DROP OUT AND PASS-RATE IN HIGHER EDUCATION
ARE THEY USEFUL MEASURES OF EFFICIENCY?

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BACKGROUND

The great increase in the number of students in post-secondary education all over the world has led to the testing of various means of making the educational process more efficient. In Sweden, reforms of basic studies at arts faculties during the 1950s and 1960s were above all aimed at reducing the numbers of dropouts and promoting the flow of students through the educational system.

The 1969 educational reform determined fixed lines of study, intake restrictions and in general a more rigid organization of studies. A registration system was built up to check the efficiency of the education received. Administrative appointments were instituted at both central and local levels to observe educational efficiency and to make it easier for students to find their way through the educational system.

Hitherto most of the evaluation of the efficiency of university education has taken place within administrative bodies and has been based on data from the official educational statistics, collected via the registration system. There has not been any more systematic evaluation of the major reforms of university education. In recent years the Office of the Chancellor of the Swedish Universities has endeavoured, by means of research grants and conferences, to encourage researchers, particularly in the behavioural sciences and economic subjects to play a more active part in the evaluation of higher education.

The project "Analyses of Education and Students" is aimed at providing a better foundation for the evaluation of basic studies at Faculties of Arts and Sciences by following up study results, dropout-rates, changes of course and intensity of study. The project
was financed by the Office of the Chancellor of the Swedish Universities.

OUTLINE OF THE SURVEY

SURVEY GROUPS

The following groups of students were investigated:

1 996 students who began studying English, Statistics, Pedagogics and Chemistry at the University of Umeå in the autumn term of 1968 have been followed up for eight terms of studies.

2 488 students who enrolled at the Faculty of Arts and Sciences at the University of Umeå for the first time in autumn term of 1971 were followed up for 2 terms of studies. This group comprises all newly enrolled students from the autumn term 1971, except for foreign students, students without complete upper secondary school leaving certificates and students who have been enrolled at universities or colleges previously.

A parallel project aimed among other things at studying the national representativeness of the Umeå material was conducted at the Institute of Education at the University of Gothenburg under the direction of Professor Urban Dahllöf. This survey covered approximately 1 000 Gothenburg students during the academic year of 1971-72 (Johansson et al., 1972; Patriksson et al., 1973).

METHOD

The Swedish Parliament has adopted the following pass-rate as the norm for the present system of studies: 40-point courses of studies should be planned
in such a way that the proportion of students passed during an academic year is at least $2/3$ the number of students who study on a full-time basis, make good use of teaching facilities and possess the initial qualifications required by the syllabus. At least $4/5$ the number of full-time students should attain 40 points within three terms.

In order to be able to compare study results in the survey groups with this norm, particulars were needed concerning intensity of study (full time, part time, discontinuation), concerning the utilization of teaching facilities and concerning initial qualifications. These particulars have been obtained by following up various registers and also by means of questionnaires.

Since the central registers of the University only record the results of completed full courses of study, follow-up studies of departmental registers were necessary. It proved difficult and time-consuming to follow up results over a long period of time, the reason being that it is often difficult to foresee a student's choice of subjects, apart from the fact that there is no coordination of departmental registers. However, analyses showed the particulars supplied by students in questionnaires to be reliable enough to form the basis of certain processing operations, particularly in the 1968 group.

The survey groups have been divided into full-time students, part-time students, temporary dropouts and permanent dropouts on the strength of the data collected concerning discontinuation of studies, interruption of studies, employment parallel to studies and full-time or part-time studies.

The term "full-time student" as used in the project differs from the definition applied in the official
statistics in that it is founded on actual intensity of study, whereas the official term is based on the planned intensity of studies. Moreover, the official statistics make an indirect attempt to exclude wastage by not counting persons who only attain one point or less. During the project, continuous observation has been maintained of persons discontinuing their studies at different times; this form of observation is not possible given the present administrative information system.

The official statistics define a full-time student as a person who
a enrolles for the course of studies for the first time during the term in question
b attains at least one point and
c in the case of 40-point courses also registeres for the following term and
d when registering, declares the intention of pursuing full-time studies.

For the purposes of the project, full-time students are
a those who have never interrupted their studies or been engaged in any form of gainful or domestic employment apart from their studies
b those who suspended their studies for less than 10 weeks in the 1968 group and less than 3 weeks in the 1971 group and who otherwise satisfy the requirements as per a
c those who have been gainfully employed for less than 15 hours per week and who have classed themselves as full-time students and have not otherwise discontinued or suspended their studies for more than 10 and 3 weeks respectively.

A criterion measure (study ratio) was calculated by dividing the total number of points obtained by the
number of active weeks of study. The longer the period of time covered by the follow-up, the more important it was to keep intensity under observation. The study ratio was a particularly good criterion of achievement in the case of the 1968 group, which was followed for eight terms (Elgqvist-Saltzman, 1972; Elgqvist-Saltzman & Lindberg, 1973).

Particulars concerning initial qualifications were collected by using particulars of previous education and average matriculation merits (or corresponding qualifications) and merits for certain type subjects (subjects going by the same names in upper secondary school and at university). Utilization of teaching facilities was covered by means of such questionnaire items as "How much of the teaching have you attended?"

The questionnaires also included questions concerning study objectives, motives for studying, subsequent study and vocational plans and, finally, certain questions regarding attitudes to education.

RESULTS AND DISCUSSION

HOW MANY DROP OUTS ARE THERE AND WHAT ARE THE CAUSES?

Great attention has been devoted to discontinuation of studies in the work that has preceded reforms of basic courses at the Faculties of Arts and Sciences at the universities. The 1955 University Commission noted in 1957 that 40 per cent of arts students and 30 per cent of science students failed to graduate. This gave rise to concern and various measures were taken to reduce the number of dropouts. Ten years later a survey by the Chancellors committee on university teaching methods revealed very little improvement in graduation frequencies during the intervening period (Kim, 1966).
In the survey groups covered by this project, 43 per cent of those who were newly enrolled in the autumn term of 1968 had discontinued their studies after 4 year and 23 per cent of those who started in the autumn term of 1971 had dropped out after two terms.

If we consider the point at which dropout occurs, we find that this mostly happens at an early stage. Roughly 22 per cent of the 1968 material had discontinued their studies by the end of the third term. This can be seen in greater detail from figure 1.

Figure 1. Various stages in the follow-up of the 1968 group.
The figure 1 shows how many students had graduated, had discontinued their studies or were still studying at different stages during the follow-up of the 1968 material. One also observes that the dropout frequency during the initial terms is roughly the same in the 1968 and 1971 groups.

Thus the dropout frequency in this survey comes very close to the figures produced by previous Swedish studies of this problem. The frequency also comes within the margin of 35-40 per cent which Miller, in a review of Anglo-Saxon research (1970), has found characteristic of dropout in the USA, Canada and Australia. It is worth noting that researchers in other countries have demonstrated a certain consistency in the dropout frequency, irrespective of student influx and certain educational reforms. The constancy established by the project gives rise to the question of whether the measures taken in Sweden to reduce the dropout-rate have served any useful purpose.

Particulars concerning the dropout frequency in a course of education should, however, be seen in relation to the organization of that education and also in relation to the group of students concerned and the causes of dropout. Dahllöf (1968) showed that the disturbing dropout frequency reported by the Chancellors committee on university teaching methods took on a completely different appearance when the survey group was divided into sub-groups according to university and previous background. Apart from this survey, there are few analyses available on which one can base educational measures. This is due to the difficulty of obtaining information of this specific kind within the present information system. Educational statistic are in fact incapable of providing a clear account to dropout-rates. A number
of more sporadic surveys have been undertaken at departmental level by energetic student counselors. The comprehensive dropout survey conducted under the auspices of the U 68 Commission yielded various interesting conclusions, e.g. the conclusion that the dropout group is a very heterogeneous group and a difficult group to define, but the material did not allow of any detailed analysis (Attehag & Svanfelt, 1971).

In this project a distinction has been drawn among other things between discontinuation classed as temporary by the students themselves - who thus express the intention of resuming their studies later on - and discontinuation of a permanent nature. Seven per cent of the dropouts in the 1968 material and roughly 10 per cent of those in the 1971 group are described as temporary.

One of the most important discoveries is that a great many dropouts are due to students transferring to other courses of education. In the 1968 group, 80 per cent of final dropouts were connected with transfers to other courses of education. Altogether 29 per cent of those enrolling at the University of Umeå in the autumn term 1968 to study English, Statistics, Chemistry and Pedagogics had transferred to another course of education after four years of study. If we include those who had planned to transfer during their third term, a total of 15 per cent of the 1971 group had transferred by the beginning of the third term. It is worth noting that 40 per cent of the entire 1971 group stated when enrolling that they intended to change over later on to some other course of education with intake restrictions besides arts faculties and the school of education.
An analysis of differences between subjects and between the sexes revealed that certain subjects, e.g. Pedagogics, tended more than others to serve as "waiting rooms" for courses with intake restrictions. The dropout rate was higher among females. Males who had discontinued their studies tended more often to have transferred to some form of post-secondary education with intake restrictions, whereas many female students found their way e.g. to schools of nursing, secretarial courses, combined studies and other shorter types of education. The following summary concerning the 1968 group will serve to illustrate the different types of education to which students transferred.

Table 1. Transfers of other faculties/courses of studies in the 1968 group. Men and women (Absolute figures).

<table>
<thead>
<tr>
<th>New course of education/training</th>
<th>Men</th>
<th>Women</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Faculties of Medicine and Dentistry</td>
<td>14</td>
<td>9</td>
<td>23</td>
</tr>
<tr>
<td>Other university, faculty unspecified</td>
<td>29</td>
<td>32</td>
<td>61</td>
</tr>
<tr>
<td>School of Social Sciences</td>
<td>4</td>
<td>9</td>
<td>13</td>
</tr>
<tr>
<td>School of Education</td>
<td>2</td>
<td>7</td>
<td>9</td>
</tr>
<tr>
<td>Other colleges</td>
<td>4</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Combined Studies, Special Economics Course</td>
<td>3</td>
<td>7</td>
<td>10</td>
</tr>
<tr>
<td>Other post-secondary education (including, e.g. nursing, commercial training)</td>
<td>13</td>
<td>53</td>
<td>66</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>69</td>
<td>116</td>
<td>187</td>
</tr>
</tbody>
</table>

Some changes were already planned at the commencement of studies, while others again constitute an adjustment in the course of studies to changing conditions in the labour market or in other parts of the education system. Finally, a small proportion of the changes are due to disappointment with the course of studies itself, dissatisfaction or insufficient ability.
Researchers in the USA and England have also observed that dropout can partly be described as mobility within the education system. There would seem to be a pronounced need for a more comprehensive view in the official statistics about "flow" of students in the whole of the educational sector.

IS THE EFFICIENCY OF UNIVERSITY EDUCATION AS POOR AS THE OFFICIAL STATISTICS MAKE IT OUT TO BE?

The surveys and Parliamentary Bills preceding the existing study system emphasized that on average the actual duration of studies was greater than the syllabi presupposed and that in consequence students were spending more time at university than was necessary in view of graduation requirements. The results which Dahllöf (1968) obtained in the analysis mentioned previously led him to query whether efficiency was so poor as had been assumed when the new system was introduced.

The final results of the 1968 group are shown in figure 2. Thirty-seven per cent of the students enrolling for the first time in 1968 had graduated, 43 per cent had discontinued their studies and 20 per cent were still studying of the Faculty of Arts and Sciences at Umeå after four years. Ninety per cent of the "Graduated" group had actually taken their degree, while the remainder had either successfully completed 6 terms of study without taking their degree or else had achieved some other study objective instead of a degree (6 per cent). An analysis of the "Still studying" group showed that low study results were chiefly due to activities apart from studies or to interruptions, often lasting for more than one term. Military service as a common reason for interrupting studies.
An analysis of the pass-rate measured in study ratios showed that approximately 90 per cent of the full-time students in both the 1968 and the 1971 groups were above the level corresponding to the so-called exclusion limit in the 1969 study system.

The report compiled by the Office of the Chancellor of the Swedish Universities on experiences of the third year of the new system included a comparison of results in terms of points obtained according to the project and according to the official statistics. This comparison revealed that the pass-rate figures from the project were consistently
higher. The differences are accentuated by a comparison referring to the same group of individuals. As can be seen from table 2, infra, an average of 68 per cent obtained 40 points in two terms according to the project figures as against 50 per cent according to the official statistics.

Table 2. Pass-rate for full-time students in certain 40-point courses, September 1972, according to the project and according to the official statistics, both sets of figures referring to the same individuals. Percentage of students with 40 points or more.

<table>
<thead>
<tr>
<th>Course of studies</th>
<th>Project</th>
<th>Official statistics</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mathematics AB 1</td>
<td>65</td>
<td>45</td>
<td>20</td>
</tr>
<tr>
<td>Chemistry AB 1</td>
<td>54</td>
<td>44</td>
<td>10</td>
</tr>
<tr>
<td>Civics AB 1</td>
<td>77</td>
<td>60</td>
<td>17</td>
</tr>
<tr>
<td>English AB 1</td>
<td>64</td>
<td>46</td>
<td>18</td>
</tr>
<tr>
<td>History AB 1+2</td>
<td>85</td>
<td>57</td>
<td>28</td>
</tr>
</tbody>
</table>

These great differences are not due to different particulars concerning the numbers of points obtained, nor to differences in the periods covered; they are entirely the result of different definitions of full-time student. Fifty-one students classified as dropouts or part-time students under the project have been designated full-time students in the official statistics. Thus it is important to which definition of full-time students one refers when discussing pass-rates.

When the Swedish Parliament resolved that 2/3 of the students should obtain 40 points in two terms, the reference was to full-time students and, moreover, to students who made good use of the teaching facilities available and who possessed the necessary initial qualifications. There are no exact
rules governing the interpretation of the two last-mentioned requirements, nor can the official statistics take account of the utilization of teaching facilities except by excluding those who obtain less than one point.

The utilization of teaching facilities is difficult to measure. In this project, the 1971 group were asked to state the proportion of the teaching they had attended. Most of them replied that they had attended the greater part of the teaching provided. During analysis we selected those who had attended 95 per cent of the teaching and then investigated various courses of study to see whether the pass-rate had been affected. We found that, with a target group of full-time student who had attended 95 per cent of the teaching, the proportion obtaining 20 points in statistics in one term rose by 20 per cent. In the 40-point English course we obtained a pass-rate of 100 per cent for the full-time students attending 95 per cent of the teaching while in mathematics the corresponding figure was 74 per cent. Further details are given in figure 3, p 15.

It seems reasonable for the initial qualifications requirement to be taken as met if the student possesses initial qualifications corresponding to those stipulated by the syllabus. It must be borne in mind, however, that the new system laid down a minimum of initial qualifications, the idea being to make the transition from upper secondary school to university as flexible as possible. If special stipulations have to be made in the form of initial qualifications, these do not generally exceed a "2" (pass) from upper secondary school. One recalls that the latest reports from the Office of
the Chancellor of the Swedish Universities have contained reports from various universities concerning difficulties occasioned by the inadequate initial qualifications possessed by the students. This has resulted, among other things, in a warning - published in the latest information brochure from the Office - to prospective students not to study English, German, French and Mathematics if they have merits below 3 for the corresponding subjects at upper secondary level.

It is now also the duty of student counsellors at different departments to discourage students who can be expected to encounter difficulties in their studies. An inquiry among Mathematics and Statistics counsellors at Umeå showed that, in their opinion, students of Mathematics and Statistics should have at least a "3" for Mathematics from the Natural Science line of the upper secondary school and at least a "4" for Mathematics from any other line. We have selected the group of students satisfying these requirements and studied their pass-rate. The proportion obtaining 20 points in Statistics in a single term rises by 10 per cent when this requirement is added to the requirements of full-time studies and 95 per cent utilization of teaching facilities (cf. figure 3). This requirement had no additional effect in Mathematics and English.

Thus a combination of the requirements of full-time studies, utilization of teaching facilities and good initial qualifications leads to a general increase in the pass-rate, at the same time as the effects of different requirements vary from one course of studies to another. The increased requirements introduced for the purposes of our analysis resulted in a very small target group - roughly one-fifth of the students. Figure 4 p 16 shows how the number of stu-
dents diminishes as different requirements are gradually introduced.

Of course it is not the intention here to recommend such a strict interpretation of the pass-rate norm, merely to show how extremely sensitive the statistics are to one's definition of the target group whose pass-rate is to be calculated. The analysis illustrates the sources of error in the official statistics and underlines the need for interpretations of those statistics to take the sources of error into account in a completely different manner from what has previously been the case. At the same time it is demonstrably easier for a less general technique of analysis to trace causal relationships that may require educational remedies.

![Graph showing proportion of students obtaining 40 points in two terms (Mathematics, English) or 20 points in one term (Statistics) in different target groups.]

Figure 3. Proportion of students obtaining 40 points in two terms (Mathematics, English) or 20 points in one term (Statistics) in different target groups.
Target groups:
A = All students taking the course
B = Full-time students
C = Full-time students utilizing 95 per cent of the teaching facilities
D = Full-time students utilizing 95 per cent of the teaching and also possessing initial qualifications corresponding to those recommended by the student counsellor

Figure 4. Proportion of the total number of students on the course belonging to different target groups.

WHAT HAS BEEN THE STEERING EFFECT OF THE PASS-RATE NORM?

The influence on educational planning attributable to the pass-rate norms is evident e.g. when studying the reasons quoted for applications for grants for pedagogical projects at different departments. Several projects at Umeå were initiated on the strength of data indicating bad pass-rates. Thus there are instances of the data provided by the official statistics concerning poor pass-rates acting as an alarm and giving rise to pedagogical work. But this work should be brought about by other and better incentives which could also steer project work more satisfactorily.
There are signs that both students and teachers have found pass-rate requirements unduly predominant at the expense of discussions of the content of courses and the relevance of education to subsequent vocational activity.

The question arises whether the pass-rate norm could not be dispensed with as the most important means of control in educational planning and whether more attention should not be devoted instead to questions of content and questions concerning the relevance of studies.

There are very few comparative analyses of both student composition and course content at university level in Sweden. In this project we have found that very simple analyses can be of value to study counsellors and teachers in their educational planning.

Many people have called for better information concerning the way in which education operates after the conclusion of the actual period of study. Apart from spot surveys of certain professional groups (mainly conducted by trade union organizations) and the general follow-ups of professional activity half a year - in some cases two years - after graduation undertaken by the Central Bureau of Statistics, very little systematic information is received by educational institutions about formerly students jobs and positions after finishing studies. Consequently both the evaluation of established educational alternatives and the introduction of new courses suffer from a lack of sufficient background knowledge about formerly students.
REFLECTIONS ON THE U 68 PROPOSALS

The latest proposals for the reform of basic university studies in Sweden are very much preoccupied with organizational changes. The U 68 reform proposals put great emphasis on a more vocational approach and endeavour to establish this approach by means of various organizational changes to the study system. However, we lack analyses of the potential effects of a more vocational approach on different branches of study. There is a danger of the vocational alignment of studies being confused with specific knowledge, to the detriment of central concepts and generalizable knowledge (Cf. Dahllöf, 1969; Svensson, 1973).

The educational organization proposed by the U 68 Commission represents an amplification of the principles of fixed lines of study incorporated in the present system. Our survey presents data indicating that many students avoid the fixed lines to begin with, while many change lines and many disappear altogether. Greater flexibility would seem to be justified.

The Commission’s proposals in favour of more decentralized educational planning and a greater number of local and individual opportunities of variation may result in decision-making bodies devoting more attention to matters concerning the content of courses and the relevance of education. In this case, great importance will attach to the information on which the decisions of these bodies are based. The foundations of decision-making will have to be improved whatever the organisational framework chosen. Educational research should be capable of making a larger contribution to the shaping of those foundations than it has done previously. It is not altogether impossible that the high priority hitherto given in reforms of
university education to organizational and administrative measures has been at least partly due to the disproportionately quantitative nature of the foundations of decision making.

I would like to express my gratitude to Maj-Britt Lindberg and Gun Fahlén for their most dedicated work as assistants in the project.

I also wish to thank professor Urban Dahllöf for his most stimulating cooperation.
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