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**Gender Segregation In Educational Choice - Contributory Factors and
Subsequent Implications for Women**

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I would like to dedicate this thesis to my family.

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INTRODUCTION

CHAPTER 1

'Education is an activity which goes on in a society and its aims and methods depend on the nature of the society in which it takes place ' (Ottaway 1962, p. 1). Secondary school is part of a process whereby various forms of knowledge and culture are formally transmitted to the students. In time they are trained in particular skills which enhance their position to actively partake in the adult life of their society. The home and the school are two of the many agencies of education. In recent times there has been a dramatic shift within the education system to a more comprehensive technology programme from a more academic - oriented humanities curriculum. Education is no longer merely concerned with the transmission and consumption of knowledge rather it has become a key resource which enables one to mobilise their socio-economic position in society.

The number of students who receive some form of secondary education in Ireland is considerably high. Indeed there is much emphasis put on the importance of one's education and more importantly the credentials that one obtains. Schools have assumed a pivotal role in economic placement. Educational credentials have become the main determinants of wealth, status and power. From the day that one enters secondary school, one is faced with decisions of various sorts that will ultimately have some form of impact on their future. Nowadays we have a more formally competitive job opportunity system in operation. Up until the 1960s the Irish education system was dominated by the arts and humanities, whilst technological subjects were only provided in a limited number of schools. However the shift towards an industrial economy required a more technical orientation in education. (Lynch 1989, p. 140). In a sense as Hannan suggests 'schools have come to play the central sorting and labelling role as credential giving institutions in labour market placement'. (Hannan et Breen 1987, p. 101). It is certainly true to say that in this day and age education is a key priority for most young people.

Substantial interest has been shown in recent years in the importance of 'gender equity within the educational system. Since the early 1990's the Irish Educational System has been the focus of much attention and scrutiny. Various government publications were developed, and in 1995 a White Paper on education was published. The debates which took place leading up to the publication of this document were fundamentally concerned with equality issues within the education system. The White Paper was entitled 'Chartering Our Education Future' and one of the main issues discussed in this paper is the context of gender equity.

'The education system for the future should have a philosophy that embraces all students female and male, on a basis of equality'.

(Chartering Our Education Future 1995, cited in Drudy 1997, p. 2).

This statement is of extreme importance to my own research. Initially I sought to examine whether gender segregation in educational choice was active within the schools. I was concerned with looking at some of the contributing factors, if it did exist, in particular in the light of young women entering the labour market. I discovered that my task was in fact quite a challenging one due to the numerous combinations of factors that influence one's subject choice. One of the shortcomings of my study is the 'omission' of class, which is another significant concept in the analysis of gender segregation in educational choice. I was of the opinion that this area could quite easily constitute a study in itself. Gender and class are two significant variables with regard to the provision of subjects in schools. Secondary schools tend to provide more 'academic' subjects and they generally have the 'largest middle class cohort. Vocational schools on the other hand, usually cater for a large proportion of children from working class families, and there is more of a focus on technical subjects. In chapter four I will present an analysis of my findings which will illustrate my latter point.

According to Drudy, the potential for job opportunities for women in the technological and scientific areas 'will increase in significance for women in comparison to the 'traditional 'areas of female employment'. Therefore it is essential that women are actively involved and represented in technological and scientific areas, in order to survive and to succeed in a labour market increasingly characterised by this form of employment. Various studies on gender segregation and educational choice do suggest that 'female students tend to predominate the arts and humanities and science and technology are a male culture. Arnot refers to this as a binary system of education ~~of education~~ (Arnot 1984, p. 40). It is from this point that I wish to begin my study.

'Our children and our students are participants in a complex process that equips one sex with math, science, and technical skills indispensable to functioning in the adult world, while it fails to encourage the same development in the other sex. Although the lives of individual women are the most negatively and directly affected, the loss to both sexes is immense'.

(Skolnick, Langbort, and Day, 1982, p. 2, cited in Kahle 1985, p. 193).

REVIEW OF LITERATURE

CHAPTER 2

According to the ESRI Report 1983 'Schooling and Sex Roles', student subject choice is the most significant reason for poor participation rates of girls in science and technology (Sr Pat Murray 1994, p. 14). This statement aptly provides a basis from which this present work shall expand. In my view it highlights the significance of gender equity within schools. This review of literature will focus on key issues, that I consider to be particularly relevant to this research.

Gender Segregation in the Selection of Subjects at Second Level

Substantial research has been conducted regarding 'gendered' subject choice at second level. Evidence suggests that girls attending second-level schools, both single-sex and co-educational, are more likely to study a language, humanities or arts subjects than their male counterparts. On the other hand boys are far more likely to study a technical subject or a physical science than their female classmates (Frank Murray 1994, p. 9). According to Hannan et al. there are very noticeable gender differences in both the take-up of particular subjects and in the provision of certain subjects (Hannan 1983, p. 115). During the late 1970's Byrne reviewed the evidence that was available regarding gender equity in post-primary schools in Ireland. The outcome of this research was that 'very significant sex differences in subject provision and choice occurs at the senior cycle level' (Hannan 1983, p. 154). In 1983 Hannan et al. published a comprehensive study of the *Schooling and Sex Roles in Irish Post-Primary Schools*. The statistics used in their research were primarily from the Department of Education, Statistical Reports dealing with the years 1979 and 1980. These statistics provided a very good insight into the gender imbalance regarding certain subjects at second level though they proved somewhat outdated for the purposes of my own research. Other research conducted at a later stage indicates that many of their findings have altered somewhat, however the study still provides a very in-depth analysis of differences in Rates of Subject Take-up, which obviously is of pivotal interest to this

research. Hannan suggests that the clearest indicator of the way in which girls post primary education differs from boys is in the arena of subject choice. an area which I will examine in detail in chapter four. Their findings showed a broad range of differences in the rate of subject choice and take-up between male and female students. They discovered at Inter Certificate Level, male students dominated not only higher Maths and Science, but that there was a huge gender imbalance in the number of male and female students taking the applied subjects. For example Mechanical Drawing, Metal Work, and Woodwork are subjects predominantly studied by male students and Home Economics is taken by a large number of females (Hannan and Breen 1982, p. 104). In relation to Leaving Certificate subjects, in the Science area female students were far more likely to study Biology than either of the other two Sciences with only 10% of girls or less taking Physics and Chemistry sciences.

According to a study conducted by Measer and Sikes, before the introduction of the national Curriculum in Britain, it was possible for pupils to be denied the opportunity to take certain subjects (Measor and Sikes 1992, p. 73). For example Biology could be timetabled at the same time as Physics in a school, although this was not the case in the study conducted by Hannan et al. in 1983.

All pupils follow the same curriculum at primary level. This however is not the case at Leaving Cert level. It is optional as to whether or not one chooses to take a Science subject. According to Drudy and Lynch, 1993 whose work looks at the position of women in Irish education, the curriculum at Leaving Certificate level is biased 'towards Languages, Business Subjects, Science and Applied Science'. Research conducted by these two authors suggests that 'Technical Subjects, such as Engineering, and Construction Studies, are rarely

available as an option for girls, while timetabling in co-educational schools often means that girls are excluded' (Drudy and Lynch 1993, p. 173). Equally boys are rarely given the opportunity to study Home Economics. Similar findings were discovered in my own personal research. They also point out that the number of female students participating in the traditionally male subjects has increased considerably in recent years. However on the basis of my own research this is only the case in certain subjects and does not really apply to the Applied Sciences. Boys schools have also increased their provision of the more typically 'female' subjects for example Home Economics and Biology. Despite the reduction of gender differences in the allocation, provision and choice of Leaving Certificate subjects, evidence from the research conducted by Lynch and Drudy indicates that girls predominate in Art, Continental Languages and Music, whilst boys still predominate in the Sciences (Drudy and Lynch 1993, p. 177).

Hannan et al. conducted a later study, which was published in 1996. They provide similar results to the previous two studies I have referred to in that they suggest that take-up of many subjects at Junior Cert is heavily gender biased (Hannan et al. 1996, p. 99). Their findings suggest that the highest level of gender imbalance at Junior Certificate level occurs in the Technical Subjects. For example Metalwork, Materials Technology and Technical Graphics are dominated by men whereas female students dominate Home Economics. It was interesting to compare the results of the earlier study conducted by Hannan et al with their later findings. Evidence also suggests that for the first time in 1994 proportionally more girls than boys took higher level maths at Junior Certificate level. Unfortunately this is not the case at Leaving Certificate Level. Hannan et al's research indicates that higher level maths remains heavily biased in favour of male students as are physics and chemistry. The results of this research show that men also dominate Physics and Chemistry. The

Practical/Technical subjects are completely male dominated also, in 1994 only 1% of female students took Construction Studies, Engineering and Technical Drawing, and 1% of male students took Home Economics General (Hannan et al 1996, p. 104). (See chapter four).

Research conducted by Drudy, illustrated that at Junior Certificate level, there is evidence of lower participation of female students in Science however not in Maths. Findings from this research suggest that 'when all science and mathematics Leaving Certificate subjects are grouped together the candidates are equally divided by gender'. However as previous research has indicated there are striking differences in the various sciences subjects that male and female students choose to study. The most popular Science subject for both sexes is Biology. However according to Drudy the boys Science choices are more evenly distributed, in that there is an almost equal number of male students studying both physics and chemistry.' This is not the case with female students (Drudy 1996, p. 253).

This gender segregation in the selection of subjects at second level is not unique to Ireland. Madeline Arnot notes that in Britain studies verify that girls usually choose mainly the Arts and Humanities, and that in relation to practical subjects 'girls have been directed towards the domestic crafts rather than technical and engineering subjects'. Unlike many of the other studies her work also refers to the consequences this may have for male students. Boys frequently leave school ill-equipped for taking a shared responsibility in home and family life and often they are not prepared for dealing with people and for dealing with their own emotions (Arnot 1984, p. 44). Research by Measor and Sikes, presents similar findings (Measor and Sikes 1992, p. 76).

Influential Factors on Gender Stereotyping in Schools

Various studies in the UK and in the US have indicated that in the sciences, in particular the Physical Sciences are strikingly male-dominated (Harding 1986, p132). One of the suggested possibilities for the imbalance in the proportion of female students participating in the physical sciences is the *masculine image* associated with science. Substantial research has been carried out regarding this perspective. Pupils are usually required to choose their subjects when they are 14 or 15 years of age. At this stage in their lives they are still trying to decipher what it means to be a man or a women. According to research conducted by Kelly, 'studying science fits in with boys' image of themselves; but for girls there is conflict' (Kelly 1987, p. 15). Alison Kelly provides four principle reasons for the masculinity of science. Firstly, the numerical dominance of boys in science classes, secondly the portrayal of women in science textbooks, thirdly the re-contextualization of gender and finally inherent masculinity. Smithers and Collings have suggested that girls who continue with science into the sixth form 'often consider themselves rather unattractive and unfeminine' (Smithers and Collings 1981).

In 1982, the Royal Society and the Institute of Physics established A Report of The Physics Education Committee. The findings of this report indicated that in 1978-1979 only 0.32 girls to every boy attempted 'O' level Physics and the corresponding figure was 1.69 for Biology. The Report suggests that the reason for this imbalance is the '*masculine image*' of Science, in that if achievement in Science is regarded as having a masculine image then female students 'may see achievement in science as incompatible with their developing femininity' (Harding 1986, p. 133). In my view this may account for the considerable imbalance between male and female students studying Physical Sciences.

Qualities such as aggressiveness, hardness and disconnectedness are widely considered to be masculine qualities, as opposed to qualities such as submissiveness, softness and the capacity to nurture which are associated with women (Harding 1986, p. 134). According to Harding Science is perceived to 'be more closely tied to characteristics thought to be disproportionately distributed to men'. Physics is perceived to be a masculine subject according to Harding because it is widely believed that 'physics can be successfully pursued only by *male* human beings... only by men possessing certain strongly masculine qualities' (Harding 1986, p.133).

The Representation of Women in Textbooks

'It is a fundamental principle of equality that knowledge and ideas are not presented in a sex biased or discriminating way, for it is this knowledge and these ideas which will form the young person's view of the world and her/his attitudes as an adult'.

(Action Handbook - How to implement Gender Equality 1985, p. 27)

The predominance of males in science textbooks has been well documented. According to Kelly there are between two and ten times as many references to men and illustrations of men and boys as there are for girls and women (Kelly 1987, p. 67). As books, posters, and worksheets, continue to shape the attitudes of students as they go through the school system. The majority of textbooks used in Science display boys or men as opposed to women or girls. According to Kelly, the great Scientists series of posters is often displayed in school science laboratories and it shows only one woman (Kelly 1987, p.14). Much research suggests that the lack of representation of women in science magazines and indeed textbooks may be a contributing factor to the imbalance within the Science subjects between male and female students. Particular images of masculinity are transmitted to both

girls and boys through literature, comics, schoolboy magazines and indeed school textbooks. In a study by Rosemarie Nave-Herz from Germany and Andree Michel from France on 'sex typing in teaching materials' findings show that in general the leading characters in textbooks are male, and that women are usually portrayed as mothers and housewives (Rosmarie Nave Herz and Andree Michel, cited in Kelly 1982, p. 7). Men are represented as strong and powerful but women on the other hand are helpless and emotional (Kelly 1982, p. 6). Rosmarie Nave Herz suggests that the textbooks are not responsible for the sex stereotyping however they may reinforce certain view that young people already have, especially during the adolescent stages.

In certain Scandinavian countries strategies have been introduced to combat sex typing in school textbooks which according to Kelly have been successful in helping to eliminate gender stereotyping in books (Kelly 1982, p. 7). Research conducted by Taylor, concludes that 'reference to females were few, references to active females even fewer and references to females in scientific activities were virtually non-existent' (Kelly 1987, p. 67). In my opinion this could be a contributing factor to the gender segregation in the Physical Sciences and Higher Level Maths. Girls interests are fundamentally based around other people, according to Kelly, in my view this could be disputed. Taylor (1979) and Heikkinen (1978) observed the lack of representations of either sex in science textbooks. Perhaps as Kelly suggests this reinforces the idea that science is about things and not people and thus contributes to the imbalance of women participating in Science. Drudy also highlights the way in which science textbooks portray that scientific discoveries of any significance were made by men (Drudy 1996p. 260). In a study by Hannan et al, they discovered that female students are under-represented in both Physics and Chemistry. In 1992, 67% of those who took Biology at Leaving Certificate Level were female compared

with 44% in Chemistry and 25% in Pysics (Drudy 1994, p. 5). Perhaps the apparent remoteness from concern with living beings, which according to many studies is an important aspect of the masculine image of Physics is a possible explanation for the low participation rates of female students in the Physical Sciences. Subjects like Biology and Social Scientific on the other hand do present a close relationship with living beings.

'Biology, with its concern for living things, appears more personal and alive, and closer to the everyday world of values and emotion, which women are expected to inhabit. Choosing the biological as opposed to the physical sciences thus involves girls in fewer contradictions and they receive more encouragement and support in their choice'.

(Saraga and Griffiths, cited in Kelly 1987, p. 137).

Students Attitudes towards Science and Maths

Bowles and Gintis suggest that 'it is different attitudes students acquire or have reinforced in school that enables society to maintain the existing state of social and economic inequality' (Oakes 1985, p. 139). There are three important factors regarding the school and the formation of attitudes, firstly the school may reduce initial differences in attitudes students have, secondly the school may serve to increase initial differences in student attitudes, and finally the school may have no impact at all on the attitudes that students have. The findings of this study show that the attitudes the students developed were very closely correlated to which 'class type' the students were in. For example the students in 'high track' classes, who were used to being told that they were 'the smarter' ones had very positive attitudes regarding themselves and they had higher educational aspirations than students in the 'lower track' classes. Evidence from this study also indicates that regardless of which 'track level' the students were in, their attitudes towards English and Maths did not differ significantly (Oakes 1985, p. 143).

The formation of attitudes relating to issues such as gender roles is a highly complex process. According to a study by Hannan et al (1996) one of the implications of 'differential socialisation' on the development of career prospects and gendered self-concepts is a 'gradual evolution of different attitudes towards subjects as girls' and boys' school careers evolve over time' (Hannan et al 1996, p. 28). Drudy suggests that there is 'a mismatch between the masculine image of science, especially Physics and to an extent Chemistry, and girls' identification with the 'feminine' role at a critical period of adolescent development' (Drudy 1996, p. 260). The masculine interest in things is more applicable to the dominant form of physical than the feminine concern with people. (Kelly 1987, p. 73). Students enter post-primary school with very little knowledge of what the different subjects

entail. Factors such as the influence of their peers, parents and teachers are very significant in helping the students to determine which subjects they will study. The findings of a study by Hannan et al. 1983. indicate that female students have 'more negative attitudes to Maths', compared with boys however this depends on the particular school type. Studies indicate that the particular school type has an impact on the attitudes that students develop towards certain subjects. DES statistics 1975, indicate that a higher proportion of girls study mathematics and physical sciences in girls schools than in mixed schools (Kelly 1987, p. 15). In conclusion, Bowles and Gintis, maintain that the relationships that students form in school 'reproduce the attitudes and consciousness of various levels of workers in society by fragmenting students into groups and then rewarding different capabilities, attitudes, and behaviours (Oakes 1985, p. 144).

Science

'The Problem of girls is science cannot be divorced from the wider issues of sex stereotyping and women's position in society'

Helen Weinreich-Haste has argued that 'science is masquerading under a stereotype of masculinity' (Kahle 1985, p. 138). According to Drudy in the late nineteenth century and the early part of the twentieth century when the foundations of contemporary Science were being established women could not be members of the principal scientific societies (Clarke 1989, cited in Drudy 1996, p. 260). Philips and McKay suggest that when women were allowed to participate in scientific discoveries they actually carried out practical work while the people credited for the work were usually male (Philips and McKay 1994, cited in Drudy 1996, p. 260). The subordination of women in Science over the years may have had an influence on the low participation rate of females in this area, especially in the Physical Sciences. In a study of the influential international high-energy Physics community,

Sharon Traweek argues that the most dominant traits which characterise American and European members are those of 'aggressive individualism, haughty confidence, and a sharp competitive edge'. However she also states that these traits are likely to be found amongst those who study Biology also (Cited in Kahle 1985, p. 134).

Research on the "Girls into Science and Technology" project indicates the way in which girls perceive science as a man's world' (Kelly 1987, cited in Hannan et al 1996, p. 30). A strong component of femininity as I have previously stated is concern with people, which poses problems in science, 'where the brass squares, light bulbs and copper sulphate often seem to have nothing to do with people' (Kelly 1987, p. 73). The special image of science as 'masculine' thus also carries an impersonal aura with it. The caring role that women are 'supposed' to enact, almost ignores the fact that for some women caring for people both emotionally and physically may be irrelevant (Byrne 1991, cited in Drudy 1996, p. 260). Drudy also illustrates that transnational research on female scientists shows that women's scientific interests are in fact correlated with a commitment to society and humanity (Vandervoort 1985, cited in Drudy 1996, p. 261). Various perspectives have been developed regarding the different roles that women and men play in our society and indeed this can be applied to the different perspectives each sex holds regarding Science. The process of socialisation is central to many of the studies conducted in this area. Fichter defines socialisation as 'a process of mutual influence between a person and his fellow-men, a process that results in an acceptance of an adaption to, the patterns of social behaviour' (Fichter 1971, p. 29). This perspective will be more closely examined in the theoretical framework.

Certain studies also indicate that there is a perception that the Physical Sciences are more difficult than other subjects are. 'Young people, it has been found, perceive Physics and Chemistry as being very difficult, heavily content-loaded, very dull, and demanding passive reception rather than active involvement with the learning process (Porter 1993, Woolnough 1994, Ni Charthaigh and O Suilleabhain 1988, cited in Drudy 1996, p. 262). However, what is especially interesting is that boys are usually more willing to continue Science than their female counter-parts, despite the fact that they may also find it extremely difficult, primarily due to the relationship between Science and their future careers (Kelly 1987, p. 14). According to Drudy, the masculine image of Science and the perception that Physics and Chemistry are *difficult* subjects has a significant impact on the attitudes that female students develop towards these two subjects. In the Sciences gender differences have been reduced significantly in recent years, and the proportion of girls schools offering Physics more than doubled between the years 1980/1981 and 1989/1990 (Drudy and Lynch 1993). In summary, most of the literature that I read regarding students attitudes towards Science, illustrates that there are a number of influencing factors involved in this process.

Maths

Various explanations have been developed regarding the male dominance in Maths. In a study conducted by Maccoby and Jacklin 1974, in the US, they discovered that 'during elementary school both boys and girls enjoy mathematics' (Maccoby and Jacklin 1974, cited in Kahle 1985, p. 32). However in high school girls SAT-Math scores were not as high as boys results. According to the study by Hannan et al. in 1983, male students dominated Higher Level Maths. (Hannan et al 1983, p. 104). In an analysis of the Leaving Certificate results from 1991, findings suggests that only 12% of the candidates who took

Mathematics in the examination did so at higher level. The report also indicates that the gender difference in Maths, was not in the number of students who took Maths but rather in the level at which this subject was taken. Despite the fact that 53% of the students who took Higher Level Maths in the Leaving Certificate examination in 1991 were female, only 37% of those who took higher level Maths were female (Martin and Hickey 1992, cited in Drudy 1994, p. 5).

Before 1974, the majority of studies indicated male superiority in Maths learning, studies such as those conducted by Wilson in 1972 and Flanagan in 1976, who used random samples of male and female students in secondary schools. Traditionally females have not studied Maths as frequently as their male counterparts in advanced secondary school classes, therefore a group of male students who had spent more time studying Maths was compared to a population of female students who had not studied Maths to the same extent. From this study Fennema concluded that males would perform better in Maths achievement tests than females because male students have studied Maths more than females (Fennema 1983, p. 165).

In 1985 a paper was published by the London GCE Board on 'bias and gender in their examination papers'. This was followed by an examination by the Fawcett Society of all GCE papers for 1987. The results of this research indicate that the examination papers were not girl-friendly especially in the case of Maths where questions were 'unnecessarily placed in contexts like football games or car engines' (Fawcett Society 1987, p. 7 cited in Measor and Sikes 1992, p. 77). Research conducted by Riddell and Graf goes even further by suggesting that the 'context in which mathematics is set affects how well women do it' (Graf and Riddell 1972, cited in Measor and Sikes 1992, p.77). Our attention is drawn to

the significance of the 'contexts' that girls find appealing, in relation to the study of Maths also by Heleen Verhage. The author suggests that 'contexts such as cooking and sewing' can be very useful in Mathematics education, but then for boys as well as for girls. (Heleen Verhage 1990, p. 68).

Benbow and Stanley suggest that girls do not perform as well as boys on Math achievement tests because male students have 'greater aptitude for math'. This explanation has been criticised by Sherman. In 1981, Sherman conducted a 'longitudinal study on high school students to determine what were the influencing factors for girls deciding to study maths.' Her analysis presented the following results. Firstly spatial visualization ability, secondly quick word test performance, thirdly perceived usefulness of maths and fourthly confidence in learning maths, were the main influencing factors for girls (Kahle 1985, p. 33). The most important factor was spatial visualization, which actually contradicts previous studies that have suggested that girls usually have poorer spatial abilities than boys do (Maccoby and Jacklin 1974, cited in Kahle 1985, p. 33). This cognitive variable has also been used by Fennema 1975 and Maccoby and Jacklin 1974 as a possible explanation for the imbalance between the performance of male and female students in Maths.

Spatial visualisation is concerned with 'the visual imagery of objects, movements of the objects or changes in their properties.' (Fennema 1983, p. 166). In 1978, Fennema and Sherman examined the relationship between spatial visualization skills, and mathematical skills, and they discovered that these data did not support the hypotheses that spatial visualization is 'helpful in explaining sex-related differences in mathematical achievement' (Fennema 1983, p.166). Fennema and Sherman, designed attitude scales to measure attitudes towards the learning of Mathematics, by male and female students (JSAS Catalog

of Selected Documents in Psychology, vol. 6, no. 2 (1976), p. 31, cited in Fennema 1983, p. 177). They observed that the attitudes of male students did have an impact on whether or not female students decided to take Maths. Fennema suggests that schools can increase females studying Maths, which in my view is certainly a plausible hypothesis evidence of this will be presented in chapter four.

One's confidence in Maths is an affective variable that has been put forward by Fennema as a possible reason for girls lack of participation in Mathematics. This is often measured using a Likert Scale. In the study carried out by Fennema and Sherman, findings suggest that boys were more confident regarding their ability to deal with Maths than the female students. (Fennema 1983, p. 170) Fennema and Sherman also discovered that female students have less confidence in their ability to learn Maths and they do not perceive positive parental attitudes toward them as Maths learners. According to a study by Fox, 1977 parents, counsellors and teachers generally believe that Maths is more suitable for male students than for female students (Fennema and Sherman 1977, cited in Kahle 1985 p. 34).

A paper written by Brigit BROCK-UNTE, on curricular options in Norway and Sweden, indicates that 41.28% of girls in Oslo take Mathematics, but very few female students opt for Physics and Chemistry. The data used in this research was from 1973 and 1974 in the case of Norway. The situation in Sweden appears to suggest that despite the introduction of a new curriculum in 1970-1971, which involved a choice for female and male students between handi-crafts, for example, Sewing, Knitting, Metal Work and Woodwork (Brigit Bock-Utne, cited in Kelly 1982, p. 67). Ingrid Freidriksson in her report in 1973, presents evidence which indicates that 93% of the male students and 20% of the female students

chose to study Woodwork and Metal Work, while more importantly a mere 7% of male students chose to study Knitting and Sewing as opposed to 80% of the female students. (Ingrid Freidriksson. Cited in Kelly 1982, p. 67).

According to Hannan et al. previous research shows that there has been a decline in boys advantage in Maths over female students (Lynch, Close and Oldham 1994, cited in Hannan et al 1996, p. 113). In a study carried out by Carey in 1990, which compared the performance of boys and girls in Maths in the Leaving Certificate and the Junior Certificate, results indicated that a higher percentage of boys than girls passed the examination and obtained honours, from the years 1975 to 1983 (Drudy and Lynch 1993), Drudy 1996. suggests that girls are capable of achieving high grades in the Physical Sciences, and with regard to average performance rates in the Leaving Certificate, girls now 'out-perform' boys. However Drudy points out that this is not the case with Honours Maths. The proportion of students taking Maths at each level are similar, however according to Hannan et al. boys are more likely to obtain 'A' grades at higher level. They also suggest that 'girls overall performance at higher level maths is marginally better, with proportionally more girls obtaining honours grades and fewer girls failing the subject' (Hannan et al 1996, p. 113). In 1994 a New Maths Syllabus for higher level Maths was introduced and according to the findings from Hannan et al.'s research this has had a positive impact on the overall performance of girls in the subject. (Hannan et al. 1996, p. 113).

The Effects of Co-Education on the Selection of Maths and Science

Recent studies in Wales and England, present evidence which suggest that co-education may lead to attitudes being polarised over time in co-ed schools (Maura Mooney 1994). The first major study on co-education in Britain was published in 1969, 1971, and 1974, entitled *Mixed or Single Sex Schools?* Dale's study in 1974, indicates that 'girls in single-sex schools have a higher preference for maths courses' than female students attending co-educational schools (Dale 1974, cited in Kahle 1985, p. 39). Kelly 1981, also discovered that girls in single-sex schools have more positive attitudes towards Maths and Science than female students in co-educational classes, despite the fact that girls schools often have less adequate laboratory provision than coeducational schools (Kelly 1987, p. 15). Older girls tend to avoid Maths because 'boys are perceived as better, and boys correspondingly move away from literary subjects because girls are seen as better' (Dale 1974, Stables 1990, cited in Hannan et al 1996 p. 29).

Ormerod 1975 summarises this gender segregation of subject choice in the following way,

'.....at an age when they are becoming acutely aware of the other sex, in co-education boys and girls are expressing preferences and, when possible, choices in such a way as to reaffirm their perceived sex role'.

(Ormerod 1975, p. 265, cited in Kahle 1985, p. 41).

In general the research in Britain indicates that if co-educational effects do exist they are 'likely to be more prevalent in subjects like Maths and the Physical Sciences, where boys have traditionally been more successful.' (Hannan et al 1996, p. 39). Evidence from Hannan et al.'s study in 1983 however suggests that gender segregation is most frequent in single-sex schools. (Hannan et al 1983, cited in Hannan et al 1996. p. 29). Bryan and

Digby 1986, indicate that co-education works favourably for girls performance in Maths although this is not tend to be the case with Science (Bryan and Digby 1986, cited in Hanafin 1993, p. 9). Smith 1984, claims that single-sex schooling however within a mixed school can benefit the performance of female students in Maths (Smith 1984 cited in Hanafin 1993, p. 9). Thus it is clear that there are numerous perspectives which have been developed in the light of the effects of co-education on gender segregation in the selection of subjects at second level.

The main Irish study on co-education was based on 17 second-level schools in the Limerick area, carried out by Hanafin 1992, 1993. This study indicates that single- sex schooling enhances girl's academic attainment. Research carried out by Drudy and Lynch in 1993 found no important difference. In a study carried out in Australia by Carpenter 1985, evidence suggests that co-educational schooling for girls had no significant effect overall. Evidence presented by Yates and Firkin, from their study in 1986, indicates that high achievers in Maths were 'more likely to come from single-sex schools.' Martin and Ditchburn's study regarding participation in Maths and Science courses, and attitudes towards Physical Science courses and Maths supported these findings referred to above (Martin and Ditchburn 1986, cited in Hannan et al 1996, p. 39). In 1990, a study by Young and Fraser on achievements in Science indicates that there are important advantages of single-sex schooling for girls (Young and Fraser 1990 , cited in Hannan et al 1996, p. 39). However in a later study by Young in 1994, on Physics, no such effect was observed (Young 1994, cited in Hannan et al 1996, p. 39). In 1993, Moore et al. reviewed the research literature, available on co-education, which was published by the Department of Education in the United States, and they 'severely criticised existing research for its inadequate statistical design' (Hannan et al 1996, p. 38). It appears that some of the more

'statistically sophisticated studies', have found minor but yet important 'negative' effects for females in co-educational schools. According to a 'substantial study' in 1993, by Bryk, Lee and Holland, female students in co-educational schools have less favourable attitudes towards Maths and Physical Sciences. (Hannan et al 1996, p. 41). In summary, according to the literature the various studies indicate that in some instances mixed schooling does have an impact on females' participation in the Physical Sciences and Maths, however other research indicates otherwise such as Hannan, Breen, et al. 1983.

The School Curriculum

'Subject take-up, is significantly influenced by the type of curriculum offered'. (Hannan et al 1996, p. 89). Drudy and Lynch highlight the way in which the curriculum, is 'strongly influenced by philosophical and psychological theories about human intelligence ' (Drudy and Lynch 1993, p. 229). According to Measor and Sikes, secondary schools have traditionally provided a more sex-segregated curriculum to pupils than primary schools. (Measor and Sikes 1992, p. 77). The curriculum plays a very significant role in the development of gender equality in schools. Pratt defines a curriculum as 'an organised set of formal educational and/or training intentions'. (Pratt 1980, p4). The term curriculum is used generally in two ways, firstly to indicate roughly a plan for the education of learners and secondly to identify a field of study. (Zais, 1976). Drudy and Lynch suggest that what is included in the curriculum is 'strongly influenced by philosophical and psychological theories about human intelligence'. (Drudy and Lynch 1993, p229). The curriculum in vocational schools has traditionally had a 'strong practical and technological bias' however it also offers academic subjects. Secondary schools on the other hand have a 'strong academic concentration on academic subjects' (Drudy and Lynch 1993, p. 12). Clearly students who attend these two different school types will be exposed to different sorts of curriculum, which I will look at in more detail in chapter four.

According to Drudy and Lynch 1993, the curriculum provided in schools in Ireland is very traditional, and there are no political science, media studies, women's studies or equality studies courses on offer for the students. (Drudy and Lynch 1993, p. 173). Evidence from Hannan et al's study in 1983, shows that the 'freedom given to schools in curriculum and timetabling' in particular for the Leaving Certificate has led to substantial gender

differences in both the take-up of subjects and indeed also in the availability of subjects. (Hannan et al 1983, cited in Drudy and Lynch 1993, p. 173). A paper by Birgit BROCK-UNTE, in Oslo, who sent out a number of questionnaires to local school administrations about the 'sex division on various curricular options', highlights the way in which 'the choices' that students make correspond to the 'traditional division of labour between the sexes. However it was also observed that in a couple of schools across Oslo the results were atypical. This suggests that the same proportion of girls as boys were choosing traditionally male subjects such as 'carpentry', in Nord-Odal. (Birgit BROCK-UNTE, cited in Kelly 1982). The findings in this paper indicate that 41.2% of female students chose to take maths however only 14.48 opted for chemistry and physics. The data used in this study for Norway was from 1973-1974. In Sweden a new curriculum was introduced in 1980, whereby it was stated that, 'the subjects home economics, technology and art appreciation, should no longer be optional subjects throughout the country'. (Birgit BROCK-UNTE....)

Heleen Verhage, examined curriculum development for maths education, which was based on a project on maths education in the Netherlands and also the work of the group 'Vrouwen en Wiskunde' (Women and Mathematics). The author indicates that in 1987, the Dutch Secretary of Education set up a committee (W12-16), to establish a new mathematics programme for the 12-16 year olds. According to Heleen Verhage the role of the W12-16, was to 'crystallize the ideas on realistic mathematics education into a curriculum'. (Heleen Verhage 19, p61). Our attention is drawn to the significance of 'contexts' that girls find appealing, in relation to the study of maths. The author goes even further by highlighting the way in which contexts such as 'cooking and sewing can be very useful in mathematics education, but then for boys as well as for girls'. (Heleen Verhage

1990, p. 68). There must be a link between the practical work of curriculum development and indeed the contexts for mathematics problems.

Studies also indicate that the curriculum in boys schools tend to reinforce traditional male roles. (Boys Don't Cry, 1988, p.50). This suggests that in boys schools there is a 'heavy emphasis on traditional 'male' subjects such as design and technology and science, while traditionally 'female' subjects such as home economics and child development were not on offer' (Boys Don't Cry 1988, p. 50). I will examine this idea in chapter four. On the basis of my own research it seems fair to say that the same is also true of girls single-sex schools, however in this instance the emphasis is on subjects like Social Scientific and Home Economics. A question that has often been asked regarding the curriculum in schools is who or indeed what controls the knowledge that should be made accessible to children? Madeline Arnot 1984, argues that the vocational skill-based training for adult life male and female students provided for the students in fourth and fifth year in secondary school, was deeply divided on the basis of gender. For example it was highly likely that the male students would be offered options in 'practical' courses such as engineering design and agriculture, as opposed to the female students who were more than likely to be offered courses, designed to prepare them for the 'home', and for 'female occupations' such as childcare, home-making and mother care. (Arnot 1984, p. 41). In a study by Hannan et al in 1983. which examined sex stereotyping in schools, evidence suggests that there were 'very marked sex differences in school provision' regarding Home Economics and Mechanical Drawing, the rate of exclusion for male students in Home Economics was 63.4% and for female students in Mechanical Drawing it was 66.9%. (Hannan et al 1983, p. 141). Findings from their research suggest that often in schools for example co-educational schools. where the two subjects were on the curriculum. there was either a

'formal' allocation of boys to Mechanical Drawing and girls to Home Economics, 'by making the subjects core to a specific sex'. (Hannan et al 1983, p. 143).

Another interesting finding from Hannan et al's study in 1983 is in the 'option packaging of science in twelve single-sex girls' schools, whereby in the case of six schools the students were required to choose between Science or Home Economics, as opposed to in the boys schools examined where science is usually obligatory at Junior Certificate Level. (Hannan et al 1983, p. 145). Streaming also appears to have an impact on the provision of subjects to both male and female students but this will be looked at more closely in chapter four. In a later study by Hannan et al in 1996, findings indicate that 'gender differentiation plays only a limited role in the class-allocation process'. (Hannan et al 1996, p. 94). Evidence from this study suggests that students are allocated to particular subjects and indeed are prevented from being allocated to certain subjects namely Home Economics, Materials Technology and Technical Graphics, however this is only in a very small proportion of schools, in fact less than ten schools. This area of subject provision will be central to chapter four. In summary evidence strongly indicates that there are striking gender differences in both the availability and indeed the 'take-up' of particular subjects, which obviously will ultimately have serious consequences for both male and female students. 'Opening the cultural barriers that discourage pupils from choosing non-traditional subjects for their sex is still a major task for those wishing to eliminate inequalities arising from curricular choices'. (Drudy and Lynch 1993, p. 177).

The Hidden Curriculum

Having examined selective literature on the 'formal' curriculum in schools, I wish to look briefly at some of the literature, that focuses on the concept of the Hidden Curriculum. This refers to the social values and norms that are 'implicitly communicated' to the students in the school by the way in which the classroom life and the school life is organised. (Drudy and Lynch 1993, p. 182). Feminists have argued that 'schools communicate messages about what kind of behaviour it is appropriate for girls to engage in'. (Measor and Sikes 1992, p. 81). The concept of the Hidden Curriculum has been developed by the conflict theorists within the sociology of education. Research conducted by Bowles and Gintis, draws our attention to 'the socially differentiated character of the students' hidden curricular experience'. (Kathleen Lynch 1989, p. 4). They used a neo-marxist perspective. They suggest that schools reproduce the 'existing social relations of capitalist society by reproducing the consciousness necessary for such relations'. (Bowles and Gintis 1976, cited in Lynch 1989, p. 3) Kathleen Lynch has conducted considerable research on the concept of the Hidden Curriculum. The findings from her research on the 'school ethos' suggest that boys' and girls' schools differ significantly in their social climates. (Kathleen Lynch- cited in Frank Murray 1994, p. 9). In the extracurricular activities, evidence indicates that there was significant bias in girls' schools towards the 'arts and other home related activities, this clearly has an influential role to play in reinforcing traditional gender stereotypes.' (Lynch 1989, p. 111). According to Drudy, the study of the hidden and the formal curriculum, suggests that girls are presented with a dual model, girls 'are educated to compete and succeed within the formal educational system; on the other hand they are socialised to be guardians of the moral order, to be unselfish and non-assertive'. (Drudy 1996, p. 5). Perhaps a correlation can be made here between what feminists have identified as 'a division between the public and private worlds'. Measor and Sikes suggest that often

the way in which a teacher treats his/her male and female students may reveal striking messages in the hidden curriculum.

Objective of the Study

Having looked at selective evidence regarding gender stereotyping in schools and hence subject choice, this study fundamentally wishes to address the following questions. Does 'gendered' subject choice exist in post-primary schools, if so what are the contributing factors of this and what are the implications of this for girls entering the labour market?

Statement of hypotheses

The following hypotheses were generated from the findings of the literature review.

1. It was hypothesised that gender segregation is quite prominent in the selection of subjects in post-primary schools.
2. The general intent is to generate possible hypotheses for further research.

THEORETICAL FRAMEWORK

CHAPTER 3

For the purpose of this part of my analysis, I will focus on three principle theoretical perspectives

Nature/Nuture

'The predominant trend in recent sociology of education has been the attempt to develop 'general theory ' of social relations and their educational contexts'. (Culley and Demaine, 1983, p161). The first question that I believe must be asked is what makes us the kinds of people we are? This question has been answered by many suggestions from various sociologists and psychologists. Even the simplest behaviour is often a result of many different influences. Some of our behaviour is genetically determined by 'biological variables or by non-genetic variables'. The above are generally referred to as the *nature* forces. However, a child's learning, his/her immediate social psychological environment and the general social and cultural milieu in which the child develops are the other factors which influence the child's behaviour. The latter three are called *nuture* or environmental forces. Thus nature refers to the inborn genetical instincts called biological factors. On the other hand, nurture refers to the cultural and environmental factors which help us to develop. Institutions are part of the patterned way people live. According to Fichter 'Institutions are a relatively permanent structure of social patterns, roles and relationships that people enact in certain sanctioned and unified ways for the purpose of satisfying basic social needs'. (Fichter 1971, p.17). In other word social institutions control social behaviour. This is very significant in the case of the educational institution which obviously has a direct impact on gender segregation in the selction of subjects. The French sociologist Emile Durkheim defined education as 'a collection of practices and institutions that have been organised slowly in the course of time which are integrated with all the other institutions and express them'.

The Socialisation Process.

'Although girls go through school more quickly and more successfully than boys they clearly lag behind boys in mathematical and scientific subjects. This is because of social expectations and the resulting inner orientation of girls and not because of innate ability, as investigations have proved'.

(From a press statement issued by the Federal of Ministry for Education and Science, Federal Republic of Germany, December 1984, cited in *The Action Handbook - How to implement Gender Equality* 1985, p. 22).

The process by which an individual learns to become a member of society is called socialisation. Fichter defined it as 'a process of mutual influence between a person and his fellow-men, a process that results in an acceptance of an adaption to, the patterns of social behaviour'. (Fichter 1971, p. 29). It is a vital foundation to our humanity. In the absence of socialisation one is little more than a living organism. This theory has often been used as an explanation for the gender imbalance in subject choice. Female and male students 'receive anticipatory socialisation in all types of schools for their future roles'. (Drudy and Lynch 1993).

The socialisation of children begins from the day they are born. According to Sara Delamont, the children of Britain 'grow up with sex-stereotyped names, clothing toys, games, books and comics which means that by the time they are of school age gender stereotypes are deeply embedded'. (Delamont 1980, p. 12). Parents and teachers play a

very important role in the socialisation of young girls and boys which I will look at in more detail at a later stage. The concept of cultural reproduction is very important for child development. (Bourdieu 1986 1988:). It refers to the way the schools 'help to perpetuate social and economic inequalities across the generations'. This concept directs our attention to the idea that through schools children learn the values of attitudes and habits. Thus when students leave school and prepare to enter the labour market these have the effect of either limiting some children's options or facilitating others. This is particularly significant regarding the subjects that students choose to study in school. At school the child learns to use and explore his or her capabilities and potentials. (Pennington 1986, p. 39).

.Female students are socialised into a 'world of personal expression and aesthetic appreciation which is frequently outside the realm of male experience'. (Frank Murray 1994, p. 10). Male students on the other hand are prepared for a future of employment in the 'paid labour market', they are not as concerned with the emotional and personal needs of the family and the self. (Drudy and Lynch 1993, p. 177). The basic feminist argument is that gender differences are not all 'natural' rather they are provided by 'elaborate socialisation'. (Measor and Sikes 1992, p. 87). Girls and boys receive 'anticipatory socialisation in all types of school for their future roles', thus it is clear that the schooling system plays a very important part in the socialisation on young male and female students. The male and female experiences of socialisation are strikingly different, and clearly this does have an impact on the gender segregation in the selection of subjects at post-primary level. Some schools use gender as means of organising students and to differentiate between students. Socialisation initiates the child into a social world. According to Mead, culture makes us what we are. What takes place in a child's consciousness is expressed by the concept of the 'I' and the 'Me'. The 'I' represents the spontaneous unpredictable part of

the person and the 'Me' is the internalised generalised other, the incorporated other within the individual. The 'Me' therefore comprises the organised set of attitudes and definitions, understanding and expectations. For example if a person hurts themselves, the 'I' is registering the pain but the 'Me' makes the person register the pain. Action begins in the 'I', but it is brought under control by the 'Me'. Another example is if the girl 'I' wants to pursue physics or technical graphics, the girl's 'me' may influence the girl to choose home-economics or music because this is what is expected and approved in her society. However 'me' never completely controls the I. Therefore 'socialisation', shapes a part of the self but it cannot shape its' entirety.

In a sense the following analogy indicates the way in which culture does in fact make certain demands on people, however people are all unique in some form or another. The script provides the part but the actor determines how it will be played. Society is never an entity separable from the individuals who compose it. Social learning theories suggest that during adolescence children are concerned with defining their 'sex role identity' to establish themselves as masculine or feminine. This can be applied to the findings from Ormerod in 1975, which indicate that often male and female students choose to study specific subjects, in particular in co-educational schools, in an attempt to reaffirm their 'perceived sex role'. (Ormerod 1975, cited in Kahle 1985, p. 41). Kahle brings to our attention the fact that 'the socialized female sex role does not currently include scientific aspirations'. Watson's theory of 'behaviourism' firmly asserts that the idea of human development being linked with biology was fundamentally wrong and that nurture or socialisation was a far more powerful influence. (Second Edition, Macionis Sociology).

Baker and Jones developed a sociological explanation, which proposes that one's performance in maths relates to '*opportunities tied to performance*'. For example if a male student has the possibility of greater future educational and occupational opportunities as a result of his performance in maths or indeed science, this may provide more of an incentive to work harder and parents, peers and teachers may provide more encouragement for the student in question. On the other hand if female students are not afforded similar opportunities, they may see subjects like maths and science and computer science as less significant. As Kelly points out, 'often in the name of love women are required to immerse themselves in their families and deny autonomy'. The author goes as far as to suggest that women are prepared for life 'by being insulated from it in the institution of the school'. (Kelly 1982, p. 11). There is a positive correlation between educational stratification and occupational stratification, although the degree of inequality varies across nations. Evidence from numerous studies as I have previously illustrated suggests that there has been a definite decline in gender differences in maths, on the basis of the 'opportunity and performance' framework this could be attributed to the expansion of opportunities for women. Findings from this research indicate that the socialisation patterns are associated and possibly influenced by the gender stratification of opportunities.

"While we cannot know for certain what is determined by 'nature' and what is constructed by 'nurture' , we can discern a great many activities in schools and in the family which direct children into different patterns and experiences according to their gender, and can argue that this must affect the way they play, work and think about themselves and the world'. (Measor and Sikes 1992,p. 87).

It is often suggested that there is 'some *biological* difference between the sexes which pre-disposes boys to opt for science subjects and girls for arts'. Apparently a difference in spatial ability is the reason for this. (Kelly 1987). Kelly suggests that during the 1970's there was a general belief that 'spatial ability was partly inherited via an X-linked recessive gene, and was therefore manifest more often in males than in females'. (Kelly 1987, p14). Another perspective (which is strongly associated with the nature argument) is the *Genetic* or *Biological* explanation, where one assumes that differences in ability and achievement are 'natural'. (Measor and Sikes 1992, p74). Benbow and Stanley 1980, 1983, suggest that boys perform better than girls on math achievement tests 'because they have greater aptitude for maths not because they enroll in more math courses'. (Benbow and Stanley cited in Kahle 1985 p. 33).

Previous research by Maccoby and Jacklin 1974, and indeed other more recent socialization research suggest that the gender differences in mathematics ability were actually quite small and the differences that did exist could be accounted for by 'social factors embedded within the family and school'. (Baker and Jones, 1992, p193) These findings were challenged strongly by Benbow and Stanley who suggest that the gender differences, which exist in maths performance, are not due to one's socialisation but rather 'innate differences' between the two sexes. (Baker and Jones, 1992, p193). The biological approach used however according to Baker and Jones, does not 'preclude cultural or social forces, but it relegates them to a lower, sometimes trivial, theoretical position'. (Baker and Jones, 1992, p. 200).

There is a perception amongst most young students that certain subjects such as physics and higher level maths are more difficult than other subjects, and that they are only for the very 'intelligent' students. It is very difficult to say whether or not intelligence is

genetically related. Holzinger, Freedman and Newman carried out numerous studies of identical twins who were separated at birth and reared in different environments. The general findings were that if identical twins were found to resemble each other more closely in an IQ test after separation than fraternal twins or siblings, one could assume that genetic factors did affect intelligence, due to the fact that these twins had the same heredity however the other children in question did not. Children do share some of their biological traits with their parents also, however there is little doubt in my view that the development of the human being is influenced more by the environmental forces of nurture than the biological forces of nature. Even if a certain amount of human potential is inherited whether or not it is developed depends upon social experiences. (Plomin and Floch, 1980; Goldsmith, 1983).

As Drudy and Lynch point out what is defined as 'intelligence' has a significant impact on what is considered 'legitimate knowledge in schools'. (Drudy and Lynch 1993, p. 228). Initially 'mental testing' attempted to show that women were less intelligent than men were. Tests of intelligence often use a multiple-choice format and evidence suggests that female students generally do not perform well in these tests. Some intelligence tests have focused on the weight of the brain; others on the way in which particular National groups have low IQ levels. (Drudy and Lynch 1993, p. 230). Lawler 1978, indicated that there was no real agreement on what exactly the term intelligent meant and therefore he could not understand how a test could possibly be constructed to measure various features of it. (Lawler 1978, cited in Drudy and Lynch 1993, p. 232). Goffman 1977, indicated that there was a gradual move from 'roles based solely on a belief in biological differences towards roles based on a belief in general social equality'. (Goffman 1977, cited in Baker and Jones 1992 p. 201).

An Analysis of Certain Concepts

The concepts of 'gender', 'equality' and 'roles' are all central to my analysis of gender segregation in the selection of subjects at post-primary level. I am of the opinion that it is necessary to briefly discuss these concepts, in particular the concept of roles before the findings of this research. The concept *gender* can be defined as 'an embodied and visual social category which roughly divides the population in half, and the separation of girls and boys permeates the history and lore of schools and playgrounds'. (Thorne 1992, p. 118). There is a distinction between *sex* and gender which is also very significant. Ann Oakley 1972, proposes that the concept gender is concerned with culture, and that the content of gender is determined by culture and is highly changeable. On the other hand sex deals with the physiological differences between men and women, and it is genetically determined. (Oakley 1972, cited in Drudy 1997, p. 2). Sex and gender are organized differently and they are also defined differently across situation, even in the same institution. (Thorne 1992, p. 127).

The concept of *equality* is of pivotal importance to this study. John Baker developed this concept and he defines equality as 'a group of principles; the satisfaction of basic needs, respect for others as equals, economic equality, political equality, racial, gender, ethnic and religious equality'. (Drudy 1997, p. 3). Equality focuses on justice and democracy.

The concept of *roles* is of extreme importance to this research. A role can be defined as 'the behavioural enacting of a patterned set of expectations attributed to a position or status'. (Merton 1968, p.422). Roles do not exist in isolation, rather a social status involves an

array of associated roles. This what is referred to as a role set, 'Complement of role relationships which persons have by virtue of occupying a particular social status'. (Merton 1968, p. 423). This can be applied to the status of the teacher who has a distinctive role set relating teachers to pupils, colleagues, principal parents etc. Hargreaves states that although a person is unique he/she has certain characteristics, which he/she shares with many other individuals, for example the way in which females tend to take specific subjects and male students take traditionally 'male' subjects. He uses the concept of roles in a broad way to refer to 'behavioural expectations associated with a position'. (Hargreaves 1967, p. 71). There are a number of expectations which complement a specific role.

The roles that the parents and teacher play in the socialisation of children and students is closely linked to the decisions that students make regarding particular subjects. Numerous studies indicate that teachers spend more time with male students than female students. Ormerod 1975, suggested that attitudes both of and towards teachers have a central mediating role in the development of 'gendered' subject choice. (Hannan et al 1996, p. 28) In a study conducted by Inga Wernersson from Sweden and Dale Spender from the United Kingdom, findings suggest that teachers were spending more time with male students than with female students. Boys were more demanding and therefore interacted more with the teacher than female students did. The authors suggested also that male students dominated the class both intellectually and physically. It appears that female students accept this as 'normal'. (Werneresson and Spender 1982, p. 9). Teachers in particular in primary schools may unknowingly re-enforce the stereotypical sex roles between young male and female students by the way in which they communicate with the students and organise the classroom. Phrases such as 'Can I have two strong boys to help carry this table?' or 'Now then, big boys don't cry' or even 'here is a picture the girls will like. It's a wedding'. ('An

Equal Start. Guidelines for those working with the under fives', Equal Opportunities Commission. U.K. may 1984, cited in Action Handbook - How to implement Gender Equality, 1985, p. 8). The language that teachers use are a source of gender messages that are often conveyed in a classroom situation. Hannan et al discovered that the expectation the teacher had for students were more significant in the case of female students deciding to study higher level maths. (Hannan et al 1996, p. 28). Evidence also indicates that the expectations that teachers have for their students are closely linked to their interactions with the children. For example pupils who were considered to be 'bright' were given more time to answer various questions asked by the teachers. (Delamont 1983, p. 21). According to Delamont the reason that teachers interact more with male students is because they get 'reprimanded' more often than female students do.

'Boys are the source of the fun and the laughter, but also of the confusion in the classroom. The dynamics of the classroom are radically affected by the presence of boys. Even a seasoned teacher can be dictated to by the dominant elements of the class'. (Spender and Sarah. 1980, p. 21, cited in Measor and Sikes 1992, p. 80). Teachers also tend to use gender and sex as an organising tool within the classroom. For example 'Boys don't sing. Listen to the girls, make certain they sing nicely. Now it's the boys turn. Get your best singing voices ready. See if you can beat the girls'. (Delamont 1983, p. 27). This is a prime example of the way that teachers use 'sex segregation' to motivate children. In 1980, Clarricoates observed a teacher's reaction to a male student who preferred to play with dolls than cars, in other words the child contradicted the role model that he was supposed to fulfil. Mrs T ...reads Michale's diary for the morning: 'On Saturday I helped Mum to bake a cake and I made a dress for my doll'. The teacher despairs: 'Couldn't you play football or something'. (Cited in Delamont 1983, p. 94). Obviously the teacher was re-inforcing sex-

role divisions in the schooling environment. The gender of the various members of staff in the school may also have an impact on the development of sex-roles in schools. It appears that men occupy the positions of authority in schools while in general women hold more subordinate positions. In fact women occupy the position of school principle in approximately 48% of primary schools in Ireland, the same is true in the case of secondary schools, however in vocational and comprehensive schools the gender imbalance is far great with over 90% of the positions occupied by men in vocational schools and indeed 89% of the positions occupied by men in comprehensive schools. (Women in Figures 1995) Children in this instance are exposed to an exaggerated sexual division of labour in schools. (Delamont 1983. p. 95)

. The representation of women in third level universities also points to the imbalance of women in positions of authority at third level. For example figures from 1993-1994, show that in all of the seven universities in Ireland there are only 14 female professors. (The Irish Times Newspaper, Tuesday , March 11,1997, p. 2) This will be examined in more detail in chapter three. Kelly et al 1985, discovered that only 37% of the teachers she interviewed in her research agreed with the statement that 'teachers often allow boys to dominate in mixed classrooms' . (Crossman, 1987, p. 59). Evidence from the study conducted by Crossman in a co-school in Greater Manchester, on the level of interaction between teachers and male and female students indicates that overall the teacher interacted more with the male students that they did with the female students. Interestingly the imbalance for physics teachers was slightly more significant than for biology teachers. The sample used for this study was third year students. These findings also suggest that the imbalance in favour of communications was higher for female teachers than for male teachers. Male students were criticised more than female students and more of their ideas

were accepted by the teachers in biology and physics than girl's ideas. (Crossman 1987, p. 63). The way in which Physics teachers interact more generally with male students in Physics than with female students may have an influence on the subjects that students decide to take. In a co-educational school this could have serious implications for the subjects that students choose to study, because the fact that physics teachers interact more with male students than female students could be a contributing factor to the imbalance in the take-up of physics by female students.

The role that parents play in the socialisation of children is also very significant. I will now look at this role in the light of the development of sex roles, which evidently do have a substantial impact on the students subject choice. In a study conducted by Hannan et al. their findings clearly indicate that 'the strongest influence on gender role expectations ...appears to be notions of appropriate gender roles learned from parents'. (Hannan et al. 1996, p. 176). Parents like teachers often use language which may convey certain stereotypical messages, for example 'what a clever little chap!', or 'Who's a pretty little girl!'. Children's first learning experience is with their parents. Girls tend to model themselves on the role that their mother plays, whilst boys on the other hand model themselves on their fathers. (Action Handbook - How to Implement Gender Equality 1985, p. 16). Parents are encouraged to play an active role in the education of their children, both male and female. In a study by John and Elizabeth Newson, in Britain on childrearing their findings indicate that by seven 'the reported preoccupations and hobbies of the two sexes have drawn apart'. (Delamont 1983, p. 99). They also discovered that in some cases mothers felt uncomfortable if their children were 'behaving in a sissy or tomboyish way'. (Delamont 1983, p. 99).

The concept of social class is also important when discussing the role of parents in the socialisation process of children. According to Lareau 'children's life chances are influenced by the social class position of their parents'. Findings from the research conducted by Lareau suggest that the parents of children from upper-middle -class backgrounds play a more active role in their child's schooling than the parents of working class families. (Lareau 1992. p. 208). Gender also hugely structures parents' actions. Fathers play a more authoritative role than mothers who tend to be responsible for the 'caretaking' of the children. Lareau testifies that in many cases parents involvement in their children's schooling career generally means 'mothers' involvement in particular in the case of working class families. Fathers do play an important symbolic role although it is mothers who supervise children's day-to -day school experiences. One of the teachers interviewed in the course of this study is quoted saying 'If the father came, you got biased in a particular way that that family really was interested in education' (Lareau 1992, p. 221). Upper-middle-class mothers play a very active role in their children's schooling experience, spending time reading with the children and attending school events. Mothers with higher levels of education and also mothers in paid employment often have less traditional expectations for their children. The results of this study highlight the significance of class and gender in children's schooling experience. The different levels of encouragement that students receive from their parents heavily influences the educational achievement levels of the student. (Hannan et al 1996, p. 13).

The home is the place where children's first learning experience takes place. The role of parents as educators is very important. because if children learn at an early age that the gender as opposed to the individual interest or talent of a person , determines their life pattern and choices, they are conditioned on these early learning experiences. Parental

METHODOLOGY

CHAPTER 4

influence on the 'learning of sex roles' does not come to an end when the child goes to school. When the expectations of home affirm those learned in the schooling environment, 'the chains of stereotyping become even more firmly fixed'. (Action Handbook How to implement Gender Equality 1985, p. 16).

Methodology

Fundamentally this research was undertaken to determine whether or not there was gender segregation in the selection of subjects in post-primary schools, and if so what were the implications of this for women in the labour market. This research also endeavoured to highlight the causes and consequences of 'gendered' subject choice.

Data Collection

In order for my research questions to be answered successfully it was imperative that the method of data collection would be carefully selected. Thus it was necessary to select a method which would supply the required data accurately as well as guaranteeing a high response rate. It was decided to conduct a number of semi-structured in-depth interviews in order to obtain the necessary data. Having established the method of data collection it was then necessary to ascertain the size of the sample being used.

For the purpose of acquiring my data, it was decided to focus on three schools in the midlands. A single-sex girls school, a single-sex boys school and a vocational school. Four students were randomly selected by the career guidance counsellors from each school. All of these students completed transition year in June 1997, and were going into fifth year in September 1997. This group was favoured on the assumption that they had received adequate counselling and that they had access to a wide variety of subject's choices during this academic year. As this is an exam-free year it was expected that they would have had a large personal input vis a vis subject choice, as a result of their work experience during the three school terms. It was decided to interview the career guidance counsellors also, to discuss the subject options with them in their particular schools. Initial contact was made with the schools in February and subsequently interviews were scheduled with the people in question. The duration of each interview was approximately 30-60 minutes. It was essential to utilise the interview situation to the full. The development of a rapport was crucial if the data required was to be attained. I had also had to take a very objective viewpoint in order to eliminate any form of bias, whilst carrying out the interview. The respondents were all very helpful, however I observed that the female students were more eager to talk than the male students. The students were asked very straight forward questions regarding their subject choice. For example who did they discuss their subject choice with? did they feel the facilities in the school were sufficient for career advice and advice on their subject choice. I was quite surprised with the variety of responses that the students presented. In the next section I will provide an analysis some of my findings. The interview were also very relaxed which made it easier to develop a relationship with the respondent. All of the respondent were under 18 years old, so their parents were consulted before the interview. In general they were all very helpful and provided some very interesting findings.

AN ANALYSIS OF FINDINGS

CHAPTER 5

An Analysis of Findings

My son talks to me of his new interest reading,
adventure /espionage/mystery/space fiction/war
stuff which little boys' and big boys' world
are made of
and where women have no place
though I don't tell him this yet
instead I watch him entering
faster and faster
this world (he can't wait till he's eighteen)
the man's world
which circumscribes/denigrates/exploits/obscures/omits
me
and I weep inside myself I

(Arnot 1984, p. 37).

Provision of Subjects in the Three Schools

The majority of the students interviewed expressed much disappointment about the amount of time allocated to subject choice for the Leaving Certificate, during the Transition Year period. Students from all schools had to choose their subjects at the end of April or the beginning of May. The procedure for the allocation of subjects was quite similar in all three schools. The subjects were divided into four/five main groups, from which the students had to pick one subject from each option available to them. In the case of the girl's school, subjects were provided on the basis of what the teachers and the guidance counsellor considered best for the student's education. The students were not consulted about the subjects that would be provided for them. The same system was applied in the boy's school. However in the co-educational school the students were asked to fill out a form stating the subjects that they wished to study and the school then did their best to

accommodate the students. This perhaps is a fairer system because it enables the students to play an active role in the provision of subjects. In the case of certain subjects, specific requirements had to be met before a student could consider taking a particular subject for the leaving certificate. For example in higher level maths the students in all three schools had to obtain a minimum of a grade C in higher level maths at Junior Certificate level, in order to be considered eligible to take this subject at higher level for the senior cycle. For the purpose of this analysis the single-sex girls' school will be referred to as School A, the single-sex boys' school as School B and the co-educational school as School C. The following tables present the various subject options available to the students in the three different schools in question.

Subjects Provided in School A

Group A	Group B	Group C	Group D
Art	Home Economics	History Modern	French
French	Physics	History Medieval	German
Chemistry	French	Music	Biology
Geography	Biology	Geography	Economics
Home Economics	Accountancy	Technical Drawing	Geography
Biology	Business Org	Home Economics	Home Economics
		Chemistry	
		German	

Irish, English and Maths are obligatory.

There is a wider range of subjects available in the single-sex girls school than there is in the single-sex boy's school. The number of students attending this school was approximately

950, the boy's school on the other hand was much smaller with approximately 550 students. One of the striking differences between the two schools is obviously in the provision of *Home Economics (Social Scientific)*. This subject is provided as an option in every group available for subject choice in school B, and biology is also available in two of the groups. However, the other two sciences are only provided in one of the groups. Physics is available in two of the groups in school A. This indicates that a much higher proportion of students will study biology than physics or chemistry. Music is also provided in this school unlike in the boys' school. Technical Drawing which could be considered to be a traditionally male subject is available for the students if they wish to study it. These findings clearly highlight the way in which the curriculum in this single-sex girls' school is somewhat less traditional than the curriculum provided in the all boys' school. Applied maths is not provided in the school either during or after hours and the students who wish to study this subject are obliged 'to go to the boys' school' after school hours in order to study this subject. In summary there are explicit differences in the subject provision in the two schools, however it is difficult to say at the moment why these differences are occurring.

Subjects Provided in School B For The School Year 1997-1998

Group A	Group B	Group C	Group D
Biology	French	Chemistry	Accountancy
German	Physics	Economics	Geography
Physics	Business Org.	German	Biology
French	Geography	Tech D.	Tech D.
Art		History	

Irish, English and Maths are obligatory.

The subjects listed in the above table are the subjects that are available for the students in the all boys' school for the leaving Certificate. As one can see there is no Home Economics, Music or Social Scientific subjects provided for the students. In the letter that was sent to the parents regarding their son's subject choice, it confirmed that the students could take Applied Maths and Home Economics (Social Scientific) in the school after hours. Out of the four students interviewed in this school, all four were aware that you could take applied maths after school, in fact two of the students hoped to do so, however the students were not so knowledgeable about the Home Economics (Social Scientific) classes that were available after school. 'I think you might be able to do Home Economics after school but I would say it would be just you and your teacher, and it would cost an awful lot of money'. (Respondent no 3, male, School B.)

This illustrates the lack of interest shown by either the student's or the teachers regarding the provision of Home Economics. The individual subjects chosen by the students in this school will be looked at a later stage of my analysis.

The Subjects the Students' Chose For The Leaving Certificate

Subjects Provided in School C For 1997-1998

Group A	Group B	Group C	Group D
French (H)	French	Engineering	Agricultural Science
French (O)	German	Technical Drawing	Art
German (H)	Art	Construction Studies	Construction Studies
German (O)	Technical Drawing	Home Economics	Geography

French (H)	French	Engineering	Agricultural Science
French (O)	German	Technical Drawing	Art
German (H)	Art	Construction Studies	Construction Studies
German (O)	Technical Drawing	Home Economics	Geography
History	Construction Studies	Biology (H)	Business
Engineering	Chemistry	Music	History
Home Economics	Biology	Biology (O)	Accountancy

Irish, english and maths are obligatory.

There are approximately 900-950 students, both male and female attending this school. The students are required to choose one subject from each group. and indicate at which level they wish to study a subject, higher or lower level. In the Vocational School the curriculum is much broader than in the all girls' school or the all boys' school. Engineering, Construction Studies and Agricultural Science are three subjects which are not available in school A or school B. One of the most striking things about the subjects provided in school C is that there is no Physics scheduled on the timetable for the year 1997-1998. Various explanations were put forward by the guidance counsellor and the students for this. I will look at this in more detail when I am presenting the analysis of the students interviews. The omission of physics from the school curriculum in my view is potentially quite serious because it may mean that students will not be able to pursue certain careers or indeed courses where one is required to have physics. The students were also required to fill out a form in February outlining the subjects that they would like to study for their Leaving Certificate. The subject options presented above were drawn up on the basis of what the students themselves hoped to study. In a sense it is a sort of 'supply on demand'

It is from this point that a detailed analysis of the various subjects that the respondents have chosen for the senior cycle and the influencing factors on their decision to select these subjects will take place. An analysis of the participation rates of male and female students will also be provided. Four students were interviewed from each school. In the case of the Vocational School, I interviewed two female and two male students. The interviews were held in the schools, and on the whole the students were very helpful.

Subject Choice of the students in School A

Respondent No. 1	Respondent No.2	Respondent No. 3	Respondent No.4
English (H)	English (H)	English (H)	English (H)
Irish (H)	Irish (H)	Irish (H)	Irish (P)
Maths (P)	Maths (H)	Maths (H)	Maths (P)
Biology (H)	Economics (H)	Biology (H)	Biology (H)
Music (H)	Modern History (H)	Physics (H)	Home Economics (H)
French (H)	French (H)	Chemistry (H)	Business Org (H)
Chemistry	Physics (H)	German (H)	French (H)
		Applied Maths (H)	

The four students that I interviewed were randomly selected by the career guidance counsellor in the school. The responses to the various questions that I asked were very different. All of the girls are doing a science subject, and in some cases the girls are doing two or three sciences. The girls are also all doing a language. Certainly respondent number three does not correspond to the 'stereotypical' female subject choice. She is doing three

Sciences, Honours Maths and Applied Maths. Two of the girls are doing Physics and two if the girls are doing Chemistry. Drudy 1996, testifies that in all girls' schools teacher may only be encouraging the 'top' students to take Physics and Chemistry. (Drudy 1996, p. 255). The results that these four girls obtained in their Junior Certificate examination, seems to confirm this observation. Two of the girls interviewed are doing Honours Maths and two of them are doing Pass Maths. Three of the girls are doing Biology. Interestingly only one of the girls is doing Home Economics. The above table will be analysed in the light of specific variables at a later stage. In my view the subject take-up of the students in the all girls' school does not correspond with the suggestion that female students are continuing to choose the 'traditionally female subject'. Nevertheless the 'traditionally male' practical subjects are not provided in the school at Leaving Certificate level, which corresponds with the findings from a study by Hannan et al., in 1996 'The proportion of girls' schools offering traditionally male subjects, such as materials technology, metal work and technical graphics is very low'. (Hannan et al 1996, p. 99).

Subject Choice of the Students in School B

Respondent No.1	Respondent No. 2	Respondent No.3	Respondent no. 4
English (H)	English (H)	English (H)	English (H)
Irish (P)	Irish (P)	Irish (P)	Irish (P)
Maths (P)	Maths (H)	Maths (P)	Maths (H)
History (H)	French (H)	History (H)	Physics (H)
Geography (H)	Accountancy (H)	Geography (H)	Chemistry (H)
Business Org (H)	History (H)	German (H)	Accountancy (H)
Biology (H)	Geography (H)	Economics (H)	German (H)
			Applied Maths (H)

Subject Choice of the Students in School B

Respondent No.1	Respondent No. 2	Respondent No.3	Respondent no. 4
English (H)	English (H)	English (H)	English (H)
Irish (P)	Irish (P)	Irish (P)	Irish (P)
Maths (P)	Maths (H)	Maths (P)	Maths (H)
History (H)	French (H)	History (H)	Physics (H)
Geography (H)	Accountancy (H)	Geography (H)	Chemistry (H)
Business Org (H)	History (H)	German (H)	Accountancy (H)
Biology (H)	Geography (H)	Economics (H)	German (H)
			Applied Maths (H)

The four students that were interviewed all chose different subjects. Interestingly none of the students were studying Home Economics (Social Scientific) after school hours. Two of the boys interviewed are doing Honours Maths. One student is doing Applied Maths. Two of the four boys are not doing a Science subject at all. None of the boys are doing Honours Irish. There is great variation in the subjects that these students have chosen as the table illustrates. My findings seem to suggest that the student studying Physics, Chemistry and Applied Maths obtained very high results in his Junior Certificate exam. Perhaps an influencing factor on his decision to choose the 'traditionally more difficult subjects'. Evidence from Hannan et al's study indicates that girls tend to dominate languages but this is not the case in German. This certainly can be applied to my own research, in that the German seems to be a much more popular subject in the all boys' school. The level of male participation in History and Geography has also increased according to Hannan et al. however this appears to be linked to 'lower levels of ability among Leaving Certificate boys'. (Hannan et al. 1996, p. 105). On the basis of the Junior Certificate results of the

The influencing factors on students' subject choice will be dealt with in detail at a later stage.

The Subjects Students Chose in School C

Respondent No.1 (MALE)	Respondent No.2 (MALE)	Respondent No.3 (FEMALE)	Respondent No.4 (FEMALE)
English (H)	English (H)	English (H)	English (H)
Irish (P)	Irish (H)	Irish (H)	Irish (P)
Maths (P)	Maths (H)	Maths (H)	Maths (P)
Construction Studies (H)	Accountancy (H)	Home Economics (H)	Home Economics (H)
German (H)	History (H)	Biology (H)	Biology (H)
History (H)	Biology (H)	Geography (H)	French (H)
Physics (H)	French (H)	French (H)	Business Org (H)

I interviewed two female and two male students from the Vocational School. The results were very interesting. One male student is taking Higher Level Physics. Both female students are taking Higher Level Home Economics and one of the male students is taking Higher Level Construction Studies. Only one of the students, a male, is taking German the other three students are taking French. None of the four students are taking Chemistry. According to Sr Pat Murray, in co-educational schools, certain subjects are seen as 'male' subjects and others are considered to be 'female' subjects. (Sr Pat Murray 1994, p. 14). On the basis of the students that I interviewed this certainly seems to be the case. Much research in Wales and England, indicates that co-education may contribute to 'polarisation of subject choice by both male and female students'. However one of the most recent

studies on co-education and achievement in Ireland by Hanafin in 1992, claims that male and female students actually benefit from co-education . (Maura Mooney 1994). Nevertheless Hanafin also verifies that mixed-schooling does not guarantee gender equity, if 'co-education is equal educational opportunity for all'. (Hanafin 1992, p. 33). Up until recent years male and female students were divided in many co-educational schools for certain subjects. For example one of the girls I interviewed did typing for her junior certificate whilst her male counter parts did Technical. Drawing The girl who I will refer to as respondent no.4. said that 'the two highest classes did Typing and the girls in the other classes did Technical Drawing, we were not given a choice'. This gender sex stereotyping which has since been abandoned (to a certain degree) intrigued me. It is interesting also to observe the correlation between specific subjects and the student's ability. Indeed according to Hannan et al 1996, co-education has different implications for lower-ability girls and boys. (Hannan et al, 1996 p 136). I will now present an analysis of some of the influencing factors on the students subjects choices, under various sub-headings.

Transition Year and Subject Choice

All of the students that were interviewed were going into fifth year having completed Transition Year. The three main reasons the students gave for doing transition year were the following

1. To take a break after the Junior Certificate
2. To study other subjects that the students were unable to study for the Junior Certificate
3. Students felt they were too immature to go into fifth year, and they were completely unfocused regarding subject choice and their career.

Obviously the area that I am primarily concerned with here is the third reason the students presented to me. The curriculum provided for the students in Transition Year was very broad in all three schools. *In School B*, the following subjects were provided during the Transition Year. Irish. English. Maths. History, Geography, Biology, Applied Maths, Accountancy, Art, Computers, Economics, Electronics, Physics, Field Studies, Social Studies, Chemistry and French and German. In general the students were happy with the subjects available in the school however two of them did comment on the fact that Home Economics was not provided at all, not even during the Transition Year - Otherwise the students were happy with the Transition year programme

It appears that despite their aspirations very little emphasis was put on subject choice. I found this very interesting because I deliberately chose to interview students from Transition Year in the hope that they would have received adequate counselling and advice about their career and subject choice. The students all said that there was 'no real discussion' about subject choice during their Transition year. They were only made more aware about what the various subjects entailed a fortnight after the forms were distributed with the different subject options. However one of the respondents acknowledged the benefit of being able to experience new subjects that were on the Leaving Certificate curriculum ' we did the basics in some of the subjects just to give us a taste of what the subjects were like'. (School B, Respondent no.2, Male). All of the students did say that they felt in a better position to choose their subjects for the Leaving Certificate after Transition Year. If they had gone straight into fifth year after the Junior Certificate they would have been rushing their subject choice. One of the students said 'before I did Transition year I wanted to do Applied Maths, but now there is no way that I would take it because it is too hard'. (School B, Respondent no.2, Male). However respondent no.3 said

that he would have taken the same subjects regardless of Transition Year. The students had a *careers class* once every week, however only two of the students interviewed made reference to this during the interviews about *subject choice*. 'We had a careers class for a couple of week, but it was not much good, it was more like a free class'. (School B, Respondent no. 3, Male). Another student said 'We had a careers class every Friday with our Career Guidance teacher, but most of these classes were free classes'. (School B, Respondent no.1. Male). It was possible however to arrange an appointment with the Careers Teacher if one wished to do so, and the parents could also discuss their child's subject's choice with him. On the whole the students in school B did not spend much time discussing their subject choice during Transition year.

In School A the following subjects were provided during Transition year. English, Irish, Maths, French, German, Social Studies, European Studies, Legal Studies, Art, Computer Studies, Choir, First Aid, Video Studies, Economics, Word Processing, Environmental Studies, Drama, Architecture, Personal Development and Home Economics. The above subjects were divided into different modules. One of the reasons the four respondents decided to do Transition year, was because they were unsure about their subject choice for the Leaving Certificate. When the students had to choose their subjects, a fifth year options night was organised by the Career Guidance Counsellor, to provide parents and students with information regarding different subjects and careers. The four students interviewed all felt more confident after doing Transition year about their subject choice, and suggested that students who do Transition Year are more focused afterwards.

In general they were happy with the subjects available to them during the Transition Year period. However respondent no.1 was disappointed that there was no Science and no Music. I thought it was very interesting that there was no Science provided in the school,

unlike in the all boys school. In my view this presents an immediate disadvantage to the female students who did not get the opportunity to study the individual science subjects like their male counter parts in school B. 'There was no Science in Transition Year, that bothered me at the start but then I just forget about it during the year'. (School A, respondent no.1, Female). The students were given the opportunity however to study other subjects during Transition Year that they would not have had otherwise. The students had a careers class once a week. Two of the girls expressed very different opinions on Aptitude tests that were carried out during the careers class. Respondent no.4 was of the opinion that they were a waste of time, but on the contrary respondent no.3 was quite infuriated by the lack of interest expressed by some of the other students. All the girls had to do Home Economics during Transition Year, which is another noticeable difference between the subject provision in School B. The four respondents expressed concern about the 'advice' or rather 'lack of advice' which they received regarding their subject choice. It was possible to meet the career guidance counsellor on a one to one basis but otherwise there was very little mentioned about the students subject choice.

In school C students appeared to be much more satisfied with the advice provided regarding subject choice. The following subjects were provided during Transition Year. Engineering, Irish, English, Maths, Construction Studies, Tourism, Communications, Business Studies, French, German, Home Economics, Music, Art, Computers, Wood Work, Science, and Social Studies. The four students were all happy with the subjects available to them in Transition Year. There were 26 pupils in the class, 16 boys and 10 girls. They had a careers class once a week which they were all very content with. The four students interviewed were confident that they had chosen the right subjects. Much emphasis was placed on subject choice. The career guidance Counsellor, outlined the

leaving Certificate system, and the different colleges. The point system was also explained to the students in much detail. The students were also taken to various universities during the course of the year. With regard to the Career Guidance Counsellor one of the students said 'I don't think he could have told us much more than he did'. (School C, respondent no.1, Male).

The school appears to have played a more active role in the students subject than in the case of the other two schools. One of the respondents stated that she had picked her subjects on the basis of advice given from the school during Transition Year. (School C, respondent no.3, Female). Another one of the students did not think there was much of an emphasis on subject choice, however he said 'In transition year the students can look at their Junior Certificate results before choosing their subjects, unlike students who come straight from third year'. (School C, respondent no.2, Male). In summary school C certainly appears to have spent much time on subject choice, and the students all commented on the importance of their subject choice decisions.

Parental Influence on Subject Choice

The majority of the students in all three schools did discuss their subject choice with their parents. Interestingly the students fathers appear to have had more of an influence of the students subject choice than their mothers, in particular in the case of female students.

Students who picked the 'more difficult' subjects discussed their subject choice in far more detail with their parents than the other students. One of the female students from School A said that her parents had the biggest influence on her subject choice 'they were the only ones who cared enough to advice me'. (School A, respondent no.3, Female). Respondent no.2 School A, said 'My mother wanted me to do art, but I didn't think there was much

point when I could do something else and probably get more points. My mother is quite good at art herself and she likes the idea of me doing it. My father said I did not need to do art. I listen to him because he works in the department of education and he knows more about that sort of thing. He is very intelligent and I value his opinion'. (School A, respondent no.2, Female). It is quite clear from the above statement that respondent no.2 relied on her father's opinion far more than her mothers. When I asked another respondent from school A why she had attended this particular school, she replied 'It was always meant to be for ladies. and my mother loved that about it'. She went on to say that her parents did not really mind what subjects she decided to so as long as she was happy, however her mother wanted her to study Home Economics and Biology, because 'they are good practical subjects that I will need in later life'. (School A respondent no.4, Female).

In my view it is quite evident that 'certain gender stereotypical roles were generated in this family'. Interestingly the two female respondents from school C, did not discuss their subject choice at all with their parents, only the school. 'I discussed my subject choice with the Career Guidance Counsellor and the different teachers, I did not talk to my parents about it at all. 'School C, respondent no.3, Female). On the other hand the male students in school C did discuss their subject choice with their parents. 'My father wants me to do well, the school just wants me to do what ever is handiest for them really'. (School C, respondent no.1, Male). This respondent went on to say 'In most houses it is the father that is most successful and he knows more, it is very important that things about school are discussed with him in the home'. This statement also conforms to the gendered roles within the home, where the father is the breadwinner, the successful one, the mother on the other hand 'doesn't really have a clue'. In school B, the responses were all quite different. One of the students said that he discussed his subject choice with his mother, because 'my father

was working a lot and my mother was at home most of the time'. (School C, respondent no.3, Male). Another student said he talked to his father, a french teacher, 'who understand how the system operates'. 'my mother would not have much of an influence regarding my subject choice. she would be grand to help me study but otherwise she wouldn't have a clue'. (School B, respondent no.2). Again in this instance it is the father who plays the more active role in relation to students subject choice. In summary, it appears that the students in all three schools, discuss their subject choice far more with their fathers than their mothers.

The Influence of Friends on Subject Choice

I interviewed twelve students in total, and only two of them indicated that her peers had influenced her subject choice. The other ten respondents said that apart of briefly discussing their subject choice with their peers, they had no influence on their decision. It appears that students can be influenced by their peers in their subject choice for the Junior Certificate although this is not the case for Leaving Certificate students. The two students who did express the fact that their peers had influenced their subject choice were both attending single-sex schools, one male student and one female student. 'In some subjects you like to have one or two friends that you know in your class because if you don't know anybody going into the class it could be very hard to settle in'. (School B, respondent no.3, Male). An interesting observation was that the two students who were influenced by their peers had both chosen the 'traditionally male' and 'traditionally female' subjects, and they had obtained the lowest results in their Junior Certificate. They were also very unsure about their career. Some of the other students who appeared to be more focused regarding their subject choice, said 'friends did not have much of an influence on my subject choice, we are all going to have to split up at some stage anyway'. (School A, respondent no.3,

Female). Another student said 'my friends had nothing to do with my subject choice it was my parents and I'. (School A, respondent no.2, Female). The general consensus was that students picked their subjects in the light of what was best for them, regardless of what their peers were doing.

Students Attitudes towards Certain Subjects, in particular Maths, Science and Home Economics

Maths

'Research , both national and international, indicates marked gender differences in attitudes towards, and take-up of, many subjects - particularly Mathematics, Science and languages. (Hannan et al 1996, p31). On the basis of my own findings it is true to say that students do look upon the Sciences and Maths differently to the other subjects available on the curriculum. However, my findings do not suggest that these attitudes can be divided completely by gender. Both female and male respondents displayed similar attitudes about these subjects, some students claiming that maths was a very hard subject and other students asserting that they quite enjoyed maths. Four students were interviewed from each school, and in each school two students hoped to do Higher Level Maths, and two students Lower Level Maths. In the case of the co-educational school, one male student and one female student had chosen Higher Level Maths and one female and male student had chosen Lower Level Maths. The teacher decides 100% whether a student is eligible to take Honours maths on the basis of the Junior Certificate results.

There is a general perception that Higher Level Maths and the two science subjects Physics and Chemistry are 'very difficult subjects'. Ormerod 1981, found that both girls and boys 'tend to rate Physics and Chemistry among the most difficult subjects at school'. (Ormerod

1981, cited in Kelly 1987, p. 14). My own findings certainly do confirm this statement. 'I did honours maths for my Junior Certificate and I failed it, I am not very good at maths. I think it is probably the most difficult subject'. (School B, respondent no.2, Male). Another student said 'I hate Maths, I got a B in Pass in my Junior Certificate, and I am going to do pass for the Leaving Certificate. I find it very hard. I have to do pass'. (School A, respondent no.4, Female).

Drudy and Lynch included research on the concept of intelligence. In their study 'Intelligence tests have focused to a large extent on measuring people's ability to engage in abstract reasoning, this ability has become equated with intelligence'. (Drudy and Lynch 1993, p. 233). According to Gardner 1987, 'only two types of intelligence have been formally recognised, in any complete sense: logical mathematical and linguistic'. (Gardner 1987, cited in Drudy and Lynch 1993, p. 223). There is definitely a perception amongst the students who are not taking Higher Level Maths for the Leaving Certificate, that those who are, must be more intelligent than themselves. 'Honours Maths is totally different to other subjects. If you are willing to put in the work you might still get a C, whereas if you are naturally brainy you could get an A no problem, you have to have the natural ability for it, a particular way of thinking'. (School B, respondent no.2, Male). This brings us back to the whole 'nature and nurture' debate. Some of the students indicated that the school reinforces the idea the students studying Honours Maths are more intelligent than those who are not studying Honours Maths. 'People that are studying Honours Maths are all in one class, they are segregated from the rest of the students, and they have no PE class, which is one of the classes where students can have some fun together. It is like we are not good enough for them'. (School B, respondent no.4 Female). 'People do not ask you if you are doing Honours in something like French or Biology but they ask you if you are doing

Honours Maths, people assume that if you are good at maths you are good at everything. Honours Maths is hard and it takes a lot of time I think you need to have a really good brain to be able to sit down and do Maths. (School B, respondent no.1, Female).

All of the students said that the size of the class is especially important in Higher Level Maths, and that the teacher needs to be able to spend individual time with the students. In School B, the classes in fifth year are generally very big, about forty students in the class. However as the year goes on, students gradually begin to drop back to Pass Maths, perhaps one of the explanations for this is because they are not receiving the time and encouragement that they require from their teachers, due to the size of the class. The guidance counsellor from School A, indicated that sometimes there are up to forty seven students in a maths at the start of fifth year however by Christmas this has dropped to twenty three. The school is unable to provide the tuition for all the students in Honours Maths, it appears to only encourage the 'top students' to continue studying Honours Maths. This is not the case in the single-sex boys' school where all the students are encouraged to do Honours Maths. One of the students from School B, said 'I don't think there should be a subject Maths in school, a lot of the stuff you cover you will not have to use in later life. As long as you are able to add, multiply, subtract and divide that is all you need to know'. (School B respondent no.4, Male). The students in School A and B who are taking Higher Level Maths all obtained grade A's in their Junior Certificate. Ormerod 1975, suggested the attitudes of and towards teachers is of central importance to the perceptions that students develop of particular subjects. One of the respondents from school C, indicated that one of the male Maths teachers spent more time with the male students than the female students in the Maths class. 'There is one Maths teacher who favours the lads mostly'. (School C, respondent no.3, Female). In summary, students certainly do perceive Maths to

be a very difficult subject in all of the schools, however those who are 'good' at Maths think that it is an easy subject to score high on. 'I am not bad at maths, and if you alright in maths it is quite easy to do well in Maths'. (School B, respondent no.2, Female). Research by Kelly, indicates that even when girls are good at Science and Maths they are much more modest about their ability than their male counterparts. This certainly was the case with the students that I interviewed for example one of the male students said 'I picked Honours maths, because I am very good at Maths. I got an A in my Junior Certificate and I am confident that I will do well because I have a very good understanding of Maths'. (School C, respondent no.2, Male). The two students mentioned above, both obtained the same grade in their Junior Certificate, Grade A, however it appears that the female student is not as self-confident regarding her ability to perform well in the Leaving Certificate, or perhaps she is more modest than the male student.

Science

The four students interviewed from School C are all taking a science subject. The two female students are taking Biology, one of the male students is also taking Biology and the other male student is taking Physics. In school A, two of the respondents are taking Biology, one of the students is taking Physics and one of the students is taking all three Sciences. In school B, two of the respondents are taking no Science subject, one of the respondent is taking Biology, and one of the respondents is taking Physics and Chemistry. Thus one can see that the participation rates in the Sciences are really quite varied. The two male students in School B are the only two students not taking a science. Some of those

who chose Biology did so because they wanted to have a Science subject and Biology is considered to be the easiest of the three Sciences. There appears to be a problem in School C regarding the provision of Physics and Chemistry. In school C subjects are made available to the students on the basis of supply and demand. When these interviews were conducted it was not totally decided whether these two subjects would be available or not and they were not listed in the various option groups, outlining the subjects that were available for the year 1997-1998.

The Guidance Counsellor expressed his frustration regarding the lack of interest shown by the students in these two Science subjects, as well as arguing that students have a perception that Biology is 'easier' than the other two Sciences. Students were brought to UCD and UL by the guidance counsellor to try to encourage them to study these subjects. It appears that there is a positive correlation between the study of Maths and Physics and Biology and Home Economics. In September there will be approximately 200 students going into fifth year. Only 14 /197 students wanted to study Physics and Chemistry. Ten of these students were female and four were male. In this instance the sex differences in the rate of choice of these subjects are actually greater than the sex differences in their provision or allocation by the managements of the school. On the contrary in school C there will be five Biology classes during fifth year in 1997. This obviously poses problems for students who do want to study Physics and Chemistry, with the school being unable to provide the subject if the numbers are not there. In a sense this can be compared to a study conducted by Hannan et al. in 1983, who discovered that 'the sex difference in pupils' own choices was greater than in either provision or allocation of the subjects to them'. (Hannan et al. 1983, p. 154). Hannan et al. also observed the low rates of provision of the Sciences with the exception of Biology in vocational schools and their high rate of provision Home

Economics and Technical Graphics. Hannan et al also stated that 'in vocational schools the allocation of subjects is markedly sex-specific'. (Hannan et al 1983, p 131). This does appear to be the case in the vocational school that I looked at, although the subjects were available the students were not interested in studying them. The students all said that they were encouraged to study Physics and Chemistry, however only one of the students I spoke to was interested in studying Physics.

In school B all three Science subjects were available. However the subject Home Economics was not provided at all, and there was a Social Scientific class in the evenings for students who wanted to avail of it. My findings were very interesting in school B, in that they contradicted previous research on this area and the masculine image of science. 'I don't like science I find it very boring'. (School B, respondent no.2, Male). Another student from school B said 'I did not do well in the Junior Certificate, and I did not like Science subjects anyway'. (School B, respondent no.3, Male).

The student who chose Physics, Applied Maths and Honours Maths wanted to do Engineering and chose these subjects in the light of his future career. In school A, the two female students who chose Physics and who were studying Honours Maths both wanted to study Engineering. The main reason the other two students gave for choosing Biology was because it was 'easy to get points in'. There will only be one Physics and Chemistry in this school in September as opposed to five Home Economics/Social Scientific classes and four biology classes. The Guidance Counsellor indicated that out of 190 students going into fifth year in September 150 will be studying Biology. One of the students highlighted the relationship between Maths, Applied Maths and Physics. 'I like Maths, and Physics is like Maths, and Applied Maths is like Physics and Maths, so in a way I have three subjects that

at some stage will all overlap. (School A, respondent no.3, Female). Evidence seems to show that the higher ability students are studying subjects like Physics and Chemistry. Often the parents of female want them to study Biology. 'My mother said to do Biology and Home Economics because they are good practical subjects that I will need in later life'.

In summary Maths, Physics, Chemistry and Applied Maths appear to be grouped together in the minds of the students. No student that I interviewed was doing Home Economics and Physics. Students seem to go for the Biology/Home Economics option of the Physics/Honours Maths option. There is no in between. It is evident that there is a positive correlation between students who are focused about their careers and 'the more difficult subjects' and between students who are somewhat unsure about their future, and Biology and Home Economics. This is not to say that all students who study Biology and Home Economics are 'unfocused about their careers' however it is the case with the students that I interviewed.

Home Economics/Technical Drawing/Computers

Home Economics is not part of the curriculum in school B, although it is possible to study it in the evenings. Some of the students are unhappy about this and think it is unfair, especially because it was not even included as a module during the Transition Year programme. Two of the students I interviewed felt that it should be introduced as part of the curriculum. however one of them also said 'I don't think that it would be a waste of time if it was introduced although I don't think many students would avail of it'. (School B, respondent no2, Male).

In school A Home Economics is very much part of the curriculum. In September there will be five classes catering for students who want to study this subject. The responses

from the students were quite mixed. 'Home Economics is an easy subject to get points in. I think that is why so many girls decide to take it for the Leaving Certificate. (School A, respondent no.1, Female). This student also said 'You can pick it up quite easily even if you have not done it for the Junior Certificate, but with something like Technical Graphics it is too hard to pick up'. Another one of the students said 'I love Home Economics and I am good at it, I think it is a very useful subject to have for when I am older'. (School A, respondent no. 4 Female). In School A, Technical Graphics is provided at Leaving Certificate level although very few students avail of this option it has only been part of the curriculum for the past four years. According to the guidance counsellor students 'are unwilling to give it a chance, and many of the girls find it boring'.

In the Vocational School Home Economics is an option for both male and female students. Both of the female students have chosen it for next year. The male students also had to do Home Economics during Transition Year. 'I know a lad who is doing Home Economics for the Leaving Certificate and he loves it. If you want to study Home Economics here that is no problem. There are girls in my class who have never done Construction Studies and now after Transition Year they are doing it for the Leaving Certificate'. (School C, respondent no.2, Male). The other male respondent from School C said 'I did Home Economics this year, it was not too brain teasing, we got a chance to go into the kitchen and cook which very few of the boys had done before. It was a very productive class'. (School C, respondent no.1). The career guidance counsellor from School C also indicated that male students do really enjoy Home Economics during the Transition Year however, very few of them continue to study it for the Leaving Certificate. He also stated that students generally do not study Home Economics if they have not studied it for their Junior Certificate. Up until recent years classes were divided on based on gender. According to

Hannan et al 1996, 'about 7% of coed schools reported that availability of subjects was limited by gender'. For example male students were unable to study Home Economics and female students were unable to study 'traditionally male' subjects such as Technical Graphics. (Hannan et al. 1996, p. 95). It appears that this was also the case in school C when the students were in first year however it has since been abandoned. Obviously this had subsequent implications for the students subject choice for Leaving Certificate. In first year 1993-1994, the students were divided on the basis of gender for particular subjects. Female students were required to study Home Economics and male students studied woodwork. Typically students do not study subjects in their Leaving Certificate unless they have done so for the Junior Certificate. Immediately a form of sex stereotyping has been introduced into the school that will be carried through to the senior cycle. 'Girls could pick Wood Work for the Leaving Certificate however they were advised not to if they had not covered it for the Junior Certificate. The classes were also divided depending on the ability of the students. The top two female classes had to do Typing and the top two male classes had to take Technical Graphics. 'For Junior Certificate you can do Typing and Technical Graphics. When I came in the girls had to do Typing and the boys had to do Technical Graphics. I did not mind it i don't like Typing anyway'. (School C, respondent no.2, Male). One of the female respondents said 'I had to do Typing for my Junior Certificate. I was happy with that because I am not scientific and my sister did Technical Graphics and she hated it'. (School C, respondent no.4, Female). Lesser ability students did not have access to as wide a range of subjects as the more able students, for example they were unable to study technical graphics. Streaming is still practised in the top four years, however for the last three years the classes are constructed on the basis of mixed ability. The Career Guidance teacher also stated that until the early 80's, male and female students in School C, were actually divided into separate classes with females in one class

and males in another classroom. This however is no longer the case. These two responses clearly indicate that the students 'appear' to have been happy with the division of subjects in the case of typing and technical graphics. Nevertheless in relation to Home Economics the male and female students were both unhappy, especially the female students because it prevented them from participating in the 'male' practical subjects. Similar findings were presented by Hannan et al. after their research in 1983.

In summary in School C, the subjects that are provided have reduced the gender imbalance to an extent, however in School A and School B there are still explicit gender imbalances in the provision of Home Economics and the practical subjects such as Woodwork and Technical Graphics. Students subject choices are influenced by a variety of factors, some of which I have referred to above. The point system plays an important role with regard to the subjects students and there is a tendency for students both male and female to choose subjects on the assumption that certain subjects are easier than others. This is particularly true in the case of Home Economics and Biology. Junior Certificate results are also significant especially in Higher Level Maths and the Physical Sciences. The gender gap in Higher Level Maths has decreased substantially in recent years, however the level of encouragement shown to male students is higher than that shown towards female students.

In my view, the single-sex girls school has attempted to combat gender segregation by encouraging students to partake in subjects like physics and technical graphics. The situation in the boys' school is not as hopeful, where Home Economics is still not part of the curriculum within regular school hours. In school C, the implications of gendered subject provision in previous years has led to problems for students presently going into fifth year, which I have previously highlighted. Nevertheless, the implications of the

POSSIBLE IMPLICATIONS OF GENDER SEGREGATION FOR WOMEN

CHAPTER 6

existing imbalance both in the provision of subjects and the choice of subjects are potentially quite grim for a rapidly changing society, where the role of men and women is changing day by day. Women must have more exposure to the applied subjects and technological subjects in order to survive in the labour market.

Madeline Arnot brings our attention to the division which has emerged with the development of a patriarchal and capitalist society, and the division between the private and the public worlds. This division is strongly associated with the idea of women working in the home and men working in the public sphere. Arnot suggests that the actual structure of the family must change in order for boys to 'relinquish their notions of manhood, machismo and their devaluation of all that is female'. (Arnot 1984 ,p 52). The structure of the family in Ireland has changed and more women are becoming involved in the workforce than before. Therefore it is not sufficient that male students are leaving school totally unskilled for personal independence and for taking shared responsibility in the home and family life. More of an effort has to be made to help combat the generation of sex-roles in all-boys' schools.

Possible Implications of Gender Segregation for Women

In this section I am primarily concerned with the possible implications of gendered subject choice in second level for women in the light of third level education and women's position general position in society. The position of women in Irish education is somewhat contradictory according to Drudy and Lynch 1993. (Drudy and Lynch 1993, p 167). Female students are slightly outnumbered by their male counterparts in third-level education, and 'greatly outnumbered in the expanding technological sectors of higher education'. In a sense women are presented with a dual role model, on the one hand they

are encouraged to actively partake in the education system, however on the other hand women are also expected to fulfil their 'caring and nurturing' role as homemakers. Girls education prepares them to cope with their dual role in an individual way. If women are socialised to take responsibility in the private spheres and to achieve a career, a double burden is placed on them. Often women are forced to make a choice between a career or homemaker. (Drudy 1997, p. 5). According to Kelly 1987, many young women experience conflict resulting from social pressures about their role in society. (Kelly 1987, cited in Harding 1985, p. 41). Ireland has changed from a predominantly rural society to an urban-industrial society, and the number of opportunities now available for women have increased. However, according to Frank Murray, women still dominate the part-time labour market, in the private sector women constitute a very small percentage of senior management, few women are employers (approximately 15.3%), women are seriously under represented in senior management positions in Schools, Colleges and Universities and finally women's earnings are considerable less than those of men. (Frank Murray 1994, p9). 'Our Universities and third-level colleges may be centres of excellence but not when it comes to being equal opportunity employers'. (The Irish Times, 11 March 1997, p2).

The Gender Imbalance in Universities in Ireland - Full-time Academic Staff 1993-1994

University	Total	Men	Women	% Women
DCU	174	124	50	28.7
UL*	253	203	50	19.7
Maynooth	126	93	33	26.1
UCD	677	545	132	19.4

UCC	370	285	85	22.9
UCG	257	223	34	13.2
TCD	475	372	103	21.6
TOTAL	2332	1845	487	20.8

*UL data includes some part-time staff.

The figures presented in this table clearly illustrate the female subordination within the academic staff in Irish Universities.

Full-Time Women in Academic Staff (1983'-83) 1993-94

Grade	Total	Women	% Women
Professor	(295) 318	(4) 14	(1) 4
Assistant Professor	(93) 146	(6) 9	(6) 6
Senior Lecturer	(441) 580	(30) 72	(7) 12
Lecturer	(809) 1025	(171) 286	(21) 28
Assistant Lecturer	(141) 210	(34) 82	(24) 39
TOTAL	(1779) 2279	(245) 463	(14) 20

(The Irish Times March the 11th 1997, p2)

The two tables above clearly indicate the gender imbalance in the positions occupied within the universities in Ireland. Perhaps there is a correlation between this gender segregation

and the gender segregation in subject choice in schools. It has been suggested that females who decide to continue working and have children often have difficulties when they attempt to obtain maternity leave. This confirms what the findings from Drudy and Lynch indicate in relation to the dual role that women are presented with. It is also important that women see other women with high profiles, according to Caroline Hussey-UCD registrar. Carmel Foley, the chief executive of the Employment Equality Agency, also said 'it's a shame that academic excellence is being undermined by images of less than equal treatment of academic staff'. (The Irish Times, March the 11th 1997, p. 3).

Equality between men and women is considered to be a basic principle of humankind. In 1996, the first Commission report '*Equal opportunities for women and men in the EU 1996*' highlights that on average women earn approximately 20% less than men, and more than 70% of the positions occupied by women are in the service sector. (Europe News 1997, p. 12). A contemporary *Euro-barometer poll* regarding equal opportunities indicates that within the home explicit gender roles are also in action. For two thirds of EU couples, married or not, the woman is responsible for the majority of the household duties. Older couples, and interestingly less-educated women are even more inclined to take full responsibility for household tasks.

Education is a key resource to enhance the mobilization of women in the labour market. The gender gap between men and women in education is decreasing every day according to a *Eurostat* report. There has been an increase in the number of women continuing their third level education. However the report also shows that 'women are still more likely to choose humanities, applied arts and medical subjects while men study mathematics and computer science. (Europe News 1997, p. 12).. Research by Clancy also tesifies that the number of women receiving third level education has increased over the years. The gender

gap between men and women is gradually closing. Under the Constitution of Ireland, a woman's place is defined as being in the home. In article 41.2 this is made very clear. 'In particular, the State recognises that by her life within the home, *woman* gives to the State a support without which the common good cannot be achieved'. (Drudy and Lynch 1993, p 167). Women appear to be gradually moving away from this idea, and this is very evident in the rise of female participation in third level. However I believe it is essential to determine which courses women are entering at third level.

A Selection of Undergraduate Degree Students By Course of Study in UL -1996/1997

COURSE	Year 1		Year 2		Year 3		Year 4		Total		Grand Total
	M	F	M	F	M	F	M	F	M	F	
Computer Engineering	55	10	41	5	17	2	30	1	143	18	161
Electronic Engineering	32	6	45	9	38	2	47	4	162	21	183
Industrial Engineering	11	3	4	1	9	2	8	3	32	9	41
Applied Physics	13	7	14	7	17	4	12	4	56	22	78
Computer Systems	86	30	58	14	44	6	45	14	233	64	297

Applied Languages	1 15	2 21	3 15	-----	6 51	57
Primary School Teaching	28 157	27 141	17 146	-----	72 444	516
Languages with Computing	5 12	3 7	1 7	1 8	10 34	44

(Final Statistics 1996/1997).

The above table illustrates the gender imbalance in the various courses that male and female students study. In the engineering courses, and the computer course there is a higher percentage of male students contrasted with the teaching and languages sectors where there is a higher proportion of female students.

A Selection Students by Course of Study Selection of Undergraduate in UCD 1996/1997

COURSE	Year 1		Year 2		Year 3		Year 4		Total		Grand Total
	M	F	M	F	M	F	M	F	M	F	
Arts	448	889	404	738	335	678	-----		1,187	2,305	3,492
Social Science	15	130	6	134	13	120	-----		34	384	418

Civil Eng	-----	41 14	44 11	47 13	132 38	170
Science			97 114	74 128	171 242	413
Science Honours						
Medicine	-----	-----	-----	-----	60 83	143
Medicine						
Electronic Engineering	-----	-----	30 8	32 8	62 16	78
Law - Civil	62 66	51 67	46 47	-----	159 180	339

The above table illustrates the way in which there is a higher proportion of female students studying the following subjects, social science , civil law, medicine, arts, and science - science honours . However Electronic Engineering is dominated by male students as is the case with Civil Engineering. In the case of the high level of female students studying Science it is possible that they are studying Biology as opposed to Physic or Chemistry. Student registrations for first science students for the year 1996/1997, indicates 126 male students and 232 female students as registered for Biology. More female students had also registered for Chemistry and Mathematics. With regard to Computer Science 121 male students were registered and 110 female students. In the case of Mathematical Physics, 42 male students and 8 female students were registered In summary, at third level female students predominate the areas like Humanities and Languages, and men tend to have a more prominent presence in areas like Mathematical Physics and Engineering. It is my

opinion that this gender imbalance in third level may be associated with the imbalance in the secondary cycle. It is clear from this analysis that if the position of women within the educational system and the labour force is to continue to change, greater attention must be paid to the issue of gendered subject choice in second level schools.

CONCLUSION

CHAPTER 7

Conclusions

The participation rates of male and female students in 'non' traditional subjects has certainly increased over the years. Nevertheless it is still quite evident that there is gender segregation in second level schools in Ireland regarding subject choice. Throughout my research I examined some of these influencing factors however due to certain limitations. One being the fact that my sample was quite small, it was difficult to judge what the general situation was in the three different school. The boys school certainly seems to have made no effort to move forward and introduce some of the more 'non' traditionally male subjects. The girls school on the other hand, has introduced technical graphics and wood work however the female students do not seem to be very interested. The co-educational school provides the most broad range of subjects for both male and female students, and on the whole the students were quite content with the availability of subjects there. In an ever changing society girls must become more involved in the technical areas in order to be able to partake actively in modern day society. Having said that girls should not be forced to do something if it is not really what they wish to do

'This is not to argue that all females need to be pushed into science careers. Rather they need to leave a variety of options open to themselves for later, more career decisions the scientific brainpower of over one-half of its population.'

(Kaminiski and Erickson 1979, cited in Kahle 1985, p. 45).

The literature also seems to indicate that substantial work is being done to encourage young men and women partake in different subjects. This gender imbalance in second level could be potentially quite damaging to our society and it is important that the situation be rectified sooner rather than later.

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