addition, African school retention rates rose rapidly in the 1970s and 1980s. Consequently, the annual growth in school enrolment in the 1970s was 7,3 per cent and in the 1980s, 5,2 per cent (Hofmeyr and Swart, 1984). By the mid 1990s, however, the overall population growth of South Africa had stabilised around 2 per cent, as a result of a declining African birth rate owing to urbanisation (Hofmeyr and Hall 1995: 26). Thus, the growth of the school age population has declined in the 1990s to 3,8 per cent. Because the rate of increase of young children in the society has been declining and school survival rates have been lengthening, primary schooling is growing slower than secondary schooling.

Therefore, the need for teachers and classrooms at the secondary level will continue to rise until at least 2003 to cope with the demographic bulge moving through the secondary schools.

Pupil enrolment is also influenced by the introduction of compulsory education, over-enrolment, and drop-in and drop-out rates. As a result of the huge expansion of the system during the last two decades, it is now clear that the vast majority of all pupils are in school. The estimated out-of-school population (aged 6 to 16) in 1994 was 850 000. (Hofmeyr and Hall 1995: 26). Increasing access to school through the introduction of compulsory education may encourage a proportion of the out-of-school children to drop back into the system. This will increase the number of additional teachers and classrooms that will be needed.

As a result of the poor quality of many African schools, there are high repetition rates especially in sub-standard A, and in Standards 8, 9 and 10. Moreover, the highest over-enrolment[5] occurs in African schools in sub-standard A because of the admission of under-age pupils. At present over-enrolment at this level is 133 per cent Again the effect is to increase class size. Poor quality also results in high drop-out rates. However, available statistics suggest that many who drop out return at a later stage, adding pressure on the South African schooling system.

To sum up: all these macro-level population and school enrolment trends will continue to exert an upwards pressure on PTRs and class size.

Regional Factors

In 1994 the average national PTR was 34:1, but teachers were maldistributed across racial groups and urban and rural areas, with over- and under-supply in different provinces. Whereas provinces like Western Cape and Gauteng had a general over-supply of teachers, others such as Eastern Cape and KwaZulu-Natal, with very large pupil enrolments, had an under-supply.

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[5] Gross enrolment rates indicate the number of pupils as a ratio of the number of the appropriately aged pupils for that school level and over-enrolment (indicative of inefficiency) refers to enrolment rates that exceed 100 per cent in any given phase.

Thus, in 1994, Kwa7,ulu-Natal had an overall PTR of 35:1 and Eastern Cape had a ratio of 41:1, while Gauteng and the Western Cape were operating at overall PTRs of 29:1 and 24:1 respectively (see Hofmeyr & Hall, 1995: 27-29).

The impact of the apartheid inequitable resourcing of education on African PTRs is clear. In 1994 African PTRs were considerably higher than all other racial groups at the primary level, but most ratios largely fell within the 40:1 and 35:1 ratios currently suggested for primary and secondary schools by government. The exceptions were the Eastern Cape (56:1) and Western Cape (41:1) PTRs in African primary schools.

Urban and rural growth trends also influence PTRs and class size. A Centre for Development and Enterprise (CDE) report (1995: 10), indicated that 43.3 per cent of the South African citizenship population is residing in the rural areas, 40.0 per cent in the metropolitan areas, and the remaining 17.0 per cent is spread across small towns and cities/large towns.

The higher African population growth rate in rural provinces is one of the reasons why largely rural provinces like Eastern Cape and KwaZulu-Natal have high PTRs and large classes. However, the continuing process of urbanisation also influences PTRs, especially in the metropolitan areas. It has been estimated that by the year 2011, the population in the metropolitan areas will increase to approximately 44.0 per cent and decrease to 38.0 per cent in the rural areas (CDE, 1995: 10). Small towns and cities will experience only a 1 per cent increase in population.

The influx of people into the metropolitan areas results in rapidly growing informal settlements where class sizes are very high. Gauteng province is reported to have a 5 per cent annual increase in the school population primarily owing to inter-provincial migration (Alfreds, The Star,28/4/97: 1).

Local Factors

At the local level, there are also trends in pupil enrolment that affect class size. Owing to violence and unrest in the townships, many black middle-class residents have been migrating to the former

whites-only suburbs for safety and to be near former white schools. Alternatively, black parents living in townships transport their children daily to and from former white schools in the suburbs.

Historically, white schools were well equipped compared to black schools. They have achieved `educationally' better results than black schools and some people perceive quality education as synonymous with `white education'. Although the last point is debatable, this perception contributes to movement from black schools to former white schools. In addition, parents have also been moving their children to former Indian and coloured schools where, again, the perceptions are that quality is better and schooling is less disrupted.

Those who cannot afford the costs of transport and higher school fees usually rush to the nearest `good' DET school. If a primary school is perceived as the best in the area, parents are most likely to take their children to that :school. The same applies to a secondary school with the highest Standard 10 pass rate in a given area. The `battling' school nearby or at a distance, even if underutilised, is the last resort for those who could not gain access to the best neighbourhood school.

As a result of migration from township to suburban schools, PTRs in Soweto have declined. They range from 47:1 and 13:1 in primary schools and 49:1 to 15:1 in secondary schools (Gauteng MEC for Education, Mrs Mary Metcalfe, 1996: Response to question 5.107 posed by the Gauteng Legislature, in Hofmeyr & 3aff, 1996: 86). Conversely, many former white suburban schools, as well as former Indian and coloured schools, are now having to cope with class sizes above 36 pupils when they were not designed to accommodate them. The most serious problem occurs in special purpose rooms such as science laboratories, domestic science rooms, and technology workshops where safety considerations determined the limited size of the rooms.

Economic Factors

In economic terms, South Africa is a middle income semi-developed country (Hofmeyr et al, 1993: 15). It has been subject to all the forces and constraints that characterise other developing countries: a general shortage of resources - human, financial and material - to meet the scale of the challenges.

Moreover, during the last decade, the South African economy has been in the grip of a severe recession from which it only began to recover in the 1990s. However, the rate of economic growth in the 1990s at some 2-3 per cent per annum has been low in relation to the population growth rate. Since 1983, state expenditure on education has been the largest slice of the national budget. During the 1990s education expenditure has been more than 20 per cent of the national budget and some 7 per cent of gross national product, a figure which is high by international standards (Hofmeyr et al, 1993, p 16).

Given the resource constraints, competing demands on the budget and the high funding of education, government has not been able to increase the proportion of the budget allocated to education. Moreover, its commitment to fiscal discipline in its Growth, Employment and Redistribution economic strategy means that it will have to contain spending on social services. This was made clear in the 1997/98 Budget Speech.

Since the new government assumed power in 1994, it has pursued a policy of equalising education expenditure. It has concentrated on eliminating inter-provincial disparities in per capita education expenditure and in standardising pupil:teacher ratios across the provinces. Thus, provinces like Western Cape and Gauteng with a large proportion of former white schools and the most highly qualified teachers have been hit particularly hard by reduced budget allocations, while others such as Eastern Cape and KwaZulu-Natal and Mpumalanga have benefited.

Currently teacher salaries consume about 80 per cent of the education budget, thereby resulting in limited funds for building classrooms, providing learning materials or supporting teachers with inservice education. In the provinces that have had budget cuts, the teacher salary bill has risen to levels much higher than 80 per cent with very little money left for anything else. For instance, Gauteng has been able to spend only small amounts on school building since 1995, despite the growing need in informal settlements.

The new government inherited a classroom backlog of some 55-70 000 and even the continued use of double shift and platooning strategies have been insufficient to reduce the backlog. The lack

of sufficient funds to make up this deficit and keep pace with the rise in pupil enrolment is one of the main causes of large classes in schools. Where schooling takes place outside of custom-built schools, in buildings such as community halls and church halls, class sizes would also be large.

The other contributory factor which arises from resource constraints is the education departments' inability to fund all the teaching posts required. Thus, there can be surplus qualified teachers in a province, because there are not enough teaching posts established to employ them and thereby reduce class sizes. Moreover, there is a need for renovation of vandalised schools (Chisholm & Vally, 1996: 21). Therefore; the provincial departments must secure funds for classroom provision and renovation. This is only possible if the number of teaching posts is reduced or costs of teachers are contained.

Policy Decisions

Given the range of considerations discussed above, and the pressures on the education budget, it is not surprising that new official norms for PTRs were established in 1995: 40:1 for ordinary primary schools and 35:1 for ordinary secondary schools. This was agreed with the teacher organisations as part of a "package" of items in the Education Labour Relations Council (ELRC). The package included a new `advantageous' salary scale and a substantial increase in salaries.

In addition, other norms for special educational needs and particular subjects with safety risks were established. A PTR of 25:1 has been set for the reception year for five year olds. The PTR for technical subjects is 20:1, and the PTR for learners with special educational needs (LSEN) is similar to those of the ordinary schools "except that each pupil be weighted as set out in the (provided) table and that the therapists, for purposes of calculating these ratios, shall not be regarded as educators". This results in more generous PTRs for learners with special educational needs. The guiding PTRs were to be phased in over a period of five years with effect from the 1 April 1995, and they were subject to annual renegotiation between the parties in ELRC (ELRC, Resolution No. 4: 2).

In policy terms, the net effect of this agreement between government and the teacher organisations is fewer teachers with higher salaries. The national average PTR will be raised from 32:1 in the late 1980s and 34:1 in 1994, to 38:1 by the year 2 000 (Hofmeyr et al, 1993:4; and Simkins, 1996). Perceptions and Debate

The new official norms for PTRs have attracted considerable debate. Educationists have raised certain concerns. It has been argued that subjects such as mathematics, technology and science usually have small class sizes, and the 35:1 ratio for a differentiated secondary school curriculum could lead to the dropping of these subjects on the basis that they are not cost-effective, and yet they are the most critical and scarce subjects in the country. Moreover, the 25:1 ratio for the reception year will concentrate available resources such as classrooms, teachers and specialised equipment in this level and result in a dilution of these resources at higher levels of schooling. Thus a number of educationists regard the reception year as a premature policy which the education system cannot yet afford (Garson, Mail & Guardian, April 11-17: 23).

Opposition has come from teacher organisations, which claim that the large classes that will result from these PTRs are not conducive to quality education (SADTU News, vol 2(4), 4/1997: 4). They point out that the introduction of the new outcomes-based school curriculum will place enormous demands on teachers, whose morale is already low. Continuous assessment of large classes will be very difficult for teachers.

At the level of popular perceptions, large classes are typically associated with the lowering of standards. Frightened about the increase in class sizes in public schools, parents who can afford to pay for the small classes of private education are removing their children from public schools. People in many former white, coloured and Indian schools are worried that larger classes will prevent the use of innovative and child-centred methods and result in a return to the traditional mode of education. They have been criticised for being historically privileged and elitist by some African teachers who point out that the new norms will mean smaller classes for most African pupils, thus furthering the national goals of equal education and redress.

Conclusion

A survey of all the contributory factors suggests that large classes are increasingly a reality in most schools in South Africa and that they are here to stay. However, the public debate indicates that large classes are a contested issue and that popular and teacher perceptions of large classes are generally negative.

SECTION FOUR: SOUTH AFRICAN LITERATURE AND DEBATE

Introduction

A limited amount of material on class size and pupil achievement has been written in South Africa. Much of the literature is discursive and argumentative, rather than grounded in empirical research. The question of class size and achievement is frequently/generally not considered as a central issue in the discussion about educational quality.

Thirion, G.J. 1987. An investigation into a strategy for teaching history in large classes in black education. Unpublished Department of Education Thesis, Vista University, Bloemfontein.

Purpose

To formulate, contextualise and theorise a teaching strategy which would result in the effective teaching and learning of history in black schools.

Period

1987

Focus and sample

Teaching and learning of history; 17 teachers and 586 pupils (299 in standard 8 and 287 in standard 9) in 1 randomly selected class from each of 6 schools.

Methodology

Questionnaires; analytical framework derived from Fundamental Pedagogics.

Findings and Discussion

A range of problems pertaining to the teaching of history in township schools are identified from the questionnaires. These include problems with the medium of instruction, inadequate facilities and resources for learning, teaching strategies, assessment, pupil motivation, study methods, classroom atmosphere, interaction between teachers and pupils, as well as socio-economic, cultural and political considerations. A key finding is that most black teachers restrict pupil activity to a minimum in order to maximise teacher control. In addition, the subject lends itself to the conventional

narrative method. Owing to these and other factors, the study found pupils to be unmotivated, negative and passive, and learning largely limited to rote memorisation of poorly understood terms and material which many pupils considered irrelevant.

An alternative teaching strategy is proposed, which employs, inter alia, the following methods to ensure a balance between teacher control and pupil self-activity: reading in pairs for comprehension, presentation by the teacher of an overview, discovery (group work), report back:, assessment and setting follow-up tasks (homework). It is argued that class size per se is not the main factor which determines effective teaching and learning, but rather, teachers' negative perceptions regarding large classes, the individual teacher's personal teaching style and his/her willingness to try alternative and more appropriate strategies.

With regard to the issue of large classes, it is recommended that teacher education institutions should move away from the ideal class size of 30:1 as the point of departure for their programmes. Serious attention must be given to prepare teachers to teach classes of sizes which actually exist. Specifically, more emphasis should be placed on appropriate teaching strategies, as opposed to particular teaching methods, because effective teaching and learning require access to materials for completing assignments and self study. The acquisition of reference works for school libraries should receive more attention.

Peachy, L. 1989. Language in Large Classes: A Pilot Study of South African Data. Lancaster - Leeds Research Project

Purpose
- ✍ To assess the size of English (ESL in particular) classes in primary schools, and to gain insights into perceptions of what constitutes an ` ideal', `small' or `large' class.
- ✍ To assess ways in which large classes pose problems for teachers.

Sample
14 black primary school teachers - non-native speakers of English, and 1 native speaker of English who worked in a teacher training college.
(All respondents participated in the Lancaster-Leeds language learning seminar).

Methodology

Two questionnaires, designed and administered by the Lancaster-Leeds Research Group to focus on the attitudes, perceptions and experiences of teachers on the issue of large classes were used. The questionnaires were administered at the end of 1987.

Findings

? The actual class sizes the respondents experienced in their daily teaching ranged from 35-85 pupils. The gross average was 50.8 pupils per class.

? Since large classes were the norm for the respondents, their perceptions of small and ideal classes were not based on experience.

? Large classes, despite disagreement about actual numbers, were considered problematic by all.

? Teachers' attitudes towards large classes are influenced by experience. The analysis of problems associated with large classes is as follows:

(1)   teaching and learning - i.e. teaching style, pace, individual attention, range of activities (reported by 80 per cent of the respondents),

(2)   teaching and learning materials - i.e. unavailability (80 per cent), (3) affective problems (55 per cent),

(4)   evaluation and assessment- i.e. marking and monitoring (47 percent),

(5)   classroom management - i.e. space, groups, discipline, movement (47 per cent),

(6)   time allocation (40 per cent),

(7)   educational planning (20 per cent).

Discussion

According to Peachy, large classes. are caused by the fact that the Department of Education fund schools on the basis of the number of pupils enrolled. The situation is exacerbated by the personal interests of principals and administrators. The latter is concerned with achieving more results with limited resources and the former with salary, since the higher the pupil enrolment, the greater the status of the principal. However,

the respondents do not regard large classes as the sole determining factor of quality education. They view large classes as one, amongst the many problems, faced by South African teachers. Other factors which influence the quality of education include methods of instruction, medium of instruction and language, resources and the level of teacher training.

The findings of this study are not generalisable because they are based on too limited a number of teachers. Moreover, since the questionnaires were administered after the language learning seminar, the responses could have been influenced by what was covered/discussed in the seminar. Furthermore, the second questionnaire of the Lancaster-Leeds research project is based on the assumption that large classes are problematic. Such an assumption could have influenced the respondents' attitudes and thinking. It could have led to the exclusion of information regarding the advantages of large classes, or class size under general circumstances.

Moulder, J. 1992. "Education and distribution", in Schrire, R (ed). Wealth or Poverty? Critical Choices for South Africa. Cape Town: Oxford University Press, pp 161-173.

Moulder argued that in 1987, while there were sufficient teachers to account for a national PTR of 32:1, they were not distributed equally across the provinces and the education departments. He further argued that with PTRs of 35:1 and 40:1 there would have been a national surplus of over 44 000 teachers. Using evidence from the World Bank report (1988) that "within the range of 25-50 pupils changes in dass size influence pupil achievement modestly or not at all", he stated that the only PTRs which could have been construed as problematic were in KwaZulu (50:1), Lebowa (42:1) and the Orange Vaal region (41:1).

Hofmeyr, J and Jaff, R. 1992. "The challenge of INSET in the 1990s", in McGregor, A & McGregor, R. Education Alternatives. Cape Town: Juta & Co., pp 167-205.

Hofmeyr and Jaff responded by stating that Moulder's argument was based on an incorrect yardstick, stating that class size was the indicator referred to in the World Bank report. Class size is a more important and relevant indicator than PTR, as far as the quality of education is concerned, since in reality class sizes are always larger than PTRs.

Hofmeyr and Jaff agreed with Moulder in suggesting that South Africa needs to base its future provision of teachers on realistic and affordable norms, "and that the savings that are effected in teacher salaries could be used more efficiently and productively to buy textbooks and instructional materials". Moreover, Hofmeyr and Jaff argued that South Africa needs to think "more innovatively about the staffing of schools and classrooms and break away from the concept of one well-qualified teacher per class. An alternative concept could involve a well-qualified, experienced teacher-tutor in each standard working with teachers and a number of teacher trainees, and led by a good manager-principal with support of adequate administrative personnel".

Morrow, W. 1994. "Colonial model sets a trap", in Sonn, F (ed). DSA in Depth. Vol 47, pp 30-31. The paper is a very brief, critical appraisal of the `disastrous' implications of the "colonial model" (which assumes a PTR of 18:1), in the light of compulsory mass schooling and a shortage of competent teachers. Morrow states that the colonial model has been used as the bench-mark definition of effective teaching and quality education, and to some extent the model has influenced the physical design of schools. The reality, however, is of over-crowded classes and a lack of teaching competence. He proposes two solutions to the problem of teacher incompetence and classes with PTRs of 40:1 or 50:1;

(a) ".... abandon our aspiration to provide about 10 years of schooling for the whole of our population, or

(b) change our conception of teaching in such a way that teachers can confidently teach more learners than is envisaged on a model which assumes a 1:18 teacher-pupil ratio as an ideal". Hence creative large-class teaching is the key.

(Republished in 1994 as "Empowering teachers to teach large classes well". Perspectives: A Journal of Economic and Management Studies. Vol. 3, pp 27-281

Alfers, H. & Murray, S. 1994. "Teaching overcrowded classes - innovations needed." Matlhasedi. Nov/Dec, pp 37-41

This article explores the issue of large classes in relation to free and compulsory education. Owing to concerns raised regarding the poor management and the ineffective teaching of large classes in

Bophuthatswana, the authors demonstrate and justify the role of small group teaching within large ESL classes. They define group work in physical terms - e.g. pupils facing one another in groups of four. They state that "although group work needs to be defined in physical terms, it is in the nature of the interaction and the role of the teacher that the most important aspects of successful group work lie" (p.38). If thoroughly planned, well organised and properly managed, even in overcrowded classrooms in which teachers cannot move beyond the chalkboard area, small group work can enhance the acquisition of "social skills needed for participation in a democratic society" (p.39). They conclude that PRESET and INSET programmes should equip teachers with the necessary and relevant methodologies for use in poorly resourced and overcrowded classrooms.

Prodromou, L. 1994. "The good language teacher - part 2". Educamus. Vol 40(3), pp 41-46.

This article provides strategies fur the management and teaching of large mixed ability classes. The author outlines approaches such as group work, lesson preparation, differentiation of learning and teaching activities, time management, cross-checking, i.e. asking pupils to repeat what another pupil said, addressing pupils by their first names, keeping eye-contact with pupils and varying voice tone at different stages of the lesson.

Gelderblom, S & de Kock G.L. 1995. "Co-operative learning as a possible solution to teaching home economics to large class groups in secondary schools". Journal of Dietetics and Home Economics. Vol. 23(1), pp 58-60.

Co-operation, team work, effective communication, responsibility and accountability are among the necessary skills for productivity and effectiveness in the world of work. Moving from this premise, Gelderblom and de Kock argue that the classroom should in itself become a `miniature' society which shares some characteristics with the world of work. Without totally rejecting the traditional lecture-oriented approach of learning and teaching, they state that co-operative learning models such as "think-pair-share, pairs-check, numbered-heads-together, jig-saw and co-op" (p59) could help to transform the learning environment. These approaches can impact on the roles of the teacher and the learner, the instruments of assessment and evaluation, and the utilisation of space and time. The authors conclude that co-operative learning "has the ability to teach learners much needed skills and at the same time it solves the problem of coping with large class groups" (p.59).

Maged, S. 1997. The Pedagogy of Large Classes: Challenging the "Large Class Equals Gutter Education" Myth. Unpublished Masters part thesis: UCT.

Purpose
To "investigate whether class size impacts, either positively or negatively, on the quality of instruction" (p.27).

Period:
1996

Focus:
Based in the Western Cape, in former HoR secondary schools

Sample: (see Table 6 below)

Table 6: Research Sample

Information	TEACHER A	TEACHER B	TEACHER C
School	School 1	School 2	School 2
Subject	Geography	Business Economics	Mathematics
Years of Experience	10 years	4 years	25 years
Standard	9	9	8
No Pupils:			
Large Class	38	38	37
Small Class	17	25	25
Medium of Instruction	Afrikaans	English	English

Maged, 1997:29

Methodology
Observation schedule, video analysis, semi-structured and partially open-ended questionnaire, and examination and test results.

Findings
"The theoretical analysis of the data of the three cases concerned reflect that there does not appear to be a causal link between class size and quality teaching. What the analysis appears to show is that the pedagogy of the teacher, that is, how the teacher understands and implements the relationship between teacher and pupil, teacher and task and pupil and task, determines the quality of the effectiveness of the instruction. Within the realm of Vygotskian theory therefore, the

study presents the following thesis: the pedagogy of the teacher determines the quality of instruction. The size of the class does not determine the quality of instruction. Good pedagogy will result in good instruction within any class size" (1997: 77).

Discussion of the South African Literature

The Moulder and the Hofmeyr and Jaff articles represent the emergence of an awareness of the significance of class size in educational quality and teacher training. These (and the other) articles are not based on experimental and systematic research; they take the situation of large classes as a given and introduce innovative thinking and methodologies to cope with the reality of the situation. Although Thirion attempted to bridge the gap between theory and practice, his work was also not based on empirical research. Maged's work is thorough, and it is a break-through in the South African context, as it has linked the theoretical perspectives and experimental findings of the class size and student achievement debate.

Areas of Consensus and Disagreement

From the realisation that large classes are here to stay, the authors agree that the best way to improve the quality of education and student achievement, with the available limited resources, is to equip teachers with the necessary skills for effective large class teaching and to encourage innovation. Their suggestions and pedagogical strategies of how to achieve this reflect similar themes.

SECTION FIVE: SURVEY OF SOUTH AFRICAN PROJECTS

Introduction

To complement the literature review, a survey of projects which focus on large class teaching and learning was undertaken. The purpose of this survey was to catalogue existing activities. No attempt has been made to evaluate the projects.

Methodology

A questionnaire was sent to a number of NGOs, known to be working in the area of large class teaching. It was also sent to a limited number of public and private schools, which were known to have adopted specific policies/strategies about large class teaching. University faculties of education, and in-service teacher colleges were selected randomly and were also contacted. The questionnaire invited respondents to identify any projects known to them, and these suggestions were followed up. Some of the organisations were contacted by telephone, and the questionnaire was used to structure the interviews.

Sample

A total of 110 institutions, organisations and schools were approached. Table 7 below categorises these and summarises the responses:

Table 7: Summary of Survey of South African Projects

Type of institution/organisation	Contacts	Responses	+	-
NGOs	45	22	10	12
Universities	5	4		4
Colleges of education and in-service teacher colleges	55	8	1	7
Private and public schools	5	3	3	
Total	110	37	14	23

Findings and Discussion

Annex 1 contains details of the projects which were identified.

The principal findings can be summarised thus:

- ✍ NGO projects are designed to facilitate effective teaching through the provision of teaching and learning materials (SMILE, MOLTENO); through the in-service training of teachers (ELTIC, SSERP, SEP, READ); by enhancing school governance, management and administration (DELTA Foundation); and through the establishment of "appropriate planning and administrative infrastructure for consistent teaching programmes" (DE'VED). Some NGOs have focused on teaching and learning in rural and farm schools. Attempts are underway to encourage co-operative/team teaching and learning, and the use of teacher assistants.

- ✍ NGOs which are running projects, operate these in more than one province and they work with thousands of teachers and pupils in various schools.

- ✍ Innovations at school level focus mainly on collaborative teaching and learning, space creation and the use of flexible time-tables. The use of interactive technology was reported by a private school.

- ✍ In the exception of administration and management innovations, the range of innovations in place target specific levels of schooling and/or subjects. It is unlikely that one classroom-based innovation could be implemented across all subjects and levels of schooling.

- ✍ It was indicated in some responses that large class teaching has been directly and indirectly addressed by some NGOs and colleges of education in their PRESET and INSET programmes.
- ✍ Some of the organisations and institutions which replied that they had no projects at present, indicated that they are in the process of planning them, although it was not yet clear what kind of interventions they would put in place to enhance learning and teaching in large classes.

SECTION SIX: CONCLUDING REMARKS

Although the issue of class size and pupil achievement is a matter of popular debate, there is, perhaps, a surprisingly small corpus of research literature which is devoted to the relationship between the two. Those specific research projects which have been conducted, have been criticised because of the methodologies they have used, and many of the papers and reports cited in this survey, have recommended the need for more systematic research.

Based on the literature survey, the following concluding comments are put forward:

- There is no simple, and clear-cut correlation between class size and pupil achievement. Pupil attainment is affected by a number of factors, and there is a complex relationship between a range of variables.

- Attitudes towards class size are shaped by teachers' perceptions and experience. Large classes pose greater challenges for teachers, and can affect morale adversely. With classes of 20-50 pupils, there is scant evidence that marginal reductions in class size will affect pupil performance in a positive way.

- Pupil achievement is influenced more by effective teaching than it is by the number of pupils in a class.

- Reductions in the numbers of children in classes will require additional teachers; this is beyond the resources of many countries, and a higher priority should be given to strategies other than reducing class size to improve pupil performance.

- Where smaller classes might be feasible, they should be targeted at younger children and those with learning difficulties.

☞ Experience in different parts of the world suggests that policy responses to the issue of large classes have tended to be ad hoc, and have not been under-pinned by rigorous empirical research and/or coherent policies. International best practice suggests that the most cost-effective interventions are those which revolve around assisting teachers to be more effective, rather than class size reductions.

☞ A number of factors have influenced class size in South Africa and will continue to do so. Realism suggests that Large classes will be a feature of most primary and secondary schools for the foreseeable future. Improvements in quality, and pupil achievement, will need to be sought through the provision of adequate teaching and learning materials, improved training for teachers, and strategies to improve classroom management and teaching practices.

☞ Within South Africa a special factor that will need to be accounted for in policy formulation relates to physical resources, and particularly the size, and capacity of classrooms. There is a need to consider not only additional construction, but the more imaginative use of space.

SECTION SEVEN: IMPLICATIONS FOR TEACHER DEVELOPMENT

Because the literature review reveals that the most important measure is to improve teachers' attitudes to large classes and strategies for dealing with them, there are considerable implications for teacher development at a variety of levels.

1. Management Training of Principals

Management training for principals should include a substantial element on time-tackling which should focus on

-   innovative time-tabling arrangements which allow for team trading with theme lectures to larger groups and tutorials with smaller groups
-   special tuition for small target groups who can be temporarily removed from their ordinary classes
-   redesign and innovative use of physical space/facilities
-   an appropriate balance between contact time with large classes and time for preparation and marking
-   maximising teaching/learning time in the annual school calendar and time-table
-   the effective administration of text book loan systems

2. INSET for Teacher Educators

Inservice education for teacher educators which aims to `inculcate' positive attitudes to the reality of large classes in teacher education providers and schools. Training in effective strategies for dealing with large groups of learners should be developed. These could include: teaching/learning strategies based on co-operative learning, resource-based learning, independent work; a range of assessment strategies like self-evaluation, peer evaluation; high-level multiple choice tests, portfolio assessment; and classroom management strategies which facilitate efficient use of class time and promote time-on-task. Moreover, teacher educators must be sensitised to the special challenges of multi-lingual and multi-cultural large classes.

Once they have acquired these skill.~, the teacher educators will be able to train student teachers to develop them also.

3. PRESET for Student Teachers

Preservice teacher education should include components which develop positive attitudes to large class teaching through the findings of international research and the inclusion of comparative studies to explore the experiences of countries like South Korea and Japan.

In education, student teachers should be taught the same management, teaching/learning and assessment strategies as teacher educators. Moreover, courses in teaching multi-lingual and multi-cultural classes should be given to student teachers during their practical teaching experience so that they can handle large classes which will increasingly have these characteristics.

4. INSET for Serving Teachers

Similarly INSET should be provided for serving teachers which focus on attitudinal change, appropriate management, teaching/learning materials and assessment strategies for large classes as well as appropriate methodologies for dealing with large, multi-lingual and multi-cultural, classes.

5. Teaching/Learning Materials

Effective large class teaching depends critically on the availability of adequate teaching and learning materials. Provincial departments must make every effort to ensure that at least every child has access to basic text books. In addition, user-friendly teaching/learning materials should be developed which will facilitate group learning and independent study.

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ANNEXURE

Annex 1

South African Projects

The table below summarises the details of information gathered through the survey on large class teaching projects or innovations. The summarised information is based on positive responses only.

Non-Governmental Organisations					
Name	Operation Area(s)	No. of schools involved	Level(s) of Schooling	Subject focus	Intervention strategies / Innovations
Read Education Trust	7 provinces excluding the Northwest and the Northern Province	± 500	Grades 1-8	Language across the curriculum	* Learning materials * Video support
SMILE	Gauteng, Western Cape, Northwest and KwaZulu Natal	61	Grades 3-7	English as a Second Language (ESL)	* Standardised learning materials * Co-operative teaching and learning
ELTIC Education Trust	Gauteng and Northwest Farm schools	24	Grades 1-7	All	* Standardised learning materials * Co-operative teaching and learning

Science Education Project (SEP)	Mpumalanga, Northern Cape, Northwest and Northern Province	± 1000	Grades 8-12	General Science, Biology and Chemistry	* Flexible time-tables * Standardised learning materials and self-developed science kits. * Teacher assistants * Co-operative teaching and learning
DEVED Trust	Gauteng	14	Grades 5-12	All subjects	* Flexible time-tables * Co-operative teaching and learning
Centre for Cognitive Development (CCD)	Northern Province	46	Grades 1-7	All subjects	* Co-operative teaching and learning * Classroom re-organisation
Molteno Project	All provinces	± 12000	Grades 1-6	Language across the curriculum	* Classroom re-organisation * Standardised learning materials * Teacher mentoring
Co-operative Organisation for the Upgrading of Numeracy Training (COUNT)	Gauteng, Northwest and the Eastern Cape	± 64	Grades 1-7	Mathematics	* Integrated approach to teaching and learning * Co-operative teaching and learning

Secondary Schools' English Research Project (SSERP)	Gauteng, Northern province and KwaZulu Natal	± 325	Grades 10-12	English	* Standardised learning materials * Co-operative teaching and learning * Classroom re-organisation * Interactive media such as tape recorders
DELTA Foundation (Institute for Development, Planning and Research)	Eastern Cape	10	All levels of primary and secondary schools	....	* By enhancing school governance, management and administartion.

Schools

Name	Operation Area	Level of Schooling	Subject focus	Intervention strategies / Innovations
Northwest Primary	KwaZulu Natal	Grades 1-7	All subjects	* Co-operative teaching and learning * Tutoring by high school students * Space creation - e.g. reading room * Flexible time-tables
St Albans College	Gauteng-Pretoria	Grades 8	Maths, Biology and Geography	* Co-operative teaching and learning * Flexible time-tables * Reduction of teacher-pupil contact time
Westerford High	Western Cape	Grades 11	Mathematics	* Cooperative teaching and learning * Space creation

TEACHING IN MULTILINGUAL CLASSES:
A REPORT OF A LITERATURE SURVEY
COMMISSIONED BY
THE JOINT EDUCATION TRUST (JET)
JUNE 1997

Acknowledgements

List of Acronyms

CUMSA	-	Curriculum Model for South Africa
DET	-	Department of Education and Training
ESL	-	English as a Second Language
INSET	-	In-service teacher education
JET	-	Joint Education Trust
NGO	-	Non-Government Organisation
PRESET	-	Pre-service training
UCT	-	University of Cape Town

CONTENTS

SECTION THREE: SOUTH AFRICAN LITERATURE AND DEBATE

1.   Introduction

2.   South African research into bilingual educational programmes

      2.1 Afrikaans/English bilingual/dual medium programmes

      2.2   Subtractive bilingual programmes in African schooling

      2.3   Assimilationist processes in non-racial private/Model C schools

      2.4   Case studies of effective teaching practices in multilingual classes

4. Summary of the review of the South African literature

SECTION FOUR: SURVEY OF THE SOUTH AFRICAN PROJECTS

1. Introduction

2. Summary of the survey of South African Projects

SECTION FIVE: CONCLUDING COMMENTS

1. Introduction

2. Summary of the literature survey's findings

3. Implications for teacher in-service development in South Africa

REFERENCES

SECTION ONE: INTRODUCTION

1.   The purpose of the report

This report on teaching of multilingual classes has been commissioned by the Joint Education Trust (JET). The report forms part of a range of comprehensive source documents which are being compiled by JET for the national Department of Education. The source documents will be used to inform the work of the President's Education Initiative as well as national and provincial education departments in their policy and planning for teacher in-service development.

2.   The rationale for the report

2.1   A brief history of language-in-education policies in apartheid South Africa

Since the 1950s there has been a negative history of the politics of language policy in education in South Africa. This is largely because language-in-education planning during the apartheid era was a central component of segregated and unequal education. For example
- the application of the principle of mother-tongue medium of instruction formed part of the state's deliberate strategy of ensuring the separation of Afrikaans-, English- and African language-speaking children in schools (Heugh, 1995b: 43);
- under Bantu Education, a policy of mother-tongue instruction was a means of systematically discriminating against speakers of African languages and excluding them from access to well-paid jobs and economic power by denying them access to English (ibid); and
- under Bantu Education, mother tongue medium of instruction for the first eight years of schooling created negative perceptions about African languages and their instrumental worth in education' because it was coupled with a cognitively impoverished curriculum which contributed to high failure rates (ibid).

In 1976. the state's attempt to enforce the implementation of its policy of teaching half of the senior school subjects in DET schools through the medium of Afrikaans and the other half through English contributed to the 1976 student uprisings (ibid). African students protested against Bantu Education', more specifically against the impositions of Afrikaans as the medium of instruction, because they recognised that this was a deliberate attempt on the part of the state to ensure that they were excluded from 'full participation in all spheres of public life' (Lockett, 1995:73).

One of the consequences of the 1976 uprisings has been that, since 1979, mother-tongue instruction in DET schools has been confined to the first four years of schooling. 13owever, the sudden transition to English medium of instruction in std 3 (grade 5) snakes it almost impossible for African-language speaking learners to cope with the demands of the syllabus after std 2 (grade 4) (ibid). Unfortunately this has contributed to the high drop-out rate of learners in DET schools, particularly at the end of std. 3.

Finally, the low status which African languages have in wider South African society today can largely be attributed to the privileging of English and standard Afrikaans as languages-in-education under apartheid. This, together with the dominance of English as the target language in African education and the lack of acknowledgement in education of the value of African languages has meant that African languages have remained underdeveloped in the education system (Luckett, 1995: 74) and therefore systematically underdeveloped by the previous language policy of the state.

2.2   South Africa's New Constitution and a new language-in-education policy

South Africa's New Constitution recognises that the country is multilingual by giving equal status to all eleven major languages.

The national Education Department has expressed its commitment to a new language-in-education policy which reflects values which are consistent with the Constitution. This commitment has been acknowledged by the Minister of Education through press statements such as the following:

In the multilingual policy envisaged by my Department, no language should be introduced at the expense of another. Learners' home languages, as well as the additional languages they wish to acquire, will all form part of a dual process of self-affirmation and cognitive development (14 November 1995 in ELTIC, 1997:17).

Furthermore, Ihron Rensburg, Deputy Director-General: Programmes, Department of Education, recognises the need for the implementation of a multilingual language-in-education policy to be actively pursued through
- the affirmation of the home languages of all learners;
- the belief in the potential equality of all languages to meet the demands of modern academic discourse;
- an appreciation of the learning resource that resides in the languages that children bring with them to the classroom (PRAESA, 1996:2).

2.3   Language policy options for multilingual education in South Africa and the implications for teacher development.

Although South Africa's New Constitution gives equal status to eleven main languages and the national Education Department has expressed its commitment to a new language-in-education policy, at present there is no indication of how a new multilingual language-in-education policy will be implemented in schools.

Kathleen Heugh (1993) of the Project for the Study of Alternative Education in South Africa claims that the implementation of three different multilingual language-in-education policy options would have very different outcomes. According to Heugh

- a subtractive and transitional-language-in-education policy where assimilationist processes in schools (when all learners, regardless of background, culture and language are expected to adapt to the existing ethos, culture and language of schools) would ensure monolingualism through the hegemony of English as the language through which social, political and economic rewards are accessible;

- a laissez-faire language-in-education policy which awards equal rights to all languages but makes little provision for securing language rights in a functional way so that implementation takes place along assimilationist or transitional or subtractive lines; l would also lead to monolingualism; and
- a third multilingual policy of additive language programmes2 (in which a second language is acquired without any weakening of learners' first language) are maintained throughout schooling to ensure that bilingualism3 develops and that linguistic diversity is highly valued.

Musket, (1993, in ELTIC,1997: 34) outlines four ways in which an additive model for bilingual education programmes could be implemented in South African schools:

1) One main. language (ie L1) is used for content subjects; another is taught as a subject:
2) Half of the curriculum is taught in one language, the other half in another language;
3) The two languages are used interchangeably in each lesson, as needed, in order to ensure effective learning as the lesson progresses;
4) The languages which the children bring with them to the classroom become the languages of learning. If the teacher is not fluent in all of those languages, then translation must be used in order to negotiate meaning. Parents, students and other teachers can help to facilitate this process. Other necessary languages are learned either through content subjects or as language subjects (ELTIC,1997: 34).

However, even in the absence of the adoption of an additive bilingual policy for the implementation of bilingual programmes, ensuring the effective implementation of a new language-in-education policy where multilingualism is valued will entail addressing a number of issues.

For example., one result of South Africa's new dispensation has been that there has been an influx of African-language speaking learners into traditionally 'white', 'Indian' and 'coloured' schools. However, there is growing concern that schools and teachers are insufficiently prepared to accommodate L1 speakers of African languages and that teachers are struggling to respond to linguistically diverse classes.

Secondly, in recent years, parents of children in ex-DET schools have been given the option of a straight-for-English approach from the first year of schooling. Although many parents recognise that proficiency in English is crucial to the future success of their children, most schools have opted for gradual transition to English as the language of learning by std 3. However, the poor English competency of many teachers in these schools combines with other factors to undermine teachers' mediation of learning.

Clearly, the implementation of any new language-in-education policy holds implications for both pre- and in-service teacher education especially in terms of the development of programmes which contribute to the development of 'the knowledge, values and skills needed to manage multilingual classes effectively'(ELTIC, 1997: introduction).

3,   The scope of the report

This report includes

a)   A survey of the international literature and South African literature on key studies into bilingualism; bilingual educational programmes; and case studies of effective pedagogical practices in multilingual classes.

      The main focus of the survey is on research into bilingual educational programmes, in particular on the effectiveness of the three main models for bilingual education in compulsory primary and secondary schooling. The review also includes research studies which provide insights into relevant and effective strategies and methodologies for teaching in linguistically diverse classes.

      Relevant international and local research findings and theories on bilingualism which appear to have implications for the type of bilingual programmes run in schools have been included in the survey.

b)   A review of some of the South African organisations which provide support or resources for in-service teachers in multilingual classes.

c)   A short, concluding discussion which focuses on the implications which international and local research findings have in terms of planning for teacher in-service development in South Africa.

SECTION TWO: THE INTERNATIONAL LITERATURE

1. Introduction

This section reviews pre and post 1960s approaches to research into bi/multilingualism as well as international research into bilingual educational programmes in developed and developing countries.

2.   Approaches to research into bilingualism

A review of the international literature on research into bilingualism 6 reveals that since the beginning of the twentieth century researchers have tried to show that there are differences between bilingual and monolingual children.

2.1   Pre 1960s research

Most American and European research conducted during the height of colonial times, when bilingualism was viewed negatively, was based on the assumption that bilingual speakers were inferior to monolingual speakers. As a result, differences in research focuses prior to the 1960s depended on whether researchers were trying to demonstrate the negative effects of bilingualism in terms of intelligence or in terms of academic achievement (Hakuta, 1986; De Klerk 1995:53-54).

However, most of the pre 1960 research is not regarded as sufficiently rigorous for example, verbal 1 0 tests were often set in English only and statistical tests were not performed (Baker, 1993:109). The research also failed to take into account the fact that bilingual and monolingual subjects came from different socio-economic backgrounds. In addition, subjects were not matched according to their levels of bilingualism. Although some later researchers tried to control these variables, they tended to use samples which did not allow for generalisations (De Klerk 1995:59).

2.2   Post 1960 research

An alternative way of viewing bilingualism was created in 1962 when the findings of a Canadian study indicated that bilingual speakers enjoyed a number of cognitive advantages over monolinguals. The study was conducted by Elizabeth Peal and Wallace Lambert and used two groups of ten-year-old children from middle class backgrounds as subjects. The research revealed that the bilinguals performed better on verbal and non-verbal intelligence tests and demonstrated superior concept formation and mental flexibility (Hakuta, 1986: 39-40, in Koopman, 1997).

Trends in international research over the last 30 years indicate a similar positive correlation between bilingualism and cognitive functioning. However, most of this research has come from First World contexts such as Europe or North America. For example research by Doyle et al (1978) and Bialystok (1987); (in Baker 1993) indicates that
• abstract thinking might come more easily to bilingual learners;
• bilingual speakers have greater control of language processing; and
• bilingual speakers have an enhanced ability to analyse their knowledge of language (De Klerk, 1995: 54-53).

Research using Torrance's 'Uses of an Object' test (in Baker 1993:118-9) reveals that bilingual children score better than monolingual children where achievement in modern day versions of IQ tests is associated with creative, imaginative and open-ended thinking skills (De Klerk, 1995: 53-54).

Research by Genesee, Tucker and Lambert (1975 in Baker, 1993:125) suggests that bilingual children may be more communicatively careful in sensitive social situations (De Klerk, 1995: 53-54).

This type of research has served to raise the questions as to why bilinguals may have a cognitive advantage over monolinguals.

A longitudinal study by Rafael Diaz and Kenji Hakuta (1986) which aimed to test the hypothesis that those who are more bilingual should score higher on measures of cognitive ability than those who are less bilingual, revealed a positive link between bilingualism and non-verbal intelligence. However the study, which made use of over three hundred low-income Puerto Rican primary school children as subjects, was able to show evidence of only a weak link between "metalinguistic awareness and bilingualism" (Hakuta, 1986 :39-40, in Koopman, 1997).

Hakuta concluded that the positive effects of bilingualism or metalinguistic awareness (consciousness of language and language use) cannot occur until a particular level of proficiency is attained. This is referred to as the thresholds theory.

The theory suggests that there is a link between cognition and the degree of multilingualism: in other words, you have to be 'good enough' in the two (or more) languages to experience the cognitive gains (ELTIC, 1997:89).

These research findings on bilingualism have implications for the different types of bilingual educational programmes discussed in the following section.

3.   International research into bilingual educational programmes

3.1   International research into bilingual educational programmes in developed countries.

Three sorts of bilingual educational programmes are evident from the literature:
•   immersion programmes or a straight-for-target language model where the entire school curriculum is taught through the medium of the target language;
•   subtractive-language-in-education programmes (where the learners' first language is abruptly replaced by the target/dominant language - for example, in South Africa learners most DET schools were instructed in Ll until Std 3 when they were suddenly expected to cope with the demands of learning all their subjects through the medium of English); and transitional-language-in-education programmes (where the learners' first language is grade:, 'y replaced by the target/dominant language - for example where there is a slow shift from. Ll to L2 from the onset of schooling or over 3-4 years). When (sudden/gradual) transition occurs early on in the schooling process (for example in the first or second year) it is known as an early exit model; where (sudden/gradual) transition takes place after the third year of schooling, it is sometimes known as

a late-exit: model. The goal in subtractive/transitional programmes is always a single, target language, to function as the dominant language of learning;

• additive bilingualism where a second language is acquired without any loss or weakening of learners' first language and where Ll is never replaced as a language of learning by more than 50% of learning and teaching time. In other words, there is no question of there being an exit point from Ll as the goal is proficiency in two target languages, Ll and L2. For example, dual medium programmes where half of the curriculum is taught in one language, the other half in another language, or when two languages are used interchangeably in each lesson, as needed.

3.1.1 Immersion programmes

Overall, evidence of bilingualism through second language learning and foreign language learning in schools in the U.S.A. and Britain is not positive. According to Baker (1993) (In ELTIC, 1997: 65) "in the US, less than 1 in 20 children become bilingual following second language instruction".

However, successful results have been produced by "early immersion" programmes in Canada and the U.S.A. with "subgroups that are most secure in their ethnic and linguistic identity," but most in need of knowledge about other ethnic and linguistic groups (Lambert, 1982:96 -99; Hakuta 1986: 227-228).

In Canada, English speaking Canadian children, with no/very little French language experience in their homes or communities, attend kindergarten or grade 1 classes that are conducted by monolingual French speaking teachers using only the target language (French). The teacher focuses on subject matter mastery and language learning is made incidental. In grade 2/3 English is introduced for one period a day. By grade 4 particular subject matters are taught in English (by a separate English speaking teacher) so that by grades 5 and 6 almost 60% of instruction is in English (Lambert, 1992:96).

Research into these programmes reveals that learners achieve "a level of functional bilingualism that could not be duplicated in any other fashion short of living and being schooled in a foreign setting" (ibid).

Furthermore, learners achieve this level of competence
• without detriment to home-language skill development;
• without falling behind in the all-important content areas of the curriculum, indicating that the incidental acquisition of French does not distract the students from learning new and complex ideas;
• without any form of mental confusion or loss of normal cognitive growth; and
• without a loss of identity or appreciation for their own ethnicity (ibid:98). They also "develop a deeper appreciation for French Canadians" (ibid).

In the 1970s a modified immersion programme based on the Canadian model was used to immerse middle class English speaking learners in a minority language (Spanish) in the U.S.A. This programme also produced positive results (Hakma, 1986:228, in Koopman, 1997). However, the success of these programmes has been attributed to the fact that, even though learners are immersed in a minority language, there is very "strong support for their (own) language at home, in the media and society in general" (De Klerk, 1995: 57). Furthermore, most learners

come from middle class professional homes where a high degree of literacy is evident.

3.1.2 Subtractive/ transitional language-in-education programmes

A review of the literature on research into American, Canadian and European bilingual educational programmes reveals that the goal of the majority of the programmes is sufficient proficiency in a dominant language (usually English or the official language of the host country) for language-minority speakers (such as immigrants) to be taught entirely in the target language.

A large number of these research studies has focused on the use of the subtractive/transitional-language-in-education or bilingualism model where the first language is initially used but is suddenly or gradually phased out in favour of the target language.

For example, research in a school in Holland using an experimental group (consisting of Turkish and Moroccan learners who received a large part of their instruction in their mother tongue for the first two years of school) and a control group (consisting of learners in a regular Dutch school), revealed that the experimental group not only performed better academically than the second control group but also had fewer social-emotional problems than the control group (Appel, 1988:72-77, in De Klerk, 1995: 60)

The literature reveals that overall the research on subtractive/transitional bilingual programmes which has yielded positive results in Europe and North America has taken place in First World contexts where the supporting conditions for the acquisition of the target language/s are in place. For example

- the dominant or target language/s are very established;
- learners are immersed in a dominant language environment;
- teachers are competent in the learners' LI and the target language; and
- minority (language) groups have to acquire the dominant language/s in order to survive.

3.1.3 Additive bilingualism

The psycholinguistic theory behind the third model for bilingual education programmes - 'additive bilingualism' has been developed mainly by a Canadian researcher Jim Cummins (1979). The theory is that there are two aspects of language proficiency namely, Basic Interpersonal Communicative Skills (BICS) and Cognitive/Academic Language Proficiency(CALP). BICS refers to context embedded/ everyday language and CALF refers to decontextualised language which is used in more cognitively demanding school-type tasks.

Cummins, together with other researchers, conducted research into why special support programmes offered to English Second Language learners in Canadian schools did not seem to work. Research findings suggested that the support programmes were not addressing learners' problems effectively because they were offering BICS which 'has a context which helps to convey meaning' and which is quite different from CALP which usually 'has little or no context to support meaning' (ELTIC, 1997: 93).

Cummins' 'interdependence hypothesis' states that there is an underlying cognitive proficiency which allows cognitive skills from one language to be more easily transferred to a second language. However, his research and that of researchers such as Hakiata (1986) suggests that the level of academic competence learners reach in a second language depends to some extent on the stage of development reached in their first language. The research also suggests that it is critical for learners learn to think and to function in their first languages up to the CALP level if they are to reach academic proficiency in a second language as well (Lockett, 1995:74; Young, 1995a:66).

Between 1983 - 1991 David Ramirez conducted a key study of bilingual education in the U.S.A. which appears to confirm Cummins' theories and findings. Ramirez' longitudinal study assessed the impact of English-instruction on 2 000 Spanish-speaking learners across three different types of bilingual programmes in 51 schools (De Klerk, 1995 :57).

The learners were divided into three groups: one group was taught in English from the beginning; (a straight-for-English approach). Another group had forty minutes of instruction in Spanish per day and the rest in English for two or three years (an early-exit-bilingual approach). The last group had forty percent instruction in Spanish per school day and a very gradual and supported introduction to English until the end of the sixth year of school (a late-exit-bilingual approach). (Versfeld and Dyer, 1997:3-4).7

The study's findings revealed that
• the first two groups kept up with their English-speaking peers for the first three years and then increasingly began to lag further and further behind, especially in subjects like Maths;
• the group with most Spanish instruction were the most successful group and did much better in their content subjects;
• by the end of the study the English results of the third group were overtaking the other groups' English results and had advanced above the norm on a graph representing the `norm' for their English-speaking peers (ibid).

The study demonstrates that while children may acquire enough English to cope in social situations, once school work becomes more conceptually challenging (from std 2 onwards), learners do not have the L2 skills to cope (Versfeld and Dyer, 1997:3; De Klerk, 1995: 57).
Both Cummins' and Ramirez' findings are significant in that they suggest that, under ideal conditions, it takes learners entering bilingual programmes at the age of 6-7, between five/six to seven/eight years of learning to develop adequate levels of academic proficiency in a second language for L2 to be used as the sole language of learning.

Ramirez recommends that, under optimal conditions, L1 is maintained right throughout schooling for at least 50% of instructional time. In other words the research findings indicate that, under the optimal conditions for L2 acquisition, learners need a minimum of five years of L1 maintenance (Heugh, 1995: 47). In terms of bilingual educational programmes, the implication of these findings and recommendations is that, not only are additive bilingual models beneficial as far as first language maintenance is concerned, but they may also be the best possible approach to second language acquisition.

Also perhaps of interest is the fact that in some developed countries where second languages (for example French or English) enjoy enormous prestige but where optimal conditions for language acquisition do not exist, first language/s are maintained to the end of schooling. For example, in Japan learners study all their school subjects (except other languages) through their first language. Textbooks and other material are available in the L1l in spite of the fact that most learners learn English as a second language (De Klerk, 1996:2).

3.1.4   Case studies of effective teaching practices in multilingual classes

No case studies which provide details of how teachers' classroom practices assist learners' in developing bilingualism could be found in the literature.

One research project which demonstrates ways in which classroom practices assist learners with conceptual development is a project entitled "Language and Learning: Effecting Change through collaborative research in multilingual schools". Between 1985 and 1989 Wells and Chang-Wells (1992) conducted a study which focused on ways in which teachers' classroom practices encourage or suppress the development of literate/ effective thinking in linguistically and culturally diverse classes.

The study was conducted in four schools serving multilingual communities in Toronto, Canada, where the majority of children in the schools came from working class backgrounds. The aim of the study was to establish how teachers could set about providing children in multilingual classrooms with the maximum opportunities to use whatever linguistic resources they have as a tool for learning and for communicating their understanding to others.

The study claims that equal outcomes for all children regardless of cultural and linguistic background can be maximized through
• collaborative talk (the type of talk that has. literate consequences) in teacher-learner interactions;
• identifying tasks that are cognitively demanding and most likely to promote productive and thoughtful, contextually embedded talk; and
• paying attention to task-related discourse and demonstrating appropriate forms and functions of discourse.

However, the researchers acknowledge that the following factors act as constraining contextual conditions:
• the number of learners who need to be supported;
• the constraints imposed by the organisation of the school day;
• issues of group collaboration;
• substantive issues which may be raised by the tasks themselves, such as the limited resources of personal knowledge of teachers themselves and limited resources such as the books, other material and equipment :fiat teachers have to draw on.

3.2   International research into bilingual educational programmes in developing countries other than South Africa

The survey on bilingual educational programmes in developing countries reveals that there is some overlap with developed countries in that there are usually

language/s which enjoy enormous prestige or status in developing countries (such as English in South Africa).

3.2.1   Immersion or straight-for-target language models

The literature reveals that, in spite of the mainly English/French medium programmes in Anglophone and Francophone countries in Africa, there is only a 10-20% competency in the target language (Heugh, 1995:46). Furthermore, a report by David Langhan (1993) for National Education Policy Investigation on medium-of-instruction policies in African countries, concluded that "there in not a single known case of a successful straight-for-L2 policy on a national scale anywhere on the continent. This includes English, French and Portuguese contexts" (in De Klerk, 1995 :57).

However, indications are that second language learning through immersion programmes appears to have been relatively successful in "Small Young Countries" or "smaller :nation-states coming into their own in this century" (Pakir, 1993:73) such as Singapore.

For example, a survey across 35 countries into the average reading literacy levels by the International Association for the Evaluation of Educational Achievement (IEA) produced some interesting findings on English Second Language programmes in Singapore. The survey revealed that learners achieved very high levels of literacy in spite of the fact that the language of instruction is not the first language of 70% of the learners (Elley, 1992:xi; 17-40, in Koopman, 1997).

The extent of support for learners' home language/s is not made explicit through the survey. However, two matters of major concern in Singapore are "the noticeable increasing divide between the so-called Chinese-educated vis-a-vis the English educated" (Pakir, 1993:81-82) and the fact that cultural roots, traditional values and belief systems "may have been sacrificed somewhat along the way" (ibid:87).

3.2.2   Subtractive/ transitional language-in-education models

Most contemporary critique in the international literature on bilingualism focuses on the failure internationally of subtractive/ transitional bilingual education programmes, particularly in Third World contexts (Skutnabb-Kangas & Cummins, 1988; Phillipson, 1988; Ramirez et al, 1991; and Tollefson, 1991). For example, the central thesis of James Tollefson is that many of these programmes are designed for failure. He argues that this is structurally necessary because free market economies rely on cheap labour from marginalised populations who do not have use of the dominant language system (Tollefson, 1991, in Heugh, 1993: 29).

3.2.3   Additive bilingualism

Although no studies were found in the literature which provide details on additive bilingual models in developing countries other than South Africa. The survey reveals that few if any of the 'optimal' supportive conditions for the acquisition of dominant/target language/s which exist in First World contexts exist in Third World contexts, particularly in rural areas where the supportive conditions are usually non-existent (Heugh, 1995:47).

3.2.4   Case studies of effective teaching practices in multilingual classes

No studies of actual practices in multilingual classrooms could be found in the literature.

4. Summary of the review of the international literature

Trends in the review of international research conducted into bilingual educational programmes indicate that:
- immersion programmes are successful only when there is very strong support for learners' home language and when learners come from middle class professional backgrounds;
- subtractive/transitional-language-in-education programmes are successful only when the optimal supporting conditions for the acquisition of the target language are in place;
- when optimal supporting conditions do not exist, immersion and subtractive/transitional bilingual programmes appear viable for the first years of schooling however, once school work becomes more conceptually challenging (for example in std 2), most learners do not have the L2 skills to cope;
- additive bilingual programmes appear to be not only beneficial for first language maintenance, but may also be the best possible approach to second language acquisition.

The notions of additive bilingualism and subtractive bilingualism seem to be confirmed by international theories and research on bilingualism which indicate that, although there is a positive link between bilingualism and cognitive functioning, the positive effects of bilingualism cannot occur until a particular level of language proficiency is attained.

Only one example of research into the ways in which teachers' classroom practice assists student performance in multilingual classrooms was located, this study suggests that student performance can be improved through:

- improved teacher-learner interactions;
- the use of well-designed, cognitively demanding and contextually embedded tasks; and
- the development of school-type/task-related discourses.

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1   Heugh cites as an example the use of the transitional-language in education model favoured by the World Bank and the NEPI (1992) report on language where the first language is initially used but is gradually phased out (subtracted) in favour of the dominant language. The replacement of the language best known by a learner by another before the learner has 'mastered' the second language well enough for it to be replaced as a language of learning, is known as subtractive bilingualism. The ultimate goal of subtractive/transitional models is to replace learners' Ll as the language of learning with the target/dominant language.
2   The problem about how the terms 'additive' and 'subtractive'/transitional' bilingual programmes has been used in South Africa has been a vexed one. particularly over the last five years. Models which allow gradual or delayed transition to English can never be described as additive as there is no question of there being any exit point from Ll in additive bilingual models (Heugh pers comment). The ultimate goal of additive bilingual models is not one but two target languages. Ll and L2.
3   For the purposes of this report the term 'multilingual' is used to refer to linguistic diversity. Thus 'multilingual' classes are linguistically diverse classes, and a language-in-education policy which promotes

'multilingualism' is a policy which recognises and values linguistic diversity. The term `bilingualism' is used to refer to the ability to use two or more languages as a means of communication for all purposes and to switch from one language to the other if necessary. Thus 'bilingual' education programmes are designed to develop learners' proficiency in at least two languages.

4   For example, in 1994 it was reported that, although provision had been made in the Curriculum Model for South Africa (CUMSA) for Xhosa as a compulsory examinable subject for std 3 - 7, few Cape Education Departments schools were able to offer Xhosa as a third language for std 617 and even fewer schools (approximately forty) offered Xhosa as a full matric subject (Kruger,1994, 30).

Furthermore, in most of these schools it is the learners who, regardless of their background, culture and language, are expected to adapt to the existing ethos, culture and language of the school.

5   The invitation which the DET presented to parents to choose a language-in-education model did not include any additive bilingual models other than the unpopular mother-tongue throughout model which was linked to Bantu Education. The gradual transition to English was the most radical of the options presented to parents (Heugh pers. comment).

6   For the purposes of this report the terms 'multilingual' is used to refer to linguistic diversity. Thus 'multilingual' classes are linguistically diverse classes, and a language-in-education policy which promotes 'multilingual ism' is a policy which recognises and values linguistic diversity. The term 'bilingualism' is used to refer to the ability to use two or more languages as a means of communication for all purposes and to switch from one language to the other if necessary. Thus 'bilingual' education programmes are designed to develop learners' proficiency in at least two languages.

7   In other words, in each of the models under scrutiny during the study, English was the ultimate goal.

SECTION THREE: THE SOUTH AFRICAN LITERATURE

1. Introduction

In this section literature on early South African research into bilingualism as well as South African research into bilingual educational programmes is surveyed.

The review reveals that there have been a number of significant South African research initiatives which have tested the local relevance of international theories and findings in terms of bilingual education.

For example, one of the earliest studies on metalinguistic awareness was a South African study involving Afrikaans/English bilinguals. The study conducted in 1972 by Ianco-Worrall (in Baker 1993:121) involved 30 bilinguals aged four to nine. This group was matched with a group of monolinguals on IQ, age, sex, social class and school grade. The study tested sound and meaning separation.

Findings revealed that in experiments the four- to six-year old bilingual subjects tended to respond to word meaning rather than to sound, indicating faster semantic development than their monolingual peers who tended to respond more to the sound of the words. The explanation given for this is that bilingualism gives a child awareness of the arbitrary relationship between objects and their labels (De Klerk, 1995:54).

2.   South African research into bilingual educational programmes

Most South African studies of language issues in education have been conducted in one of the following three contexts
•   Afrikaans/English bilingual/dual medium programmes in `white' schools in the 1930s and 40s;
•   subtractive bilingual programmes in African schooling in the 1980s; or
•   assimilationist processes in non-racial private/model C schools in the 1990s.

2.1   Afrikaans/English bilingual/dual medium programmes

Two South African studies into Afrikaans/English bilingualism conducted in 1938 and 1940 both showed results which are in line with the positive findings on bilingualism which were only to become widely accepted after 1962.

In 1938, the National Bureau of Educational and Social Research conducted a survey into Afrikaans/English bilingualism in home and school which involved collecting data from 18 000 pupils across South Africa (De Klerk 1995:58).

Some of the main findings of the investigation were published in the Bilingual School (Die Tweetalige Skool) by the CNA in Johannesburg 1943 and by Longman in the UK in 1946. The results of the survey revealed that
•   bilingual schools of all models facilitated learning of second language;
•   bilingual schools encouraged communication and cultural exchange between Afrikaans and English speaking children;
•   there was no evidence of adverse effects of two languages on children's intelligence (ibid).

This study was regarded by international experts at the time as `the most comprehensive and authoritative study of the relations between education and bilingualism thus far made'(Malherbe 1977:65, in De Klerk, 1995: 58). Unfortunately, all sheets containing the statistical tables of the data gathered from each of the 18 000 pupils were destroyed in 1945.

In the early 1940s a second large scale study of Afrikaans/English bilingualism was conducted in the Cape, under the direction of H. A. Reyburn from the University of Cape Town. A controlled experiment was conducted with four groups of pupils matched according to the same average intelligence. Two groups were in the Afrikaans Jan van Riebeeck High School and two groups were in the English Rondebosch :Boys' High School. At each school one group was taught entirely in one medium (Afrikaans/ English) and the other through teaching all subjects on alternate days in English and Afrikaans with short summaries in the language used the previous day (De Klerk, 1995: 58).

Comparison of results of standardised tests conducted over a number of years in both schools revealed that learners in the alternating dual-medium classes had shown better progress than those taught exclusively through one medium (Malherbe 1977:93, in De Klerk, 1995:58). The results of this study were later denounced by the National Party.

2.2   Subtractive bilingual programmes is African schooling

A key South African research project into bilingual education in black primary schools is the Human Sciences Research Council's Threshold Project (MacDonald, 1990). The Project promoted versions of late-exit transitional bilingualism[1] and is significant in that it bears out Cummins' linguistic interdependence theory (Young, 1995a:67), and reveals the ill effects which subtractive bilingualism has had in the context of education for black children in apartheid South Africa.

The Project's name is derived from Skutnabb-Kangas and Cummins' `threshold' hypothesis. The study focused on problems experienced by junior primary learners in DET schools in Std 3 when they were expected to cope with the demands of suddenly `crossing the threshold' to learning all their subjects through the medium of English.

The research revealed that sudden transition to English in Standard 3 resulted not only in most learners resorting to rote learning content which they did not understand, but also in many learners failing to achieve what Cummins calls 'Cognitive/academic language proficiency'(CALP) in either language. These findings support Cummins' `linguistic interdependence hypothesis' that the Ll and L2 competence of learners can develop independently of each other up to the BICS level (in this case for the first four years of schooling) but work together interdependently at the CALP level (Young, 1995a:67-68; French, 1990:23-25).

The research also revealed

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1 Debates about additive bilingual models had not yet re-appeared in South Africa at this stage (Heugh pers comment).

- that teachers' classroom practices and authoritarian notions of teaching and learning worked against learners achieving adequate cognitive development, especially in science and maths (French, 1990:23-25);
- poor practices in the writing and prescription of text-books. In particular, a huge difference between the estimated 800 English words learners would at best have learnt in the first four years of schooling, and the approximately 5 000 they were presumed to know if they were to understand their Std 3 English text-books (Langhan, 1993; French, 1990:23-25).

2.3   Assimilationist processes in non-racial private/Model C schools.

A number of more recent South African studies into bilingual education have focused on assimilationist programmes in non-racial/model C schools. Although many of these studies recognise that the `openness' of (ex) Model C schools and private schools is problematic, researchers have recognised that these schools can be used as a resource to explore the possibilities of de-segregated schooling in South Africa (Walters, 1994).

Research by Monica Bot (1991:72-73, in Walters, 1994:185-186) reveals that the most common types of curriculum changes implemented to facilitate the successful reception and retention of ex-DET pupils in public and Model C schools are

- bridging work (for example, around observed strengths such as oral strengths);
- remedial programmes (for example, extra English/Maths);
- additions to subjects (for example the use of alternative textbooks or the introduction of African languages); and
- an `integrated studies' model using a skills-orientated approach.

In 1988 Brenda Leibowitz (1991) of Rosebank House College, a private college in Cape Town, carried out a case study for her Masters' degree which involved a linguistically diverse std 9 class who were being prepared to write matric English First Language examinations. A number of the L2 learners in the class had come from DET schools in std 8/9 and many of adaptations listed above were made to accommodate both L1 and 2 learners in the English class.

Information gathered through interviews and questionnaires with each student revealed that both L1 & 2 learners benefited from a linguistic, intellectual and cultural point of view and in terms of the breaking down stereotypical views. However, L2 speakers experienced discouragement over their inability to cope with the academic and linguistic demands of the English course. Furthermore, in spite of the fact that L2 learners experienced improvement in English communicative and academic competency and spoke and wrote better English "than if they had remained at DET schools", Liebowitz reports that most of them failed matric English First Language Higher Grade.

In an attempt to establish what language and learning difficulties ex-DET pupils are likely to encounter on entering traditionally `white' schools, Walters (1994) uses available research conducted into what a typical ex-DET learner's prior learning and experience might have been (MacDonald, 1990; Langham,1993; Southey, 1991) to construct the kind of profile a typical std 5 ex-DET learner is likely to present as
- having a highly restricted/limited English vocabulary;
- lacking in base-line concepts and subject specific knowledge;

- having a learning style which is dependent on the teacher both for the content of what he/she learns and the way the content is processed.

This profile is matched with a profile of a typical Model C school where English is the medium of instruction and where the teacher is not bilingual in an African Language. Walters concludes that ex-DET pupils' competence in the medium of instruction will affect their performance in all subjects.

Olivier-Shaw (1994:41) uses research done by Lazarus into Academic Support Programmes `as envisaged by the typically white universities in the 1980s' to analyse the response of most model C schools to multilingual classes. This response has been to set up bridging programmes based on the assumptions that the `language problem' is
- located in ESL learners;
- primarily manifest in communicative, cognitive and subject deficiencies; and
- can be `cured' through academic support/bridging programmes.

Olivier-Shaw argues that the problem with this approach is that teachers are not prepared to cope with linguistically diverse classes and make unrealistic demands on ESL learners which result in both teachers and learners becoming discouraged by the inability of most learners to meet the teachers' expectations. She concludes that, instead of setting up bridging programmes, schools should focus on the ways in which both the school as an institution and the curriculum can be adapted to the changing linguistic and cultural needs of learners.

2.4   Case studies of effective teaching practice in multilingual classes

No research-based case studies which provide details of how teachers' classroom practices assist learners' in developing bilingualism were found in the literature.

However, Versfeld (1995) suggests whys in which all learners, in particular learners from poorer socio-economic backgrounds, can be given as much opportunity as possible to develop their language skills in multilingual classrooms where English is the medium of instruction.
She suggests three areas for a curriculum for `Language' lessons which encourage learners to `pool' their knowledge of different languages and to share their ideas about language. The areas are
- the systemic examination of different language sounds and structures (for example through activities which include forms of linguistic analysis such as listening to, looking at and comparing words and sentences across languages in order to detect patterns and systems);
- discussion about language and multilingualism; and
- the articulation of learners' attitudes and responses to those whose languages they do not understand.

An investigation by Van der Walt and Dreyer provides insights into the ways teachers' classroom practice could assist conceptual development in linguistically/ culturally diverse classrooms[2] where English is the medium of instruction. This

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2   The subjects of the study were 175 std 6 learners. 84 of the subjects were English first-language speakers whilst the remaining 91 learners were either Southern Sotho or Setswana speaking. Findings indicated that English L1 speakers used cognitive, compensation and

investigation focuses on the uses of a variety of strategies for language learning by English Ll and L2 learners in three traditionally `white' schools in the North-West Province (Van der Walt and Dreyer, 1995).

The findings of the study indicate that the English Ll learners were more autonomous learners but that they need to 'be taught to empathize with others, and to develop cultural understanding and understanding of others' thoughts and feelings'(ibid:315).

The study enabled the researchers to make some concrete proposals around the development of four different categories of learning strategies which could assist English L2 learners to become more autonomous learners - cognitive, compensative, metacognitive and social strategies. In particular, the researchers stress the importance of classroom activities which provide English L2 learners with opportunities to

- complete charts/write lists;
- create schemes/outlines and identify main ideas;
- use clues or cues to make intelligent guesses;
- identify the purpose of tasks;
- self-monitor errors and progress; and
- work in groups on well-designed tasks

The researchers emphasise that the strategies for learning should not only be taught through teachers telling English L2 speakers about them but also through teachers providing learners with opportunities to practice using learning strategies and through teachers themselves modelling appropriate strategies during teaching tasks.

In an article entitled Talking Numbers, Wendy Colyn and Agatha Lebethe (1994) discuss the role language plays in the formulation and expression of mathematics concepts and the implications this holds for South African teachers in linguistically diverse classrooms where English is the medium of instruction.

They cite the following factors as contributing to learners' lack of confidence and unwillingness in using mathematics language

- mathematics language in the context of the mathematics classroom often seems meaningless to pupils because of the use of familiar words in unfamiliar contexts, the ambiguity of the language of mathematics, and the fact that learners' informal language is much more developed and complex than their mathematical language; and
- teaching styles which limit learners' opportunity to develop an enriched and extended language of mathematics by encouraging learners to depend on the teacher for the right words (for example, teachers cueing/waiting for pupils' to fill in the missing words).

According to Colyn and Lebethe, teachers in linguistically diverse classes need to allow learners to explore meanings and to develop their own mathematical language and understanding of mathematics.

metacognitive strategies far more frequently than the Southern Sotho/Setswana speakers. The only strategies used more frequently by the English L2 speakers were social strategies or "learning with others" (Van der Walt and Dreyer, 1995:321).

Finally, in an article entitled Octopuses and Octagons, James Garraway (1994) discusses the ways in which a discourse approach to language in education can serve to liberate or limit disadvantaged learners in multilingual classes.

Children of professional parents whose everyday discourse models the discourse of school subjects have an advantage over children whose parents everyday language does not include typical vocabulary/discourse used in school subjects. Garraway suggest that., because certain teaching approaches such as the critical, the work/skills-orientated and integrated studies approaches to teaching do not generally make subject/discipline specific discourses explicit, they serve to further disadvantage the second group of learners in terms of school knowledge.

He points out that school discourses are similar to non-school discourses in that they are social constructions which arise from particular understandings of how the world works and can and do change. He advocates the use of a discourse approach to language where teachers and textbooks both encourage access to and overtly teach the dominant discourse by

- linking subject specific vocabulary/words to concepts and other networks of words to 'create a web of understanding';
- making explicit what counts as legitimate or important knowledge within particular school disciplines/ subjects; and
- allowing room for conversation/ interaction/ `negotiated talk' between teachers, texts and learners and between groups of learners so that learners can draw on constructions from `out of school' discourse as a way into the dominant discourse.

3.   Summary of the review of the South African literature

The following is a summary of the main findings of the survey into the South African literature on bilingualism:
1.   South African studies conducted into Afrikaans/English dual medium schools in the 1930s/40s indicate that bilingual schools facilitate second language learning and encourage communication and cultural exchange, and that children in dual medium classes show better progress than children who are taught through one medium only.
2.   Research on subtractive bilingual programmes in `black' schools in the 1980s reveals that programmes resulted not only in learners resorting to rote learning content which they did not understand but in learners failing to achieve adequate levels of academic language proficiency in both their Ll and English.
3.   Literature on assimilationist processes in non-racial private/Model C schools in the 1990s indicates that English L2 speakers and their teachers experience discouragement over the learners' inability to cope with the academic and linguistic: demands of an English medium of instruction curriculum.

An investigation into the use of learning strategies by English Ll and L2 learners allowed the researchers to propose that "training in language learning strategies be incorporated in teacher education courses" (Van der Walt and Dreyer, 1995:317) as teachers themselves need to have knowledge and understanding about different instructional strategies and tasks.

Literature on effective teaching practice in linguistically diverse classes indicates that teacher in-service programmes need to assist teachers in being as creative as possible both in making use of the linguistic resources which their learners bring into classrooms and in finding ways to get learners to use their Ll to facilitate cognitive development.

SECTION FOUR: SURVEY OF THE SOUTH AFRICAN PROJECTS

1. Introduction

The review of the South African literature included a survey of projects in South Africa dealing with teaching multilingual classes and teaching in a second language.

There are at least fourteen projects in South Africa which give support to or provide resources for teachers who teach linguistically diverse classes and/or for teachers where the language of instruction (English) is the L2 of learners.

NATIONAL PROJECTS
The Primary Science Project (PSP)
1.   Geographic location: Gauteng; Eastern Cape; KwaZulu-Natal; Free State; Western Cape
2.   School level: Senior primary.
3.   Scope and nature of the project: produces language awareness materials for science teachers and runs workshops to assist them in understanding debates around multilingualism and in developing strategies for teaching in home language and English in the same lesson.

Centre for Cognitive Development (CCD)
1.   Gauteng; Western Cape; KwaZulu-Natal.
2.   Pre-Primary to secondary school level.
3.   Focuses on developing teachers awareness and understanding of multiculturalism and multilingualism and assists teachers in developing strategies to facilitate the cognitive development of children through using their home language/s.

READ Educational Trust
1.   Gauteng, Eastern Cape, North West, Western Cape, Northern Cape, Northern Province, KwaZulu-Natal, Orange Free State.
2.   Junior/lower primary level.
3.   Has developed story-based packs which include bilingual methodology for teachers. English stories have been translated into at least eight South African languages.

The Molteno Project
1.   Johannesburg; Cape Town; Grahamstown; Mafiking; Nelspruit; Pietermaritzburg; Pietersburg; Empangeni.
2.   Grade 1 - std 2.
3.   The Project has developed two language and learning programmes, Breakthrough to Literacy and Bridge to English. The Breakthrough to Literacy programme focuses on the acquisition of initial literacy skills in African languages in ex-DET schools with English being taught parallel with the first language in the first four years of primary school. The Bridge

to English programme focuses on developing the conceptual understanding, vocabulary and language-across-the-curriculum skills which prepare std 2 learners in ex-DET schools for the linguistic demands of changing over from learning content subjects in their mother tongues and having English as one subject at Standard 3 level. These programmes are base on the assumption that the language-in-education model will be one based on transition to English.

REGIONAL PROJECTS

WESTERN CAPE

Teaching and Learning Resources Centre (TLRC)
1. Cape Town.
2. All levels.
3. Provides assistance for teachers in multilingual classrooms through the sale of resources and through short courses and workshops.

Project for the Study of Alternative Education in South Africa (PRAESA)
1. Cape Town
2. All levels
3. Conducts research into multilingual education and participates in national policy initiatives. Is involved in the establishment of a multilingual demonstration school where teaching practice and research will be integrated on an ongoing basis. The school will explore bilingual models of education and provide a teacher training base for multilingual pedagogy. It is anticipated that teacher-training institutions will look to this type of initiative in order to extend the classroom-based training component of their programmes (p97 in PRAESA). In 1997 the Project, in conjunction with the University of Cape Town, established a 14 month accredited teacher in-service diploma (F.D.E.) in multilingual education for primary and secondary schoolteachers.

National Language Project (NLP)
1. Cape Town.
2. Junior and senior level.
3. Provides resources on multilingual education and language policy and assists schools interested in teaching Xhosa as a second language as well as providing advice on implementing a multilingual language policy.

Early Learning Resource Unit (ELRU)
1. Cape Town
2. Early Childhood Development
3. Workshops and training courses include a focus on helping teachers to work in multilingual learning environments. Are developing an extensive variety of multilingual classroom materials on an ongoing basis.

Primary Education Project (PREP)
1. Cape Town.
2. Junior/lower primary level.
3. Has developed four distance education courses for junior primary teachers. One of these courses focuses on Language and Learning. Course material

is to be published through Juta Publishers and will be available for any institution offering tuition through full-time or distance education. Course material includes multilingual classroom resources.

GAUTENG

English Language Teaching Information Centre (ELTIC)
1.   Johannesburg.
2.   All levels.
3.   offers one-two year distance education courses for individuals who teach in multilingual contexts regardless of qualifications. Also offers training in the process of developing and evaluating a democratic language policy in schools.

The Little Library
1.   Johannesburg.
2.   Junior Primary level.
3.   Produces a "kit" which includes a two day training courses and consists of English stories with translations into all major South African languages, other support material and teachers' notes which set out the bilingual, "whole language" approach.

Teachers' English Language Improvement Project (TELIP)
1.   Johannesburg.
2.   All teachers.
3.   Offers 8 English language courses for teachers which have been designed by Wits University.

KWAZULU.-NATAL

The Language in Learning and Teaching Project (LILT)
1.   Pietermaritzburg.
2.   Junior secondary level.
3.   Focus is on language across the curriculum, specifically helping content subject teachers to be sensitive to language issues and to support language development in their pupils.

Language Methods and Programmes (LMAP)
1 .   Newton Park.
2.   Junior Primary level.
3.   Develops courses in communicative Xhosa, Afrikaans and English and trains teachers to teach such courses.

2.   Summary of the survey into South African Projects

Four of the fourteen NGOs surveyed operate in more than one province/region. Six of the fourteen projects provide support for teachers at all levels. Five projects focus on the junior primary level only. The three remaining projects focus on Early

Childhood Development, senior primary and senior school level respectively. Almost all the projects reviewed offer non-accredited short courses or workshops for teachers. Many of them provide resources for multilingual classes and bilingual teaching.

Although the majority of these initiatives operate on a fairly small scale and do not have the capacity to cater for the large-scale needs of teacher education, a number of fully-fledged teacher-education programmes which cater for multilingual education do have the capacity for going to scale.

Two such programmes are the Project for the Study of Alternative Education in South Africa's (PRAESA/UCT) accredited Further Diploma in Education (F.D.E.) in multilingual education; and the English Language Teaching Information Centre's (ELTIC) distance education courses for "individuals who teach in multilingual contexts".

One project, the Project for the Study of Alternative Education in South Africa also participates in language policy initiatives at the national level.

SECTION FIVE: CONCLUDING COMMENTS

1.   Introduction

This short, concluding discussion summarises the findings of the literature survey and makes some concluding comments about planning for teacher in-service development in South Africa.

2.   Summary of the literature survey's findings

International theories and research findings on bilingualism[1] indicate that, although there is a positive link between bilingualism and cognitive functioning, the positive effects of bilingualism cannot occur until a particular level of language proficiency is attained.

Trends in the review of international research conducted into bilingual educational programmes indicate that:
•   immersion or straight-for-target language programmes are successful only when there is very strong support for learners' home language at home, in the media and society in general[2] and where learners come from middle class professional or highly literate homes. In other words, they are most effective with subgroups who are 'secure in their ethnic and linguistic identity' and most in need of knowledge about other ethnic and linguistic groups (Lambert, 1982:96 -99; Hakuta 1986: 227-228).
•   subtractive/transitional-language-in-education programmes . (where the first language is initially used but is either abruptly replaced or gradually phased out by a target/dominant language and where the goal is a for single, target language to function as the dominant language of learning) are successful only when the optimal supporting conditions for the acquisition of the target language are in place. For example, when learners are immersed in a dominant language environment and when teachers are highly competent in both the learners' Ll and the target language;
•   when optimal supporting conditions do not exist, immersion and subtractive/transitional bilingual programmes may appear viable for the first three years of schooling however, once school work becomes more conceptually challenging (for example, in Grade 4), most learners do not have the L2 skills to cope[3];

1 For the purposes of this report the terms 'multilingual' is used to refer to linguistic diversity. Thus 'multilingual' classes are linguistically diverse classes, and a language-in-education policy which promotes 'multilingualis m' is a policy which recognises and values linguistic diversity. The term 'bilingualism' is used to refer to the ability to use two or more languages as a means of communication for all purposes and to switch from one language to the other if necessary. Thus 'bilingual' education programmes are designed to develop learners' proficiency in at least two languages.
2 In South Africa the privileging of English and standard Afrikaans as languages-in-education under apartheid together with other factors has contributed to the low status which African languages in wider South African society today (Luckett, 1995: 74).
3 Work done in the Threshold Project (MacDonald, 1990) reveals the ill effects which subtractive bilingualism has had in the context of education for African children in apartheid South Africa.

- additive bilingual programmes[4] (where learners' Ll is never replaced as a language of learning by more than 50% of learning and teaching time so that a second language is acquired without any loss or weakening of learners' first language - for example, dual medium programmes where half of the curriculum is taught in one language and the other half in another language, or when two languages are used interchangeably in each lesson) appear to be not only beneficial for first language maintenance but also the best possible approach to second language acquisition.

South African studies conducted into Afrikaans/English dual medium schools in the 1930s/40s indicate that bilingual schools facilitate second language learning and encourage communication and cultural exchange, and that children in dual medium classes show better progress than children who are taught through one medium only.

Research on subtractive bilingual programmes (abrupt transition to English medium of instruction in std 3) in DET schools in South Africa in the 1980s indicate that programmes resulted not only in learners resorting to rote learning content which they did not understand but in learners failing to achieve adequate levels of academic language proficiency in both their Ll and English.

Research into assimilationist processes in non-racial private/Model C schools in the 1990s indicates that English L2 speakers and their teachers experience discouragement over learners' inability to cope with the academic and linguistic demands of an English medium of instruction curriculum. (This may also be the case in ex-House of Delegates and ex-House of Representatives schools).

The literature on ways in which teachers' classroom practice can assist student performance in multilingual classrooms suggests that student performance can be improved through
- improved teacher-learner interactions;
- the use of well-designed, cognitively demanding and contextually embedded tasks;
- the development of school-type/task-related discourses;
- linking subject specific vocabulary/words to concepts and other networks of words to `create a web of understanding';
- making explicit what counts as legitimate or important knowledge within particular school disciplines/ subjects; and
- allowing room for conversation/ interaction/ `negotiated talk' between teachers, texts and learners and between groups of learners so that learners can draw on constructions from `out of school' discourse as a way into the dominant discourse.

Most of the international and South African literature supports the view that adopting an additive model for bilingual education is the most effective way of

4 The problem about how the terms 'additive' and 'subtractive'/transitional' bilingual programmes have been used in South Africa, particularly over the last five years, has been a vexed one. Models which allow gradual or delayed transition to English can never be described as additive as there is no question of there being any exit point from L1 in additive bilingual models. The ultimate goal of additive bilingualism is not one but two target languages, Ll and L2 (Haugh pers comment).

ensuring the effective implementation of a new language-in-education policy where multilingualism is valued.

However, even in the absence of comprehensive additive bilingual programmes, the survey indicates that the implementation of a multilingual language-in-education policy will have implications in terms of

1. pre/in-service teacher training and development (Skuttnabb-Kangas, 1988:2230; Young, 1995b;);
2. the development of multilingual classroom-based resources and textbooks (McCallum, 1995); and
3. terminology development in African languages, particularly in the areas of mathematics, science and technology (Chumbow, 1995:19; Heugh, K and Siegruhn, 1995: 97/8).

The review of the South African literature also included a survey of projects in South Africa dealing with teaching multilingual classes and teaching in a second language.

Fourteen NGOs were surveyed. Four of the Projects operate in more than one province/region. Six of the fourteen projects provide support for teachers at all levels. Five projects focus on the junior primary level only. The three remaining projects focus on Early Childhood Development, senior primary and senior school level respectively.

The main findings on projects in South Africa are summarised below:

1. NGO projects assist teachers through
     a) the provision of multilingual materials and resources
     b) short courses and workshops which assist teachers with
        • teaching in linguistically diverse classes;
        • facilitating learners' cognitive development;
        • developing language across the curriculum skills;
        • multilingual pedagogies;
        • improving their own communicative and academic language skills in English and African languages;
        • developing language policy in their schools.
     c) the provision of fully-fledged teacher education programmes on multilingual education. For example, the Project for the Study of Alternative Education in South Africa, (PRAESA)/UCT's accredited Further Diploma in Education (F.D.E.) in multilingual education; and the English Language Teaching Information Centre's (ELTIC) two distance education courses for "individuals who teach in multilingual contexts".

2. One project, the Project for the Study of Alternative Education in South Africa participates in language policy initiatives at the national level.

3. The majority of projects operate on a fairly small scale and do not have the capacity to cater for the large-scale needs of teacher education. However, at least two project's programmes have the capacity for going to scale.

3.   Implications for teacher in-service development in South Africa.

The survey highlights the need for pre-service teachers who are both well-trained and bilingual and for in-service teachers in all subjects to be involved in ongoing professional development which assists them to cope with linguistically diverse classes or/and bilingual teaching through

• adapting both the school curriculum and their schools as institutions to the changing linguistic and cultural needs of their learners;
• understanding the relationship between language and learning;
• adopting multi/bilingual pedagogics which allow all learners to use all their linguistic resources to facilitate cognitive development
• using language across the curriculum methodologies;
• improving their pedagogical understandings and practices;
• improving their knowledge and understanding of learning strategies;
• using and designing appropriate (cognitively demanding and contextually embedded) tasks;
• making task-related or discipline specific discourses explicit;
• improving their personal understanding of baseline concepts and subject specific knowledge;
• improving their own knowledge and use of English and/or African languages; and
• becoming involved in the development of appropriate terminology in African languages'

5 'this has been confirmed in the work of the Primary Science Project (PSP) where staff have discovered that, while working with junior primary teachers, they find indigenous terminology for scientific concepts organically because they are used to teaching in the first language, whereas senior primary teachers who have been expected to teach using English find this process very difficult. One example of this is the word/concept 'particles'. PSP has found that senior primary teachers have struggled with this concept for some time and have been unable to find a Xhosa equivalent for it. Yet, in recent workshops preparing junior primary teachers to include science in the new curriculum, junior primary teachers in different workshops came up the same Xhosa word, 'amasuntswana', with no difficulty at all. (Heugh & Siegruhn, 1995: 98'

TEACHING IN MULTIGRADE CLASSES: A LITERATURE SURVEY COMMISSIONED BY THE JOINT EDUCATION TRUST

MAY 1997

PENNY VINJEVOLD : JOINT EDUCATION TRUST

with assistance from

JENNIFER SCHINDLER : EDUSOURCE

Contents page

1. Introduction

1.1 Background

The national Department of Education commissioned research on four topics as part of Phase 1 of the President's Education Initiative (PEI) : large class teaching, multi-grade teaching, multilingual teaching and whole school development.

1.2   The brief for the report

The brief for each research topic was that the final report should cover:

a review of the international literature
   • the countries and writers which form part of the review
   • the findings of the literature reviewed
   • areas of consensus
   • areas of disagreement

a review of South African literature on the topic
   • the writers which form part of the review
   • the findings of the literature reviewed
   • areas of consensus
   • areas of disagreement

past, current and proposed projects in South Africa dealing with the topic
   • the name of the project
   • geographic location
   • the school level
   • scope
   • nature of the project
   • existence of evaluation or research component

1.3 Definitions

For the purposes of this report multigrade classes are classes in which students from two or more grades are taught by one teacher in one room at the same time. This system of teaching is also referred to in the literature as multi-age, multi-level, multiple class, composite class and, in some countries such as Colombia, one-teacher schools are known as `unitary' schools.

This is to be distinguished from multi-age within grade teaching which occurs when there are wide variations in age within the same grade. This is common in South Africa where the age of school entry varies and there is a high incidence of grade repetition or drop out. Thomas and Shaw (1992) assert that multigrade classes `take a wide variety of organisational forms, ranging from grouping of several form grade divisions under the direction of one teacher to a completely non-graded learning environment.' The non-graded learning environment is generally found in situations

where schools have chosen to combine children of different ages into one classroom for the academic and social benefits that derive from such organisation. In most developing and developed countries multigrade classes are adopted because of geographic and economic conditions and pupils in these classes `retain their respective grade-level assignments and follow their grade-specific curricula' (Solstad, 1996).

1.4   Multigrade teaching in South Africa

The literature reviewed for this report on multigrade teaching revealed that, while there was extensive literature from developed, and to a lesser extent developing countries, there was very little South African writing on the topic.[1] In addition, communication with South African provincial education departments, nongovernmental education organisations and university education departments indicates that there are no local projects or programmes dealing specifically with multigrade-grade teaching. This is indicative of an international trend: multi-grade classes are a significant part of many education systems in both developed and developing countries and yet they are largely ignored by policy makers, ministries of education, administrators and teacher education providers.

Statistics on the number of multigrade classes or schools in South Africa are not available. Some indication of the scope of the phenomenon is provided by considering the number of farm schools in the country. EduSource estimated the number of these schools in 1995 as 2155 in Free State, 188 in Gauteng, 752 in Mpumalanga, 556 in North West, 85 in the Northern Cape, 335 in Northern Province (faxed communication April 1997). No information was available for the other three provinces. Another indication of the number of multi-grade classes in South Africa is the size of schools. For example, the Northern Cape Education Department figures show that 24% of schools have less than forty pupils, 40% have less than 80 pupils and 59% have less than 160 pupils. Using teacher:pupil ratios of 1:30 Vinjevold (1996) suggests that, as these schools are generally primary schools which offer seven levels of tuition (Grade 1 to Standard 5) close to 60% of schools in the Northern Cape have classes which combine two or more grades in one class taught by a single teacher. It is important to note that in South Africa the number of multigrade classes in schools and the number of different grades taught in one class will increase in the next few years with increasing urbanisation and the implementation of the new teacher:pupil ratios.

Schools in South Africa which have multigrade classes are generally in rural or remote areas and in the majority of cases are characterised by extreme disadvantage: inadequate facilities such as classrooms and libraries, absence of physical infrastructure such as roads, electricity, telephones, water etc.; and un- or under-qualified teachers.

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1 In June 1997, Adele Gordon and Johan Graff, confirmed that South African researchers of rural schools have generally not written on multigrade classes and teaching.

The inclusion of multigrade teaching as a topic for research by the national Department of Education is a positive sign for one of the most disadvantaged sectors of schooling in the country.

1.5   Outline of the report

This report begins with a description of the sources used in compiling the report and provides a shorn history of multigrade teaching. In the following sections the extent of multigrade teaching in developed and developing countries and government policies concerning multigrade classes are described. The report then considers the circumstances and conditions which contribute to successful multigrade teaching. In particular, the report concentrates on the implications of the literature for teacher development.

2. Sources

The HSRC was commissioned to complete a literature search on multigrade or multi-age teaching. The resultant Literature List provides short summaries and publication details of six articles on multigrade teaching in South Africa and over 100 articles from other countries. The USAID also provided `Select documents from ERIC Database on Multigrade Teaching and Multi-lingual Teaching' which contains publication details and summaries of over 200 articles on multigrade teaching and learning. Finally, the Royal Norwegian Embassy provided a report on the Interregional Workshop on Single-teacher Schools and Multigrade Classes held at Lillehammer, Norway in 1996 and a paper presented by a Norwegian scholar at the workshop.

All the summaries were read for trends, and seminal articles or books were chosen and reviewed to provide more in-depth understanding of the main issues and research findings concerning multigrade teaching. Three of the articles reviewed provide overviews or meta-analyses of the international literature on multigrade teaching.

The literature surveyed can be divided in two different ways
• literature on developed countries and literature on developing countries
• literature on schools or classes where multigrade classes are a reality of small, isolated communities and literature on schools which choose multigrade classes as a alternative to mono-grade because of the advantages they offer.

While this report concentrates on the research undertaken in rural multigrade classes in developing countries, the literature from developed countries, both that which looks at enforced and chosen multigrade classes, provides important insights and has been reviewed.

The vast majority of the literature on multigrade teaching is from developed countries namely the United States of America, Australia, Canada, Sweden, Norway, the United Kingdom and Holland. A small minority of the literature listed

deals with multigrade classes in Zambia, Columbia, Peru and a number of countries in the East : Malaysia, Vietnam, India, Korea, the Maldives, Nepal, Thailand, Philippines, Sri Lanka and Indonesia. The multigrade literature is mainly concerned with primary school education. Only two studies were found which considered multigrade teaching at high schools. When multigrade teaching is discussed in the report it therefore relates to primary education.

3   History of multigrade teaching

The multigrade classroom has a long history. The majority of state-supported schools in the USA of the 19" Century were multigrade or one-room schools. It was only in the late 19'° and 20`° Centuries that the mono-grade school became the norm (Thomas and Shaw, 1992; Miller, 1990). However, the multigrade class has remained a significant part of schooling in developed and developing countries. In fact the number of children in multigrade classes is increasing. In developed countries this is primarily because of population movement. In developing countries the increase in multigrade classes has been the result of attempts to increase access to primary education especially for girls by bringing schools closer to rural communities (Thomas and Shaw, 1992). While the history of multigrade classes has primarily been shaped by population considerations and the extension of universal primary education, pedagogical theories have also led to an interest in multigrade or multi-age teaching. In the 1960s and 1970s developmental theories of learning meant that `open education' and individualised instruction became influential curriculum and instructional models; and multigrade classes came to be seen as sites for fostering these approaches. While the largescale innovations of the 1960s and 1970s have dwindled (Miller, 1991), the multi-age class movement is *enjoying* a revival in the USA at present (Stone, 1994/5).

4.   Extent of multigrade schools in developed and developing countries

Multigrade classes are a feature of all countries which have rural or isolated communities. In the developing countries multigrade schools and even one-teacher schools are a significant feature of the education systems. Isolated small communities are also found, albeit to a lesser extent, in industrialised countries and therefore teaching of several grade levels simultaneously by one teacher are part of primary education in many European countries, as well as in large areas of North America and Australia (Solstad, 1996).

The literature surveyed suggests that governments and international agencies do not collect comparable data on multigrade classes. Little (1995), in her review of multigrade teaching for the Overseas Development Agency (ODA), synthesises data collected in the 1990s on multigrade classes but points out that the data do not allow comparisons. For example, in some countries data on the number and percentage of one and two teacher schools are available; in others the number of teachers teaching in multigrade schools is captured; in others the number and/or percentage of

multigrade classes within an education system is available and in others again the number and/or percentage of schools which have multigrade classes is provided.

Despite the non-comparability of data, the ODA review, which covers twenty-five countries, illustrates the extent of multi-class teaching in both developed and developing countries

- in Peru, Mexico and Zambia more than 20% of schools are one-teacher schools
- India has more than 300 000 schools with either one or two teachers
- in Australia's, Northern Territories 40% of schools have multigrade classes
- 35% of Sweden's primary schools are multigrade and
- in Wales 30% of schools have multigrade classes.

Other reports on multigrade teaching provide further data on the extent of multigrade teaching: about 37% of all primary schools in Norway have only three classes or less. Each class in a two-class school will generally include three grade levels, whereas the one-class school comprises six grade levels (Solstad, 1996). One of every seven classrooms in Canadian schools is a multigrade classroom, and interestingly, greater numbers of multigrade classrooms are found in urban areas than in the rural districts (Gayfer, 1991).

The World Bank which supports multigrade schools in a number of developing countries reports approximately 420 000 multigrade schools in China, 20 000 in Indonesia and 1540 in Malaysia (Thomas and Shaw, 1992).

Veenman and Raemaekers (1995) claim that demographic contraction and staffing cuts since the middle 1970s have resulted in an increase in the number of multigrade classes in primary schools in Europe. While small schools in sparsely populated areas have always had multigrade classes, the need for multigrade teaching is now being faced by a much wider group of schools both in rural and urban areas. In the Netherlands, 53% of primary school teachers have a multigrade class. In a survey conducted in England and Wales, 40% of the schools surveyed reported an increase in multigrade grouping as a result of falling enrolments. A further 15% reported that falling enrolments might lead to an increase in the extent of multigrade teaching in the future. Almost one-half of the new teachers in England and Wales had their first appointment in multigrade classes (Her Majesty's Inspectorate, 1982).

In the USA there is another reason for the increase in multigrade classes. Developmental theories of learning and student-centred models of instruction have resulted in the multi-age classroom being seen as a way to restructure schools. (Miller, 1991; Stone, 1995) The state of Kentucky has mandated multiage classrooms in all junior primary grades and Alaska, California, Florida, Georgia, New York, Pennsylvania and Texas are considering the implementation of multi-age classrooms. In a multi-age classroom a group of mixed age children stay with the same teacher for several years. While the current multi-age movement generally focuses on the primary years multi-age classrooms are also being implemented with groups of 9, 10 and 11 year olds.

5.   Government policies concerning multigrade classes

Despite the widespread nature of multigrade schools and classes, very little attention has been paid to this sector of schooling by policy makers, ministries of education, administrators and teacher education institutions (Thomas and Shaw, 1992; UNESCO APEID Annual Report 1989; Little, 1995; Solstad, 1996; Miller, 1991). Little (1995) provides a brief review of standard texts on curriculum development to illustrate the point that `A mono-grade structure appears to be the taken-for-granted form of organisation.' She continues that the widespread exclusion of discussion of multigrade teaching and the assumption that most teaching is mono-grade is also found in texts focusing on conditions of schools in developing countries.

Writers from a range of developed countries claim that very few, if any, teacher education institutions provide pre-service and in-service education programmes for multigrade teachers (Miller, 1992; Duck, 1989; Vanbalkom 1994; Veenman and Raemaekers, 1995; Solstad, 1996; Little, 1995; Gibson, 1994). Solstad writes that it is interesting to observe that even in a country like Norway where small rural schools have always been an important part of primary education,

> `teacher training and the production of teaching materials seem to be solely directed to meeting the demands of the normal mainstream situation. Even in colleges serving predominantly rural counties, most, if not all, the students' school-based teaching practice is undertaken in large schools consisting generally of only single-grade schools classes and situated close to the college. Furthermore, textbooks, as well as teacher guides and associated pupils' worksheets, are generally formulated for the single grade classroom situation. Accompanying advice commonly exhorts teachers to adapt such materials to multi-class teaching as best they can.'

Gibson (1994) argues that even when national policy recognises the uniqueness of rural schools and the need for special training for future rural teachers, as is the case in Australia, this is not evident in practice. Gibson's study of state education documents and interviews with representatives of state and regional teacher recruitment offices revealed no standard selection practices for rural teachers and assumed no need for specialised training.

Despite this general neglect of multigrade teaching and learning, the literature suggests that in recent years there has been a change in attitude to multigrade classes. While they were viewed almost universally as a deficit form of provision, there is now a growing view of multigrade classes as a legitimate model of providing access to education in circumstances of low population concentration. This change of attitude is most noticeable in the work of UNESCO, the World Bank and other international and national agencies. In addition, in recent years legislators

in a few countries, notably in Asia, have moved towards identifying multigrade as a form of primary education requiring legislative, regulative and policy support.

UNESCO has a fairly long history of involvement in multigrade schools. A conference on one-teacher schools was sponsored by the International Bureau of Education in 1961 and the International Conference of Ministries of Education in 1961 led to the establishment of unitary schools in Latin America. In the 1980s the Asia and Pacific Programme of Educational Innovation for Development (APEID) considered the problems faced by teachers in rural and isolated areas and in its annual reports provides information on the experiences of Australia, Bangladesh, People's Republic of China, India, Indonesia, Republic of Korea, Malaysia, Nepal, Pakistan, the Philippines and Thailand. The 1989 publication contains a report from each country which includes the incidence of multigrade teaching, difficulties faced by these schools, measures adopted to overcome them, and proposals for improving multigrade schools.

The World Conference on Education for All in Jomtien, Thailand in 1990 emphasised the urgent need to ensure access to, and improve the quality of, education for all particularly girls. Since then UNESCO has developed several Action Programmes on the functioning and effectiveness of schools that operate under difficult conditions such as the double shift system and multigrade classes. UNESCO is working with national and regional agencies to exchange experiences and to promote the need for effective small schools. In 1996 an inter-regional workshop was held in Lillehammer, Norway `to emphasise and strengthen the role of single-teacher schools and multigrade classes as one means towards achieving education for all.'

The World Bank has supported multigrade schools in the Gambia, Mauritania, Lesotho, Botswana, Niger, Senegal, Guinea, Zaire, Mexico, Paraguay, Colombia and Brazil. In addition, the Bank in 1992 commissioned a paper Issues in the Development of Multi-grade Schools `to increase Bank staff awareness of the complexity of such components and to their economic and pedagogical benefits.'

Government initiatives

A feature of the Norwegian small school is the strict regulation of the number of pupils in a class: in a one-class school no more than twelve pupils and not more than thirty in a two-class school. This regulation was introduced `to compensate for the supposed extra teaching difficulties which result from a teacher having to deal with pupils of very different levels of maturity and subject mastery' (Solstad, 1996).

A number of countries have adopted incentive policies concerning multigrade classes. Additional funds are provided in Indonesia by local governments to encourage community participation in multigrade classes. There are several examples of special policy treatment with regard to the employment of teachers. Nepal and Indonesia make provision for the faster promotion of multigrade class teachers. Pay incentives are offered to teachers of multigrade classes in Vietnam and Senegal and provision of teacher housing is a fairly common system of incentive to

rural teachers. Teaching and learning materials for multigrade classes are provided free of charge in countries such as Indonesia and Vietnam.

In South Africa the White Paper on Education and Training identifies the marginalisation of rural and farm schools as an issue which needs to be addressed. In addition, concern to provide support to rural schools is seen in the policy and planning documents of several provincial education departments and in the commissioning of this report on multi-grade teaching by the national Department-of Education.

This section of the report has shown that multigrade classes and schools are a reality that will remain a part of education systems, including that of South Africa. In fact the number of multigrade classes will increase with urbanisation and the implementation of the new teacher:pupil ratios. The next sections of the report will consider whether multigrade teaching can provide viable, quality education and, if so, under what circumstances or conditions multigrade teaching is successful.

6.   Multigrade classes as a model of education provision

The literature on multigrade teaching stresses the benefits of the multigrade class. An explanation for this is that those who have written on multigrade teaching view this system as a legitimate and viable model of education provision. It is possible that researchers of rural schools, in their descriptions of the lack of resources of these schools, consciously or unconsciously, assume multigrade classes to be one of the disadvantages faced by rural schools. If this is the case, the literature reviewed suggests that they do not write against multigrade classes specifically or in any detail. In general the literature reviewed does not provide systematic analyses or documentation of the problems of multigrade teaching but only alludes to them while providing suggested solutions. The three most commonly mentioned disadvantages are: the expense of multigrade schools, the limited curricular and extracurricular activities that can be offered and teacher dissatisfaction.

The positive features of multigrade classes most frequently cited in the international literature are:

6.1   Increased access to education

The World Bank report argues that `multigrade schools fulfil an important role in improving access to primary education' (Thomas and Shaw, 1992). The argument is compelling given the number of multigrade schools in countries such as China (420 000), Indonesia (20 000) and Malaysia (1540). The argument is supported by two studies of multigrade programmes introduced in Zambia and Colombia.

In 1988 a multigrade project aimed at increasing pupil enrolment and the levels of primary education completed by local children was introduced in rural areas of Zambia (Lungwangwa, 1990). The results of the study conducted at four pilot

schools indicate that access to education led to increased student enrolment and reduced migration of the village. The system also provided an opportunity for rural children to complete a full primary education. Because of these positive experiences, the Ministry of General Education of Zambia has introduced the multigrade system in 200 schools.

Unitary schools - multigrade classrooms taught by one teacher - were established in the early 1960s in Colombia's isolated rural areas with few students. Escuela Nueva (rural schools in which one or two teachers offer all five years of primary education in one or two multigrade classrooms) was created in 1976 as an official attempt to improve the unitary school. By 1989 enrolment increased to 800,000 students in 17,948 schools. The study found that multigrade schools significantly increased access to school and reduced drop out from primary education (Psacharopoulos et al., 1993).

It is important to note that both the projects in Zaire and Colombia were characterised by teacher training, resource provision and government support.

6.2   Social benefits

Multigrade classes are seen as an effective way to allow small schools to continue to operate in isolated or rural communities. There is widespread consensus in the literature that community schools provide social benefits for communities and their pupils. The two most commonly quoted benefits for communities are that schools

*   help to preserve the identity of local communities (Thomas and Shaw, 1992). Because pupils remain in their communities, family life and cultural traditions are preserved. (Bray, 1992; Commonwealth Pacific Regional Workshop, 1994).
*   serve as centres of social development (Bray, Commonwealth Pacific Regional Workshop)

Multi-grade classes are also thought to benefit the social development of pupils (DeBord, 1993; Pratt, 1986; Miller, 1990). De Bord, for example, examined the perceptions of teachers experienced in working with mixed-age groups from birth through to 12 years old. Providers agreed that both older and younger children more readily learn sharing, new skills and new roles. Older children learn nurturing, patience, family :roles and leadership. Younger children more rapidly learn sharing, new skills and language. Miller's review of 21 quantitative studies of students in the first six grades found multigrade students strongly outperformed single-grade students on measures of affect, attitudes and social relationships.

One explanation offered for the enhanced social development of pupils in multigrade classes is that a range of levels of maturity, perspective and experience contributes to the learning process and that therefore heterogeneous interaction of age groups contributes to social growth and understanding as well as to academic growth (Levine, 1976; National Education Association, Washington, D.C., 1968).

6.3 Psychological

A number of studies describe the psychological benefits of grouping children c€ different chronological and developmental stages in a single class (Marshak, 1994; Pratt, 1986; Buston, 1978, Way, 1980). Buston, for example, argues that these classes are a means of providing continuity between home and school with a minimum of psychological and emotional shock.

6.4   Academic achievement

The literature is inconsistent and inconclusive on the impact of multi-grade teaching on academic achievement. Many of the studies conducted in North America and Europe to assess the effect of multigrade instruction on academic achievement claim that there are no significant differences in student achievement between multigrade and single-grade classrooms.

- A review of 13 experimental studies assessing academic achievement in single-grade and multigrade classes found no significant differences in overall student achievement (Miller, 1990). The limited evidence suggests that there may be differences depending on subject and level but there are not enough studies to make safe generalisations about which subjects or grade levels are best for multigrade instruction.

- A study of students in multigrade classes and matched peers in single-grades 1-5 in eight New. Brunswick elementary schools showed that the multi-grade students did not differ significantly from single-grade students in grade points or total achievement tests (Brown and Martin, 1989).

- An observational study of 12 mixed-age and 12 single-age Dutch primary reading/language and maths classes revealed no significant differences in achievement test scores but found time-on-task levels were lower for the mixed-age classes (Veenman, 1990).

- In an investigation of the effects of multigrade classes on student achievement in the Mesa Public Schools in Reading and Mathematics, the District formed multigrade classes from adjacent grade levels to reduce class loads and numbers of teachers. Students retained their grade-level assignments and maintained their grade-specific curricula. The sample included 3 360 third to sixth graders in three groups: multigrade classes; single-grade classes from schools with multigrade classes; and single-grade classes from schools without multigrade classes. The results of the tests indicated multigrade classes have no detrimental effects on reading and mathematics achievement with one exception: the mathematics achievement of average students (Rule, 1985).

- A comparison of an experimental and a control school concludes that multi-age groups make little difference in mean basic skills achievement but multi-age grouping does engender positive attitudes towards school (Milburn, 1981).

- A paper which considers alternatives to the current system of graded classes claims that the research reviewed for the paper provides inconsistent support for

the use of non-graded and multigraded classes over traditional practices. Although findings are inconclusive no detrimental effects are attributed to multigrade classes (McGurk and Pimentle, 1992).

A few studies provide slightly different views to those described above. Ansah (1990), for example, claims that a review of selected literature on the relation between multi-grouping and academic achievement suggests that the effectiveness of multigrade teaching in reading and mathematics is mixed. Some children seem-to benefit from multigrade classes while others do better in single-grade classes.

Some studies suggest that pupils in multigrade classes outperform single-grade pupils both in terms of social and academic development. The youngest pupils or those at the lower levels of the multigrade classes appear to benefit most. Nye (1995) presents findings of the longitudinal School Success Study (SSS) which attempts to determine the academic and social effects of non-graded (multi-age, continuous progress programmes) on Tennessee elementary school students. The study indicates that students from non-graded classes in the first year of study significantly outscored those from traditional classes on tests on vocabulary, total reading, language and maths.

Dever (1994) attempts to explain why younger pupils in multigrade classes outperform those in single-grade classes through Vygotsky's zone of proximal development theory. Children receiving peer assistance can stretch their learning beyond their individual accomplishment.

All the studies described above have been conducted in the USA or Europe. Studies in developing countries have not generally included comparative studies to measure academic achievement. However, two studies of *supported* multigrade programmes include academic measurement and report positive results. The Colombian study described above claims that students enrolled in Esceuda Nueva schools attained higher achievement levels than students in comparable single-grade schools in maths and Spanish (Rojas and Castillo, 1988). A study of learning achievement in Togo revealed that multigrade students performed substantially better than single-grade students. This was attributed to the effects of peer tutoring, independent work and a variety of teaching methods. Lulungwa's study conducted in Zambia did not address the impact of the programme on student basic academic skills and academic achievement. However, based on secondary school selection examination, all four pilot schools were successful in promoting pupils to grade 8.

The only study found in the literature which considers academic achievement in a developing country where no support was provided is a study of rural elementary schools in Honduras (McGinn, 1993). The study found that grade repetition was related to four variables: low academic achievement, amount of time available for learning, low teacher expectations of students, and *being in a multigrade classroom.* The World Bank report claims that multigrade students in Pakistan performed 30% worse on achievement tests than their single-grade counterparts and multigrade schools showed higher rates of repetition. Thomas and Shaw(1992) conclude that

one lesson that can be drawn from this is that it is difficult to implement an effective multigrade programme without trained teachers and sufficient material inputs. Although the literature on multigrade teaching in developed and developing countries is generally positive concerning the benefits of this organisation of learning the developing country view of multigrade schools generally tends to be negative.

They are seen as a temporary solution, an intermediate point on the route to a full primary school offering all grades in individual groups each with its own room and teacher. Through force of circumstances, many developing countries have adopted the organisational pattern, timetable and student groupings used in multigrade schools but do not practice the modified pedagogical techniques necessary for successful multigrade schooling ..and assume that the teacher can function successfully without additional training in the pedagogical aspects which are essential for effective multigrade instruction - self-directed learning, peer tutoring, careful lesson planning, variation in methods of instructional delivery and appropriate texts. In doing so, they create "quasi" multigrade schools with limited chances of success.' (Thomas and Shaw, 1992)

Although the literature on multigrade teaching generally deals with the benefits of this system of education provision it is important to note that multigrade classes are seen as potentially feasible sites for high quality education (Mulcahy, 1993). Much of the literature reviewed suggests that multigrade teaching can only be successful if `implemented properly' (Thomas and Shaw, 1992). The next section considers the literature on necessary conditions for successful multigrade teaching.

7. Circumstances and **conditions which contribute** to **successful multigrade teaching**

The literature supports two minimum requirements for successful multi-grade teaching:

> ✍ teacher training and
> ✍ the provision of teaching and learning resources.

A number of studies also consider outside support either from the local community or regional/national government structures as important for successful multigrade implementation.

7.1   Teacher training

There is widespread agreement in the literature on the need for specialised education programmes for teachers in rural and isolated areas (Surwill, 1982; Miller, 1988; Duck, 1989; Thomas and Shaw, 1992; Little, 1995; Gibson, 1994). Duck's mail survey of 97 rural Australian schools reports that almost all respondents saw a need

for special pre-service and in-service education programmes for rural teachers. In another Australian study interviews were conducted with twenty-four teachers newly appointed to small communities in outback regions. Half were in one-teacher schools and 79% were teaching three or more grades. 75% were dissatisfied with their preparation for rural teaching and indicated the need for better training in multi-grade classroom strategies and teaching methods, organisation, student evaluation and placement, school administration and dealing with the community (Gibson, 1994). Surwill's (1982) survey conducted as part of the continuous review of Eastern Montana College's teacher programme produced written responses from teachers, principals and superintendents of rural schools who strongly supported the need for specialised preparation of rural teachers. Miller's (1992) `A Review of the Qualitative Research on Multigrade Instruction' which considers selected research studies of multigrade classrooms in Canada, Finland, India, Korea, Maldives, Nepal, Thailand, Philippines, Sri Lanka, Indonesia and the United States claims that one of the main issues emphasised is that teachers should be trained to teach multigrade classes.

In recent years an increasing number of courses which prepare teachers for rural schools has been offered. Miller (1988) describes nine rural pre-service and inservice training programmes in Hawaii, Alaska, Utah, Oregon, Montana and British Colombia. A feature of the pre-service courses is practical teaching sessions in non-cosmopolitan areas. The University of Victoria in British Colombia offers an rural teacher preparation programme based on research and discussions with rural educators in New Zealand and Australia. Third year students participate in a four-month rural field experience and fourth year students have two six-week rural practicums. Both groups are expected to teach at primary and intermediate levels and to log their experiences and to become immersed in the dynamics of teaching and residing in a small community. Radio broadcasts have been used for teacher training in Nigeria, Tanzania, Zimbabwe and an Australian pre-service teacher education course: successfully used interactive television to present rural teaching situations (Gibson and Gibson, 1995).

There is consensus in the literature on two broad areas of preparation required by students planning to teach in rural areas

• preparation for teaching multigrade classes
• preparation for working and living in isolated, rural areas

7.1.1   Preparation for teaching multigrade classes

The literature asserts that special skills are required by the effective multigrade teacher. Teachers of multigrade classes who have received no training class inevitably teach as though they are teaching several independent classes, that is they teach one cohort while the others remain idle. The results are 'Time-on-task is reduced, achievement falls, discipline degenerates, the teacher becomes frustrated and feels overworked'(Thomas and Shaw, 1992).

Instruction and classroom organisation and management in the multigrade classroom are complex and demanding. Miller (1991),for example, claims that research tells us

that when student diversity increases, whether it be in a multigrade or single-grade classroom, greater demand is placed on teachers both cognitively and emotionally. Thomas and Shaw (1992) claim that the international literature suggests that the teacher must be well-trained and conscientious as the demands on teachers' time are great and excellent organisational or co-ordinating capabilities are required. These studies are supported by teacher surveys which indicate that the majority of teachers who face multigrade classes experienced them negatively and preferred not to teach them. Some of the problems reported include that:

- it is time consuming
- basic skills subjects require double preparation
- teachers experience burnout and have low work and personal satisfaction.

Miller (1991) concludes that 'Multigrade teaching is not for the timid, inexperienced or untrained teacher'.

In practical terms teachers of multigrade classes need to be prepared for assignment to more subjects, more grade levels and more extracurricular activities (Gibson, 1994). Some of the suggested ways in which teacher preparation programmes can help prospective teachers prepare for the breadth of responsibilities expected in rural schools are:

- increase the number of content areas in which students specialise
- develop students' skills in integrating the curriculum and planning
- prepare future teachers to work with broader age ranges
- provide a strong background in teaching reading
- offer method courses and practicums in teaching art, music, health, physical education and dramatics
- provide training in utilising rural community resources for classroom enrichment • diagnostic and planning skills to identify and meet student needs
- preparation for school record maintenance.

Perhaps the most obvious feature of the multigrade classroom is that a different organisation of learning is required to accommodate the different grades in the classroom. For many writers this means a completely different approach to teaching (Surbeck, 1982; Miller, 1990; Stone, 1995; Marshak, 1994). A multigrade class requires teachers to consider the learning cohort as individuals, each with his or her own continuum of learning and to structure learning as activities to meet the needs of individuals rather than to teach the middle of the class (Marshak, Stone). The international literature repeatedly identifies self-directed learning, and to a lesser extent peer tutoring, as the most effective of the multigrade teacher's practices.

Miller's studies of instruction in multigrade classrooms across rural America reveal that teachers use various methods to juggle the wide levels of student needs. He establishes six key variables affecting successful multigrade teaching. An analysis of the six variables reveals that all are concerned with various aspects of independent or self-directed learning or peer tuition.

(1)   classroom organization that facilitates student learning, independence, and interdependence;

(2)   classroom management and discipline that emphasize student responsibility for their own learning;
(3)   instructional organization and curriculum that allow for a maximum of co-operative and self-directed student learning;
(4)   instructional delivery and grouping that improve the quality of instruction;
(5)   self-directed learning strategies; and
(6)   peer tutoring.

All this suggests that teachers need to have comprehensive sets of learning materials, particularly self-directed materials at their disposal and that teachers should be trained in developing, selecting and using materials which promote independent learning such as libraries, self-learning materials etc.

Before considering the teaching and learning resources recommended in the literature for multigrade classes it is worth considering the effects of teacher training for multigrade teachers. A considerable amount of time, energy and money is invested in staff development or in-service training but little is known of the effects of the training (Taylor, 1995). Only one detailed study of the long-term effects of a staff development programme for teachers in multigrade classes was found in the international literature. It is described in some detail because of the instructive insights it provides.

The study by Veetnnan and Raemaekers (1995) conducted in Holland in the late 1980s describes the long-term effects of a staff development programme. The programme `Dealing with multigrade classes: a programme for school improvement' was based on selected findings from teaching effectiveness research in schools with multigrade or mixed-age classes.

In the initial two studies, the short-term effects of the staff development programme were assessed. The results of these studies showed important gains in instructional skills and the way in which the trained teachers organised instruction and adapted it to the pupils. Classroom management skills such as the use of materials/space, and dealing with disturbances also improved markedly for the trained teachers. The time-on-task levels for the pupils with trained teachers also increased substantially.

In the third study the long-term effect of the staff development programme were examined. The research questions that guided the study were the following: Do teachers who followed the staff development programme in the school years 1986/87 and 1989/90 still use the target behaviours after two and five years of training? Does the training appear to have a lasting effect on the time-on-task levels of the pupils? Are the effects greater for teachers who received coaching in addition to participation in the staff development programme? Does the training appear to have a positive effect on pupil achievement?

Observational data collected two and five years after the conclusion of the training programme showed the trained teachers still demonstrated the target teaching behaviours. The target skills appear to have been transferred and sustained over time. No effects were found for the length of application. The

teachers who had participated in the training five years ago showed no higher implementation rates than the teachers who had participated in the training two years ago. The study also showed that the staff development programme had a significant effect on the time-on-task rates for the pupils. The pupils with trained teachers spent significantly less time waiting for the teacher and were more engaged in their work than the pupils from he control group.

It is interesting to note that although the trained teachers achieved higher time-on-task levels than the untrained teachers, these higher time-on-task levels did not result in higher pupil achievement. No significant achievement differences were found for the classes with trained versus untrained teachers. Two potential explanations for why more time on-task was not associated with higher pupil achievement are offered by the researchers. `Firstly, the teachers may have treated time as a homogeneous entity. More time may simply have been taken to mean more of the same. No effort was made in this study to partition time into various pupil or teacher behaviours. We do not know, therefore, if more time was spent on the right tasks. Time was measured quantitatively and not qualitatively.' The writers recommend that in a revised edition of the staff development programme, `the teachers should be trained to examine their time-on-task data in light of the question: time on what task? The quality of the task may determine just which and how much learning occurs.' Second, the staff development programme was mainly directed at the improvement of teacher behaviours in multigrade classes. A stronger coupling between teacher and pupils behaviours may be needed. To improve pupil learning, teachers may need to be stimulated to identify the desired pupil behaviours and then the teacher behaviours needed to evoke such pupil behaviours. In such a way, the time-on-task levels of the pupils may become more directly related to their achievements.'

7.1.2 Preparation for working and living in rural areas

Studies from developed and developing countries agree that preparation for multigrade teaching is not sufficient preparation for teaching in isolated or rural schools. Teachers also need to be prepared for the cultural, social and economic conditions of the school's environment (Blackwood, 1989; Gibson, 1994; Duck, 1989; Bandy, 1984). The difficulties of living and working in rural areas are cited as inadequate knowledge of the situation, inadequate resources, professional isolation, social and cultural isolation and being expected to participate in community activities. Teaching practicums in non-metropolitan areas are seen as an essential part of teacher preparation for teaching in rural areas. While these theoretical and practical steps may prepare teachers more adequately for their teaching, they do not necessarily solve the problem of the cultural and social isolation of teachers in their new communities and the consequent high turnover rates at rural schools.

An extensive study of teacher supply in Northern Norway in 1980 described by Solstad (1996) points to the cultural gap between the local population and the teachers as an important factor in explaining high turnover rates. Among the recommendations implemented was the introduction of decentralised teacher

training. Adults from areas with a history of teacher shortages were provided with teacher training which combined face to face tuition and distance education. During their studies, which are one year longer than the conventional courses, the students teach at their local school on a part-time basis. This programme `has turned out to be a relatively effective means of recruiting a stable teaching force in many outlying small rural schools.' The study reports other benefits of using local adults as teachers in rural communities: `these teachers have an understanding of local demands and priorities; because they are local themselves, teachers recruited and trained in this way are generally in a good position to build upon and expand from the pupils' cultural inheritance and their out of school experiences' (Solstad, 1996).

7.2   Teaching and learning resources

The previous section of this report indicated that self-directed learning is identified in the international literature as a central feature of effective multigrade teaching. In this situation limited access to teaching materials and equipment may effect negatively the motivation and activity levels of the pupils and thus their learning progress (Solstad, 1996). In addition, careful scheduling and preparation of lessons and materials is required to keep pupils meaningfully occupied. If teachers are to consider individuals, each with his or her own continuum of learning (Marshak, 1994; Stone, 1995) and to structure learning as activities to meet the needs of individuals rather than to teach the middle of the class, an extensive range of teaching and learning materials is required.

The following teaching and learning resources are recommended in the international literature:

self-directing materials
To be productive on their own students must have access to self-teaching materials. The materials should be user friendly and allow students to conduct research or proceed through self-correcting exercises with minimal guidance from a teacher.

a library
The library should contain enrichment and remedial material.

teacher aides/paraprofessionals
This assistance, along with peer tutoring, is regarded as a powerful tool for extending the influence of the teacher in the classroom.

learning space
The layout of the classroom should be conducive to teaching several groups. Sufficient space should be provided to allow separation of groups. Mobile furniture and blackboards on opposite walls permit flexibility. Learning corners facilitate multigrade teaching by providing semi-private spaces for groups of students to work.

7.3   External support;

A number of international studies point to the benefits of external support of various forms in providing effective multigrade teaching (Thomas and Shaw, 1992; Inter-regional Workshop on Single-teacher Schools and Multi-grade Classes, 1996; Solstad, 1996; Lulungwa, 1990; Psacharopoulos et al., 1993)

7.3.1 Community support

The studies carried out in Zambia and Colombia identified local communities as important contributors to the success of those multigrade programmes. The Esuela Nueva schools in Colombia involved community members not only in providing resources for schools but in the teaching process. A number of other studies support the use of community members as teaching aides. Local governments in Indonesia provide funds to encourage community participation in rural schools and multigrade schools in India are encouraged to foster closer school-community ties.

7.3.2 Local or regional government support

Local or regional pedagogic and administrative support is also seen as important for effective multigrade teaching. Teachers of one- and two-teacher schools, in particular, experience both social and professional isolation. Pedagogical support is recommended to counteract this isolation. On-site support in isolated rural areas can be both expensive and time-consuming and so various forms of support delivery are suggested such as regional resource centres, newsletters and radio programmes. The creation of opportunities for multigrade teachers to meet, exchange experiences and collect resources is also recommended in the literature (Thomas and Shaw, 1992). Training for pedagogical advisers in multigrade instructional methods and materials is seen as essential for the provision of these support activities (Solstad, 1996). Thomas and Shaw also recommend that support for multigrade teachers in rural areas is best achieved through a decentralised education system with clear sets of incentives and systems of accountability.

7.3.3   National policy support

Finally, much of the recent literature on multigrade classes points to the importance of national policy in delivering effective multigrade teaching. The Inter-regional Workshop on Single-teacher Schools and Multigrade Classes in Norway (1996) recommended that the first step is to persuade governments and legislators of the advantages of single-teacher schools and multigrade classes. Thomas and Shaw, drawing on the experiences of many developing countries, argue that there should be two stages in implementing multigrade programmes: a pilot phase and an expansion phase. In the expansion phase national policy decisions are necessary with regard to:
• creation of a decentralised administrative system
• provision of teacher training in multigrade techniques
• recruitment and support of multigrade teachers
• curriculum adaptation
• development and allocation of resources to multigrade schools

Thomas and Shaw (1992) see teacher training and curriculum and materials development as the two most important areas requiring national policy. They recommend that because effective multigrade instructional practices are applicable in single-grade classes they should be introduced in the general teacher training curriculum; and curriculum and materials development units should be directed to develop materials suited to multigrade instruction.

8.   Summary of the literature on multigrade teaching

The literature surveyed illustrates the extent of multigrade teaching in both developed and developing countries. For example, 61 % of primary schools in India have only one or two teachers and 22% of Mexican primary schools are `unitary' schools which offer six grades with one teacher; in Sweden, Norway and Wales more than 30% of schools have multigrade classes.

The literature reviewed also indicates that the number of children in multigrade classes is increasing. In developed countries this is primarily because of population movement. In addition, developmental learning theories and learner-centres approaches have resulted in schools, particularly in the USA, choosing to implement multigrade classes because of the benefits they are perceived to offer. In developing countries the increase in multigrade classes has been the result of attempts to increase access to primary education by bringing schools closer to rural communities.

Despite the widespread nature of multigrade schools and classes, very little attention has been paid to this sector of schooling by policy makers, ministries of education, administrators and teacher education institutions. Standard texts on curriculum development point to the assumption that most teaching is mono-grade. A number of writers from a range of countries claim that very few, if any, teacher education institutions provide pre-service and in-service education programmes for multigrade teachers. Even in a country like Norway where small rural schools have always been an important part of primary education, teacher training and teaching materials are generally aimed at the single-grade situation.

Despite this general neglect of multigrade teaching and learning, the literature suggests that in recent years there has been a change in attitude to multigrade classes. While they were previously viewed as a deficit form of provision, there is now a growing view of multigrade classes as a legitimate model of providing access to education in circumstances of low population concentration. This change of attitude is most :noticeable in the work of UNESCO, the World Bank and other international and national agencies. In addition, in recent years legislators in a few countries, notably in Asia, have moved towards identifying multigrade as, a form of primary education requiring legislative, regulative and policy support. There are several examples of special policy treatment with regard to the employment of teachers. Nepal and Indonesia make provision for the faster promotion of multigrade class teachers. Pay incentives are offered to teachers of multigrade classes in Vietnam and Senegal and provision of teacher housing is a fairly common incentive

offered to rural teachers. Teaching and learning materials for multigrade classes are provided free of charge in countries such as Indonesia and Vietnam.

In South Africa the White Paper on Education and Training identifies the marginalisation of rural and farm schools as an issue which needs to be addressed. In addition, concern to provide support to rural schools is seen in the policy and planning documents of several provincial education departments and in the commissioning of the PEI report on multigrade teaching by the national Department of Education.

The literature on multigrade teaching stresses the benefits of the multigrade class. An explanation for this is that those who have written on multigrade teaching view this system as a legitimate and viable model of education provision. It is possible that researchers of rural schools in their descriptions of the lack of resources of these schools, consciously or unconsciously, assume multigrade classes to be one of the disadvantages faced by rural schools. If this is the case then the international literature reviewed for this report (and the South African literature on rural schools) suggests that they do not write against multigrade classes specifically or in any detail.

In general the literature reviewed does not provide systematic analyses or documentation of the problems of multigrade classes but only alludes to them while suggesting solutions. The three most commonly mentioned disadvantages are: the expense of multigrade schools, the limited curricular and extracurricular activities that can be offered and teacher dissatisfaction.

The positive features of multigrade classes most frequently cited in the international literature are:
• increased access to primary education
• social benefits for small communities and their pupils
• psychological benefits.

The literature is inconsistent and inconclusive on the impact of multigrade teaching on academic achievement. The majority of studies conducted in North America and Europe to assess the effect of multigrade instruction on academic achievement claim that there are no significant differences in overall student achievement between multigrade and single-grade classrooms. Studies in developing countries show that pupils in multigrade classes that are supported by programmes involving teacher training, learning materials and government support result in multigrade pupils outperforming pupils in single-grade classes; pupils in multigrade classes which do not adopt suitable teaching practices and have few learning materials fare considerably worse than their single-grade peers.

Although the literature on multigrade teaching in developed and developing countries is generally positive concerning the benefits of this organisation of learning, teachers and education officials, with some exceptions, tend to view multigrade classes negatively.

The literature supports three minimum requirements for successful multi-grade teaching:
- teacher training
- the provision of teaching and learning resources
- external support from communities and/or government Teacher training

There is widespread agreement in the literature on the need for specialised education programmes for teachers in rural and isolated areas. The two broad areas of preparation recommended are:
- preparation for teaching multigrade classes
- preparation for working and living in isolated, rural areas.

The literature asserts that special skills are required by the effective multigrade teacher. Instruction and classroom organisation and management in the multigrade classroom are complex and demanding. In practical terms teachers of multigrade classes need to be prepared for assignment to more subjects, more grade levels and more extracurricular activities. Some of the suggested ways in which teacher preparation programmes can help prospective teachers prepare for the breadth of responsibilities expected in rural schools are:
- increase the number of content areas in which students specialise
- develop students' skills in integrating the curriculum and planning
- prepare future teachers to work with broader age ranges
- provide a strong background in teaching reading
- offer method courses and practicums in teaching art, music, health, physical education and dramatics
- provide training in utilising rural community resources for classroom enrichment
- diagnostic and. planning skills to identify and meet student needs
- preparation for school record maintenance.

For many writers this means a completely different approach to teaching. A multigrade class requires teachers to consider the learning cohort as individuals, each with his or her own continuum of learning and to structure learning as activities to meet the needs of individuals rather than to teach the middle of the class. The international literature repeatedly identifies self-directed learning, and to a lesser extent peer tutoring, as the most effective of the multi-grade teacher's practices.

Studies from developed and developing countries agree that preparation for multigrade teaching is not sufficient preparation for teaching in isolated or rural schools. Teachers also need to be prepared for the cultural, social and economic conditions of the school's environment. The difficulties of living and working in rural areas include inadequate knowledge of the situation, inadequate resources, professional isolation, social and cultural isolation and being expected to participate in community activities. In Norway decentralised teacher training for adults from areas with a history of teacher shortages were provided. This programme was relatively effective in recruiting a stable teaching force in outlying small rural

schools. The study reports other benefits of using local adults as teachers in rural communities.

Teaching and learning resources
Self-directed learning is identified in the international literature as a central feature of effective multigrade teaching. In this situation teaching materials and equipment are essential. The following teaching and learning resources are recommended in the international literature:
• self-directing materials
• a library
• teacher aides/paraprofessionals
• flexible learning space

External support
A number of studies point to the benefits of external support of various forms in providing effective multigrade teaching. Some studies describe local communities as important contributors to the success of those multigrade programmes. Local or regional pedagogic and administrative support is also seen as important for effective multigrade teaching. Training for pedagogical advisers in multigrade instructional methods and materials and local teaching centres are recommended. The literature also suggests that support for multigrade teachers in rural areas is best achieved through a decentralised education system with clear sets of incentives and systems of accountability. Finally, much of the recent literature on multigrade classes points to the importance of national policy in delivering effective multigrade teaching. National policy decisions are necessary with regard to:
• creation of a decentralised administrative system
• provision of teacher training in multigrade techniques
• recruitment and support of multigrade teachers
• curriculum adaptation
• development and allocation of resources to multigrade schools.

9.   Implications of the literature for teacher development

When considering the implications of the multigrade literature for teacher development it is necessary to take into account that in South Africa:
• large numbers of primary school teachers teach multigrade classes but have no pre-service or in-service training in dealing with such classes
• the number of teachers who teach multigrade classes will increase with population movement and the implementation of the new teacher:pupil ratios
• the teachers of multigrade classes are generally in under-resourced schools
• the schools with multigrade classes are difficult to access both in terms of distance and in terms of poor infrastructure such as roads, telephones, faxes etc.
• teachers view multigrade teaching negatively
• teachers in rural schools where multigrade classes are most common have the lowest academic and professional qualifications of the teacher cohort
• there are currently no teacher training courses aimed specifically at multi-grade teaching

- provincial education departments have limited financial resources at their disposal.

Perhaps the most important finding of the literature reviewed is that, while the international literature promotes multigrade teaching as a means of improving access to primary education, studies in developing countries suggest that pupils in multigrade classes are disadvantaged compared to their single-grade peers if multigrade teachers are not appropriately trained and supported with learning materials.

Policy makers also need to note that there is widespread consensus in the literature from developed and developing countries that multigrade teaching:
- is complex and demanding;
- requires high levels of organisation and planning;
- requires large; amounts of learning resources especially self-directed learning material.

An implication of these findings is that multigrade classes are not suitable for under-resourced situations and therefore addressing the needs of multigrade teachers is not easily accomplished, especially in a country such as South Africa which has limited resources. In such a situation the needs of multigrade teachers have to be weighed against the many other demands faced by education departments. In South Africa provincial education departments will have to consider their redress priorities. It is possible that the education departments of the Western Cape and Gauteng, with relatively few rural schools, will not wish to re-direct precious resources to multigrade teaching requirements but that the Northern Cape and Free State which have large proportions of teachers teaching multigrade classes will see this as a priority.

A second implication of the multigrade literature is that education departments face a difficult choice concerning the teachers who are employed to teach multigrade classes. The literature suggests that these teachers require special skills and training, should be highly conscientious and resourceful and have excellent planning and organisational skills. It is unlikely that teachers with these attributes will be found in rural areas. On the other hand the studies reviewed indicate that teachers deployed to rural areas almost inevitably face social and professional isolation which results in a high turnover rate. Teachers recruited from rural communities would not face these problems but would require extensive training and support to provide the skills required for effective multigrade teaching.

Other implications of the literature on multigrade teaching for teacher development are:
- primary school in-service providers should be encouraged to offer courses in multigrade teaching techniques. This would require in-service training for teacher educators. Teachers with experience and expertise in multigrade teaching will be useful resources in developing and presenting such courses. This would also promote the status of teachers in rural areas;

- primary school pre-service providers should be encouraged to provide a proportion of their students with practical teaching experience of multigrade classes;

- materials developers should be encouraged to produce high quality, low cost self-directed learning materials.

In addition to the above there seems to be a strong case for all primary school inservice and pre-service providers offering courses in multi-level teaching techniques and classroom management. The reason for this is that:
- all teachers confront mixed levels in their classes
- many teachers in urban and rural settings face considerable age ranges in their classes. (A Joint Education Trust study in the Northern Cape found that in a random, representative sample of 15% of primary schools the age range for Std. 2 was 8 to 18 years of age.)
- the multigrade teaching curriculum and approaches are compatible with those advocated for outcomes-based education (OBE) such as the integrated curriculum, pupils working at their own pace at various levels etc.

In this context the development of teacher training courses and learning materials suitable for multigrade classes would benefit all teachers especially those with mixed ability levels and ages. The current development of new curricula and materials for OBE provides an opportunity for the development of teacher training courses which address teaching in multilevel classes and the production of materials which promote self-directed learning.

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PRESIDENT'S EDUCATION INITIATIVE

(PEI) SOURCE DOCUMENT

WHOLE SCHOOL DEVELOPMENT
AND
IN-SERVICE TEACHER DEVELOPMENT

Prepared by
Sacred Heart School Development Project

Commissioned by
Joint Education Trust

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TABLE OF CONTENTS

PART A

LITERATURE ON SCHOOL DEVELOPMENT ITS RELATIONSHIP TO INSET

PART B

WHOLE SCHOOL DEVELOPMENT PROJECTS IN SOUTH AFRICA

This document is written as part of a set of source documents providing points of departure for in-service teacher development with regard to teaching in large classes, teaching of multi-grade classes and teaching in a multi-lingual environment. The focus of the document is on whole school development (WSD) with particular reference to sustaining and supporting teacher development.

as envisaged, for example, by National Department of Education documents such as the 1995 White Paper on Education and Training, the 1996 Schools Act, and the 1997 National Policy on Teacher Supply, Utilisation and Development. These policy documents envisage, for example:

- education and training as a basic human right
- lifelong learning
- articulation of learning experiences through a National Qualifications
- Framework and South African Qualifications Authority
- outcomes based education and assessment
- greater devolution of powers to school governing bodies with majority parent membership

These and other goals of the new education system place particular demands on teachers as key agents in education, and therefore on policies for teacher support and development. As the National Policy on Teacher Supply, Utilisation and Development (NPTSUD) states:

Government's goal of quality teaching and learning for all South Africans will not be achieved unless a culture of teaching and learning is restored. Clearly, new teacher policies will be a critical means to this end. To be effective, teacher policies must take cognisance of the current contextual realities, while developing teachers for a new future, and they must be combined with other strategies to bring about school reform. (1997, p, 2)

2 Review of international literature on school change

These approaches are:
- the effective schools approach
- the school and classroom quality improvement approach (including school development planning)

Much is made in recent literature relating to differences between the two approaches in terms of their epistemology and methodology. This has been so fully documented elsewhere (see Jansen, 1995; Schereens, 1992; Reynolds and Cuttance, 1992) that this review will not develop it further.

2.1 Effective Schools Approach

Britain's Plowden Report (1967) pointed to the learners' home backgrounds as being the single biggest influence on their academic achievements. As Coleman put it, '...schools bring little to bear upon a child's achievement that is independent of his background and general social context' (1966, p. 325) .
- professional leadership
- shared vision and goals
- a learning environment
- concentration on teaching and learning
- purposeful teaching
- high expectations of students
- positive reinforcement
- monitoring progress
- pupil rights and responsibilities
- home-school partnership
- a learning organisation

However, there is a greater degree of agreement among school researchers concerning the need to focus explicitly on learner outcomes (Sammons et al, 1994, p 3). Sammons (1994) draws attention to the necessity of conducting case studies into both effective and ineffective schools. She argues that this would enhance understanding of the processes of effectiveness.

2.2 School Quality Improvement Approach

Though hard to define in precise terms, quality is an important concept in schooling and can be used as a point of leverage for change.

- It has been found that change can take place in small, incremental steps (Verspoor 1989) which can have a positive effect on teaching and learning.

However, another strand of research relates educational change to the dramatic restructuring of schools (Levin 1991). But no matter which strand is followed, At times, too much attention is given to talking about educational quality solely in professional terms and not enough about changing curricula and teaching methods.

As a result the literature often ignores writing about education as a shared process between learner, educator and parent (Stuart, 1994, p 11).

As can be seen, this approach to school improvement relies heavily on understanding school change (see Fullan, 1992).

In practice, school development planning is a fairly long term process, the focus of

which is on the actual implementation of change(s) democratically agreed upon. Outside agents are often required to assist schools with this process which is made up of a range of activities. These activities usually include:

- assessing the situation in a school
- deciding what to change
- setting goals planning for the change
- implementing the change
- evaluating the change

2.2.2 Whole School Development (WSD)

In Britain, WSD as seen by Bradley (1995) has two foci (the individual and the school) around which a number of activities take place. Bradley argues that even though teachers should have maximum control over their own Inset, this does not necessarily lead to school improvement. Southworth and Fielding (1995) talk of a 'learning school' as one having levels of interaction which relate to each other in a dynamic way. These learning levels include:

- learners
- individual teachers
- staff as a whole
- the organization
- leadership structures

Similar points are informed by the Improving the Quality of Education for All (IQEA) project based at Cambridge, UK, and are used by Southworth and Fielding (1995) to address important conditions of school improvement.

2.3 Research in developing countries

In their research in developing countries such as Bangladesh, Colombia and Ethiopia, Dalin et al (1992) identify important common elements outside schools that have made reform successful:

- Rural primary education has been a political priority, wherein people with knowledge, skills and commitment have conducted strong team efforts to carry out the reform.
- Common strategies to bring about the change have been:
    - a focus on changing classroom practice and teacher development to aid this process, and
    - provision of Inset and consultants necessary to change teaching practices.

This is a strong argument for the WSD approach being of particular importance in a

developing country like South Africa.

So far, this report has looked at different approaches to school change and school development. What, then, are the implications for Inset?

There are various approaches followed in providing Inset to practising teachers. Bolam (1982) traces the history of Inset in the United Kingdom and illustrates how the school-based approach to Inset emerged out of models of teacher professional development. Another approach argues that school-focused Inset requires all members of staff to have a role in the running of the school and in supplying the Inset approaches adopted (Newton and Tarrant, 1992, p 12).

Inset can be an extremely powerful vehicle for achieving change if the process is carried out effectively and successfully (Newton & Tarrant, ibid, p 22). However, the problem in the past was related to the traditional model within which Inset programmes functioned. Bolam talks of this traditional model as characterized by individual teachers being removed from their schools for training and then returning. Teachers often judged the content of these courses to be irrelevant to the diverse contexts from which they came.

Within a school-based Inset approach, an important question is: Whose needs are being listed, prioritized and presumably acted upon? It may be that school management structures (principals and deputies) are able to define the school's needs in relation to organizational development improvement. However, a potential problem exists if service providers remain at the level of school management when implementing change processes. This type of intervention may well have little or no effect on the actual teaching and learning processes which are central to school quality.

Having briefly outlined international research trends in school effectiveness and school development and their Inset implications, the report now turns to South African literature.

3   Review of South African literature on school change

-    establishing what the desired outcomes of education are
-    identifying those inputs which will have the greatest impact on quality and student achievements
-    determining the combination of inputs to education which will best facilitate change
-    ascertaining a causal relationship between quality and efficiency on one side, and the mix of inputs which would enhance this on the other
-    bearing in mind the costs which would be incurred during change

A major challenge currently facing South African policy makers relates to deciding

the mix of inputs and policy needed to improve the quality of schooling. Checklists have the advantage of focusing attention on aspects of schooling that might provide leverage for change. However, policy makers and educationists who apply checklist approaches may not be facilitating a process of change within schools. Checklists may be misleading as they represent important characteristics of school improvement as separate entities, whereas in practice these characteristics function in complex and integrated ways, depending on the context.

3.1 Literature on school effectiveness, school quality and whole school development

While policy makers need accurate information about schooling in the form of quantifiable data, in the South African context the incorporation of qualitative measures is an important way to get a more complete picture of schooling. The incorporation of both quantitative and qualitative data can result in a policy framework that is both simple and flexible.

Clearly, it should be noted the reliance on only qualitative data could leave policy makers with yet another approach that may suffer from the inverse set of limitations to quantitatively-based effectiveness research. It seems that research which is both qualitative and quantifiable would be of most help to policy makers.

Factors which were anticipated but not found to be related to resilience were:
- governance structures
- parental involvement in governance
- relationships with education departments

A number of suggestions are made for policy makers working for school change:
- foreground teaching and learning
- work as close to the schools as possible
- involve leadership in a broad way
- strengthen the organizational capacity and leadership
- build legitimate discipline and authority
- work to achieve a safe and secure environment
- encourage a sense of agency and responsibility

3.2 Material from NGOs on WSD

Part B of this report provides information on NGO initiatives in WSD; this section looks only at three sets of available material on the topic.

While most NGOs produce booklets which give funders brief reports on the processes and practices of the NGO, not much research or evaluation has been done on WSD approaches. An exception is the Education Support Project (ESP)

which produced a report on a pilot project 'Matlafalang' which ran during 1993 and 1994. The Matlafalang working group was established early in 1994 to take forward the implementation of the school based and school centred phase of their Inset pilot project. Schofield (1994), a member of the Matlafalang working group, agrees that South African researchers and theorists into WSD could learn from international experiences in countries such as Malawi, Zimbabwe, South Australia, United Kingdom, and British Columbia (Canada). Case studies in these countries have not always been conducted in depth. However, they do provide a useful summary of lessons for WSD in South Africa, including:

- the objectives of the teachers and not external facilitators must take precedence;
- teachers are allowed to reject initiatives they feel will not contribute to their intellectual growth;
- school based programmes should link up with district and departmental issues;
- programmes need departmental support; and
- initiatives should be school based and not school focused.

Bradley (1995, quoted earlier) would agree with Schofield about teachers having maximum control over their own Inset, but cautions that this alone does not necessarily lead to school improvement.

She related the breakdown of the culture of teaching and learning in South Africa to the following four factors:

- financial and material constraints
- poor governance structures
- teaching and learning
- socio-political factors

Workshop participants took part in an exercise designed along the lines of school development planning. Factors identified in this process were:

- quality of management
- quality of learning and teaching
- quality of learning materials and learning activities
- personnel and staff
- commitment
- building and equipment - communication
- relevant curriculum
- culture of work

Participants developed strategies for engaging government and NGOs in school development. The manual served as a facilitator's guide for WSD workshops.

What emerges from this brief review is the importance of developing within South

Africa a set of contextually relevant conditions for the improvement of the quality of schooling.

3.3   Inset and school development in South Africa

As the National Policy on Teacher Supply, Utilisation and Development (NPTSUD) points out, much of the Inset provided in South Africa has taken the form of short courses and workshops with little follow-up in the school. Consequently, 'its impact on teaching and learning in the classroom is limited' (1997, p. 34).
More fully, the NPTSUD states:
> ...the prevalence in the field of short INSET courses which are internationally regarded as generally ineffective, is worrying and indicates the need for more school-focused INSET, based on holistic approaches to solving the context-specific needs of teachers and schools.

This can be seen in the role NGOs play in Inset, which has tended to be aimed at attempting to make up for poor quality Preset most teachers received, rather than helping schools embark on innovative developments.

The work of Hofmeyr (1991; 1994) has been significant in outlining existing Inset patterns, including their strengths and weaknesses, and in arguing for Inset to be school-focused.

There are a number of points to note about approaches to Inset in the South African context in relation to the issues of large-class, multi-grade and multilingual classrooms:

-   Firstly, it is important to note that the challenges posed by teaching in large classes, teaching of multi-grade classes and teaching in a multi-lingual environment are whole school problems; they are not likely to affect only some teachers in some parts of a school. This itself suggests that for Inset to address these issues, Inset should be located within the context of whole school development.
-   Secondly, research on the culture of learning and teaching in South Africa indicates that the problems facing schools are complex and multifacetted. The Report of the Gauteng Committee on the Culture of Learning and Teaching (Chisholm & Vally, 1996) sets out a number of interrelated issues contributing to the collapse of schooling.

    These conditions are:
    -   infrastructure (school buildings, facilities and resources)
    -   leadership, management and administration

- relationships between principals, teachers, students and parents
- relationships with education departments

An implication of this research is that Inset which targets teachers' skills without addressing these! wider school issues is not likely to succeed in rebuilding a culture of learning and teaching in dysfunctional schools. Taking this further, Christie (1997) has argued that the organizational failure of these schools contributes to the breakdown of their 'real work', namely teaching and learning. This implies that organizational development needs to accompany other Inset strategies addressing teaching and learning.

At the same time, it is important to recognise that courses for school leadership, though important: in establishing enabling environments in schools, will not necessarily themselves change teaching and learning practices. Leadership courses also need to have a wider focus than school principals and deputies, and need to keep the central goals of schools in mind, namely teaching and learning.

Similarly, approaches to school improvement through development planning or governance may be very important in binding those stakeholders together to develop common purposes and procedures, and a sense of responsibility within the school. However, development plans and governing bodies themselves need not necessarily lead to improvements in teaching and learning. Again, it is important that interventions in these areas are mindful of the importance of teaching and learning in improving the quality of schooling. This in itself suggests the benefits of a WSD approach to school improvement.

Thirdly, as noted earlier, the current South African education reform agenda will place continuing demands on teachers, who will need to develop their own competences in a career of lifelong professional development. This suggests that long-term, continuous teacher learning' needs to have a central role in building a professional community. As Lieberman points out in the context of the USA,

> ... if reform plans are to be made operational, enabling teachers to really change the way they work, then teachers must have opportunities to talk, think, try out, and hone new practices, which means they must be involved in learning about, developing, and using new ideas with their students (1996, p. 189)

Lieberman supports the view that it is not enough for teachers to hear about new ideas on teaching; these ideas need to be located firmly within the context of the curriculum, the classroom and the school itself. Inset needs to be attached to classroom life, and teacher learning needs to be supported within the culture and daily practices of the school. In this conception, teacher development is central to the restructuring of schools.

In the words of Darling-Hammond and McLaughlin,

> To serve teachers' needs, professional development must embrace a range of opportunities that allow teachers to share with one another what they know and what they want to learn, as well as to connect their learning to the contexts of their teaching. Professional development activities must allow teachers to actively engage in experiences with others that are sustained over time, to reflect on the process as well as the content of what is actually being learned. (1996, p. 206)

Fourthly, an important approach to school development in the South African context is to build responsibility at the school level. It is important to break a logic of compensation' through Inset, and to build relationships of collaboration and ownership among school stakeholders. In this model, improving teachers' competence is not simply about building individual capacity; rather it is about building institutional capacity. Inset is not merely about developing and building institutional capacity for its own sake, but building it in relation to teaching and learning as the central activities of the school.

Finally, in conclusion, support from education department is crucial for Inset to be successful in terms of whole school development, but most importantly the support needs to come from the departmental section which has direct contact with schools themselves. Outside agents like NGOs also have an important facilitating role to play. The key to success seems to be the integrated planning of all aspects of Inset.

The following section offers examples of projects which are currently addressing the issue of WSD within the South African context.

PART B   WHOLE SCHOOL DEVELOPMENT PROJECTS IN SOUTH AFRICA

Two sets of initiatives on WSD in South Africa were surveyed: NGOs and provincial education departments.

1 NGOs

Nine NGOs were consulted concerning whole school development (WSD) programmes they run, or will run. The selection of NGOs was based on:

- information supplied to JET during the Teacher Education Audit (NGO Sector) conducted in 1995
- NGOs contacted by Potterton for a research project on school development in South Africa (see Christie et al 1997)

- those NGOS which have a holistic approach to WSD

Other NGOs, like MSTP (Management of Schools Training Programme) who are generally involved in management training, have not been included separately but are mentioned where they work with other NGOs. As JET has already conducted a country wide audit of NGOs in 1995, this report will not duplicate their findings, but will take a more in-depth look at fewer NGOs involved in WSD.

2 Provincial Education Departments

All provincial education departments were asked to provide information on WSD projects they are running, and seven out of nine replied. In some cases, provincial education departments have formed partnerships with various NGOs, and these are considered together.

Each project mentioned in this section was contacted directly and an in-depth interview, either telephonically or personally, took place. These conversations were summarized and faxed to the contact person(s) for revision. Not all the faxes were responded to within the time frame of this report, and several key informants could not be contacted for a variety or reasons.

The following pages contain tabulated information concerning each initiative followed immediately by a surnmarizing comment.

CATHOLIC INSTITUTE OF EDUCATION (CIE)	
PROJECT	Whole School Development and Renewal in Catholic Schools
CONTACT	Mark Potterton
PHONE NUMBER	(011) 433-1888
LOCATION	Western Cape; KwaZulu Natal; Eastern Cape; Gauteng; Northern Cape; Free State
SCHOOL LEVEL	Primary and high schools
NATURE	Defined as "A movement which will support and sustain the empowerment of local institutions, leadership and management, parents, teachers and students, in transforming educational structures and practices and nurturing the needs of a democratic, just and prosperous society."
SCOPE	Various numbers of schools are involved in each of the following provinces: Western Cape - 8 schools KwaZulu Natal - 20 schools Eastern Cape - 40 schools Gauteng - 9 schools Northern Cape - 20 schools Free State - 14 schools
EVALUATION AND/OR RESEARCH	Andrew Schofield will evaluate the Western Cape project in May 1997. Mark Potterton will evaluate the KwaZulu Natal and Eastern Cape projects in June 1997. These evaluations are interim and formative. Six areas have been identified to consider. They are: - The appropriateness of the framework used in each context to carry out school development. - The materials developed in the project. - The approach taken at school level and the nature of involvement of the school community. - The costs involved. - The impact of the project to-date. - The future of the project, and how it relates to the education system.
FUTURE PLANS	WSD programmes run by the CIE would like to seriously consider the moral purpose of schooling, within the framework of reconstruction and development.

COMMENT:

Potterton argues strongly for WSD programmes to establish a focus, within a holistic framework, and maintain it. The focus of the CIE WSD project is on developing capacity in individual schools to understand their own needs, through a process of development planning. Various forms of reflection are used to help those involved assess the needs of their school within that context. School Development Committees are suggested as the mandated group to take the planning further in an attempt to develop agency within the school and by so doing, empower people.

EASTERN CAPE DEPARTMENT OF EDUCATION (ECDE)	
CONTACT	Zolisa Loni
PHONE NUMBER	(0433) 33609/33997
LOCATION	Eastern Cape
SCHOOL LEVEL	High schools and primary schools.
NATURE	In the Bisho area the HRD (Human Resources Development Unit) is involved in facilitating the process of electing school governing bodies. This is in an attempt to involve all interested parties (parents; learners; educators; non-educators) in capacity building. The focus of this work is on the revitalization of the culture of teaching and learning.
SCOPE	Bisho - all schools are involved
EVALUATION AND/OR RESEARCH	Internal evaluation in a continuous way. External evaluation once the project is complete.
FUTURE PLANS	Training teachers in OBE (Outcomes based education)

Comment:
In common with many other provincial departments of education, the Eastern Cape department is concerned with implementing the 1996 School's Act, especially relating to the election of governing bodies.

EDUCATION QUALITY IMPROVEMENT PROGRAMME (EQUIP) FACILITATED BY NATIONAL BUSINESS INITIATIVE (NBI)	
PROJECT	EQUIP
CONTACT	Susan Meyer
PHONE NUMBER	(021) 418-3141/2/3
LOCATION	Different regions within Gauteng, KwaZulu Natal and Western Cape.
SCHOOL LEVEL	Primary and high schools
NATURE	Overall intent and methodology EQUIP provides schools with a process and partnerships to help them: - accept responsibility for own development - manage their own systems changes in line with national and provincial education policies - improve teaching and learning The process involves: - the identification of specific goals relative to good school benchmarks - the drawing up of plans to achieve these goals - the implementation of the plans - the evaluation of implemented plans Basic principles: The approach to WSD is holistic (the different strands of work that go into quality teaching and learning must hold together. An external agent is needed to drive this approach.) - a commitment to quality - school focus - policy coherence - education authorities' responsibility - supporting networks - equitable access - flexible implementation EQUIP uses a WSD approach to improve the quality of schooling with a governance focus as the entry point - work with the principle of stakeholder involvement. The educational management of the school needs to be developed to articulate with EQUIP's governance thrust which is characterized by: - bridge the gap between school and community but in a real way, not just via rhetoric (people must be able to make real decisions) School Development Planning This approach is the method used to put key principles into action. In EQUIP the NBI insists this involves all stakeholders under auspices of governing bodies. While teachers are a key group of stakeholders, the principle of school-level partnerships in EQUIP implies that it is not enough to work with them alone.
SCOPE	Try to maintain a balance between urban and rural schools (primary and secondary). Most projects work on the geographic principle of clustering.

EVALUATION AND/OR RESEARCH	There are different nuances/strands emerging from the EQUIP work being done in various provinces. These nuances are related to the character and capacity of the provincial department of education, philosophy and approach of NGOs involved, cultural factors, and the level of business support. The NBI's aim was to commission an external evaluation over a four year period to track the developments of these different approaches to WSD, and to assess the impact the implementation has had on teaching and learning. But funding for this has not yet been assured. However, work has been initiated regarding internal monitoring in provinces and schools. Canada/South Africa Education Management Development Programme (School Performance Project): One subcomponent of this larger intervention is made up of representatives from NBI (Susan Meyer); 4 provincial departments (Eastern Cape; Western Cape; Gauteng; North West); the national department; 5 universities (Wits; Fort Hare; UWC; UCT; North West) and the Canadian government - to develop indicators of school performance (related to efficiency; effectiveness and quality more broadly).
FUTURE PLANS	To expand EQUIP as more businesses wish to become involved. Also to establish EQUIP programmes in other provinces. Two key challenges face this: - the quality focus embedded in the principles of EQUIP (to ensure a holistic approach to WSD) must be maintained. - the facilitation capacity must be expanded beyond the NBI and current NGO partners.

Comment:
EQUIP has emerged out of research and policy work, as well as the implementation of projects, over a period of 3 to 4 years. Within EQUIP the NBI distinguishes between governance and management, and takes a governance route. Meyer comments that in South Africa, as in many developing countries, the state does not have the capacity to improve the quality of teaching and learning alone. Partnerships are necessary, but not just from the business sector. Communities are major contenders in partnerships where their involvement can, over time, make a significant impact. She cautions that parents could remain marginalised and an untapped resource in South Africa if their involvement remains at the level of rhetoric. Business support can function as a catalyst for change. This support assumes a variety of forms - money; help schools by "business" people becoming involved; "in kind" support (eg financial management). The NBI's role is to continue the process of motivating business to become/remain involved in a coherent and holistic programme. Within school development planning are the elements of implementation and evaluation which have been problematic for other projects.

FREE STATE DEPARTMENT OF EDUCATION (FSDE)	
CONTACT	Thabo Nthunya
PHONE NUMBER	(051) 407-4043/4105
LOCATION	Free State
SCHOOL LEVEL	Primary, farm and high schools.

NATURE	Canada/South Africa Education Management Programme facilitate a number of workshops on education management training.
	
	- managing the process of change; leadership for school development
	  attended first by the chief directorate and district mangers; secondly by principals and school management developers
	- school improvement
	  attended by school principals, school management developers, teacher developers and appraisers, and one teacher from each school
	- co-operative learning
	  attended by principals of farm schools
	- follow-up on managing the change process and school leadership
	  attended by principals, school management developers, and teacher developers and appraisers

SCOPE	Large numbers of schools involved.
EVALUATION AND/OR RESEARCH	Too early for evaluation but funds have been requested from RDP COL to audit and evaluate the process at a later stage.
FUTURE PLANS	To run training for school governing bodies: - the aim is to train a core group of trainers - a tender is out for a service provider to do this type of training

Comment:
While also concerned with the election of governing bodies, the Free State Department of Education wishes to raise money for a service provider to assist with capacity building after governing bodies have been elected. This department is basing the training of governing bodies within a much wider framework of development.

GAUTENG DEPARTMENT OF EDUCATION (GDE)	
CONTACT	Hemant Waghmarae; Sally Cohen; Albert Chanee; Brian Chinsamy
PHONE NUMBER	(011) 355-0472;/0496
LOCATION	Gauteng Province
SCHOOL LEVEL	High schools and primary schools
NATURE	This department runs an number of initiatives and pilot projects in WSD. As such, there is no restriction to a particular model or strategy, flexibility is a key issue. However, all initiatives are based on the following premises: - schools have autonomy ; - schools will be helped to develop as "learning organizations"; - initiatives are partnership-driven and not dependent on bureaucracy. Three projects were considered : 1 Governance: This project links governing body, school management and district officials together. Training is focussed at the level of district officials. An NGO (MSTP) works in partnership with GDE to develop training materials as a conceptual process. 2 Pilot Project in Vaal Triangle: The National Business Initiative (NBI) funds an NGO called EQUIP. EQUIP works with GDE in a 9 school pilot project in the Vaal Triangle. It is hoped that the department's WSD model will emerge from this pilot which concentrates on the establishment of governing bodies, school development committees and five year plan of needs. 3 Work managed by Andrew Schofield: Schofield is a full time co-ordinator to develop schools in the Soshanguve area. He works in strategic planning at grass roots level (zero budgeting). School development plans and budgets are incorporated into district, region and finally head office plans and budgets.
SCOPE	Many schools throughout the province.
EVALUATION AND/OR RESEARCH	Khulisa Management Services are evaluating the material developed by MSTP and GDE.
FUTURE PLANS	The department is working on developing a pedagogic process which will have WSD as one of its components. The structure of WSD will depend on the pedagogy developed. As soon as this structure is accepted as policy, then an infrastructure for WSD will have to be established to support it.

Comment:
Like the CIE, a key focus of the GDE is on helping schools become independent. An important issue raised by GDE relates to the departmental infrastructure. The organizational structure of the department would change if WSD became a component of its educational pedagogy. GDE acknowledge that WSD requires an infrastructure to support it. Currently, many departments are fragmented in nature and this translates into a fragmented approach to school development.

INSTITUTE FOR TRAINING EDUCATION AND CAPACITY BUILDING (ITEC)	
PROJECT	ITEC Siseko Unit Management Development Project
CONTACT	Geraldine Nicol
PHONE NUMBER	(0431) 43-8333
LOCATION	Eastern Cape
SCHOOL LEVEL	Primary schools and high schools
NATURE	Siseko: Grade 0 - Grade 3 teachers are trained including the training of lead teachers. Classroom based support visits and provision of resources. Central Region: School management and governance project management. Education management development. Capacity building and developing skills in self-development.
SCOPE	Siseko (Lynn Campbell) Central region (Phumzile Tywala)
EVALUATION AND/OR RESEARCH	Observation of teachers in their classrooms for baseline data. Pre-impact, impact and post-impact assessment to develop an evaluation instrument.
FUTURE PLANS	Distance education. Translation of materials. Production of training manuals for sale.

Comment:
ITEC has many other projects underway (eg Resource Centre; Mathematics, Science and Technology Project; Internal Services; Computer Training Centre for Employment Skills). At this stage the report is not sure how these different projects are co-ordinated into WSD. Possibly, fragmentation of projects is experienced by ITEC in much the same way as many provincial education departments have a fragmented infrastructure.

KWAZULU NATAL DEPARTMENT OF EDUCATION (KZNDE) & EDUCATION QUALITY IMPROVEMENT PROGRAMME (EQUIP)	
PROJECT	Thousand Schools Project
CONTACT	Mildred Mkhulisi
PHONE NUMBER	(031) 260-1596
LOCATION	KwaZulu Natal
SCHOOL LEVEL	Primary and High schools
NATURE	The project works in 5 areas: - English - Maths - Management - Thinking skills - Governance For the last two (Thinking Skills and Governance), KZNDE uses various service providers. This has not worked well due to fragmentation of NGOs and lack of funding. The process is based on assessing what teachers are doing and proceed from there, however, implementation is a difficult issue. Workshops are run on WSD.
SCOPE	10 regions - 200 schools 70% are primary schools 30% are high schools
EVALUATION AND/OR RESEARCH	Implementation evaluation conducted by University of Durban. Impact research conducted by University of Zululand. The latter is summative as the Thousand Schools project is coming to an end.
FUTURE PLANS	Potential links with Colleges of Education. They would like to "bridge the gap" between PRESET and INSET. Lecturers would be used to establish satellite schools of "good quality" in which student teachers would do practice teaching. Qualified teachers could observe lessons in these schools as well.

Comment:
KZNDE has strong links with EQUIP in the Thousand Schools project. The department experienced the fragmentation among NGOs when setting up partnerships. Implementing plans developed within schools is openly acknowledged as a problem. KZNDE and EQUIP identify, correctly we would say, that implementation is the whole point of planning exercises. They also raise the issue of the possibility of colleges of education being used to facilitate the WSD process.

LINK COMMUNITY DEVELOPMENT	
PROJECT	N/A
CONTACT	Martin Prew
PHONE NUMBER	(011) 440-1265
LOCATION	KwaZulu Natal; Northern Province and Gauteng
SCHOOL LEVEL	All schools in Soshanguve district.
NATURE	Pilot project in Nongoma, KwaZulu Natal, on a holistic approach to school development - 1993-1995 (Vulani project). Workshops with other NGOs (ESP; CIE; EQUIP; MEDU) during 1995 on WSD to develop commonalities of approaches and understandings and to discuss case studies. Work in Northern Province is focussed on management changes within colleges of education. The aim is to link colleges with clusters of schools and teachers so that the college becomes integrated with the community. Partnership with GDE in N4 district (Soshanguve) on process of school development. Schools are given control of the process of identifying their own needs. The role of the department emerges from this analysis which is done at school level. The focus is on taking a WSD process "to scale".
SCOPE	88 schools in Soshanguve rural schools in Northern Province Colleges of education
EVALUATION AND/OR RESEARCH	Write articles for SADTU (South African Democratic Teachers' Union) news. An inclusive evaluation process made up of: - base-line evaluations in schools - select a sample of 10 schools in Soshanguve district and interview stakeholders - train teachers as evaluators who can interact effectively with their peers (this is linked to teacher appraisal)
FUTURE PLANS	Continue taking the WSD process to scale.

Comment:
LINK has developed a strong network with other NGOs. Colleges of education are seen as one way to involve the community in rural schooling. LINK's focus in Gauteng is on taking WSD to scale through a partnership with the GDE. Prew comments that LINK has lost the "personal touch" in favour of making a bigger impact. The aim of their evaluation is an attempt at obtaining quantifiable indicators of qualitative change. In this way policy makers could have accurate and quantifiable data on which to base their decisions.

NORTHERN CAPE DEPARTMENT OF EDUCATION (NCDE)	
CONTACT	Sue Dreyer
PHONE NUMBER	(0531) 81-1541
LOCATION	Northern Cape Province
SCHOOL LEVEL	Primary and High schools.
NATURE	Facilitators are being trained to run workshops on Outcomes Based Education (OBE) and the National Qualifications Framework (NQF). There is an emphasis on governance which will include the training of principals and the establishing of electoral offices. The management structures of schools will help others in the area perform the same function.
SCOPE	All schools in the province.
EVALUATION AND/OR RESEARCH	N/A
FUTURE PLANS	N/A

Comment:

This department is concerned with the implementation of Curriculum 2005. As with other education departments, the WSD focus is on governance and the training of school management structures.

NORTHERN PROVINCE DEPARTMENT OF EDUCATION (NPDE)	
CONTACT	Mumsie Mogadime; Shibu Mariti; Daniel Phakgadi
PHONE NUMBER	(0152) 223-3970; 082-925-2833; (014) 736-2235 respectively
LOCATION	Northern Province
SCHOOL LEVEL	all
NATURE	Working with MSTP and SHC R&D in educational management development programmes. In the central region, Konekwela, a project was run out of a college of education. This process was to involve all stakeholders in setting up school development committees, supportive of governing bodies. This was in association with LINK.
SCOPE	N/A
EVALUATION AND/OR RESEARCH	N/A
FUTURE PLANS	N/A

Comment:

The Northern Province has established very strong links with NGOs. It is hoped that these partnerships will establish a strong WSD focus within the province.

PROMAT	
PROJECT	Jozini Effective Schools Programme
CONTACT	Marion Higgs
PHONE NUMBER	(012) 343-2275/6/7
LOCATION	KwaZulu Natal
SCHOOL LEVEL	High school and primary schools
NATURE	Monthly meetings with a committee of the schools' principals. The steps are as follows: - conduct a needs analysis - principals prioritize these needs - PROMAT supplied each school with funds - committees ran budget, accounts and justified expenditure relating to the prioritized needs - a proposal was written for each school - focus now shifts to classroom development and curriculum needs - committee prioritize needs - PROMAT suggest service providers - committees manage workshops
SCOPE	One high school and eight "feeder" primary schools all in the Jozini area of KwaZulu Natal.
EVALUATION AND/OR RESEARCH	The project manager produces detailed reports for the funders. At the moment, there are no plans for an evaluation as this project has just begun.
FUTURE PLANS	Intend to make this a replicable model if more funding becomes available.

Comment:

PROMAT is working with a limited number of schools as a pilot study. Should the pilot be successful, and more funding be secured, Higgs would like to see this approach replicated.

SACRED HEART COLLEGE RESEARCH & DEVELOPMENT (SHC R&D)	
PROJECT	President's Schools Project
CONTACT	Takalani Nwedamutswu
PHONE NUMBER	(011) 648-6264/5247/7838
LOCATION	Northern Province
SCHOOL LEVEL	Primary schools
NATURE	SHC R&D was approached by the MEC in the Northern Province to manage this project. This is done by the project working through provincial structures in an attempt to build capacity within the education department and Northern Province teachers. The project has five main components: 1 School Development This component works with school management and governing bodies (parents). Facilitators guide each management structure to analyze its needs based on a SWOT analysis. These elements are then prioritized and worked on. Workshops are run at a central point in Seshego, namely the Education Resource Centre (ERC). Follow-up support is provided by regular visits to schools. 2 Curriculum All teachers are introduced to OBE (Outcomes based education) and the NQF (National Qualifications Framework) and the implications this has on their practice. Thereafter the curriculum unit concentrates on three of the eight learning areas (Human and Social Sciences; Communication, Literacy and Language Learning; and Natural Sciences). This section of the curriculum work is characterized by both on-site and three day workshops at Sacred Heart College. While at Sacred Heart, visiting teachers team up with a SHC teacher in the same grade. Thus NP teachers can observe OBE in practice. After returning to their own schools, teachers are supported by a SHC development officer to work with peers to further develop the curriculum. General curriculum workshops dealing with assessment and materials adaptation and development are also included. 3 Administration and Finance This unit will work with governing bodies in an attempt to put into practice the responsibilities given to them by the 1996 School's Act. During 1997, all teachers are being trained in word processing and speadsheeting. 4 Technology In addition, another NGO (Reach & Teach) are equipping one technology-based classroom for use by Grade 1 teachers. Teachers are being trained on how to use this Technology Based Learner Centred Environment (TBLCE).

NATURE	5 Mathematics and Science
	Consultants from the major funders will be running maths and science courses at the ERC.
	An important element of the SHC R&D project is its emphasis on the development of written materials.
SCOPE	6 Primary schools in 4 regions.
EVALUATION AND/OR RESEARCH	Each component of the project has written performance indicators. A staff member functions as evaluator and monitor to report on the extent to which these indicators are being met. An independent evaluation will be conducted at the end of 1997 and at subsequent intervals
FUTURE PLANS	The project will continue to develop capacity within the Northern Province Department of Education.
	The curriculum unit will expand into other learning areas (eg Arts and Culture).
	In 1998 SHC R&D plans to collaborate with MSTP and thus extend to 60 schools in the province. This will be operated from the ERC.

Comment:
The main focus of the SHC R&D WSD project is on sustainability. Their perspective is that many NGOs in the past have established contact with schools and for a variety of reasons, mainly relating to funding, these contacts have not been sustained. By working directly with regional officials who have direct contact with schools, SHC R&D hope to develop capacity within the departments to assure sustainability

TEACHER INSERVICE PROJECT (TIP)	
PROJECT	N/A
CONTACT	Sue Davidoff
PHONE NUMBER	(021) 959-3630
LOCATION	Western Cape
SCHOOL LEVEL	Primary and high schools.
NATURE	TIP is an organization development consultancy wich uses various interventions to build up the school as an organization. Whole school organisational development is something that binds stakeholders together. - TIP do not follow a programmatic approach. - They have no set package but do follow systematic organizational development principles. - As such, every intervention is different, but within TIP's principles. - A sense of the issues of each school is attained through a process of interviews with a representative sample of stakeholders. - A report is written with TIP's suggestions which is discussed by stakeholders. - The relationship is long term - a year or longer. This strategy is to ensure that there is a group of people (eg School Development Committee) able to support and build the development process within the school. - TIP works with this group and other stakeholders as relevant to the process. - This process constantly builds capacity within the school.
SCOPE	Work with approximately 25 schools at any one time. These schools are predominantly exDEC and some are exDET. TIP does not work with exModel C schools.
EVALUATION AND/OR RESEARCH	An external evaluation was done in 1994 - documents available. PhD research being done in 3 schools.
FUTURE PLANS	Multiplier strategies: - TIP planning a 2 year training course for trainers develop even closer links with education department - presently negotiating a partnership with IMTEC to work with Per Dalin Will not expand the number of schools TIP currently works with.

Comment:
TIP emphasises that building capacity within the organization strengthens teaching and learning within schools. Organizational coherence is built as a strong organizational base helps schools meet both day to day and long term challenges.

VALLEY TRUST	
PROJECT	Education resource Project
CONTACT	Lungani Tembe
PHONE NUMBER	(031) 777-1417
LOCATION	Qadi/Nyuswa Tribal Area - Botha's Hill
SCHOOL LEVEL	Primary and Secondary schools (18 in number)
NATURE	Formation of education committees to address the collective needs of schools pertaining to physical resources, eg sanitation, school buildings and renovation etc. Human resource development: Organizing courses after needs identification (materials development for primary school teachers). Other service providers are worked with.
SCOPE	The committee is formed of 2 teachers and 2 parents and the principal from each of the 18 schools. They meet quarterly to review progress and/or constraints.
EVALUATION AND/OR RESEARCH	While no formal evaluation has been conducted, the project won the Premier Education Award in 1995.
FUTURE PLANS	Replicate the project into other areas who are keen to establish education committees.

Comment:

The Valley Trust runs another project aimed at developing capacity for Science teachers. The WSD project run by the Valley Trust facilitates the process which is run by school committees.

WESTERN CAPE DEPARTMENT OF EDUCATION (WCED)	
PROJECT	N/A
CONTACT	Mrs Rose
PHONE NUMBER	(021) 403-6911
LOCATION	Western Cape
SCHOOL LEVEL	Pilot project in primary schools
NATURE	N/A
SCOPE	N/A
EVALUATION AND/OR RESEARCH	A workshop has been planned for 17 June 1997 to workshop the concept of WSD. It is acknowledged that different interpretations are given to the term WSD, and so it has been decided that WCED should workshop it in order that the various role-players may have a shared understanding of WSD. This may even result in some core characteristics and other agreed upon differences. All involved parties will attend (WCED; circuit managers; advisory services; funders; NGOs). This project is a partnership between the WCED, funders and NGOs.
FUTURE PLANS	Launch a pilot programme to move INSET away from being subject-based to being whole school based. Pilot programme in primary schools.

Comment:

WCED has acknowledged the tremendous differences in approaches to WSD. As such, they are attempting to develop their own relevant strategy.

3   Concluding Comments

The following table represents a summary of the NGOs surveyed according to a combination of the main activities they follow in their approach to whole school development (WSD). The items listed below reflect the main thrust and starting point of the work done by each NGO.

NB: EQUIP in KwaZulu Natal will be considered with KZNDE as they are jointly run.

WSD ACTIVITIES	Curriculum Changes	School Management	Governance	Networking with other NGOs	Developing and sustaining departmental links
NGOs					
CIE		✓	✓	✓	
EQUIP (NBI)		✓	✓		
ITEC	✓	✓	✓		
LINK		✓	✓	✓	
PROMAT		✓	✓		
SHC R&D	✓	✓	✓	✓	✓
TIP		✓	✓		
VALLEY TRUST		✓	✓	✓	

Expressed numerically, the table reads thus:

WSD ACTIVITIES	NUMBER OF NGOs INVOLVED
Curriculum changes	2
School Management	8
Governance	8
Networking with other NGOs	4
Develop and sustain departmental links	1

The following table represents a summary of the provincial departments of education surveyed according to a combination of the main activities they follow in their approach to WSD. The items below reflect the main thrust and starting point of the work done by each department.

WSD ACTIVITIES	Curriculum changes	School Management	Governance	Networking with NGOs
DEPARTMENT				
ECDE			✓	
FSDE		✓	✓	✓
GDE			✓	✓
KZNDE (incl EQUIP)	✓		✓	✓
NCDE	✓	✓	✓	
NPDE			✓	✓
WCED				✓

Expressed numerically, the table reads thus:

WSD ACTIVITIES	NUMBER OF DEPARTMENTS INVOLVED
Curriculum changes	2
School Management	2
Governance	6
Networking with NGOs	5

The process of establishing links between NGOs and provincial departments is a well constructed one and should be developed further. If the aim of the many pilot studies conducted by NGOs is to find a replicable model that can be taken to scale, then these partnerships or links with the departments are crucial. Related to this is the structure of the provincial departments of education. Should they wish to follow a WSD approach, then the infrastructure which could facilitate the process needs to be put into place.

As defined in the 1996 School's Act, democratically elected governing bodies are being established in schools. The question that needs to be asked is, will these governing bodies make a difference to the quality of teaching and learning at this stage? This is phrased in the context that the primary purpose of governing bodies is to establish and maintain, an enabling environment within which the quality of

teaching and learning can improve. Possibly there are better and more sustainable ways to involve the parents and communities in schools. The setting up of governing bodies needs to take place within a wider framework of establishing that enabling environment.

Many WSD initiatives, both NGO and departmental follow the route of school development planning and the establishment of mandated committees briefed to put the plan into action. However, few acknowledge that the actual implementation and then evaluation of these plans is fraught with difficulties. It appears that school development planning, in many instances, remains at the level of the actual plans themselves, rather than implementation.

In conclusion, it is imperative for initiatives to approach WSD in such a way that schools are provided with a range of activities designed to address the needs of each school in a unified and complete way.

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