

to the educational process. As a science about such complex systems as schools in interaction with one another and also with other groups and systems in the society, education seems to have extremely few ready-made generalizations to offer the planner and administrator. And yet, thirdly, there are more or less explicit ideas in every reform decision about how the reform itself, and also different ways of implementing it, will influence the teaching situation and — as an expected consequence — the mind and behaviour of the pupils.

We are here facing a problem where educational planning and comparative education as science have to rely upon or, at least, be guided by — more or less well established — sociological/educational laws about the general relations between frames, processes and attainments. From the point of view of comparative education the problem is to compare two sub-systems within a country, the old one and the new (or changed) one. In comparison with cross-national analyses, this ought to be easier since the general, cultural and other environmental factors that make this science so difficult are minimized, although there still remains a difference in time. On the other hand, the ideas and expectations put forward in debates and committees during the planning, would reasonably be helpful as guides to hypotheses about the final outcome of the change. Therefore, it seems that intra-national comparisons between different phases of the same system subject to reforms must be regarded as an excellent potential source for developing comparative education as a generalizing science about how and why schools, universities and other educational systems function under different conditions.

2.2. Range and Limitations of the Model

In its general form the model may be applicable both in a system with great local freedom and in a rather centralized system like the Swedish one. The main difference is that the deciding agencies vary and so does the range over which it is possible to generalize.

The model suffers quite deliberately from a limitation in that it is primarily concerned with changes in the system induced "from above". Perhaps it might be modified to suit also the situation where the main initiatives come from teachers or pupils. At least with regard to the means of carrying through the reform, the model presupposes two things that are quite compatible with a reverse order of initiative. Firstly, it takes the position that it is necessary to motivate teachers and school leaders to get involved in the reform and to take active steps themselves in order to promote a change in the intended direction. Secondly, it makes use of systematic evaluation studies about problems in the field during the implementation period. This means among other things that the school authorities in a feed-back mechanism are furnished with systematically collected data about the experiences, problems, attitudes and demands among teachers and pupils related to the means and possibilities of implementing the reform.

2.3 *Problem areas for educational research*

In fig. 1 we may distinguish three areas for systematic educational research. (1) External studies concerning different problems of interest for the decision about the objectives, e.g. studies of pupil attitudes as well as of general education and vocational demands. This is called "demand analysis" in fig. 1. (2) Studies relating to the logical structure and internal psychological consistency among objectives, mainly through a theoretical analysis of preliminary versions of the reform plan as well as through specification and operationalization of the objectives. Here the term "theoretical goal analysis" seems appropriate. It may also contain a summarizing evaluation of earlier research of importance for assessing the psychological realism of the proposed system or curriculum. Historical and comparative studies are relevant here and also research from educational psychology. (3) Studies aiming at an evaluation of how the system really functions against its own goals including the whole chain: teachers — pupils — frames — processes — attainments. Let us use the term "functional analysis" for this type of evaluation studies.

Functional analyses may, of course, be relevant as part of the preparation of a reform. The new school system may be better suited for its own purposes if we know in what respects the old one did not succeed in accomplishing its ends. But functional analyses seem to be far more relevant as a feed-back mechanism in the implementation period just after a reform, provided that they are properly designed.

2.4. *Design problems in functional evaluation studies in an implementation program*

The design problems in systematic evaluation studies of the functional type that we are suggesting may perhaps be most easily located through a comparison with two other procedures, *viz.*, on the one hand, how reform progress is otherwise assessed in a new system and, on the other hand, procedures used for measuring progress by individual pupils.

In the first case we have to rely on oral or written reports of the essay type by school-inspectors, headmasters, teachers, etc. In general there is no common frame of reference or list of variables and data are very seldom quantified in any comparable way. Since we are suggesting a need for data of the same type, but more systematic and better quantified, the difference between common practice and our proposal is a matter of degree as regards representativeness, planning and data treatment.

On the other hand, a comparison with the procedures for evaluation of pupils' individual progress at school seems to give rise to differences in kind. Since our evaluation definitely needs to be criteria related, there is little help in using standard tests, the scoring of which is done in terms of interpersonal comparisons, or tests of general intellectual functions and low content validity. Moreover, although achievement testing may be worth while, there is a

stronger demand for representativeness with regard both to different groups of pupils and to various subjects and curriculum units, whereas the reliabilities may be kept on a lower level than is normally needed for a diagnostic testing of individuals. In the latter type of assessment we do not care very much about how or where the pupil has been learning his syllabus. In the implementation evaluation of a new school system it is extremely important to keep the educational process under control and also to relate it to the fundamental ideas behind the reform. In an early phase of a reform cycle, an evaluation with the purpose of acting as a feed-back mechanism must also add information about the obstacles and difficulties met by teachers and pupils as well as their relative importance, e.g. in terms of effort or time needed to overcome them.

3. SOME ILLUSTRATIONS FROM THE 1964 SECONDARY SCHOOL REFORM IN SWEDEN

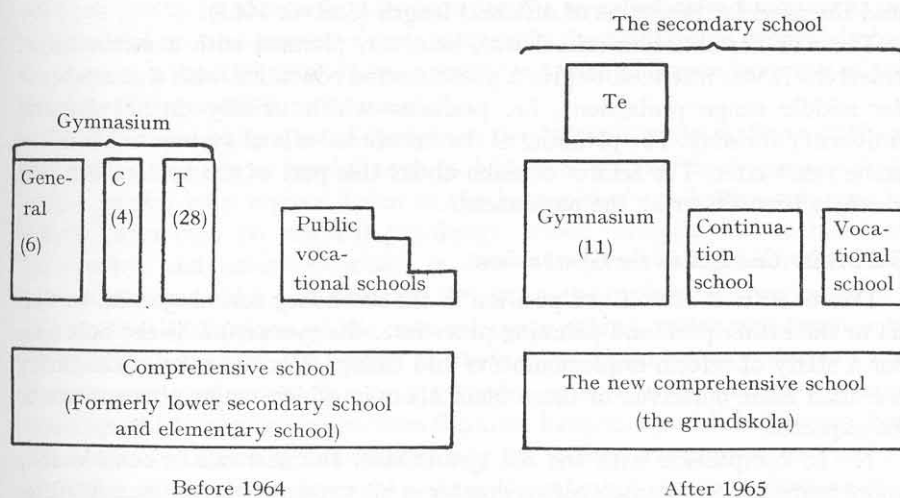
3.1. *The reform and its background*

The 1964 reform of the Swedish secondary school system has been more fully described by Dahllöf (1966) and Dahllöf, Zetterlund & Oberg (1966). The new secondary school system starts at age 17 (corresponding to grade 10) after the nine year comprehensive school (*grundskola*) that starts at age 7. In every grade and subject, all schools follow the same syllabus and the same time-table. So far, there is a common frame for the teaching all over the country. There are also general, centrally issued, directions concerning the methodology of teaching, with the status of recommendations, which allow the teachers quite a lot of freedom. Decisions about choice of text-books and teaching aids are taken locally by the teachers in the same subject as a group.

The new public secondary school system contains three school-forms, (1) the *gymnasium*, (2) the *continuation school* and (3) *vocational schools*. The *gymnasium* gives a three-year education preparatory for universities. A fourth year is added in the technical track for the majority of the students who want to leave the secondary school as engineers. In the continuation school and the vocational schools there are two years of theoretical studies to which, in some cases, has to be added some time for practical work. There are only a few private schools, the majority of which are supported by the government. They generally follow the same curriculum and time-tables.

Before the reform there were only two kinds of school in the public sector, viz. the *gymnasium* and *vocational schools*, although the *gymnasium* was divided into three administratively separate schools, the general *gymnasium* and the commercial and technical ones. In the new system they have been integrated into one, but there are still separate economic and technical tracks. In total, the number of branches in the *gymnasium* has diminished from 38 tracks and branches (of which 28 only could be chosen within the technical *gymnasium*) to 11 tracks and branches within the three year program. Fig. 3 shows the general outline of the old and new system.

Fig. 3. The old and new secondary school system in Sweden



Notes :

C = Commercial gymnasium

T = Technical gymnasium

Te = Technical track (grade 4)

The number of tracks and branches in the new gymnasium is given within brackets.

The immediate background of the reform was the 1962 parliamentary decision about the new comprehensive school (the *grundskola*), the new curricula of which inevitably led to changes in the secondary school program. Moreover, the fact that the main structure of the general gymnasium dated from 1933 called for a revision of curricula, due both to a very high increase of the intake and to attitude changes in society regarding the contents of general secondary education especially with regard to demands for future development.

As a part of the planning of the reform, there was carried out a series of expert investigations, some of which were related to the statistics about student flow. (Angsmark 1963, Wallberg 1963, Wallberg & Guiedo 1963, Wallberg & Cassel 1963). There were also some labour market forecasts. Other studies were of an educational-sociological kind. Thus there was one big study of the pupils' attitudes towards their choice of school forms, tracks and branches as well as of the older students' attitudes towards the curriculum content and methods of work (Harnqvist & Grahm 1963). Another study was about the qualitative demands made on the gymnasium by the universities as well as by trade and industry (Dahllöf 1963, Bromsjo 1963a). Still other educational studies were made about drop-out problems (Norinder

1963), under-achievement (Ahnme 1963), science curricula (Bromsjo 1963b) and the need for programs of different length (Sarlvik 1963).

The new continuation school was, however, planned with a minimum of research. It was intended to give a goal-directed education with a competence for middle range professions, i.e. positions which usually do not demand university training. The planning of the vocational school system was finished some years later. The reform decision about this part of the system has just recently been taken by the parliament.

3.2 Major Changes in the Gymnasium

Due to its well established position in the secondary school system, as well as to the rather profound planning procedure, the *gymnasium* is the best case for a study of reform implementation and change. For the sake of simplicity we shall limit ourselves to three main areas in which major changes are to be expected.

1. In comparison with the old *gymnasium*, the new one is considerably more unified. The common core is greater in all streams. Due to the difficulties of making a choice among the various tracks and branches, fully documented by Harnqvist & Grahm (1963), one of the main objectives was to make it easier for the pupils to choose their way through the secondary school. In order to promote this, no definite choice was needed in grade 1 which offered only four options, *viz.* one common for humanities and social science, one for economics, one for natural science and one for technology. In grade 2 these options are turned into tracks with great differences between them in syllabus and time-table. Then there are also two separate streams for humanities and social science.

A special reason for this construction was the aim that by 1970 there should be a considerable change in the *relative* recruitment to the different tracks in favour of the economic and technical and in disfavour especially of humanities (see below). At the same time, the total intake was planned to increase. This aim presupposed a marked change of choices, especially of female students. The aim was expected to be accomplished mainly through information and vocational guidance in the new comprehensive school.

2. The most important change in the curriculum refers to methods of work. In the planning studies there was a very strong demand both from the pupils just about to matriculate (Harnqvist & Grahm 1963) and from the "receivers" (Dahllöf 1963) for much more independent methods. The outcome of this was a systematic program in order to get away from the traditional routine with a short period of homework from one day to another. The program starts not only with some teaching in general study-technique but also with practical training in different types of subject. In grade 1 the "day homework" is gradually replaced by "long homework" over a week or so in some subjects. In grade 2 there is introduced a still longer homework or "piece-work", lasting for at least two weeks. Each class practises this