

PARTICIPATION IN THE LEAVING CERTIFICATE EXAMINATION, 1961–1980*

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Department of Education statistics on the number of students who sat for the Leaving Certificate Examination in 24 subjects (most of which were selected because of their popularity) over the period 1961 to 1980 are examined. The numbers taking each subject and the proportion of the total number of Leaving Certificate students who took each subject at higher and ordinary levels in each year are presented in graphical form separately for boys and girls. Over the twenty years there was a four fold increase in the numbers sitting for the Leaving Certificate Examination. All subjects except Latin attracted an increasing number of students. There were considerable changes however in the proportion of students attracted to individual subjects. There were indications in the data based on growth in the numbers taking the subject and on the relative popularity of subjects in 1980 that subjects in the science, applied science and business categories had increased in popularity. In general while there was an increase in the absolute number of students taking higher level examinations there was a decrease in the proportion of students who took examinations at this level. Marked sex differences in participation favouring boys were found in Mathematics, science (Physics, Chemistry) and most notably in applied science (Building, Construction, Engineering, Workshop, Technical Drawing) subjects though the participation level of girls in Mathematics and science subjects had increased considerably between 1961 and 1980. Differences in participation in favour of girls were found in Home Economics, Biology and Art.

Many changes occurred in the structure, funding, and curricular content of the Irish educational system in the 1960s and 1970s. These included

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the provision of funds for capital expenditure on secondary schools (1964), the provision of free education and free transport to schools (1967), the establishment of the Psychological and Guidance Service in schools (1966), the raising of the school leaving age from 14 to 15 years (1972), the establishment of comprehensive (1963) and later (1972) community schools, and an increased emphasis on scientific, technical, and practical areas in the curriculum (cf 5, 14, 16) A major objective of the changes, in the words of the Minister for Education (Dr Patrick Hillery), was 'to press on with all possible speed towards my goal of equal educational opportunity for all our children' (cf 16, p 172) It was hoped that the reforms would mean that children of 'sufficient' ability to profit from education, even those from low-income families, would be able to obtain all the benefits of the educational system (16, p 45) It was also hoped that increased emphasis on scientific and technical areas of study would ensure an adequate supply of trained persons to serve the economy of the country at a later date (15, p 126)

Lack of opportunity to participate in the educational system was perceived in ministerial statements primarily in terms of social class membership and regional location, two sources of inequality which had received attention in the *Investment in education* (8) enquiry References to gender as a reason for inequality were rare until recently Indeed, the *White paper on educational development* (9) does not appear to have regarded such inequality as problematic Like earlier statements, it spoke in general terms of a policy 'to enable each pupil to identify and develop his talents and thus to help him realise his potential as a human being' (9, p 43)

Published information has been available for a long time in Department of Education reports on participation rates by gender in the various sectors of the educational system Information has also been available in the same source on participation in and performance on public examinations for boys and girls separately A number of reports have drawn on this information to examine participation rates One focussed on the area of science (6), another on geography (4), while a recent study used Departmental statistics, as well as other information, to provide a wide ranging analysis of sex differences in subject provision and student choice in post primary schools (7)

The study reported in this paper is confined to data published in Department of Education reports on participation in Leaving Certificate

Examinations over the period 1961 to 1980. Firstly, it looks at the total numbers taking the Leaving Certificate Examination from 1961 to 1980. Since this examination is taken about two years after the age at which attendance at school is compulsory and marks the end of second-level education, information on participation provides a good index of the extent to which the various reforms of the 1960s and 1970s have been matched by a growth in the number of students completing secondary education. Secondly, changes in the numbers and proportions of students taking examinations in the most commonly taken subjects are examined. In view of ministerial statements regarding the priority that should be given to the scientific and technical areas, we might expect an increase over time in the proportion of students taking examinations in science, applied science or technical subjects. Thirdly, we examine the proportions taking higher and ordinary-level examinations. If one assumes that expansion implies the retention in the system of an increasing number of low achieving students, one might expect that there would be a decrease in the proportions of students taking higher level courses. Finally, male-female differences in participation are examined. In view of reports that lower proportions of girls follow courses in science and mathematics (1, 6, 7), we shall be interested in observing possible trends in this situation.

METHOD

The source of our data is information provided in annual reports of the Department of Education for the years 1961 to 1980 (10, 12). In each annual report, information is provided in three tables. One gives the total number of students examined in the Leaving Certificate Examination. In the other two tables, the numbers of candidates who took higher level examinations (or honours level up to 1968), the numbers who took ordinary-level examinations (or pass-level up to 1968), and the numbers who took common-level examinations are provided for each subject separately for boys and for girls.

Over the years, examinations have been offered annually in approximately 30 subjects at the Leaving Certificate level. Very small numbers take examinations in some subjects and these are not included in the present analyses which examine data for the following subjects, classified broadly in line with the categorization in the Department of Education's *Rules and programme for secondary schools* (13): *Language Group* Irish, English, Latin, and French, *Science and Mathematics Group* Mathematics, Chemistry, Physics, Botany (discontinued after 1970), *Physiology and*

Hygiene (discontinued after 1970), and Biology (commenced in 1971); *Applied Sciences Group*: Technical Drawing, Engineering Workshop Theory and Practice, and Building Construction (all commenced in 1971); *Business Studies Group*: Commerce (discontinued after 1970), Business Organisation, Accounting, and Economics (all commenced in 1971); *Social Studies and Art Group*: History, Geography, Domestic Science (discontinued after 1970), Home Economics (commenced in 1971), Drawing, Art (discontinued after 1970), and Art (commenced in 1971).

In considering the graphical data, it should be borne in mind that there have been a number of changes between 1961 and 1980 in the subjects for which examinations were offered, in syllabi for individual subjects, and in the method of reporting results of examinations (2, 3, 14, 16). Several new syllabi were introduced in 1969; examinations were offered for these in 1971. An examination in Biology replaced the earlier subjects of Botany, and Physiology and Hygiene in 1971. The new subject includes much of the subject matter of the subjects which it replaced, but its scope is broader, including such topics as the characteristics and interdependence of living things, microbiology, and genetics. Some of the subject matter of Physiology and Hygiene is also covered in the current Home Economics (Social and Scientific) course. Commerce was the only Business Studies subject offered in the Leaving Certificate Examination up to 1970, but from 1971, four subjects in this category have been offered: Business Organisation, Accounting, Economics, and Economic History. (Economic History is not considered in this study because of low participation rates.) Domestic Science was offered up to 1970, after which it was replaced by Home Economics. There are two alternative syllabi in Home Economics, a general syllabus and a social and scientific one; in the presentation of our data, the numbers taking the two syllabi are combined. In the case of both Art and Drawing, which were offered up to 1970, the syllabi involved object drawing, drawing natural forms, design, and mechanical drawing. Differences between the syllabi were in the combination of these subsections which it was possible to take. The numbers taking the two syllabi are added in the data we present. A single Art syllabus has been in existence since 1971 and differs from the earlier one in that it includes imaginative composition, history, and appreciation of art.

There were also syllabus changes throughout the twenty years in many Leaving Certificate subjects which did not change their title. Many such changes were the result of the work of syllabus committees which were set up in the 1960s.

In 1969, the practice of awarding grades from A to E to students for performance in individual subjects commenced and higher and ordinary syllabi in each subject were introduced to replace the previous honours and pass distinction.

All subjects dealt with in this report, with three exceptions, were offered at higher and ordinary levels. The three exceptions, all Applied Science subjects and examined for the first time in 1971, are Technical Drawing, Engineering Workshop Theory and Practice, and Building Construction. These were examined at common level only.

RESULTS

Figure 1 is a graphical presentation of the total numbers of boys and girls who sat for the Leaving Certificate Examination in each year from 1961 to 1980. It is clear that the numbers have increased considerably over the period. Over four times as many students (36,539) took the examination in 1980 as in 1961 (8,676). The rise in numbers was more gradual in the period prior to 1968 than in the nine years which followed. Since 1977, the overall increase has been small.

Gender differences are apparent in the graph. While up to 1968, there was little difference between the number of boys and the number of girls who took the examination, since that year there has been a consistent difference in favour of girls. Since 1978, the number of boys has dropped, while the number of girls has continued to rise. In 1980, 4,769 more girls than boys took the examination. From 1961 to 1980, while the increase in the number of girls taking the Leaving Certificate was almost 400%, the increase in the number of boys was only 250 percent. Between 1971 and 1980, the increases were 84% for girls and 66% for boys.

To obtain an over-all index of changes in numbers taking the examination, as well as changes in specific subjects, we calculated the percentage increase (or decrease) in the number of students who took examinations in 1980 over the 1961 figures. For nine subjects which were offered over the twenty-year period, this information is provided in Table 1. Information is provided in Table 2 for a further nine subjects which were first offered in 1971; in this table, the percentage increases refer to the growth in student numbers between 1971 and 1980. Information on six subjects which were terminated in 1970 is not included in these tables, though it is included in the graphical data.

LEAVING CERTIFICATE EXAMINATION

FIGURE 1

NUMBERS OF STUDENTS SITTING FOR THE LEAVING CERTIFICATE EXAMINATION 1961-80

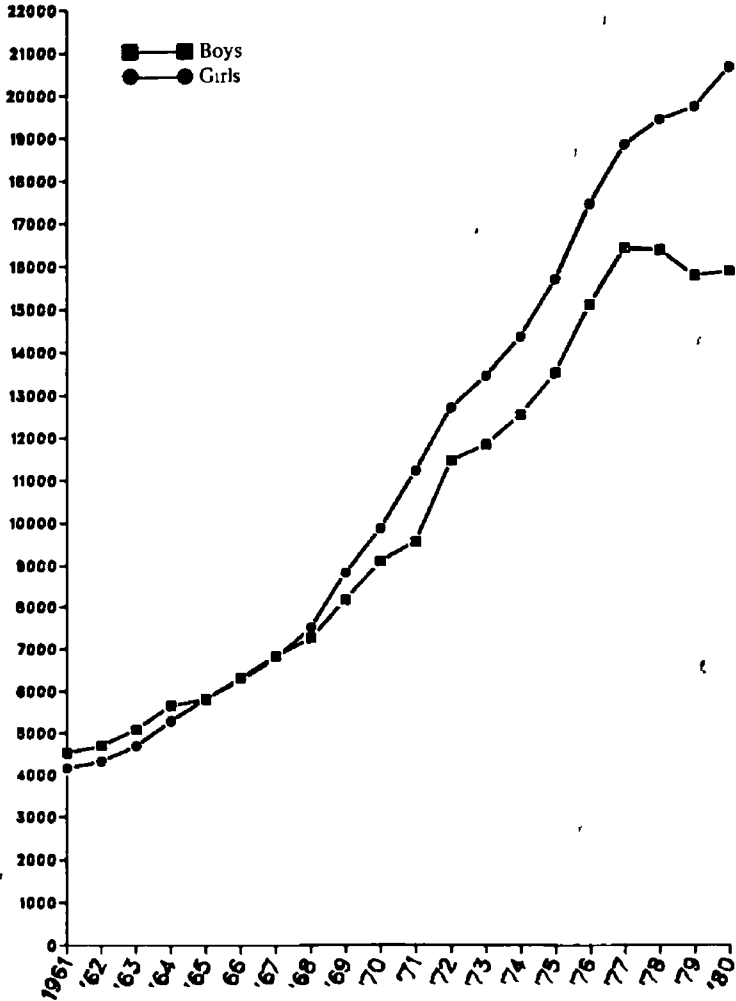


TABLE 1
INCREASE IN NUMBER OF STUDENTS TAKING
LEAVING CERTIFICATE EXAMINATION BETWEEN
1961 and 1980

		1961	1980	Increase	% Increase
All Candidates	Boys	4,521	15,885	11,364	251.36
	Girls	4,155	20,654	16,499	397.09
	Total	8,676	36,539	27,863	321.15
Irish H	Boys	2,438	3,693	1,255	51.48
	Girls	2,638	5,663	3,025	114.67
Irish O	Boys	2,065	10,652	8,587	415.83
	Girls	1,513	13,721	12,208	806.87
	Total	8,654	33,729	25,075	289.75
English H	Boys	2,618	7,466	4,848	185.18
	Girls	2,941	9,442	6,501	221.05
English O	Boys	1,866	8,334	6,468	346.62
	Girls	1,206	11,114	9,908	821.56
	Total	8,631	36,356	27,725	321.23
Latin H	Boys	1,255	856	399	31.79
	Girls	513	375	138	26.90
Latin O	Boys	2,648	183	2,465	93.09
	Girls	1,046	75	971	92.83
	Total	5,462	1,489	3,973	-72.74
French H	Boys	273	4,125	3,852	1,410.99
	Girls	1,040	6,063	5,023	482.98
French O	Boys	265	4,266	4,001	1,509.81
	Girls	1,105	8,284	7,179	649.68
	Total	2,683	22,738	20,055	747.48
Math H	Boys	1,215	2,461	1,246	102.55
	Girls	56	847	791	1,412.50
Math O	Boys	3,218	13,142	9,924	308.39
	Girls	3,094	18,380	15,286	494.05
	Total	7,583	34,830	27,247	359.32
Chemistry H	Boys	715	2,982	2,267	317.06
	Girls	57	1,868	1,811	3,177.19
Chemistry O	Boys	499	1,542	1,043	209.02
	Girls	45	592	547	1,215.56
	Total	1,316	6,984	5,668	430.70

TABLE 1 - Contd.

Physics H	Boys	659	2,478	1,819	276.02
	Girls	19	490	471	2,478.95
Physics O	Boys	480	1,930	1,450	302.08
	Girls	11	204	193	1,754.54
	Total	1,169	5,102	3,933	336.44
History H	Boys	1,626	3,178	1,552	95.45
	Girls	2,075	3,685	1,610	77.59
History O	Boys	1,326	2,780	1,454	109.65
	Girls	956	3,312	2,356	246.44
	Total	5,983	12,955	6,972	116.53
Geography H	Boys	2,691	4,787	2,096	77.89
	Girls	3,010	4,284	1,274	42.33
Geography O	Boys	1,123	3,564	2,441	217.36
	Girls	766	4,675	3,909	510.31
	Total	7,590	17,310	9,720	128.06

Of the subjects we examined, only in the case of Latin was there a decrease (73%) in the actual number of candidates taking the Leaving Certificate Examination between 1961 and 1980. The decrease was greater at ordinary than at higher level. An increase in numbers greater than the increase in total examination candidates (321%) occurred in the case of French (748%), Chemistry (431%), Mathematics (359%), and Physics (336%). Increases less than the overall increase occurred in Irish (290%), Geography (128%), and History (117%). The increase in English (321%) was similar to the overall increase.

Generally, increases at ordinary level exceeded increases at higher level, very considerably in the case of Irish, to a lesser extent in the case of English, and marginally in the case of French. There were a few subjects in which growth at higher level was greater than growth at ordinary level. The percentage growth at higher level exceeded the percentage growth at ordinary level for girls in the case of Chemistry, Physics, and Mathematics. The percentage growth in these three subjects at higher level was extremely high for girls. However, in all three cases, the base from which girls began in 1960 was very small.

TABLE 2
 INCREASE IN NUMBER OF STUDENTS TAKING
 LEAVING CERTIFICATE EXAMINATION BETWEEN
 1971 AND 1980

		1971	1980	Increase	% Increase
All Candidates	Boys	9 558	15 885	6 327	66 20
	Girls	11,222	20 654	9,432	84 05
	Total	20 780	36 539	15 759	75 84
Biology H	Boys	642	3 408	2 766	430 84
	Girls	1 546	6 284	4 738	306 47
Biology O	Boys	570	3 002	2 432	426 67
	Girls	999	6 615	5 616	562 16
	Total	3 757	19 309	15 552	413 95
Building Const C	Boys	399	1,512	1 113	278 95
	Girls	1	2	1	100 00
	Total	400	1 514	1 114	278 50
Engineering C	Boys	435	1 403	968	222 53
	Girls	—	1	1	
	Total	435	1 404	969	222 76
Technical Drawing C	Boys	955	2 873	1 918	200 84
	Girls	2	17	15	750 00
	Total	957	2 890	1 933	201 99
Accounting H	Boys	1 185	2 228	1 043	88 02
	Girls	1 104	1 841	737	66 76
Accounting O	Boys	899	1 604	705	78 42
	Girls	1 529	2 982	1 453	95 03
	Total	4 717	8 655	3 938	83 49
Business Org H	Boys	543	2 253	1 710	314 92
	Girls	572	2 227	1 655	289 34
Business Org O	Boys	716	1 879	1 163	162 43
	Girls	1 451	3 916	2 465	169 88
	Total	3,282	10 275	6,993	213 07
Economics H	Boys	575	2 644	2 069	359 83
	Girls	388	1 188	800	206 19
Economics O	Boys	399	2 106	1 707	427 82
	Girls	365	1 931	1 566	429 04
	Total	1,727	7 869	6,142	355 65

TABLE 2 - Contd

		1971	1980	Increase	% Increase
Home Econ H	Boys	6	539	533	8,883 33
(Gen & Soc & Sc)	Girls	3 447	7 439	3,992	115 81
Home Econ O	Boys	16	170	154	962 50
(Gen & Soc & Sc)	Girls	2 704	4 766	2 062	76 26
	Total	6 173	12,914	6 741	109 20
Art H	Boys	548	1 118	570	104 01
	Girls	1 653	2 299	646	39 08
Art O	Boys	792	827	35	4 42
	Girls	4,866	6,271	1 405	28 87
	Total	7 859	10,515	2 656	33 80

When we look at increases between 1971 and 1980 in subjects introduced in the former year, we find that all subjects, with the exception of Art, showed a greater increase than the overall increase in Leaving Certificate candidates over the same period (76%). The greatest increases occurred in the case of Biology (414%) and Economics (356%). Lesser increases occurred for Building Construction (279%), Engineering Workshop Theory and Practice (223%), Business Organisation (213%), and Technical Drawing (202%). The lowest increases were recorded for Home Economics (109%), Accounting (84%), and Art (34%).

In Figures 2 to 10, information is provided in graphical form on the percentage of the total number of Leaving Certificate Examination candidates (boys and girls separately) who sat for individual subjects in each year from 1961 to 1980. Information is provided separately for higher and ordinary level examinations, except in the case of the three subjects which were examined only at common level.

Language Group

The percentage of boys and girls taking the Leaving Certificate Examination who took examinations in languages from 1961 to 1980 are presented for the higher level examinations in Figure 2 and for the ordinary level

examinations in Figure 3

Irish was taken for the Leaving Certificate Examination by the vast majority (96.64%) of students over the twenty-year period, however, the percentage of students who took the subject decreased from 99.8 in 1961 to 92.3 in 1980. There was a decrease in the percentage of students who took Irish at higher level and a corresponding increase in the percentage at ordinary level. In 1961, 58.5% of students took Irish at higher level, while by 1980, the percentage had decreased to 25.6 percent. The sharpest decline in higher level participation occurred between 1967 and 1971. Over the twenty years, a greater proportion of girls than of boys took the higher-level paper in Irish. This difference was most notable in the early years, for example, in 1961, 9.6% more girls than boys took the higher-level examination. The gender difference had decreased to 1.1% in 1971. Since then, there has been a consistent difference of about 4% in favour of girls.

The percentage of Leaving Certificate students who took English in the examination was in excess of 98 in the 1960s and 1970s, with the exception of the years 1975 to 1979. The percentage reached its lowest level (94.9) in 1977 but increased again to 99.5 in 1980. There was a substantial drop in the proportion of students who took the higher-level paper between 1968 and 1972 – from 66.7% to 35.8 percent. Since 1972, the proportion has increased somewhat and, in 1980, 46.3% of students took the higher level paper. More girls than boys took higher-level English in all but one of the twenty years examined. This difference was in excess of 11% from 1961 to 1964. Since then, the difference has narrowed, and in 1980, the position was reversed with a greater proportion of boys (47.0%) than of girls (45.7%) taking the higher level examination.

Latin declined very substantially as a Leaving Certificate subject from 1961, when 63.0% of students took the subject, to 1980, when it was taken by only 4.1% of students. At the beginning of the period, Latin was taken more often at ordinary level, however, participation has declined more rapidly at this level than at higher level. By 1980, 3.4% of students were taking the subject at higher level but only 0.7% at ordinary level. Thus, of students taking Latin, 4 out of 5 took it at higher level. There are large gender differences in the numbers taking Latin. In 1961, 86.3% of boys, but only 37.5% of girls, took the subject. The gender difference was greater at ordinary level. Up to 1973, the participation of boys declined more rapidly than that of girls. Since then, participation by both genders

FIGURE 2

PERCENTAGES OF BOYS AND GIRLS
TAKING LEAVING CERTIFICATE EXAMINATIONS
IN LANGUAGES HIGHER LEVEL, 1961-80

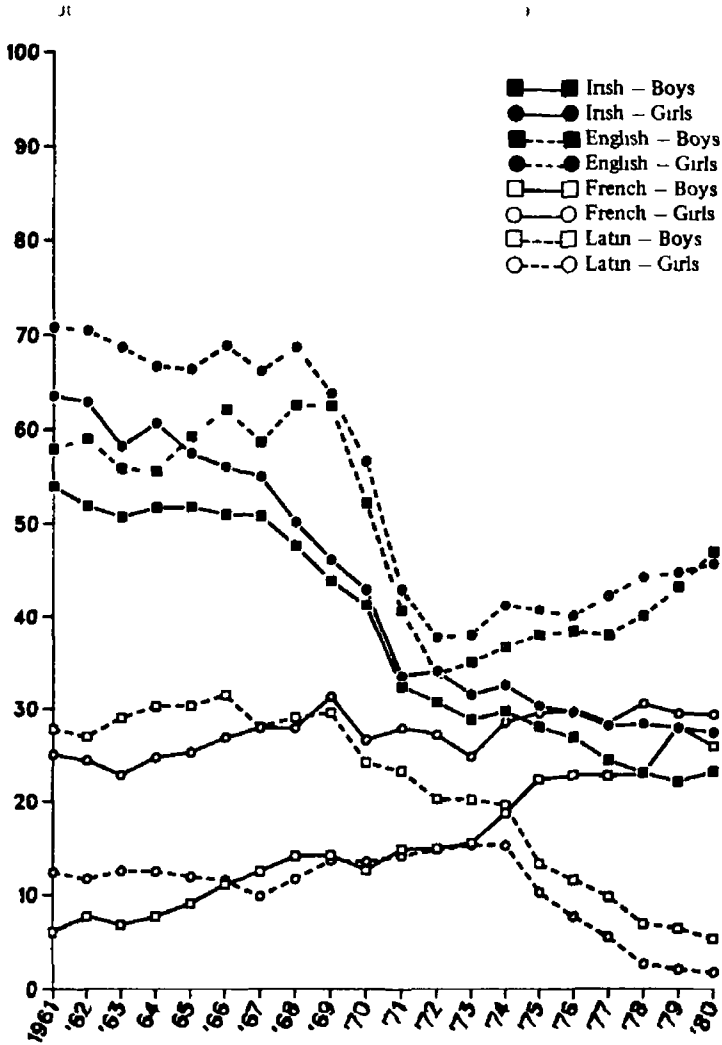
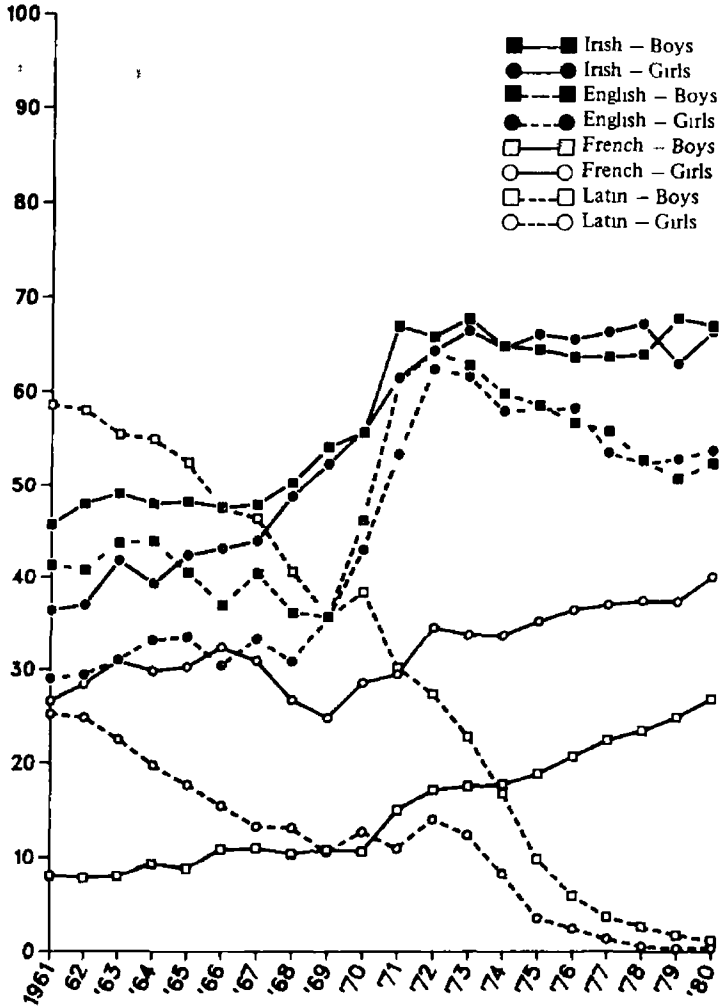


FIGURE 3

PERCENTAGES OF BOYS AND GIRLS
TAKING LEAVING CERTIFICATE EXAMINATIONS
IN LANGUAGES ORDINARY LEVEL, 1961-80



has declined with about equal rapidity. In 1980, 6.5% of boys and 2.2% of girls sat for the Latin examinations.

In contrast to Latin, the proportion of Leaving Certificate students taking examinations in French has increased from 30.9% in 1961 to 62.2% in 1980. Almost half of those who took French took it at higher level and the increase in participation has occurred about equally at higher and ordinary levels. There are gender differences in participation in favour of girls in both the higher and ordinary examinations. At higher level, boys' participation increased more rapidly than that of girls, thus reducing the gender difference. At ordinary level, the gender difference in participation persisted and, in 1980, 13.3% more girls than boys took the examination at this level.

Mathematics and Science Group

The percentage of Leaving Certificate candidates (boys and girls separately) taking higher-level examinations papers in Mathematics and science subjects each year from 1961 to 1980 are presented in Figure 4, while the percentages taking ordinary level examinations are given in Figure 5.

Over the twenty years, an average of 87.5% of Leaving Certificate students took Mathematics as a subject. Between 1970 and 1980, overall participation increased steadily from 82.0% to 95.3 percent. The proportion of students taking Mathematics at higher level was not high. The largest proportion in any one year was 17.6% in 1966. Since then, the percentage has dropped and, in 1980, only 9.1% of students took Mathematics at higher level. There are marked gender differences associated with Mathematics. While more than 92% of boys took the subject in all of the twenty years studied, girls' participation exceeded this figure only in 1980. The average percentage of boys taking Mathematics in the twenty years was 96.9, while the average for girls was 78.5. The percentage of boys remained relatively constant during the period. Girls' participation actually dropped between 1961 (75.8%) and 1966 (62.9%) but increased since then to 93.1% in 1980.

Gender differences were found in the level at which Mathematics was taken. The percentage of boys taking the subject at higher level increased from 14.7 in 1961 to 17.6 in 1966 and then decreased to 9.4 in 1974. Since then, the percentage increased somewhat to 1977 when it reached 11.6 and decreased again, reaching 9.1 in 1980. The percentage of girls

FIGURE 4

PERCENTAGES OF BOYS AND GIRLS
TAKING LEAVING CERTIFICATE EXAMINATIONS
IN SCIENCES AND MATHEMATICS HIGHER LEVEL, 1961-80

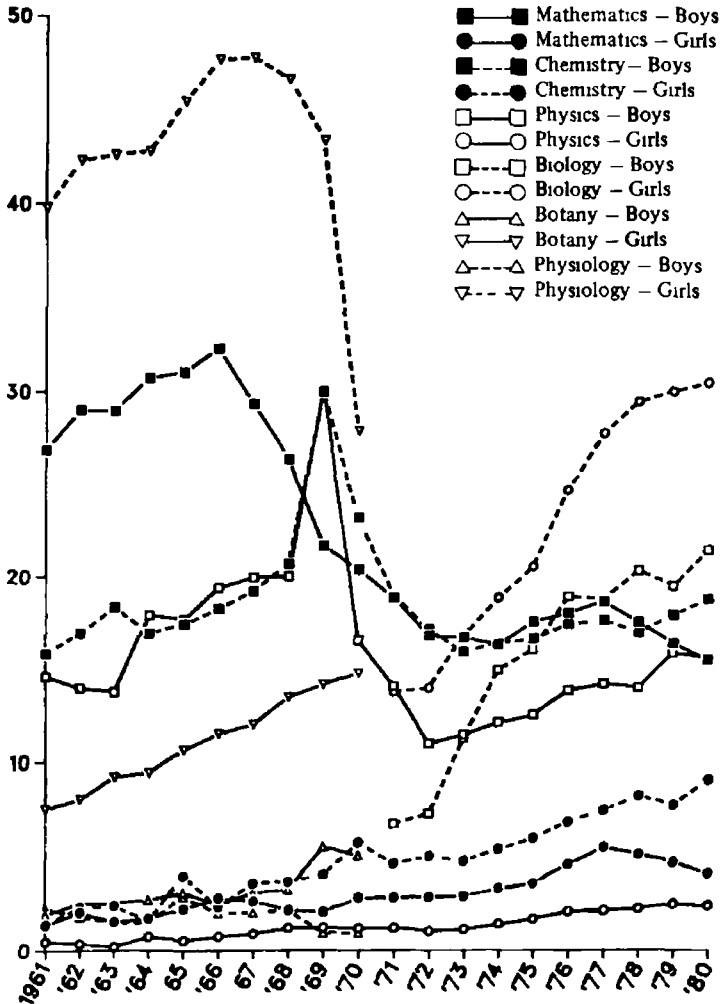
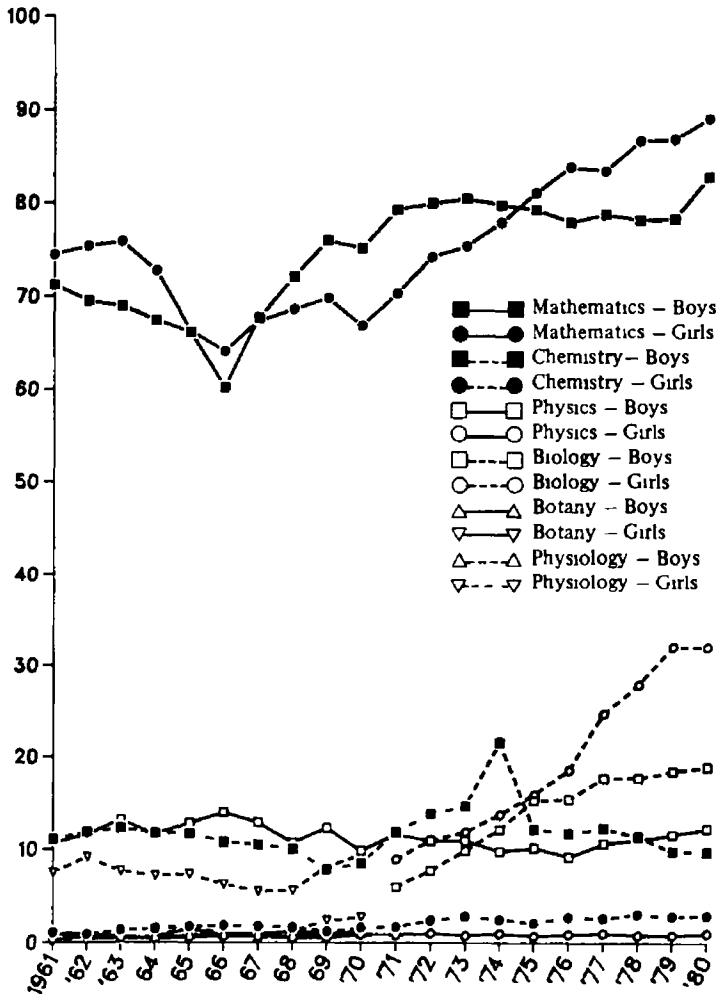


FIGURE 5

PERCENTAGES OF BOYS AND GIRLS
TAKING LEAVING CERTIFICATE EXAMINATIONS
IN SCIENCES AND MATHEMATICS ORDINARY LEVEL 1961-80



taking higher level Mathematics increased gradually from 1.4 in 1961 to 5.1 in 1977 and 1978. The proportion decreased in 1979 (4.7%) and in 1980 (4.1%). At ordinary level, the percentage of boys taking Mathematics dropped from 71.2 in 1961 to 60.2 in 1966, then rose to 79.2 in 1971 and has remained relatively constant since then. The percentage of girls taking ordinary-level Mathematics also dropped in the early 1960s and was lowest in 1966 when 64.0% of girls took this level. Girls' participation has shown a steady increase every year since 1966 (with the exception of 1970 and 1977) and, in 1980, 89% of girls took Mathematics at ordinary level.

The percentage of Leaving Certificate students who studied Chemistry did not vary much in the period 1961 to 1980, averaging 18.2. Almost two thirds (an average of 63.0%) of those students took the subject at higher level. It was taken predominantly by boys, 80.6% of Chemistry examinees were boys. Gender differences were evident in both higher and ordinary level Chemistry. At both levels, however, girls' participation increased gradually throughout the twenty year period, at higher level from 1.4% in 1961 to 9.0% in 1980 and at ordinary level from 1.1% to 2.9%, thus reducing the gender difference to some extent. For boys, there was a drop in the proportion taking the examination at higher level between 1969, when it was 30.0%, and 1973, when it was 15.9 percent. This drop was matched by an increase in the proportion taking the examination at ordinary level. Since 1973, higher level participation has been relatively stable for boys, varying between 16 and 19%, while ordinary level participation decreased from 21.6% in 1974 to 9.7% in 1980.

The overall trends in choice of Physics as a Leaving Certificate subject were similar to those in Chemistry. Over the twenty years, Physics was taken by an average of 14.2% of students. Of those who took the subject, on average more than half (58.4%) took the higher paper and the vast majority (92.3%) were boys. The percentage of boys taking higher level Physics increased from 14.6 in 1961 to 30.2 in 1969, it dropped markedly in 1970 (to 16.6) and then further (to 11.0) in 1972. From 1973, it has risen gradually and, in 1979 and 1980, it was just over 15 percent. While the proportion of girls studying higher level Physics remained low, it rose fairly consistently from less than 0.5% to 2.4% over twenty years. At ordinary level, the percentages of both boys and girls studying Physics were fairly consistent over the twenty years, on average, 11.3% of boys and 0.7% of girls took Physics at ordinary level.

Physiology and Hygiene was the most popular science subject in the

period 1961 to 1970, being taken by 26.8% of Leaving Certificate students. On average, 92.9% of these were girls. Most (84.3%) took the higher level paper. The percentage of girls choosing this subject for Leaving Certificate was highest in 1967, when 47.7% took the higher paper. This figure had decreased to 27.9% by 1970 before the subject was taken off the Leaving Certificate programme. The percentage of boys who took the higher paper was never greater than 3 in the period studied. At ordinary level, the percentage of girls who took Physiology and Hygiene averaged 7.4, while the average percentage of boys was 0.9.

Botany was taken by an average of 8.0% of Leaving Certificate students between 1961 and 1970. As in the case of Physiology and Hygiene, it was taken predominantly by girls and at higher level. The percentages taking Botany at higher level increased from 1.9 to 5.1 for boys and from 7.5 to 14.8 for girls in the period 1961 to 1970. The percentages taking ordinary level Botany were low, less than 3% (in most years less than 1%) of either boys or girls took the subject at this level in any one year.

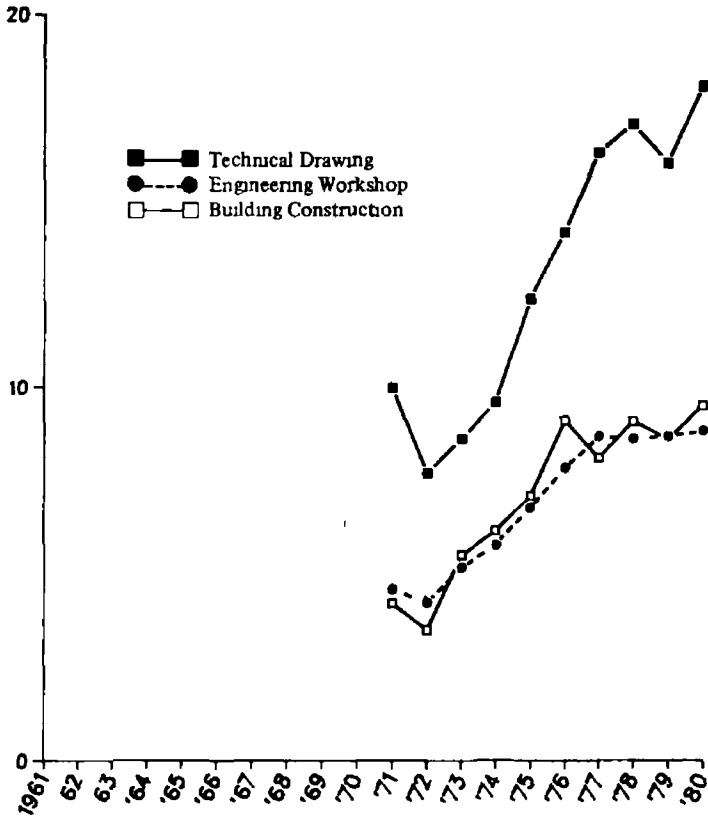
Since its introduction to the Leaving Certificate Examination in 1971, when it was taken by 18.1% of students, Biology has increased consistently in popularity, in 1980, it was taken by 52.8% of students. It was chosen more often by girls than by boys, however, the gender difference was smaller than in the case of other science subjects. From 1971 to 1980, 64.3% of those who took Biology were girls. While the earlier biological science subjects, Physiology and Hygiene, and Botany, had been taken predominantly at higher level, about equal proportions of students took the higher and ordinary level papers in Biology. The rise in the percentage of students choosing Biology as a Leaving Certificate subject is evident at both higher and ordinary levels and for both boys and girls. Gender differences in participation narrowed considerably in the mid 1970s, however, since then, differences in favour of girls have again increased.

Applied Science Group

Figure 6 gives the percentages of boys taking Building Construction, Engineering Workshop Theory and Practice, and Technical Drawing in the Leaving Certificate from 1971, when these subjects were introduced, to 1980. These subjects were offered at common level only. They were taken almost exclusively by boys. The percentages of girls taking the subjects were too small to be presented in Figure 6.

FIGURE 6

PERCENTAGE OF BOYS
TAKING LEAVING CERTIFICATE EXAMINATIONS
IN APPLIED SCIENCES, COMMON LEVEL 1961-80



Participation in all three of the applied science subjects increased in the ten years following their introduction. The increase was greatest in the case of Technical Drawing which was taken by 18.1% of boys in 1980, compared to 10.0% in 1971. Boys' participation in Building Construction increased from 4.2% to 9.5% between 1971 and 1980. A similar trend can be observed in the case of Engineering Workshop Theory and Practice for which the percentage of boys taking the subject rose from 4.6 to 8.8 over the same period.

Business Studies Group

The percentages of boys and girls taking subjects in the Business Studies Group at higher level are presented in Figure 7. The percentages for the ordinary-level papers are given in Figure 8.

In the ten years before it was taken off the Leaving Certificate course, the percentage of students taking Commerce increased from 13.6 to 34.6. It was a more popular subject among boys than among girls. However, over this period the gender difference decreased and by 1969, 48.2% of those taking Commerce were girls. Nearly three quarters (74.6%) of those taking commerce took the higher paper. The increases in the percentage of students taking Commerce occurred mainly at higher level. The percentage of boys who took the higher level examination increased from 10.8 in 1961 to 28.8 in 1970, while the percentage of girls increased from 7.4 to 23.2 for the same years. The increases for ordinary level papers were from 6.3% to 8.6% in the case of boys and from 2.5% to 8.9% in the case of girls.

The proportion of students who took Accounting has remained relatively stable at about 20.8% since the subject was introduced in 1971. The subject was more popular among girls, on average, 57.0% of those who took the subject were girls. Compared with the earlier subject, Commerce, the ordinary paper was more often taken in Accounting. The average percentage of Accounting students who took the ordinary paper was 56.4.

Examination of the trends in participation in Accounting at higher and ordinary levels reveals that the subject was more likely to be taken by boys at higher level and by girls at ordinary level. In general, the proportion of girls who took Accounting did not vary much over the ten years studied. The proportions of boys taking both the higher and ordinary level papers dropped at the beginning of the period but then rose.

FIGURE 7

PERCENTAGES OF BOYS AND GIRLS
TAKING LEAVING CERTIFICATE EXAMINATIONS
IN BUSINESS STUDIES HIGHER LEVEL 1961-80

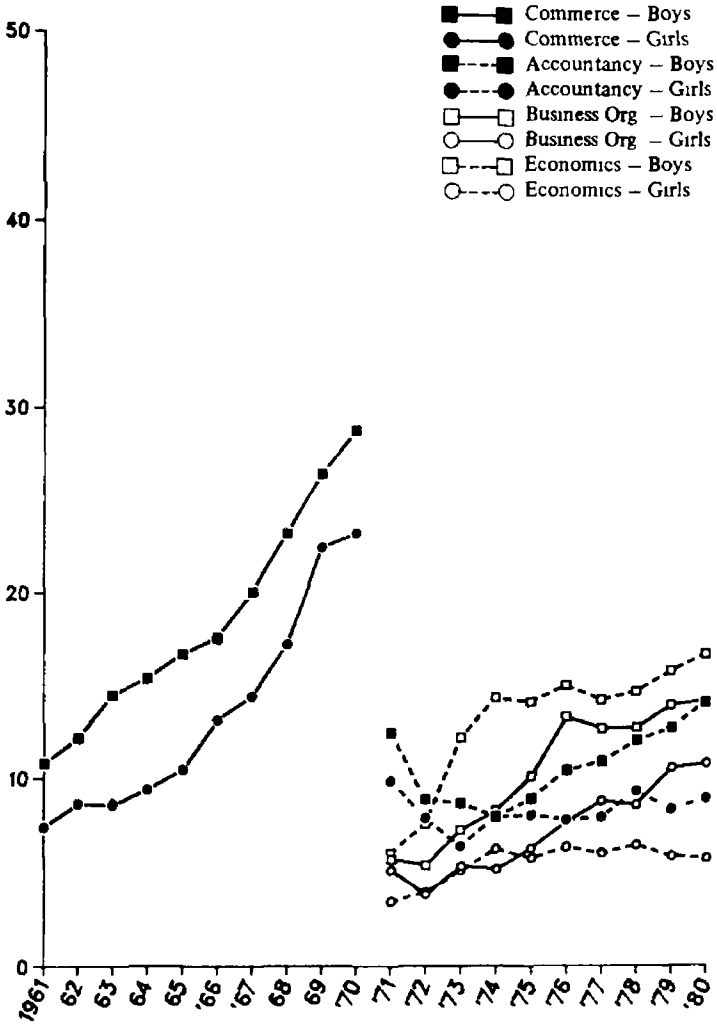
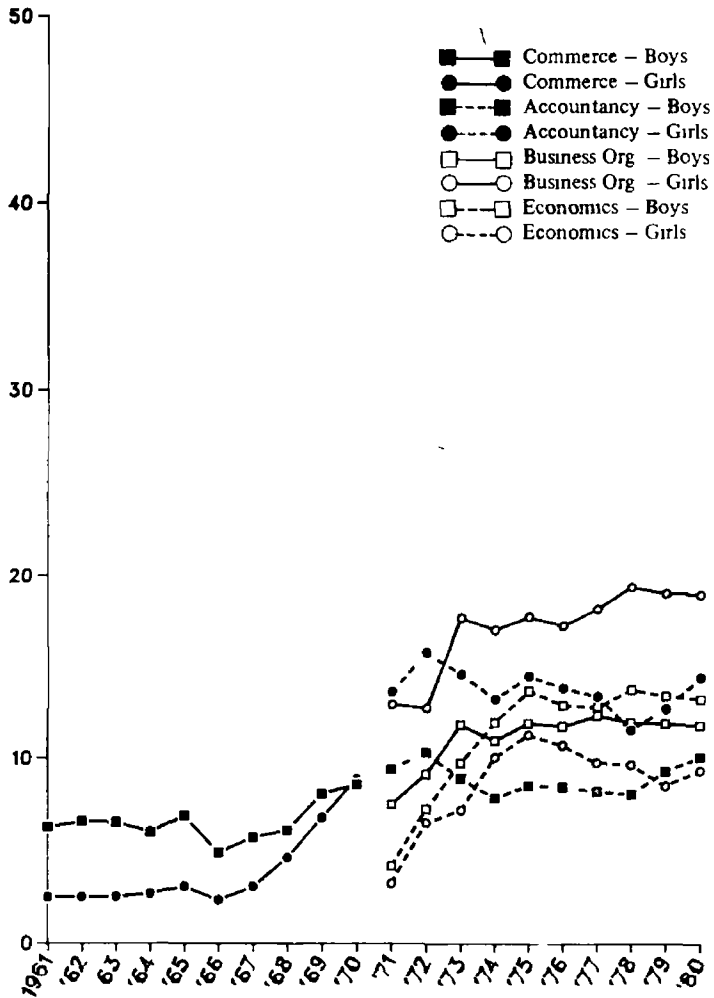


FIGURE 8

PERCENTAGES OF BOYS AND GIRLS
TAKING LEAVING CERTIFICATE EXAMINATIONS
IN BUSINESS STUDIES ORDINARY LEVEL, 1961-80



During the ten years following the introduction of Business Organisation to the Leaving Certificate Examination in 1971, the percentage of students taking the subject increased from 15.8 to 28.1. A majority (62.2%) took the ordinary level paper. The popularity of Business Organisation increased for both boys and girls and at both higher and ordinary levels. As in the case of Accounting, more girls than boys took the subject. However, at higher level, it was taken by a greater proportion of boys. Over a ten-year period, boys' participation averaged 10.3% at higher level while girls' participation averaged 7.2 percent. At ordinary level, boys' participation was lower at 11.1%, while the percentage of girls taking the subject averaged 17.1.

Economics also rose in popularity since its introduction. The percentage of students who took the examination rose from 8.3 in 1971 to 21.5 in 1980. An increase in popularity was evident among both boys and girls in the first five years in which the subject was offered. Subsequently, boys' participation stabilized at about 13%, while girls' rates of participation dropped slightly from 11.3% in 1975 to 9.3% in 1980. The subject was taken by approximately equal numbers at higher and ordinary level. At higher level, the percentage of male Leaving Certificate candidates taking the subject rose rapidly, from 6.0 in 1971 to 14.31 in 1974, and has shown a more gradual rise until 1980, when it reached 16.6. Girls' participation at higher level also increased, though from a lower base and at a less rapid pace. It rose from 3.5% to 6.3% in the first four years, and has stabilized since then, in 1980, it was 5.75 percent. The trends at ordinary level were similar.

Social Studies and Art Group

Figure 9 presents data on the percentages of boys and girls taking subjects in the Social Studies Group and Art at higher level between 1961 and 1980, Figure 10 gives the percentages taking these subjects at ordinary level. The percentages given for participation in Home Economics are based on the number of students taking both the General and the Social and Scientific syllabi in this subject. For the period 1961 to 1970, the percentages of students taking both Art and Drawing are combined whereas in the period since 1971 percentages taking the new syllabus in Art are given.

The percentage of Leaving Certificate students taking History declined almost continuously in the 1960s and 1970s. In 1961, 69.0% of students took History, while in 1980, the percentage was only 35.5. The largest

FIGURE 9

PERCENTAGES OF BOYS AND GIRLS
TAKING LEAVING CERTIFICATE EXAMINATIONS
IN SOCIAL STUDIES AND ART HIGHER LEVEL 1961-80

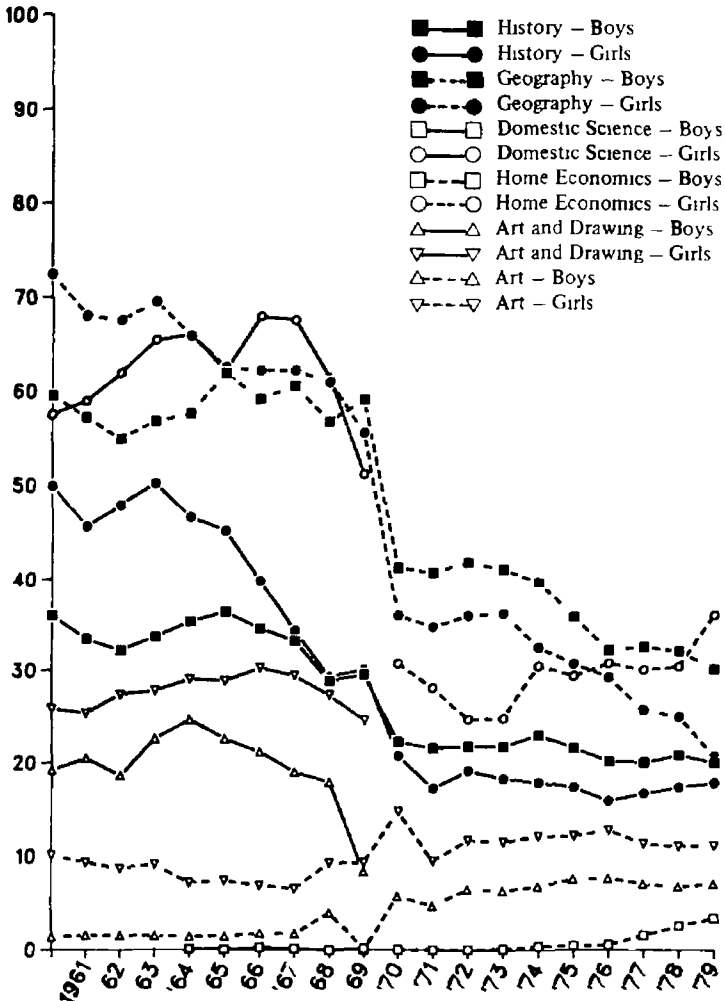
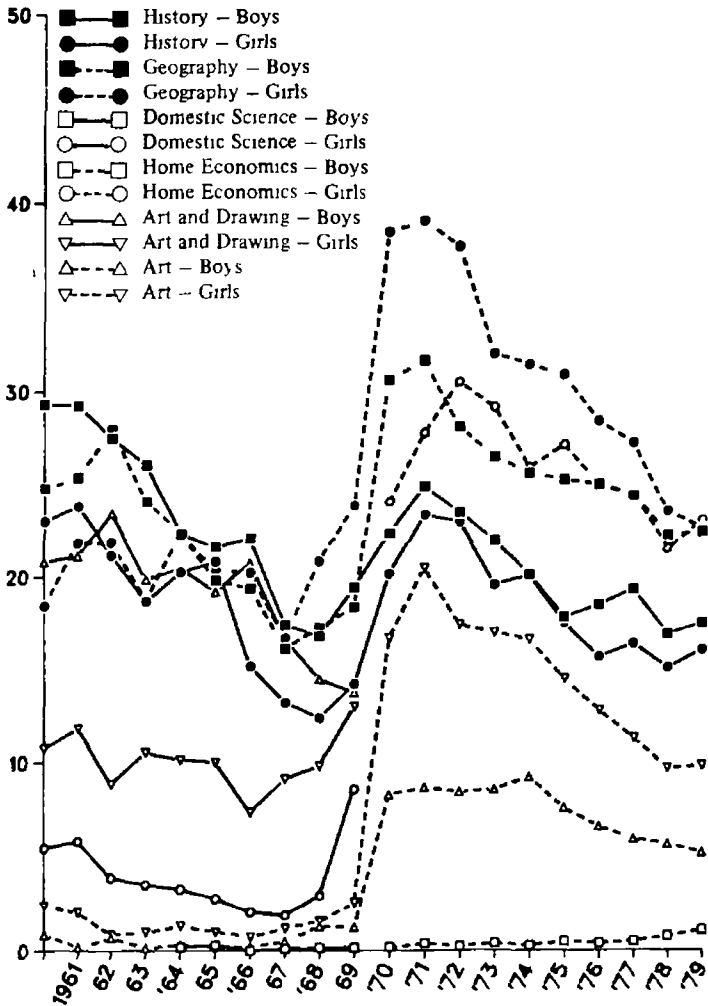


FIGURE 10

PERCENTAGES OF BOYS AND GIRLS
TAKING LEAVING CERTIFICATE EXAMINATIONS
IN SOCIAL STUDIES AND ART ORDINARY LEVEL 1961-80



drop occurred between 1967 and 1968 when the percentage dropped from 63.2 to 49.0. Over the twenty years, an average of 57.1% of those who took History took the higher paper. This percentage dropped from 68.9 to 44.5 between 1969 and 1972, but has increased since then to 53.0. About equal numbers of girls and boys took the subject. The decline in the proportion of students taking History occurred largely at higher level. There was a sharp decline in the percentages of both boys and girls taking the subject at this level following 1966. In the case of boys, the percentage dropped from 36.4 in 1966 to 21.6 in 1972, in the same years, the percentage drop for girls was from 45.2 to 17.25. The decline was greater for girls than for boys, with the result that while in the early 1960s there was a difference in participation of about 15% in favour of girls, since 1971 the proportion of boys taking higher level History has been higher than that of girls. At ordinary level, participation of both boys and girls declined up to 1969, when it was 16.8% for boys and 12.4% for girls. It increased from then until 1972, when it was 25.0% for boys and 23.4% for girls, but declined again after that. In 1980, 17.5% of boys and 16.0% of girls took ordinary level History. There was a slight tendency throughout the twenty years for a greater proportion of boys than of girls to take ordinary level History.

The percentage of students taking Geography also declined — from 87.5 in 1961 to 47.4 in 1980. Further, there was a significant decrease in the percentage of Geography students who took the higher level paper in 1971. Prior to that year, nearly three quarters (74.3%) of those who took Geography took a higher paper, since then, just over half (53.6%) took a higher paper. Examination of the trends for boys and girls in higher level Geography reveals that participation for both sexes declined almost continuously throughout the twenty years. In the case of boys, it dropped from 59.5% in 1961 to 30.1% in 1980, in the case of girls, the drop was from 72.4% to 20.7% over the same period. Ordinary level participation increased between 1968 and 1972, especially in 1971 when the greatest drop in higher level participation occurred. Otherwise, a decline occurred at ordinary level also. Changes occurred in the relative magnitudes of the percentages of boys and girls taking Geography at both higher and ordinary levels. At higher level, more girls than boys took Geography up to 1969, since then, the pattern has been reversed. At ordinary level, more boys than girls took Geography up to 1965, since then, the percentage of girls taking this paper has been higher.

Between 1961 and 1970, the percentage of Leaving Certificate students

taking Domestic Science averaged 32.8. This figure represents 64% of girls who took the Leaving Certificate in these years and 0.1% of boys. Almost all students who took this subject (93.7%) took the higher paper. The percentage of girls taking higher level Domestic Science increased in the five years following 1961 but decreased from 67.9% to 51.2% in the four years before the subject was taken off the Leaving Certificate programme in 1970. At ordinary level, participation declined from 5.4% to 1.9% between 1961 and 1968 but had increased to 8.6% in 1970.

The overall percentage of students who took Home Economics remained stable at about 30 from 1971 to 1979 and rose to 35.3 in 1980. As in the case of Domestic Science, the vast majority (98.0%) of those who took Home Economics were girls. On average, 53.5% of those who took this subject took the higher paper, a much lower proportion than in the case of the earlier subject, Domestic Science. While about equal numbers of girls took Home Economics at higher and ordinary levels between 1971 and 1980, the trends in participation were different at the two levels. At higher level, the percentage of girls who took the subject was lowest (at about 24.8%) in 1973 and 1974. Otherwise, the percentage was about 30 until 1980, when it increased to 36.0. The percentage of girls taking the ordinary level papers was highest in 1973 at 30.5 and lowest in 1979 when it was 21.5. While few boys took Home Economics at either level, the proportions taking the subject increased in the ten years from 0.1% to 3.4% at higher level and from 0.2% to 1.1% at ordinary level.

In the period 1961 to 1970, an average of 6.0% of students studied Art or Drawing. The percentage varied between 4.8 and 7.1. A majority (61.5%) of the students who took the subjects took the higher paper. More girls than boys took the subjects. With the introduction of the new Art syllabus in 1971, the proportion of students who studied art increased substantially. In the last year (1970) of the old syllabus, 6.7% of students studied Art or Drawing, in the first year of the new syllabus in the following year, 23.4% of students took Art. The percentage of students studying Art fluctuated somewhat throughout the 1970s. In 1980, 17.2% of students studied the subject. At higher level, the participation rates of both boys and girls remained relatively stable, averaging 11.8% and 6.6% respectively throughout the 1970s. At ordinary level, the proportions of both boys and girls who took Art dropped. In the case of girls, it dropped from 20.5% to 9.8% between 1972 and 1980, in the case of boys, it dropped from 9.2% to 5.2% over the same period.

DISCUSSION

Our analyses of Leaving Certificate Examination statistics from 1961 to 1980 indicate that there was a very considerable increase during this period in the number of students who stayed in the educational system and took this examination. Over the twenty years, the increase in numbers was four-fold. The increase was most marked between 1968 and 1977 and so might be interpreted as a response to the provision in 1967 of free education and free transport to schools. Allowing vocational-school students to sit for the Leaving Certificate Examination (a provision introduced in 1966) may also have contributed to the increase. The effects of these changes seem to have been exhausted by 1978. Overall, however, it is clear that the benefits of the educational system became available to increasingly larger numbers of students during the 1960s and 1970s. To the extent that this contributed to greater equality of opportunity, it can be said that an objective of the policy-makers in instituting reforms was at least partially attained.

On the basis of policy statements made by the Minister for Education, we would not expect the growth in student numbers to have been similar across all curricular areas and indeed they were not. While all subjects in all curricular areas, with the exception of Latin, attracted an increasing number of students between 1961 and 1980, increases in the Language Group (French) and in the Science and Mathematics Group (Chemistry, Mathematics, and Physics) were greatest. In the case of these subjects, the growth exceeded to a considerable extent the growth in the overall numbers of students who took the Leaving Certificate Examination. Thus, these subjects attracted not only an increasing number of students but also an increasingly greater proportion of the students sitting for the Leaving Certificate Examination. The rate of increase in Irish, in Geography, and in History, on the other hand, did not match the overall rate of increase in student numbers. The rate of increase in English was similar to the overall rate of increase of student numbers.

All the subjects introduced in 1971, with the exception of Art (which replaced Art and Drawing), attracted an increasing proportion of students between 1971 and 1980, although the increase was not always linear. Increases were most marked in subjects in the Applied Science Group and in the Business Studies Group. The new Science subject, Biology, also showed considerable growth. The Social Studies subject, Home Economics, however, had a more erratic history; in 1980, it attracted little

more than the proportion it had attracted in 1971

These trends indicate that when considered in terms of relative increases in the numbers of students taking individual subjects, some progress has been made in achieving a second objective of policy, that of increasing the emphasis on scientific and technical areas of study. We do not know, of course, how much of an increased emphasis was intended. As a further index of the success of the policy, we can consider the popularity of scientific and technical subjects relative to other subjects in 1980. While Mathematics was taken by 87.4% of students in 1961 and ranked fourth in popularity, it was taken by almost all (95.3%) students in 1980 and ranked second in popularity among Leaving Certificate subjects. Biology, which was first examined in the Leaving Certificate in 1971, was the fifth most popular Leaving Certificate subject in 1980, being taken by almost 53% of students. This subject is considerably more popular than were either of the earlier biological subjects, Physiology and Hygiene or Botany, which in 1961 ranked 10th and 17th in order of popularity. The other principal science subjects, Physics and Chemistry, have not gained in popularity from 1961 to 1980. In 1961, Physics was the 13th most popular subject in the Leaving Certificate Examination, in 1980, it was 14th. Chemistry was 11th and 12th in popularity in 1961 and 1980 respectively. Although showing considerable growth since their introduction in 1971, none of the Applied Science subjects (Technical Drawing, Engineering Workshop or Building Construction) can be regarded as having achieved great popularity by 1980. The most popular of these subjects was Technical Drawing which ranked 15th, next most popular was Building Construction with a rank of 16, while Engineering Workshop, with a rank of 18, was marginally less popular than Latin. On the other hand, there has been a substantial increase in the study of Business subjects over the period studied. In 1961, Commerce (taken by 13.63% of candidates) was the 12th most popular Leaving Certificate subject. In 1980, Business Organisation, Accounting, and Economics ranked 8th, 9th, and 11th respectively in order of popularity. (The percentages of students taking these subjects were 28, 24, and 22 respectively.)

Since students, on average, sit for about six or seven subjects and since this number has remained fairly constant over time, we would expect the increases in participation we have just observed in some subjects to have been matched by a decrease in participation in other subjects (4). This indeed was the case. Among the subjects which showed a considerable drop in popularity were, most dramatically, Latin (the

6th most popular subject in 1961, taken by 63.0% of students, becoming the 17th most popular in 1980, taken by 4.1% of students), and, to a lesser extent, Geography (which dropped from 3rd place in popularity in 1961, when taken by 87.5% of students to 6th place in 1980, when taken by 47.4% of students) and History (which dropped from 5th to 7th place in popularity between 1961 and 1980, being taken by 69.0% of students in 1961 and by 35.5% in 1980). The fall in the numbers taking Latin was most likely a result of the announcement in 1973 that a classical language was no longer required for matriculation. Reasons for the decline in the other subjects are less clear but may be related to changes in syllabi in 1969 as well as to students opting for new subjects in the Leaving Certificate course.

Our analyses indicate that, over the years, students' choice of subjects has become more varied. While the majority of students in 1961 concentrated on a small number of 'core' subjects, students in 1980 selected a wider range. In 1961, the six most popular subjects (Irish, English, Geography, Mathematics, History, and Latin) were all taken by over 60% of those who took the Leaving Certificate Examination. The next most popular subject (Drawing) was taken by only 31% of students. In 1980, only four subjects (English, Mathematics, Irish, and French) were taken by more than 60% of candidates, while an additional three subjects (Biology, Geography, and History) were taken by between 30% and 60% of candidates. It will be noted that French has replaced Latin as the most popular third language after English and Irish and that other languages are not popular.

As might have been expected because of the large increase in numbers of students sitting for the Leaving Certificate Examination, there has been a decrease in the proportion of students taking higher-level examinations. For example, in 1961, almost two-thirds (65.7%) of all Leaving Certificate students took higher-level (honours) Geography and almost as many took higher-level English (64.1%) and higher-level Irish (58.5%). By 1980, much smaller proportions were taking higher-level papers. Less than half (46.3%) of Leaving Certificate candidates took higher-level English (the subject most frequently taken at higher level) and only a quarter (25.6%) took higher-level Irish. English and Irish were still in the top four subjects in attracting students to higher-level courses in 1980 and were joined by French (27.9%) and Biology (26.5%) which had moved into second and third places in popularity.

Several of the subjects which were introduced in 1971 were doing quite well relative to other subjects in attracting students to higher-level courses in 1980. This was particularly true of Biology (26.5% of all students took higher-level Biology) and Home Economics (21.0% of all students took a higher level examination in this subject). Roughly 1 in 10 students took higher level examinations in Business Organisation (12.3%), Accounting (11.1%), Economics (10.5%), and Art (9.4%).

Overall, the trend between 1961 and 1980 has been for a smaller proportion of students to take higher-level examination papers. While a number of subjects (Geography, English, and Irish) could attract approximately 3 out of 5 students to take an honours paper in 1961, no subject (with the exception of English in which somewhat less than half of Leaving Certificate students took a higher paper) could attract as many as 3 out of 10 students to take a higher paper in 1980. There are three exceptions to the downward trend in the proportion of Leaving Certificate students taking a higher level paper: the percentage of students who took higher level French increased considerably from 15.1 to 27.9, the percentage who took higher-level Chemistry increased from 8.9 to 13.3, and the percentage who took higher level Physics increased marginally from 7.8 to 8.1.

These overall trends may reflect schools' attempts to adapt to the achievement levels of the increasing number of students staying to sit for the Leaving Certificate Examination. Prior to 1967, the population of secondary schools was probably biased in favour of high achieving students, who were encouraged to attend through the operation of scholarship schemes. For example, of the students who entered second level schools in 1966, about 10% were scholarship holders (11). As the system came to accommodate the majority of students, we would expect to find greater variance in the achievements of students. For this reason, we might expect the proportion of students taking higher-level courses to have decreased.

While the proportions taking higher level examinations has decreased, it should be pointed out that the absolute numbers of students taking higher level examinations increased between 1961 and 1980 in all subjects, with the exception of Latin. The highest increases in absolute numbers were achieved in French (676%), Chemistry (528%), Biology (343%), Physics (338%), Business Organisation (302%), and Economics (298%). All these subjects, with the exception of French and Biology, attracted relatively small numbers of students.

While drops in the proportions of students taking higher-level examinations might not have been unexpected, the differences between subjects in attracting students to higher-level courses seems surprising. English, as we have seen, attracts the largest number of higher level students, almost half of Leaving Certificate students in 1980 took a higher-level paper in English. Four other subjects attracted about 1 in 4 Leaving Certificate students to a higher-level course – French, Biology, Irish, and Geography. In the areas of Science and Mathematics, with the exception of Biology, relatively few students attempted higher level papers, 13% in Chemistry, 9% in Mathematics, and 8% in Physics. The most surprising of these is Mathematics which, though taken by the vast majority of students, attracts a relatively small proportion to higher level study.

Gender differences are apparent in overall statistics as well as in statistics relating to individual subjects. Since 1968, more girls than boys sat for the Leaving Certificate Examination. While the number of boys taking the examination increased up to 1978 (as did the number of girls), since that date the number of boys has decreased while the number of girls has continued to grow. The explanation for the drop in the number of boys may be partly in the greater attraction for boys of pre-employment courses, which were introduced in 1977.

Several subjects show marked differences in participation between boys and girls. The most dramatic ones are to be found in the Applied Science Group of subjects. Building Construction, Engineering Workshop Theory and Practice, and Technical Drawing are effectively the exclusive preserve of boys. In 1980, there was only one female candidate for Building Construction and Engineering Workshop Theory and Practice and only 15 for Technical Drawing. The position was not so stark in the case of Science subjects (Physics and Chemistry) though differences between male and female participation were considerable in those also. When adjustment is made for the total number of male and female Leaving Certificate candidates in 1980, we find that more than eight times as many males as females took Physics. The ratio for Chemistry was 2.5 boys to 1 girl. Subjects which were taken by much larger proportions of girls than of boys were less common. The most striking of these was Home Economics which in 1980 was taken by over 13 girls for every boy who took the subject. Less extreme biases in favour of girls are to be found in Art (for which the ratio was 1.7:1) and Biology (for which the ratio was 1.6:1).

A consideration of the total number of candidates who take a subject may not reveal the full extent of sex bias. Further light may be shed on this issue by examining the number of boys and girls who take higher level courses. While 93.1% of girls took Mathematics in 1980 (compared to 75.8% in 1961), thus bringing them close to the proportion of boys (98.2%) who took the subject, only 4.1% of girls took higher level Mathematics (compared to 15.5% of boys). The gap at higher level is thus still considerable, though the trend is towards increasing participation by girls. While the proportion of boys taking higher-level Mathematics decreased between 1960 and 1981 (from 26.9% to 15.5%), the proportion of girls increased considerably (from 0.13% to 4.10%) over the same period.

Chemistry and Physics, as we have seen, attract higher proportions of boys than of girls. This is true at both higher and ordinary levels. While the proportion of girls taking higher-level examinations was still small in 1980 (9.04% for Chemistry and 2.37% for Physics), it was considerably larger than the proportion taking these subjects at ordinary level (2.87% for Chemistry and 0.99% for Physics). Boys also were more likely to take these subjects at higher level, though the discrepancy in favour of higher level was not as great as in the case of girls. The growth in female participation since 1961 in both these subjects has been considerably greater at higher than at lower level, which is also true for boys in the case of Chemistry, but not in the case of Physics.

In the light of the analyses we have considered in this paper, we may conclude that the considerable expansion which took place in the educational system in the 1960s and 1970s was marked by some if not a very strong sense of direction. An increase in the provision of subjects in the scientific and applied scientific areas was matched by growth over the years in the proportions of students opting for such subjects. The more traditional scientific subjects also attracted increasing proportions of students. However, the proportions taking most science and applied science subjects must still be regarded as small. The position of foreign languages is even worse. Only French is taken by a large number of students. (The only other language taken by more than 10% of students in any year since 1961 was Spanish.) The accession of Ireland to the European Community in 1973 seems to have had relatively little impact, except in the case of French, on the study of European languages in schools.

It is clear that efforts to involve more girls in Mathematics and scientific

subjects have met with some success. However, there are still marked gender differences in subject choice. These are most obvious in the case of the Applied Science subjects which were introduced to the Leaving Certificate Examination in 1971.

Finally, we may note the large discrepancy between subjects in the proportions of students who take higher level courses. With the exception of Biology, the subjects which attract high proportions of students at higher level are in the Language (English, Irish, French) and Social Studies (Geography, History) Groups. The reason for the discrepancy between subjects probably lies in the availability of teachers and other resources.

While policy-makers may welcome some of the trends revealed in our analyses, the analyses also raise issues which must be a matter of concern to them. These issues include the relatively low numbers of students who follow courses in science, applied science, and foreign languages, the continuing gender bias in some subject areas, and the imbalance between subjects in the numbers of students who take higher-level courses.

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