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The Ohio State University

Ph.D. 1983

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DISSERTATION
Presented in Partial Fulfillment of the Requirements for
the Degree Doctor of Philosophy in the Graduate
School of The Ohio State University

By
Theodore Lewis, B.S., M.S.

The Ohio State University
1983

Reading Committee:  Approved By:
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Edwin Novak
Morgan Lewis

Advisor
Industrial Technology
Education
To my daughter Rhea Nerissa,  
my source of inspiration.  
To her fullest development.
ACKNOWLEDGEMENTS

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Martin who collaborated professionally in the execution of Project Concern. Miss Eilene Reece is recognized for interpreting my handwriting and being able to produce from it this document.

Finally, my uncle Jerome Lewis is recognized for being a father and role model.
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CHAPTER 1

INTRODUCTION

In his treatise on "The World Educational Crisis" Coombs (1968, p. 17) cautioned that a society's "social demand" for education and its "manpower requirements for economic and social development" were quite independent entities. Since the former tended to outstrip the latter, failure to distinguish between them often led to unemployment of the educated. The dilemma Coombs was addressing here of course was the widespread belief among the new post-World War II societies that a single strategy—schooling—was the solution to both these problems: the belief that two birds could be killed with one stone.

Citing the tendency of third world countries to resort to technical and vocational education as part of this strategy he wrote:

A developing country can land in deep trouble by slavishly adhering to the educational forms and rituals of industrialized countries, in a context where they simply do not fit. The phenomenon crops up in varying degrees at all levels of education and in all sectors of the curriculum. But a particularly troublesome sector is technical and vocational training at the secondary or post-secondary level. For a wide variety of reasons, these kinds of formal technical training have often been conspicuously unsuccessful and unsuitable in industrialized countries. Yet, despite their miscarriage in their countries of origin, they are nonetheless exported and imported at great expense into less developed countries, side by side with shorter and more flexible non-formal training schemes, delivered by a different breed of advisers. (Coombs, 1968, p. 77)
If we take Trinidad and Tobago as a case in point we find in our efforts an unmistakable and worrisome parallel with the scenario as described by Coombs.

Coinciding with its dramatically improved economic status as an oil-producing country in the mid-1970's, the Trinidad and Tobago government embarked upon a massive, somewhat accelerated, comprehensive school building programme. These schools were to now absorb all of the graduates of the junior secondary school instead of a projected 37% (Education Plan, 1967). At the same time each senior comprehensive school built after 1975 was to include a "technical vocational wing," to cater to training in the building, mechanical and electrical trades, along with programmes allied with home economics and business studies.

Conjointly with its school building programme, the government initiated a massive industrialization effort focused mainly at the Point Lisas industrial development estate, and consisting of the construction of a steel mill, plants for the production of Liquified Natural Gas (LNG) and methanol, and with plans for an aluminum smelter plant. Government initiative here was intended to create a new industry, an industry that required the skills of craftsmen and technicians.

There was an unmistakable link between school building activities and activities aimed at industrial development; clear implication regarding the timing of the new vocational thrust. If the new industrial initiative was to take root, then the school—the comprehensive school—would have to provide the needed skilled manpower.
So far we have had no evidence with which to make an assessment of this vocational education strategy. We do not know whether the vital connection between school and industry was made. We could not be sure that this was in fact the most efficient means of achieving the end of preparing people for work.

This study is a beginning towards addressing these concerns. The researcher was troubled by the question "what if the type of curriculum pursued by the senior comprehensive student does not make a difference when he or she enters the labour market?"

A Conceptual Framework

There is enough in the literature to convince us that we have witnessed an educational revolution of world-wide proportions. The broad sweep of some authors, e.g., Coombs (1968), Meyer, Ramirez, Rubinson and Boli-Bennett (1977), and Psacharopoulos (1973, 1981) is indicative of this phenomenon. The "Human Investment Revolution" (Bowman, 1966) pioneered by Theodore Schultz combined with post-colonial nationalist zeal to ensure this growth. The landmark work of Denison (1966) showing increased education in the United States to have contributed 23% of the increase in growth rate (between 1929 and 1957) provided even more fuel. Human capital investment became as important (if not more important) a growth strategy as investment in physical capital.

Some developing countries attempted to sharpen the link between the school and industry by training students directly for work. The
evidence here is not very promising. Ghana's failed attempt has been caricatured in Foster's (1965) celebrated paper on the "vocational school fallacy." The dismal attempts at formal vocational education in Uganda have been documented by Thomas in Harbison and Myers (1965). Evidence of the flurry of research activities in Africa on this topic is illustrated in Jolly and Colclough (1972).

As we move from Africa to Latin America and the Caribbean we find that there is a familiar pattern—increasing commitment to using the formal school for vocational education and training, and doubt as evidenced by expert opinion and from research. From Mexico, Irquierdo and Rodríguez* (1980) report finding no significant differences (using labour market criteria) between technical and second-stage schools. Urquidi (1982, p. 121) in a comprehensive summary of the technical education thrust in Mexico felt that "It has not yet been proved that technical education meets the manpower demands of development or even of the short-term labour market."

Nearer home, studies from Jamaica indicate continuation of the pattern. The New Secondary School is to Jamaica what the senior comprehensive school is to Trinidad. According to Bennett (1979, p. 7) when these schools came on stream in 1974 they were hailed by Prime Minister Manley as the greatest single educational advance in the history of Jamaica. Vocational programmes in the upper grades were touted by Manley as being "properly worked out" to fit students for "successful careers in the economy." Bennett's own study (to be analyzed later) was to show this to be a false hope. Other studies set in Jamaica

*Reported in Urquidi
(Abbot, 1980 & Mahy, 1980) confirm the interest that these schools have generated. From Barbados, Oxtoby (1977) has reported on an apparently unsuccessful attempt at formal vocational education.

The Colonial Condition—Technological Illiteracy

If there is similarity in our efforts, it may well be due to the similarity of our historical antecedents— a reflection of our common colonial heritage.

Industry in colonial times consisted of labour intensive production of primary products, e.g. sugar in the Caribbean islands, cocoa in the case of Ghana. Subject peoples were allowed only such education as was necessary to ensure smooth running of the plantation driven economy. Since the tools of industry were rudimentary (the machete and the hoe) there was no real need for "technical" education. Caribbean scholars have addressed this ubiquitous colonial artifact within the framework of what they refer to as "plantation economy."

The observations of Beckford (1972) are apt:

In the field of education too the plantation system induces underdevelopment biases. Restrictions on the availability of education and its limited technical content contribute to an underutilization of the human resource potential of plantation society.

Beckford continues:

For the most part, what education became available was irrelevant to the environment and to the needs of a dynamic society. Geared as it is to the immediate needs of the plantation system, the content of education is
heavily weighted to the supply of administrative (clerical) skills with little or no emphasis on technical and managerial skills. . .On the whole, the educational system of plantation society is technologically backward and contributes to the persistence of underdevelopment.

Timar (1976) on a concurring note has written with respect to developing countries, that:

The foundations of the educational system were inherited from the colonial period and were characterized by their backwardness. Long-term development has not sufficiently modified this unjust and obsolete structure. This is one of the principal reasons for the fact that the humanistic type of education still predominates today. Scientific and technical education is still very far behind in relation to the growing needs. (p. 234)

This then is the genesis of the problem. It is a dilemma which confronted every nationalist leader as the transition was made from colonialism to independence. A comparison of the comments of Kwame Nkrumah, first prime minister of independent Ghana, and Trinidad and Tobago's first prime minister, Dr. Eric Williams, dramatises the point. First the following excerpt from Nkrumah (1963):

There did come a time when colonial administrators found that it was too expensive for the local budget to import British officers for the lower grades of the service, and when the European trading communities discovered a need for African workers with some degree of literacy. The colonial administration then took a hand in providing facilities at primary and secondary levels, though they were niggardly, especially in regard to secondary schools.

Little attention was given to technical training, and as a result educated Africans have acquired a bias towards clerical work and a contempt for manual labour.
A fateful consequence of this accent upon a literary education has been the denial to our country of a skilled labour force. (Nkrumah, 1963, p. 46)

Continues Nkrumah:

This lopsided state of affairs has created for us one of the biggest of our problems: that is, how to create a skilled labour force. . . (Nkrumah, p. 46)

Nearer home, Dr. Eric Williams, founder of the Nation of Trinidad and Tobago in a 1974 speech entitled "Education and Decolonization in Trinidad and Tobago" in much the same vein as Nkrumah made the following remarks:

As colonialism drew politically to a close in 1962, Trinidad and Tobago found itself with an education system which bore all the characteristic features of cultural imperialism. . . The curriculum of the secondary school was pronouncedly metropolitan in scope, orientation and character, designed to prepare students for metropolitan examinations and metropolitan university systems. The system showed an almost total absence of any approximation to the technical and the vocational.

Later in the same speech, Williams commented:

We already are producing more 'O' level students (with five or more passes) than can readily be accommodated in the basic activities and occupations in our society. We are already short of the skills whether craftsman or technician, required for our economic development*.

As can be gleaned from the above excerpts from the writings of these two great nationalist leaders, an educational system devoid of technical emphasis was a standard part of the legacy of colonialism. Subject peoples were to be kept "technologically illiterate."

* Author's emphasis
Williams found this a particular troubling problem even before he came to power, as further excerpts from his writings will illustrate.

In his book *Education in the British West Indies*, Williams, commenting on the curriculum at the time wrote:

> The curriculum of the secondary school in the British West Indies is largely academic. The British West Indies have yet to appreciate the significance of the fact that it is possible to develop types of post-primary education of high educational value on non-academic lines with a certain bearing, more or less direct, on industry, commerce and agriculture. (1951, p. 31)

His response to this was a recommendation that:

> Vocational education, in agriculture, industry and commerce, should dominate the secondary curriculum. (p. 46)

As Williams saw it, the school could "no longer be content to plead that it swims with the social current" (p. 48), there were times when "it is its duty to indicate how the direction of the current should be changed." What Williams was leading into here was the role of the school in changing attitudes towards education for work—attitudes which could be traced back to the plantation.

The new Caribbean society needed to change its attitudes toward manual work, since the new industry would call for large doses of skilled input. The yoke of the plantation had to be cast off. As Williams surveyed the Caribbean work ethic then he found that:

> The memories of chattel slavery have stamped upon the British West Indian intelligensia a strong aversion to and a contempt for manual labour. This has coloured the conception of vocational education. The attitude has permeated the outlook even of the unprivileged classes, to whom the attraction of the secondary school
is the opportunity it provides for the achievement of their dearest ambition, a white-collar job for their children. The young boys and girls forsake the lives of their people, and seek salaried positions in professions, commerce or government, at great expense to their parents and the state. This is nothing short of economic suicide.

As impressed as one becomes with the fervour of Williams' advocacy of vocational education, one questions whether he fully understood the direction of causality between expanded training programmes in the school, and economic growth. As later events were to show, Trinidad and Tobago was only able to launch an expanded programme of vocational education after the influx of petro-dollars. The government which came to power in 1956 could only deliver on the commitment to vocational education in the secondary schools in 1975. The reason for the delay seems clear. Far from being a driver of the economy, formal vocational schooling, because of its high cost, could only be driven by a vibrant, buoyant economy.

This is not to say that there is no need for technical instruction in our schools, or that industry is not more productive when the labour force is skilled. But it is possible to so overcommit in the direction of formal training, that the overall effect is to retard rather than stimulate growth.

Technical-Vocational Education and the Social Class System

Urquidi (1982, p. 120) in his review of the development of technical education in Mexico observed that "technical education..."
tends to attract the emerging lower social sectors and classes."
This could well be said of Trinidad and Tobago.

Perhaps the major stumbling block in the way of creating a technologically literate society in Trinidad and Tobago in the 1980's is the system of social class. Government, despite Williams's early recognition of the fact that technical education bears an unhealthy stigma, has steadfastly offered such education in a way as to escape the privileged classes and the gifted. In considering the British "multilateral" school as a prototype for secondary education, Williams noted that:

The esteem in which the academic school is held is extended to the vocational courses when all students go to the same school and sport the same insignia, sportswear, cap, etc. Purely educational considerations are freed from the domination of extraneous social factors. There is the supreme social benefit that all children pass through the same door to life. (1951, p. 50)

But this kind of talk was never matched with action. For example, the first attempt at a mixed curriculum (the "central" or "modern secondary" school) ignored completely the prestige schools. With tacit government support (the well known system of quotas) the church was able to maintain its stranglehold on grammar-type education—ensuring continued service for its largely middle class clientele. The central school concept rapidly collapsed to reflect the status quo, since the central school student, like his middle class counterpart in the prestige school, aspired also to the white collar job.
Now we have the senior comprehensive school, and the parallel with the central school is evident, the main difference being that now the focus on technical education is more deliberate. There is now opportunity for specialization. The writer now finds it necessary to draw extensively on the eloquence of noted Trinidadian scholar Lloyd Best (1979) in order to crystallize the point. In speaking on the topic whether there should be elite schools, Mr. Best dealt (among other issues) with the question of technical education. He wrote:

. . . Nor is there any dispute about turning education more in the direction of technical and vocational studies, towards subjects more relevant to the multitude of students. But did we not anticipate that St. George's might make some breakaway and then the Secondary Moderns in Tunapuna, Arima, St. James, etc.? But now even the senior comprehensives system is being subverted by a popular demand for all children to be given the right to the 'O' and 'A' level examinations.

The problem clearly is how to make the change over. . . I suspect that the only way to effect the change is by making your traditional elite schools into excellent comprehensive schools involved as much in Technical and Vocational work as in the Humanities, the Arts, the Classical Languages, the Natural Sciences, etc.

In other words, the cultural and social (and therefore psychological) conditions have first to be created in order to usher in a transformation.

Mr. Best argued further that instead of involving the prestige schools in the "transformation" there was "unplanned dismantling" of the system which led to "popular insistence on the covert retention of the old arrangements." He warned that "where the strategy of democratization is confused and disorderly, the rich and the powerful
always operate at a premium. They have the means to ensure that confusion fall most heavily on the defenseless multitude."

So the point is made. While all of the curricula elements of the comprehensive school concept are in place, the qualitative, social purpose is lost, because again the privileged classes and the gifted are exempt.

It's as though we are saying that the burden of eradicating the colonial mentality which abhors working with the hands must be borne only by the children of the lower class. In a strangely illogical way, the more able and privileged of our children are being shielded under the umbrella of the elitist grammar school, while we focus the thrust towards supposed economic growth on the less fortunate. This peculiar strategy, is decidedly at odds with the comprehensive concept.

In a famous report on the American high school, James B. Conant (1959, p. 159) in addressing the question whether vocational education should be included in the comprehensive school curriculum wrote thus:

My inclination is strongly in favor of including vocational work in a comprehensive high school instead of providing it in a separate high school. My reasons are largely social than educational.* I believe that it is important for the future of American Democracy to have as close a relationship as possible in high school between the future professional man, the future craftsman, the future manager of industry, the future labor leader, the future salesman, and the future engineer. . .I am convinced that one of the doctrines of American society is quality of status* in all forms of honest labor as well as equality of opportunity.

* Author's emphasis
Conant made the point that the comprehensive school was the American way of showing displeasure with the "European" academic school. This, of course, was the very point to be gleaned from the writings of Williams—that a new school with a technical-vocational emphasis was needed to change the colonial psyche. But when we examine the way in which the school is being utilized, it is clear that it functions beneath the crust of the privileged and gifted, ensuring in the process the preservation of a class system demarked partly by occupational status.

This kind of resilience—this tendency of the social class structure to hold even in the face of genuine attempts to democratize education—has been addressed by Levin (1978) in his observations of the comprehensive school reform movement in Europe. There, reforms at the secondary level were in the large part erased by adjustments in the labour market and in post-secondary institutions which again allowed the privileged classes an advantage. But at least he could point to "the partial success of liberal political forces in achieving comprehensive secondary reforms" (p. 449).

In the case of Trinidad and Tobago, "reform" in the Senior Comprehensive School has to date meant only the expansion of access for the lower classes. It has not meant democratization of educational opportunities. In studying curricula effects of Senior Comprehensive education, this study was mindful of this fact.

Caribbean Research

Earlier in this study the work of some Caribbean researchers was cited as evidence of the ubiquity of the problem of linking the
school and industry. Specific features of these studies are now presented.

Bennett (1979) compared the labour market performance of New Secondary School graduates in Jamaica. A sample of 977 students was selected for the study, 81.37% of whom responded to the questionnaire. Two major objectives were set forth:

1. To ascertain if vocational education training made any difference in the employment rates, salaries, relatedness of job, job satisfaction, further training and work experience of vocational and non-vocational graduates.

2. To determine if individual variables (achievement, age, sex, job seeking efforts), societal variables (geographic location, the state of the economy, employer, prejudices, occupational status) and school variables (curriculum, instruction, facilities, and work experience) had any significant effects upon (a) employment, (b) job satisfaction, and (c) further education. (1979, p. 11)

Among the major findings of this study were the following:

1. Approximately four-fifths of all students in the study reported they were unemployed.

2. There were no significant differences between the vocational and non-vocational students with respect to rates of employment.

3. Significantly more vocational students were to be found in the $30 to $49 per week range, while more non-vocational students appeared to be receiving salaries in the $50 per week and above range.

4. Of those vocational students who had jobs, 67.9% said these jobs were related to their training.
Comments on Bennett (1979)

The fact that Bennett attempted this study at all is a good omen for educational planning in the Caribbean. There is need for a rational basis for planning. Unfortunately though, Bennett was guilty of simple oversight and conceptual mistakes which detracted from his work. For example, he grouped a diverse array of vocational activities (child-care, auto mechanics, beauty culture, carpentry and cabinet-making, etc.) under the heading industrial education, without making any attempt to disaggregate once the overall picture for the group was given. The Jamaican government as a result still does not know which of these programmes (if any) shows promise. This was an oversight. In the same vein, because salaries are grouped and presented in interval form ($30 to $49 per week range, etc.), we have no idea of the mean salaries of the two main groups (and sub-groups).

In what can only be termed a conceptual error, Bennett found it necessary to report the percentages of non-vocational students who reported whether or not their work was related to their training! This seemed an ill-conceived concern, since general education by definition is geared to "trainability" and is not in itself "training." Percentages reported here are hence spurious.

Bennett's figures for vocational graduates however are troubling, 32.1% of the employed not finding their work "related." His overall findings of no significant differences between vocational and non-vocational students is ominous. One would think that given the depressed state of the Jamaican economy at the time of the study, skilled (trained) people would have an advantage over unskilled (untrained).
This was not to be. Neither group could trigger a revival. To quote Bennett:

It is obvious from the findings that the possession of vocational and technical skills by vocational graduates did not give them an advantage in securing jobs. There were limited numbers of jobs available. In the limited job market situation, it was non-practical skill factors that gave the edge to the graduate. (p. 113)

If one could make a single broad generalization from the Bennett study it would be that training of itself does not lead to jobs. The economy must be vibrant enough to create the opportunities (for jobs and for entrepreneurship) to make training worth the while.

Abbott (1980) studied the process of curricular change in Jamaica, again with focus on the New Secondary School. Two observations of this study are noteworthy, (1) that "the public service, the administrative arm of government, was a bottleneck to educational changes," (p. 170), and (2) "that manipulating the variable of skill acquisition among the secondary school population...must occur with simultaneous manipulation of the economy to create jobs for secondary school leavers" (p. 177).

Mahy (1980) investigated the vocational maturity of New Secondary School students in Jamaica. Her findings about the psychological development of the Jamaican early adolescent have implications Caribbean-wide and will be presented later in this study under the general heading "vocational maturity."

One account of efforts in Barbados appears in the literature. Oxtoby (1977) conducted a three-part study in which he examined
(1) the views of policy makers (n = 76) with respect to technical and vocational education, (2) the labour market performance of graduates of the Samuel Jackman Prescod Polytechnic (n = 379) and (3) the attitude of third-form boys (n = 312) toward different types of curriculum, and the relationship between academic streaming and job aspirations and expectations.

The study showed that among policy makers, there was considerable support for the expansion of pre-employment education in schools or in post-school institutions. Results of the follow-up of graduates indicated (1) a 38% unemployment rate, (2) that 25% of respondents were not employed in training related jobs, and (3) that generally a period of unemployment preceded the first job.

Among Oxtoby's observations was that manpower forecasts tended to overestimate the capacity of the economy to absorb young people. He concluded that:

Generating skills and attitudes in line with national development in the Commonwealth Caribbean seem likely to be best achieved by policies, which, on the one hand, emphasize the vocational aspects of general education—particularly if these can be associated with work experience projects—rather than narrowly conceived schemes of pre-employment training. . . (p. 240)

Like Bennett and Abbott, Oxtoby too had reason to question whether training of itself led to employment. He continued, that:

Functional changes in educational systems, though desirable, are unlikely by themselves to have a significant effect on the level of unemployment. They need to be accompanied by structural changes and by reforms in labour market practices, modifications in the pattern of wage rates, and the introduction of specific employment-generating strategies. (p. 240)
As we move to research on Trinidad and Tobago's efforts, a dearth of studies is evident. Riske et al. (1975) in a study conducted at the time when the first senior comprehensive schools were being constructed observed that:

...in its present form, this thrust resembles outmoded vocational training in the modern nations. (p. 331)

While there might be some truth regarding the resemblance of the comprehensive school to its American counterpart, one questions the notion that vocational education in the American context is outmoded, given the Vocational Education Acts of 1963 and 1968.

Another study by Joe (1977) looked at the occupational selections of potential secondary school graduates (fourth formers), and concluded that the primary interest of students in the sample was in prestigious education and occupations aimed at upward mobility. This finding is of course quite consistent with the perceptions of Williams (reported earlier) and the discussions (highlighted by an excerpt from Best) concerning the demise of technical education in the secondary modern schools.

Summary

Trinidad and Tobago, like some of its Caribbean counterparts, has to wrestle with the problem of how best to provide for the manpower needs of industry. This is a particularly troublesome question since it seems apparent that when industry is at a standstill, training of itself does not stimulate it. Trinidad and Tobago, however,
found itself in the fortunate position during the mid-70's of being an oil producing country. A great deal of industrial activity was generated around this period. Our case might therefore be different to that of Jamaica and Barbados.

The major producer of skilled people in Trinidad and Tobago is the comprehensive school. As the products of this school are being studied the researcher is mindful of the fact that the students being studied have been assigned to these schools, through the junior secondary vestibule, after the more able (and socially advantaged) students were screened for the prestigious grammar schools. Findings have to bear this severe limitation of the school in mind.

As we survey research in the Caribbean on the work-school connection there does not appear to be much support for formal vocational training. There is an urgent need for a wider knowledge base which will assist first of all in a better understanding of the dynamics of the work-school connection, and secondly in helping planners so informed to make more rational decisions in this area.

Statement of the Problem

The problem of this study was to determine the effect of the senior comprehensive school curriculum (consisting of academic, pre-technician and vocational components) on the post-high school performance of a sample of graduates.
Operational Definitions

Post high school performance in this study was measured by the following indicators:

1. Time taken to find the first full-time job (measured in months).
2. Percentage of time spent in full time employment since graduating.
3. Whether employed at the time of the survey.
4. Starting salary (first and most current job).
5. Level of satisfaction (first and most current job).
6. Level of preparedness (first and most current job).
7. Whether students ever worked full-time.
8. Relatedness of jobs to training (vocational and pre-technician only).
9. Job type (first and most current jobs).

Further Clarifications

Level of satisfaction was measured on a four-point scale ranging from very satisfied to very dissatisfied.

Level of preparedness was measured by student response on a four point scale ranging from excellent preparation to poor preparation.

Relatedness of job was measured by student self-report (Rosmann, 1978) on a four point scale ranging from "same as area of training" to "not at all."
Job-type was measured by comparing the jobs students reported with the following scale adapted from two indices of occupational classification (Duncan, 1961; Hollingshead, undated). The categories are as follows:

1. Professional/managerial
2. Clerical and Sales
3. Service
4. Agricultural, Fishery, Forestry
5. Skilled Occupations
6. Semi-skilled (Including Apprentices)
7. Unskilled

Purpose

The purpose of this study was to test whether the curriculum of the senior comprehensive school produces the kinds of differentiated outcomes which are implicit in its structure. Of particular concern was whether the vocational component of the curriculum was working as intended—whether these students were:

1. finding jobs that were related to their area of training.
2. finding jobs more quickly than other students.
3. experiencing shorter unemployment spells.
4. earning more money than other students.
5. satisfied with their jobs.
6. convinced that they had made the right curriculum choice.
7. disposed to seek further education and training.

A very important purpose of this study also was to closely look at the occupational standing of academic and pre-technician students. A point of interest was whether academic students were reporting occupations which we would expect to be the province of vocational or even pre-technician students. Was it possible for example that large numbers of academic students might report occupations in such fields as welding, masonry, plumbing, or electrical installation?

With regard to pre-technician students whose curricula included technical courses, a curiosity was the degree to which industrial arts courses such as metalwork, woodwork and technical drawing translated into occupations such as machinists, cabinetmakers, or draughtsmen.

These types of detail elude our planners, and one suspects, prevent them from fully realizing the extent of their options in planning curricula for the schools. It was hoped that the study would reveal, for the first time, the subtle dynamics of the curriculum-work link.

Assumptions

It was assumed that:

1. control by regression will allow one to assess the independent influence of curriculum.
2. Vocational students would tend to seek employment in their particular area of training, also, that they received active encouragement so to do both from the Ministry of Education and from principals and teachers.

3. Employers had knowledge about the curricular options available in the comprehensive school, and that they would use such knowledge in making hiring decisions.

4. Subjects in the study responded forthrightly to the items on the questionnaire.

5. The first job was a good indicator of the career direction of graduates, and that it was possible to isolate the contribution of schooling (2 years attendance at a senior comprehensive) and curriculum to first job success.

6. That the follow-up was a valid mode of inquiry for addressing the problem as stated.

**Null Hypotheses**

H₁: There is no significant difference between academic, pre-technician, and specialized crafts graduates in the amount of time taken to find their first job.

H₂: There is no significant difference between academic, pre-technician and specialized crafts graduates in the percentage of time spent in full-time employment since graduation.
H₃: There is no significant difference between academic, pre-technician and specialized crafts graduates in the starting salaries for their first job.

H₄: The stream a student pursues and the type of job he or she finds are independent of each other.

H₅: There is no significant difference between academic, pre-technician and specialized crafts graduates with respect to their level of satisfaction with their first job.

H₆: There is no significant difference between academic, pre-technician and specialized crafts graduates with respect to the starting salary of their current or most recent job.

H₇: There is no association between the stream to which a graduate belonged and his or her status at the time of the study.

H₈: There is no significant difference between academic, pre-technician and specialized crafts graduates with respect to their satisfaction with subject choice.

H₉: There is no association between the stream to which graduates belonged and their ideal career choices.

H₁₀: There is no significant difference between the proportions of academic, pre-technician and specialized crafts graduates who ever held a full time job.

H₁₁: There is no significant difference between the proportion of academic, pre-technician and specialized crafts graduates who have changed jobs.
H$_{12}$: There is no significant difference between academic, pre-technician and specialized crafts graduates with respect to their perception of preparedness for their first job.

Significance of the Study

The researcher viewed the question of significance from two perspectives, namely (1) the ideal world, and (2) the real world. This somewhat peculiar, but very carefully considered dichotomy was set forth in recognition of the political context of a study such as this.

The Real World

Senior comprehensive schools are a fact of life in Trinidad and Tobago. They are perhaps the dominant feature of our education system today. If the cold world of scientific fact unveils truths which are antithetical to prevailing orthodoxy "significance" could clearly mean something different to the researcher and to the administrator. As some have indicated (Weiss, 1970, 1975; Brickett, 1978; Argawala-Rogers, 1977; Patton, 1978; Caplan, 1979, 1980; Connolly et al. 1980; Cook et al. 1980; Leviton & Hughes, 1981), we ignore these "real world" considerations at our peril. Abbott (1980) has written at length on the hindrances to the change process within the Jamaican Ministry of Education.
The Ideal World

Despite the fact of a limiting political context, the researcher was of the persuasion that the study could claim to be of significance on a number of grounds. Criteria adapted from Miller (1970, p. 3) are used to summarize these:

Timeliness

Senior comprehensive schools first began appearing in 1975. Allowing for time needed to smooth out the varied problems which normally attend large-scale educational innovations, the researcher felt that it was timely now to establish a base line.

The Research Need

There is a gaping void in educational research in Trinidad and Tobago. Our primary educational documents tend to be status reports, the last of which (Germanacos, 1964) is about two decades old. This study is a modest attempt at filling the void. It seeks to provide the kind of baseline data which Husen (1974) has identified as a research priority in educational development planning. Together with the Caribbean studies previously cited, the pieces of the relationships between schooling, curriculum and earnings will begin to fit together.

In a wider context, this study will add one more bit of evidence to the still inconclusive understanding of what the true nature of the work-school connection is in a developing setting.
Practicality

There are obvious utilitarian benefits to be gained from this study. The problem was real, as the ex-post facto nature of the design indicates. Usefulness was an important guiding criterion.

Generalizability

The sample was randomly chosen as far as this was possible. The researcher is satisfied that the group selected was representative enough of the variables of interest (geography, race, sex, school, curriculum, and year) to allow a claim of generalizability that was national in scope.

Broad Implications

Consistent with the claim that the representativeness of the sample allowed for generalizability of findings, this study is being posited as a prototype for future evaluative research on the problem in question. Data provided could form a baseline, and the basic instrument could be adapted for use, possibly in a longitudinal type study. The implications for planning are quite evident.

Limitations of the Study

There are some constraining factors which limit the extent to which the findings of this study could be interpreted. These are put forward to alert the reader to the need for caution. The researcher took all reasonable steps to ensure that such limitations as reported did not seriously compromise the objectivity of the study or prevent generalizability.
Methodological Constraints

Sampling. Due primarily to poor record keeping practices in some of the schools from which samples of graduates were drawn, it was impossible to locate all members of the graduating classes of interest for possible inclusion in the study. As a result, the sample is not random in the purest sense. Not all possible members of the population had a chance of being selected. However, the subjects who finally became a part of the study were for the most part randomly selected. More details on the exact procedures are outlined in Chapter 3.

The Design. In keeping with Campbell and Stanley (1963) notation this study employs the Static-Group Comparison design. Campbell and Stanley have pointed out that this design (shown below) suffers from the condition that "there are...no formal means of certifying that the groups would have been equivalent had it not been for the "X" (curriculum). They note further that "If O₁ and O₂ differ, this difference could well have come about through the differential recruitment of persons making up the groups: the groups might have differed anyway, without the occurrence of "X". This problem, referred to as a problem of "selection," is a "source of invalidity," which makes it difficult in the case of this study to fully come to grips with the true effects of "X", i.e., curriculum.
In Chapter 3, where the methodology is spelled out, attempts to control for possible confounding background variables (sex, 14-plus score, race, geography, etc.) have been outlined. But here again the researcher points to Campbell and Stanley reservations about the extent to which "all" possible contributing variables can be identified.

It should be noted as we discuss possible design problems however that Campbell and Stanley concerns are precisely the reason why it is necessary to be concerned about differences between the groups in question. What on the surface may look like a curriculum effect may well be an artifact of other phenomena, selection perhaps, but also ascribed social status.

**Constraints of Value**

There are some immeasurable outcomes of vocational education. Some have discussed the possibility that this kind of education "keeps boys in school" (Taussig, 1968; Corazzini, 1967), perhaps improving their attitudes, while at the same time preventing them from turning loose on society. This study does not address this acknowledged possible value of vocational education. It may well be though, that broader programs of technical studies might serve as well in keeping students off the street.
Delimitations of the Study

The vastness of the available literature relating to the role of education in development, and the merits of general versus vocational education as development strategy, necessitated a narrowing of focus. The researcher decided after surveying this literature to anchor the study around theory and research relating to:

1. Human capital.
2. Vocational education evaluation.
3. Education and development.
4. Alternatives to vocational education, e.g. recurrent education and on the job training.
5. Vocational maturity.
7. Vocational education versus general education.
8. Vocational education versus industrial arts.
9. Education and underdevelopment.
10. The comprehensive school.
11. Education for development in the Caribbean.

While these broad headings did not exhaust the sources of input into the study, they reflect in large part its overriding emphases.

Definition of Terms

Occupational Status—Determined by whether the graduate has a full-time job, the classification of that job, its perceived prestige, salary, etc.
Occupational Classification—Position on a seven point scale, roughly approximating Duncan (1961) and Hollingshead (undated) categories. Level one reflects professional and managerial type occupations. Level seven reflects unskilled labour, unemployed, etc.

Socio-economic Status—Determined by indices set forth by Duncan and Hollingshead. Job classification and education are key criteria.

Vocational Maturity—Determined by cross-sectional (point in time) measurement of an individual's perceptions, knowledge, awareness, etc. about the nature, requirements, etc. of a spectrum of occupations.

Technological Literacy—Like conventional literacy, this condition reflects understanding and some facility with the ideas and methods of the technology.

Technological Illiteracy—The absence of the condition of technological literacy. Ignorance with respect to the tools, ideas, and techniques of industry. Lack of problem-solving awareness, etc., dependence.

Academic Curriculum—Liberal studies, reflecting perhaps the humanities, etc., not inclusive of "technical" subjects.

Vocational Curriculum/Education—Geared to the world of work.

Pre-Technician Curriculum—A hybrid curriculum, general education with a technical education component, e.g. typing, metalwork, home economics.
Specialized Craft—A local (Trinidad and Tobago) name for a vocational education course.

Technical—Vocational—A term used interchangeably with technical education or vocational education.

Industrial Arts/Industrial Technology—Studies related to the knowledge and practices of industry.

Overview

In this chapter, the broad framework of the study was set forth. Theoretical issues of concern were addressed, and related research of importance were identified. The succeeding chapters will be organized to address the problem as follows:

Chapter Two

This chapter will consist of a review of core and related literature. It will attempt to place the issue of vocational education within the framework of education for development. Focus will be on human resource approaches in the third world context. Attention will also focus on theory and research relating to vocational maturity and non-school correlates of post-school occupational success.

Chapter Three

This chapter will focus on the design of the study, and the methods and procedures adopted in its implementation. Included also will be the development of a tentative evaluation framework. Sample selection procedures and questionnaire design and mailing will also be addressed. Statistical procedures used are explained.
Chapter Four

This chapter reports the analyses of data, along with major findings.

Chapter Five

In this the final chapter, a summary of the study along with a review of findings will be presented. Conclusions based on these will be set forth along with recommendations.
CHAPTER 2

REVIEW OF LITERATURE

The review of literature is organized under the following general headings:

1. Education and Development—Current Thought
2. Human Capital Approaches
3. Objections to Human Capital Theory
4. Vocational (Technical) Education as a Growth Strategy
5. World Bank Sector Policy Paper
6. Vocational Education Research in America—A Human Capital Context
7. The Vocational Education/General Education Dichotomy
8. Industrial Arts Versus Vocational Education
9. Vocational Education Research Findings in the U.S.—Focus on Variables
10. Vocational Maturity Theory
11. Correlates of Occupational Success

Education and Development

There is consensus in the literature that the world has witnessed an "educational revolution." This revolution, consisting of dramatic increases in enrollment in all countries, but notably in countries
which emerged after World War II, is now under scrutiny. The concern is that the promise of widespread education has not materialized. Instead, increased education may have served only to heighten already existing social tensions. Education may in fact have been largely an artifact of the tide of world history, a largely irrelevant variable in explaining ends such as economic growth or social equality. Coombs (1968) has termed the revolution a "crisis."

There have been two competing schools of thought regarding the role of education in development. Walters (1981) identifies these as the "modernization" school which believes that economic growth (modernization) in the developing countries is concomitant with growth in education, and the "dependency" theory which argues that economic development has less to do with education as to "the dependent status of underdeveloped countries in a world economy." The research has focused on the efficacy of these theories.

In a test of the dependency theory, Chase-Dunn (1975) examined the effects of such measures of dependence as "investment dependence per capita" and "debt dependence per capita" on economic development criteria such as G.N.P. per capita and Kilowatt hours per capita. He found "strong evidence that investment dependence retards economic growth." Based on his findings, Chase-Dunn found that he could agree with Beckford (1972) that it is not within the power of states "which are subjected to external controls" to fashion balanced economic development. Focusing on education alone would at best be an exercise in futility.
A simultaneous test of both theories would be whether growth in education led in due course to economic growth. Some studies have addressed this relationship. Harbison and Myers (1964) had found a causal relationship between growth in schooling and economic development, but with the limiting condition of cross-sectional data. Subsequent studies (Meyer, Ramirez, Rubinson & Boli-Bennett, 1977; Meyer, Hannan, Rubinson & Thomas, 1979; Walters, 1981) have not been as supportive. In the first instance, Meyer, Ramirez, Rubinson and Boli-Bennett (1977) using historical data (1950–1970) reflecting the educational growth and economic indices of a cross-section of countries found no evidence to support the notion that modernization and educational development are concomitants. The interrelationship between educational growth and economic development appeared small. They noted too that the fact of independence did not seem to affect the world pattern of growth in education. In the final analysis they argued, perhaps it is the parcelling of the world into organizational units that accounts for the universal expansion of education. Using the same data, Meyer, Hannan, Rubinson and Thomas (1979), while finding some evidence of correlation between secondary enrollments (especially) and economic growth attributed this to state dominance of power.

Walters (1981), working from the same data as Meyer et al. (1977) found no support for the notion that increases in educational enrollment led to increases in economic growth. The fact of increases in enrollment in the 1950–1960 period had no effect on economic development in the 1960–1970 period.
So we see that there is some evidence that the apparent connection between growth and education is spurious. Not that education is unnecessary, but it seems to be only part of the story.

Some have pointed to other supposed effects of education, particularly the question of equality (Carnoy, 1982; Bacchus, 1981; Fry, 1981; Tilak, 1982; & Levin, 1981). These authors point to rigidities in the class structure of developing countries which education, instead of loosening, seem to heighten. Carnoy notes that:

...in the type of development characteristic of dependent capitalist economics, the degree of improvement possible for education and for the employment and income distribution pattern is inherently limited by the social relations of dependent capitalist production. Economic growth (even rapid economic growth) can take place with such social relations, but we cannot expect that the mass of people in the society will share more than marginally in the fruits of that growth. Similarity, education can expand rapidly, but the nature of that expansion will continue to leave the rural and urban poor in a disadvantaged learning, social, and economic situation. (p. 170)

In much the same vein, Levin (1981) has advanced that educational development in the third world has not led to the promise of "greater equality." He argued, rather caustically, that:

The burden of proof is now on those who still believe that educational expansion and the planning it entails are the best strategy for achieving economic growth, democracy and equality. Education may not be irrelevant to those goals, but at most it is one of many ingredients. Clearly, if educational expansion and educational planning activities do not assure the attainment of these goals, then educational planners must justify their profession in some other way. (p. 87)
Looking at the question of persistent inequalities in the social fabric within the underdeveloped countries in the Commonwealth, Bacchus (1981), like Carnoy (1982) pointed to "continued economic and cultural domination of these countries," and "the marked dualism in the economic rewards provided by the two major sectors of the economy of these countries—the modern and the traditional sectors" (p. 219). According to Bacchus, curriculum reforms had failed because "educators have been tackling the symptoms of the problem rather than its major cause." Tilak has also discussed the question of inequality within the micro-perspective of individual countries, and the macro-perspective of an "international economic order." He notes that "the inequalities between the nations are widening further." If public investment in education in developing countries remained guided by "political, cultural and consumption criteria" education will itself produce inequalities. Tilak's belief was that "the rational criteria of the human capital theory" was the approach to ensure the creation of a new international order through education.

Fry (1981) has provided recent evidence regarding the nature of educational expansion inequalities. His findings illustrate that inequality is explained mainly by the dependent status of countries. As Fry (p. 115) notes "those societies most dependent on foreign capital have the greatest degree of inequality." He found striking "the apparent irrelevance of the expansion of schooling to a degree of inequality," and concluded "it appears that greater equality does not result from the expansion of schooling, but rather from fundamental structural changes that reduce dependency on foreign capital."
Bock (1982) agrees that inequality cannot be blamed on the schools—on education. Unlike Fry however, he posits that it is the conflicting needs and expectations of these largely plural societies which is to blame. He editorialized thus:

The failure of education can realistically be seen as a consequence of continuing dependence upon an explanatory paradigm regarding the relationship between education and social change. This has led to the selection of highly unrealistic and inappropriate expectations concerning the efficacy of schools*. . . . Education has no greater capacity for serving contradictory directives than any other social institution. There is need to de-escalate, or perhaps demystify, the almost magical belief in education's potency. (Bock, 1982, p. 79)

**Summary**

We see from the above review that there is need for concern about the promises implied in educational expansion. In developing countries, where education is an emotional issue, there might be the tendency to overcommit in the direction of education, without fully understanding the complexity of the mechanism which stands between such investment and growth. Indeed the connection between these two variables might be spurious, given the dependent status of many of these countries.

Next we look at "Human Capital," the school of thought which perhaps more than any other has triggered belief that increases in expenditures on education could be traced to increases in growth rate. Emphasis will be placed on its major research methodology—rate of

* Author's emphasis
return, together with the rival manpower forecasting and correlational approaches. All are subsumed under the heading "Human Capital Approaches."

**Human Capital Approaches**

The foremost pioneer of the human capital "revolution" (Bowman, 1966) was Theodore Schultz. In his landmark 1960 presidential address, Schultz (1961) posited that certain hitherto unexplained phenomena characteristic of the American economy (the so-called "residual") namely: a decline in the capital-income ratio; national income growth accelerating faster than the growth of natural resources; and substantial increases in the earnings of labour; reflected largely "a return to investment that has been made in human beings (p. 6). The growth in per unit labour productivity had been "a consequence of holding the unit of labour constant over time although in fact this unit of labour has been increasing as a result of a steadily growing amount of human capital per worker" (p. 6).

Schultz considered education as one of the primary ways in which man invested in himself. Education built "human capital" since it "becomes part of the person receiving it."

Schultz's presidential address was followed by the landmark paper of Gary Becker. Becker (1962) used on-the-job training as the prototypic example of how human capital became "embedded" in people.
His empirical evidence in support of the theory (Becker, 1964) has become a cornerstone of the so-called human capital revolution.

Both Becker (1964) and Schultz (1961) had suggested that the explanatory power of their theory was such as to have cosmopolitan applicability. Schultz argued that in the context of the developing world "it simply is not possible to have the fruits of a modern agriculture and the abundance of modern industry without making large investments in human beings." Becker in concurring argued that:

Probably the most impressive piece of evidence is that more highly educated and skilled persons always tend to earn more than others. This is true of developed countries as different as the United States and the Soviet Union, of underdeveloped countries as different as India and Cuba, and of the United States one hundred years ago as today. Moreover, few if any countries have achieved a sustained period of economic development without investing substantial amounts in their labor force. (1964, p. 10)

He observed too that strong linkages appeared to exist between income distribution and inequality in education, and (inversely) between education and unemployment.

These "strong linkages" that Becker talked about had in fact become the primary justification for the effects of the "manpower forecasting technique" school. Using data from 75 countries, Harbison and Myers (1964) examined the correlation between investments in education and economic growth and became impressed that:

There is a high correlation and presumably some causal relation between enrollments in education (and hence investments in education) and a country's level of economic development as expressed by GNP per capita. . . .It is possible, however, for a country to invest inefficiently in human resource development, to emphasize wrong kinds of formal education. . . . (p. 185)
Countries needed to accurately forecast their manpower needs it seemed, giving rise to the need for manpower forecasting experts such as Harbison and Myers, and Parnes (see Parnes, 1962).

A refinement of the correlational approach utilized by Harbison and Myers appeared subsequently (Beida, 1970). This researcher claimed that when a longer time lag was allowed for economic growth (claimed to be an improvement on Harbison and Myers) significant correlations between education and growth could be observed. Developing countries could now chose between the "rate of return" approach to development planning of the human capital school or the correlational approach of the manpower forecasters.

One of the premises upon which development planning seems to operate, is that if the early history of now developed countries is analyzed it would become possible to catalog and model their solutions to the problem of economic growth. Of course in so doing, one would have to control for history and culture—a dubious proposition. The classic prototype of this type of thinking is the landmark paper of Denison.

Using a "production function" approach, Denison (1966) found from census data that increased education accounted for about a fifth of the total growth of the U.S. economy between the years 1929 and 1957. It appeared that Schultz and the human capital school were correct; that it was possible to isolate the unique contribution of education to economic growth.
It is well to remember though that such a calculation was useless and irrelevant in the American context, save for purposes of academic speculation. It was ex-post. America had already experienced growth. The third world was thus the natural laboratory in which to see whether the calculations had predictive value. Despite the intent of nationalists, education was to be judged solely on its capacity to add increments of growth.

It is not surprising therefore, that the developing countries figured prominently in the flurry of studies involving rate of return calculations that followed Denison's study focused on Britain (Blaug, 1967), Latin American (Carnoy, 1967), Nigeria (Bowles, 1969), and India (Gounden, 1967). Rate of return was touted as being the most useful of the educational planning techniques in vogue (Blaug, 1974). Blaug was to later change his mind (1976) in a scathing denunciation of the human capital concept, chiding the research effort for

"a certain tendency to mindlessly grind out the same calculation with a new set of data, which are typical signs of degeneration in a scientific research program" (p. 849).

Individual Versus Social Rates of Return

One of the many refinements of the human capital approach which appeared was the distinction between social and private rates of return. The social rate of return has been defined as the discount rate of interest which will equate the present value of an incremental
national income stream with the costs of that education (Bowman, 1962; Hansen, 1963). It does not reflect the sum of all individual rates of return since these are not considered discrete. The calculations showed that it was more likely that private rates would exceed social rates of return. Blaug (1967) reported the private rate of return to university graduates in Great Britain (20%) exceeded the social rate (6.5%). Carnoy established a similar trend in Latin America. As Blaug noted, "free education" may not be so "free" if earnings foregone by individuals in order to attend school are taken into account.

Consumption Versus Investment Education

One of the more philosophically troubling aspects of the human capital approach is the requirement that the "investment" component of education be factored out. Theodore Schultz had noted that "education can be pure consumption or pure investment, or it can serve both these purposes" (Schultz, 1960). In his presidential lecture too he had cited the distinction between these two not so discrete components of education as a problem for the economics profession. In writings on this issue (Schultz, 1960, 1961, 1963, 1980; Vaizey, 1962; Lewis, 1962; Weisbrod, 1962; Eckaus, 1964) there is general acknowledgement of these two components, but like criteria are not always utilized. W. Arthur Lewis for example employs utilitarian criteria, as opposed to the temporal criteria of Schultz. The following excerpts from their writings illustrate this. According to Schultz:
Schooling can contribute to satisfaction in the present. . .or in the future. . .when the benefits are in the future, schooling has the attributes of an investment. As an investment, it can either affect future consumption or future earnings. Thus, the consumption component of schooling is of two parts: schooling that serves present consumption and schooling as an investment to serve future consumption. . .The satisfaction that people obtain from schooling is the consumption component. (1961, p. 8)

W. Arthur Lewis has posited thus:

From the standpoint of economic development, one may distinguish between types of education which increase productive capacity and types which do not. Teaching an African cook to read may increase his enjoyment of life, but will not necessarily make him a better cook. Education of the former kind I have called investment education, while the latter is called 'consumption' education. From the standpoint of economic development, investment education has a high priority, but consumption education is on par with other forms of consumption. (1962, p. 685)

The ideas of this noted Caribbean scholar will be explored later, particularly on the issue of what constitutes "education which increases productive capacity."

Next, the review looks at objections to the notion that returns to education can be Meaningfully measured.

Objections to the Human Capital Theory

Under this heading, some of the basic objections to human capital theory and the rate of return technique will be reviewed. More important will be a review of misgivings with respect to the applicability of human capital theory to the developing world.

This review has earlier examined the notion that education can be said to consist of consumption and investment components.
The computation of the rate of return to investment in education requires that costs and benefits be isolated and quantified. It becomes apparent that there are immeasurable psychic outcomes which could never quite be captured by cost-benefit calculus. This remains a fundamental conceptual and methodological problem. A related problem, is how to deal with the so-called "externalities" (Weisbrod, 1962), those benefits (such as having nice neighbours) which accrue from being educated to a certain standard.

These and other difficulties have led several (Vaizey, 1962; Balogh, 1962; Balogh & Streeten, 1963; Eckaus, 1964; Merret, 1966; Chamberlain, 1967; Machlup, 1975; Blaug, 1970, 1976) to either express misgivings with or completely disavow the approach.

Eckaus's contentions were that (a) market prices associated with the human capital created by education may not reflect the marginal product of the factor, and (b) that errors of estimation could lead to spurious policy decisions. He inquired rhetorically whether a low rate of return to teacher education or college should result in discouraging people from investing in these ventures. Merret's argument was that prices derived from cross-sectional data would become invalid in subsequent time periods. Vaizey found it difficult to accept student foregone earnings as the major component in the cost of education. Chamberlain's misgivings appeared motivated by moral-ethical considerations, his contention being that:

There are some allocations we make on faith, rather than by pure rational calculations. To weigh on a pecuniary scale whether the benefits are equal to the costs, or to calculate what constitutes the rate of return of an investment,
in democratic government, racial non-discrimination, a healthy human environment, and let me include education as well, is to look at all values through money-colored glasses. (p. 6)

The Screening Hypothesis

There are those who feel that education is not as important as the diploma. The advocates who hold this belief have posited the "screening hypothesis" as a rival to human capital theory. This hypothesis seeks to explain why more educated people tend to earn more. It was first advanced by Berg (1970) when he speculated that there may not be considerable disparity between the educational achievements of the American workforce and the educational requirements for a significant proportion of jobs. Credentials seemed to reflect more the faith of employers in educational achievement than the marginal productivity of workers.

Berg's research led him to conclude that obsession with credentials had led to the "great training robbery," credentials serving to segregate those who could afford more education from those who could not. Since those who could not afford were as a result consigned to low skill jobs, screening ensured the perpetuation of class values.

Berg's hypothesis was formalized later by Arrow (1973), and has been described as having marked a turning point in the "human investment revolution in economic thought" (Blaug, 1976). Arrow concluded that at least at the level of higher education, the diploma served as a filter, a means of sorting out individuals of different skills and conveying this information to the purchasers of labour.
Concurring, Taubman and Wales (1973, 1974) noted from their own research that "the private rate of return to education is higher when screening exists than it would be under free entry to all jobs."

Education served as a means of reducing the sorting costs of firms. Firms and society would incur higher costs without screening.

**The Neo-Marxian View**

Strong opposition to the human capital hypothesis has come from the neo-Marxian school. Perhaps best exemplified by the work of Bowles and Gintis (1976), neo-Marxists argue that schooling (in a capitalist society) serves the dual purposes of (a) increasing the productive capacity of workers via the imparting of technical and social skills, and (b) defusing and depoliticizing the otherwise volatile class relations of the production process making it easier to perpetuate existing power relationships. Schooling, according to this view, serves little more than to preserve the status quo of social and economic inequality. Behaviour patterns which are "compatible with the relationships of dominance and subordinacy in the economic sphere" (Bowles and Gintis, p. 11) are reinforced. The schools also create "surpluses of skilled labor" which affords the dominant capitalist his prime weapon—the power to hire and fire.

As can be seen from the above, neo-Marxists believe that the school
and industry are fundamentally intertwined. Within the capitalist context, the school does not exert unique effect. The payoff to education is not nearly as dependent on IQ—a value much prized by schools—as on sex and race. The school is the servant of the economic system, slavishly perpetuating its ideals—its hierarchical power structure.

**How Transferable?**

This section of the review focuses on those offerings in the literature which doubted the transferability of the human capital approach to educational planning to the underdeveloped setting. As stated earlier, both Becker and Schultz had expressed belief in the ability of their ideas to hold across nations.

Some of the research also showed promise. Carnoy (1967) for example had found that schooling accounted for 43% of the variance in earnings in Latin America, and significantly, that the rate of return to investment in human capital was higher than that to physical capital. But some still remained skeptical.

A principal critic of the transferability of the rate of return approach to educational planning in Africa was Lord Balogh (Balogh, 1962; Balogh & Streeten, 1963). The model itself appeared to him to be too static to be credible, especially in a new societal context. He counseled that education was not a panacea, that while it might be "a necessary condition of growth," it could "never be a sufficient cause of progress." Balogh did however concede that expenditures in
"technical education at all levels" might be "a complement assuring that physical accumulation of capital. . .tools and factories will become more effective" (1962).

Another critic of the rate of return approach to development planning was Caribbean scholar, W. Arthur Lewis (1961). Like Balogh and Streiten he noted "confusion" in the attempts to transfer findings on "the yield of education in rich countries" to poorer countries. One of the difficulties Lewis noted with this practice—-a point also made by Skorov (1966)—was that poor countries simply do not possess the necessary absorptive capacity to ensure the maximum marginal yield for expenditures in education. In a later work, Lewis (1966) set forth in more explicit terms his misgivings about the transferability of human capital approaches to the underdeveloped world. He argued:

The results of such efforts can hardly be applied to underdeveloped countries, for three main reasons. First, the assumption that the pattern of earnings reflects differences in productivity seems rather doubtful; in Jamaica an unskilled labourer earns three times as much in the bauxite industry as in the sugar industry; such 'anomalies' are too numerous in underdeveloped countries for earnings to be accepted as a guide to productivity. Secondly, even where earnings reflect productivity, education is so correlated with other causes of high productivity (especially intelligence, patience, persistence and ability to persuade) that one would have to be able to distinguish these other factors before deciding how much of differential earnings was due to education; this is not easy. Having regard to the irrelevance of what is taught in schools (even at the college level, not more than 30 percent are trained in scientific or technological skills) employers probably pay more for arts graduates not because of what they have learnt in school, but because ability to survive the tests imposed by schooling is as good a test as any of the kind of personal qualities which employers are seeking.
Thirdly, this kind of correlation would not be useful in underdeveloped countries because of the big difference between average and marginal earnings. (Lewis, 1966, p. 108)

Given these concerns about the applicability of rate of return methodology in the underdeveloped setting what could we make of the actual research? Psacharopoulos (1973, 1981) conducted an international comparison of the results of rate of return studies and reported that not only did both developed and developing countries seem to profit from investment in human capital, but that in the developed world, this form of investment yielded higher returns to that of physical capital.

Jolly and Colclough (1972) identified ten rates of return studies set on the African continent. Among the problems these authors identified as caveats were the following:

1. data on earnings by age and educational level are rarely available,
2. a tendency not to look beyond education in explaining earning differentials,
3. a tendency to make assumptions (e.g., that average costs of education equalled marginal costs) which had led to overestimates of the marginal costs of education, and
4. neglect of "mortality and participation rates in the labour force."

The authors wondered whether some of the conclusions made by these studies would not have been "altered by changes in key assumptions."
In similar vein, Sobel (1978) in his human capital research review and synthesis pointed out that the research coming out of developing settings are burdened with attendant caveats. He wrote:

The data limitations in many of the developing countries required somewhat heroic assumptions to generate rates of return. Thus the results in developing countries are even more tentative and require more qualification than those in more developed countries. (p. 285)

We are forced to question the usefulness of rate-of-return studies in the underdeveloped setting, given some of the concerns expressed above. How can the planner in this setting draw any meaningful conclusions from studies whose findings seem to depend on heavily on assumptions.

**Vocational (Technical) Education as a Human Capital Strategy**

In Sobel's (1978) review of the impact of the human capital "revolution" he pointed to the unfulfilled promise of vocational education as a human capital strategy in the developing world. Wrote Sobel:

In the early 1960s, given the new conventional wisdom about maximizing the human-capital-generating rather than the consumption aspects of education, there was increasing emphasis in developing countries upon formal vocational and technical secondary school systems. When these types of schooling were greatly expanded, the rates of return on such education were disappointingly low if not negative. This lack of success for formal vocational education has been attributed in the various countries to obsolete equipment and out-of-date curricula, lack of faculty contact with industry needs, and the tendency observed in some countries for vocational graduates to seek clerical and nonvocational careers. (p. 396)
This section of the review focuses on the problem of technological illiteracy in the developing world, and the validity of vocational education as a strategy in eradicating it. From the outset, it is important to see that vocational education was simply a special case of the human capital movement. It had appeal because of widespread technological illiteracy in the developing world, and because it appeared to provide a ready link between school and work.

Very early in this review, the laments of Nkrumah and Williams (both founding fathers of emergent nations) with respect to the absence of technical studies in the pre-independence (colonial) curriculum were noted. As has been shown too, Balogh (1962), Balogh and Streeten (1963) and Lewis (1962) had expressed the belief that "the wrong type of education" was emphasized in this era and recommended some role for technical studies, perhaps within the formal system.

Others had expressed similar views, an example being the following observation of Vaizey (1962):

Two problems especially dominate existing education structure. The first is the bias of education towards the arts and literacy culture in a society where the needs for technical skills are dominant. The explanation for this is simple. There is a distaste for working with one's hands; arts subjects are cheaper to teach; and industry is not sufficiently developed to employ technologists in large numbers. They can be imported. Obviously, if economic growth is to take place this tradition has to be broken. (p. 127)

W. Arthur Lewis had also called for a better mix of technical and liberal studies in developing countries. He wrote:
The balance...between general and vocational studies;...need to be blended in right proportion if education is to be a help rather than a hindrance to economic development. Careful survey and planning are needed if the education system is to produce the balance of skills which the community exactly needs at its particular stage of development. (1961, p. 686)

Conventional wisdom seems to have pointed in the direction of a curriculum mix inclusive of technical studies. But the question then (as it is now) was how to provide for it. Known planning techniques, while advocating training, frowned upon the idea of pre-employment formal vocational training. Witness the views of Harbison and Myers (1964) in their famous work:

In building technical skills, particularly at the craft level, countries may choose to place primary responsibility for training on the formal educational system or they may attempt to shift most of the burden to the employing institutions in cooperation with labor organizations. In practice, training and retraining is a continuous lifetime process of human development, and thus the employing institutions cannot escape responsibility for some training. Ideally, the role of the schools, particularly at the secondary level, is to produce broadly educated persons who are readily trainable. But some training probably must be provided prior to employment by the schools. ...

They continued:

human capital formation may start with formal education, but it does not end there. Most managerial, technical, and craft skills, for example, are developed on the job much more effectively than in vocational schools. Indeed, in many countries vocational or trade schools are quite inefficient and wasteful instruments of human capital formation. Better craft training would result from shifting more responsibility for skill development to the employing institutions. (p. 193)
So that while recognizing the need for skilled manpower, these famous authors saw only a limited role for the formal school, preferring industry to play a larger role in training.

W. Arthur Lewis in a somewhat more measured discussion of this issue, further elaborating his notion of "investment" education in the context of the developing world, granted that some children might indeed be ready "at about age fifteen" to receive formal vocational training. But, he continued:

The quickest way to increase productivity in the less developed countries is to train the adults who are already on the job. Education for small children is fine, but its potential contribution to output over ten years is small compared with the potential contribution of efforts devoted to improving adult skills. (p. 693)

But while the comments by Lewis are indeed insightful, they do not help us in dealing with what happens at the entry level. How do we deal with the new worker? At what skill level should he enter, and how does he attain that skill level?

The discussion at this stage moves to some evidence which appeared to corroborate the counsel of Harbison and Myers and Lewis, among others. First the observations of Thomas in Uganda will be looked at, then a fairly extended review and critique of the landmark work of Foster is presented. The writer finds it necessary to conduct such a review since Foster's work is generally accepted as the last word on the demise of formal vocational education in the third world. First the Thomas report.

In a report entitled "High-Level Manpower in the Economic Development of Uganda" constituting a chapter in Harbison and Myers
(1965) Robert L. Thomas reported on the failure of vocational and technical schools in Ghana to meet the goal of "bringing the boy to skilled manual status." Thomas reported that the total output of thirteen technical and vocational schools over a three year period was 25 (out of a school intake of 800). He noted:

There were a number of reasons for the inefficacy of these technical or vocational schools. . . The fundamental reason, however, was the unsoundness of the basic concept. (p. 317)

The reasoning upon which this comment was based, was (as earlier attributed to Harbison and Myers, 1964) that schools cannot adequately simulate industry. Futility was predictable because:

. . . the most complex of the manual skills (of the craft or artisan level) can only be acquired by training on the job in the ordinary work environment and normal pressures. . . Few schools can duplicate the machines and equipment or materials used in industry or the size and variety of jobs characteristic of normal industrial or construction activities. (p. 377)

Thomas's report, though enlightening, has not been as influential as the work of Foster. The latter's study is now reviewed and critiqued.

**Foster's "Vocational School Fallacy"**

Foster's work first appeared in a collection of readings entitled "Education and Economic Development" (Anderson & Bowman, 1965). It was based on the results of two surveys conducted in colonial Ghana (1959, 1961). It was said by Blaug (1974) to have "set the cat among the pigeons" in the school which set store in the growth generating powers of formal vocational education.
Based largely on Foster's study, Blaug has written:

Everyone agrees that vocational schools are expensive; that vocational school teachers ought to be well trained teachers as well as having industrial experience, but that such people are scarce in any country; that the equipment of vocational schools is liable to be either outmoded or so advanced as to have little relevance to the country in question; that it is virtually impossible to simulate the actual rhythm and discipline of factory work in the classroom; and that most students regard vocational schools as second-best opportunities and hence are reluctant to take their training seriously. Nevertheless, if vocational school made good sense, these would merely constitute surmountable difficulties. Unfortunately, vocational training in formal education institutions make little sense on either educational or on economic grounds.* It is impossible to foresee accurately the requirements for specific skills in an economy two to three years hence; for that reason, vocational training on a full-time basis must necessarily impart general skills, at which point it ceases to be "vocational" in the sense in which that term is usually understood. And on strictly educational grounds, vocational schooling frequently creates a sense of second-class citizenship among both teachers and taught which militates against effective learning. (1974, p. 22)

In the first of these surveys (1959), the research question sought to determine whether there was any validity to the widely held belief that the products of formal education in Africa were wont to disdain manual labor. The subjects consisted of a random sample (n = 210) of fourth form boys from nine academic type schools. The students were all in the final month of studies before graduating, possibly into the world of work.

Students were asked what occupation they would like to pursue if they were completely free to choose, and what type of employment they actually expected to find. The findings indicated that while 62%

* Author's emphasis
of the subjects favoured 'artisan employment or farming,' 'only' 30 percent favoured white-collar type employment. Of 51 percent of the students who expressed the desire to become skilled artisans, 'only' 22 percent expected to have their desire fulfilled. Thirty-five percent of the students 'were fully reconciled to entering semi-skilled or unskilled occupations.'

Foster concluded from these figures that "the findings in no sense indicate a predisposition to favor professional and white-collar employment." He declared:

It seems clear that mass unemployment among school-leavers in many new African nations is due to dysfunctions existing between the gross rate of school output and the slow expansion of occupational opportunities of all types within the exchange sector. (p. 150)

Foster was next interested in student perception of farming. He hypothesized that "the reasons why graduates do not return to subsistence or quasi-subsistence agriculture has... little to do with a disdain for farming that is created by an academic education." Students were asked to rate 25 different occupations, using two criteria, occupational prestige and perceived income.

The findings showed that farming was rated 16th in prestige, and 10th in perceived income. Primary school teaching was rated 19th in prestige and 21st in income. Despite the fact that farming was rated higher on both sets of criteria, only one percent of the students expressed the wish to become farmers while 34 percent wished to become teachers.
Foster gleaned from these results that "the factors inhibiting the 'return to the land' lie primarily in the institutional milieu of farming." He argued:

... if we are to really appreciate the factors that militate against individuals entering agriculture, we must examine the neo-traditional institutional complex in which agricultural activities take place ... Young people do not object to farming per se or to the desirability of entering 'modern' farming. They are perfectly aware, however, that this is precisely what the institutional framework does not offer. (p. 151)

Confident that he had exposed the "vocational school fallacy," Foster advised that:

in the initial stages technical and vocational instruction is the cart rather than the horse in economic growth. (p. 153)

Reaction to Foster

As one reads Foster's second study, one finds clear evidence in support of the very notion he tried to dispel in his first study. Students, given 25 diverse occupations did rank fourteen white-collar jobs (excluding policeman) above the occupation of farmers. They also ranked 'carpenter' a lowly 22nd. For some reason however, Foster chose to ignore this rather obvious white-collar bias in the minds of students, preferring instead to draw attention to a somewhat obscure comparison between student perceptions of elementary school teachers and farmers.

The results of the 1961 survey clearly shows that white-collar jobs are perceived to be somewhat more prestigious.
If this is the case, as it clearly is, then what can we make of the 1959 survey? Were the disparities between aspirations and expectations the result of "dysfunctions existing between the gross rate of school output and the slow expansion of occupational opportunities," or were they simply a reflection of the vocational immaturity of the students?

These kinds of disparities are not uncommon for the age group, and certainly are not unique to Africa. Indeed, convinced of the unsettled psychological disposition of early adolescent American children, psychologists have devoted a great deal of theory building and research energies toward a fuller understanding of the nature of these difficulties (see Ginzberg, 1951, 1952; Super, 1953, 1955, 1957, 1963; Super et al., 1957, 1969, 1974; Super & Overstreet, 1960; Roe, 1957; Crites, 1961, 1969, 1971; Crites & Semler, 1967; Jordaan & Heyde, 1979; & Zaccaria, 1970).

In their massive Project Talent study, Flanagan and others (1966) observed considerable change in the career choices of students within a year of leaving school.

It seems reasonable to believe then that there were other possible explanations for the disparities observed by Foster, more perhaps to do with the nature of children than with the nature the Ghanaian economy.

Foster erred in not presenting other possible (and quite, plausible) explanations for the disparities which he observed. His 'vocational fallacy' may well be valid. There may be a great deal of
wisdom to his notion that "in the initial stages technical and voca-
tional instruction is the cart rather than the horse in economic
growth." But for the reasons cited earlier, together with the fact
that this study was cross-sectional in nature, and based largely on
student perceptions as opposed to actual student experience, the
'fallacy' is yet to be illustrated. More and better designed research
is needed.

Cross-National and National Studies

Under this heading the review looks at evidence regarding the per-
formance of vocational education. A general observation is that there
is a dearth of relevant studies in mainstream literature, almost a
complete absence of in-depth national case studies.

Psacharopoulos's cross-national work (1973, 1981) includes only
four studies addressing the relative contributions of vocational and
general studies, too few from which to discern a pattern. Returns to
secondary technical education were found in one study set in Columbia
to be higher than that to general education. In a study set in the
Phillipines the reverse was found to be true. A study set in Thailand
showed negative returns to technical education.

In a study set in Israel, Borus (1977) compared the relative cost-
effectiveness of four types of vocational programs in Israel. His con-
clusion was that to the extent that "skills training" was the sole
objective, non-formal techniques should be used.

Fuller (1976) in a study which he claimed provided "more evidence
of the demise of pre-employment vocational trade training," examined
the relationship between training and performance in specific jobs. The study was set in a factory in India. While Fuller found evidence that "schooling is significantly and positively related to job performance," his general finding was that workers who had received in-firm training were more productive than those who had pre-employment vocational training. Criteria were supervisor perceptions and a job performance measure. Fuller commented on the fact that not only did it appear that pre-employment vocational institutes were turning out relatively inefficient workers, but they did so at a higher cost.

In a study set in Columbia, Puryear (1979) looked at the effects of general and technical education alone, and in combination on subsequent earnings. The sample consisted of graduates of SENA (Columbia's national apprenticeship service), n = 261. Graduates were interviewed 5-7 years after leaving school, and their incomes were compared with that of workers of similar age and educational background. SENA graduates were found generally to enjoy higher wages than their peers. While this finding was significant of itself, it was noted that as years of formal education increased, the SENA effect correspondingly diminished.

Caveats attending interpretation of the data were (a) that SENA graduates tend to self-select themselves, and (b) SENA acted as a screen for higher paying jobs. The researcher could not be sure whether a SENA effect did in fact exist—a concern reflected in the title of the paper.
The research is too sparse to allow a pattern to emerge. There are some interesting signs though. In both Fuller (1976) and Puryear (1979) some vocational schooling seemed to be better than none when productivity was the measure. This augers well at the entry level. Also, in-firm training and other non-formal training appear more cost-effective. There simply is not enough quality evidence though to allow one to agree with Blaug that "vocational training in formal educational institution makes little sense on either educational or economic grounds."

There seems to be more balance in the offering of Ducray (1979) on this topic. Ducray has pointed to reasons which he says have caused governments "since 1972 or thereabouts" to look more skeptically at the role of vocational training. He points out in this work, that the inefficiencies of vocational education are heightened during periods of economic downturn. According to Ducray, the research (cross-national) "tend to confirm the limitations of using vocational training as a mere instrument of national policy." But the comments of this author were limited to Western industrialized countries, with unplanned economies. However as Bogatov (1975) has shown, vocational education plays a more assertive role in the Soviet Union where training and production are coordinated. So vocational education itself may be only part of the issue.

A recent paper (Benavot, 1982) confirms the need for skepticism. This researcher, using regression techniques with data generated by Meyer et al. (1979) reported that:
In equations with just poorer countries, we find a surprising pattern: in six of seven panels, the size of the unstandardized coefficient of vocational education is greater than that of general education even though the significance levels of both effects vary to some extent.

In speculating as to the reasons for vocational showing so well, Benavot suggests (naively) that "the preponderance of low ability working class children found in terminal vocational programs of more developed countries is not mirrored in less developed countries."

Perhaps, these countries focus their vocational training on the more able. This of course is not the case, but the writer agrees with Benavot that "the possibility that a particular system of vocational education may be a significant cause of economic growth in less developed countries deserves serious attention."

World Bank Policy--Sector Policy Paper

The World Bank also has provided fuel for debate by its policy of preferential treatment to technical education projects. Psacharopoulos (1980) has suggested that World Bank lending policy might have "indirect effect" on the way educational funds are allocated. Noting a general trend towards increase in the share of loans towards technical and agricultural curricula, he wondered also whether the bank by such a policy, was not tacitly supporting the view that it is these types of education which contribute to development (p. 12).

In view of the key role the World Bank plays in the allocation of educational funds in developing countries, and because of the bearing this has on the so-called vocational-general education dichotomy
a summary of relevant policy as stated in the Sector Policy Paper (Haddad, 1980) is of considerable import.

The Bank has set forth five principles guiding its lending policy, one of which is that:

Education should be related to work and environment in order to improve, qualitatively and quantitatively, the knowledge and skills necessary for performing economic, social, and other development functions. (p. 10)

General education is viewed as being a complement to specific training as a development strategy. A combination of the two is recommended.

On the related and crucial issue of unemployment, the Paper sounded an ominous note:

Unemployment is likely to worsen in the foreseeable future as the growth of the labor force of the developing world accelerates from two percent a year between 1960 and 1970, to 2.7 percent a year during the next 25 years. Even the optimistic projections indicate that the number of job vacancies will accommodate only a limited proportion of the 15-year old cohort in 1980. . . even in the more rapidly developing countries. . . less than half of the age cohort stands a reasonable chance of obtaining employment in the modern sector. (p. 42)

The paper cautions against diversified schools citing their "prohibitive" costs. It notes too, that with respect to merits of technical and vocational schools, "twenty-five years of experience has not resolved the controversy about the formation of skills within the formal system" (p. 45). Three factors are set forth as guidelines for effective technical and vocational schools, namely:

1. realization that employment depends less on training than on the pace of industrialization,
2. there must be good relationship between schools, employers, and government ministries, and
3. instructors should possess both academic and industrial background.

As Psacharopoulos observed, the Bank seemed to be willing to play an active role in influencing the educational allocative decisions of governments. The Paper states "because of its experience in development financing and its awareness of technical choices and their outcomes in other countries, the Bank can help enlighten the choices available to a country" (p. 87). This is commendable, but the educational authorities of developing countries are not noted for the research activities which would help to provide data for decision making, so that an external agency such as the World Bank may easily find itself filling the information (data) vacuum by default.

The Paper also affirms a commitment to pre-employment training by pledging to provide funding for "tracer" studies as a prerequisite for identifying education and training projects.

It is of course obvious that the Bank would be inclined toward economic criteria when assisting governments in making allocative decisions. The fact that there is a dearth of research though, means that governments may for the most part be investing blindly, especially in vocational education which by definition is specific and could be viewed as "investment" education. Preliminary notions as to what economic returns can be expected from vocational education could perhaps be ascertained by studying similar investments in the developed
world. Attention will now be turned to some relevant research findings.

Vocational Education Research in the United States—Rate of Return

The research to be examined here is set in the United States where vocational education, because of a series of Federal legislative actions now consumes large amounts of Federal funding, and because of which some accountability must be evidenced. The focus is on economic criteria.

Philosophical arguments surrounding the vocational education concept are not unlike those which arise in the developing setting. Indeed, the research here also is inconclusive when the question is "does the rate of return to investment justify the funding of vocational programmes?" Some studies (Taussig, 1968; Corazzini, 1968) report negatively. Others (Hu et al., 1971; Carroll & Ihnen, 1967; Eninger, 1965; Li, 1981) report positively. There is also disagreement on the question when should vocational education begin (Corazzini, 1967; Li, Carroll & Ihnen, 1967). A summary of some of these studies together with important findings are now presented.

Corazzini compared the profitability of vocational and general education in the public school system of Worcester, Massachusetts. He found a differential between the starting wages of graduates of both programmes, in favour of vocational. These differentials were as to be expected in the initial employment period, and were expected by Corazzini to decrease with time. A rate of return to vocational
education of 17.9% was calculated. He concluded that vocational education in the given circumstances was "at best only marginally profitable, and recommended that cheaper ways be found to provide people with skill training."

Taussig (1968) studied the New York City public school system, and tried to assess whether vocational investment was, in purely economic terms, superior to investment in general education. Like Corazzini, he found initial differentials in wages. The analysis of costs versus benefits forced the conclusion that "returns have been meagre relative to the considerable social investment in the programme."

Hu et al. (1969) in presenting findings somewhat contrary to these, criticized the work of both Taussig and Corazzini, arguing among other things that their data focused on wages and not on actual earnings. Their study was set in the city school districts of Baltimore, Philadelphia, and Detroit. A "cost effectiveness" model which featured economic as well as non-economic criteria was adopted. The economic analysis included the three standard calculations, that is, rate of return, cost benefit ratio, and net present value.

For the Philadelphia and Detroit school districts from which relevant data were more readily available they found the profitability of vocational education to be "considerably greater than returns to alternative curricula" (p. 224). The returns to vocational education in Philadelphia were estimated to be 8.2%, and that in Detroit 31.8%. The authors of the study recommended that "additional public funds should be spent on the vocational-technical curricula rather than on the non-vocational-technical curricula."
Further analysis of this data (Hu et al., 1971) led the authors to recommend investment in vocational education as being a superior decision vis-a-vis comprehensive (general) education.

Li (1981), using census data, found his results to be supportive of investment in vocational education. He expressed some misgiving about purely economic evaluative criteria though, and like Hu et al., seemed to be calling for a "cost effective" approach. His calculated rate of return to investment in vocational education in America was 21 percent. Expressed in cost-benefit terms a ratio of 11 to 1 was derived.

Some studies such as that reported by Corazzini (1967) and Li (1981), were supportive of vocational education—as an economically sound high-school investment. An earlier study done by Carroll and Ihnen (1967) found a satisfactory yield at the post-high school level. In this study both private and social rates of return (23.9 and 16.7 percent respectively) were calculated.

To what extent can lessons be learned from these findings in the United States setting? How applicable are they? Perhaps the best lesson here is that the results are situational. Another very important lesson though not reported here at length, is the awareness which most of these expressed for non-economic variables. Important methodological problems were also reported, and these could be of invaluable assistance, being unique to studies of the type.
Vocational Education/General Education A Dichotomy

The primary intent of this study is to assess the effectiveness of vocational education in Trinidad and Tobago by way of comparison with general education. There is recognition of a dichotomous system of education, vocational-general in nature, within our senior comprehensive schools. Given the long standing controversy surrounding this dichotomy it would be foolhardy to proceed in a manner oblivious to its very nature. A useful starting point in this direction is to agree on definitions, and that provided by Page (1966) seems apt.

General Education—developing the intellectual faculties and learning how to use them (language, arithmetic, graphic expression, etc.)—acquisition of basic knowledge not directly connected with any particular activity—stress placed on the "why" of things.

Technical and Vocational Training—acquisition of habits and knowledge preparing a person more directly for the various trades connected with a given career. . .The distinctive feature is thus the utilitarian motivation which tends to place greater stress on the "how" of things (Page, 1966, p. 497).

These seemingly divergent purposes have in large measure been the cause of the "controversy." Once vocational education and general education are perceived as discrete concepts, mutually exclusive of each other, it becomes difficult for planners to do any better than provide a dual system catering to each. In other words, the dichotomy comes about because of conceptual rigidity. A rigidity which carries over into educational planning.
Timar (1976) attributes the dichotomy to "theoretical confusion," whose source lies in "the sharp division drawn between education and training, the opposition assumed to exist between "consumer goods" and "investment" and between education with its socio-cultural function and economic activity, involving the reproduction of manpower" (p. 236). In similar vein, Mark Blaug has stated that "the notion that there is one kind of education called general education, which has nothing to do with the world of work, and another called vocational education, which is firmly geared to the "needs of a growing economy," is part and parcel of the rhetorical folklore that continues to impede rational educational planning in developing countries" (Blaug, 1974, p. 28). But shortages of skilled people are a fact of life in the developing world, and you do not learn how to repair cars by studying history. Clearly, some kind of accommodation has to be found which will eliminate need for a dichotomy, while at the same time presenting the best values which each of the two approaches offer.

Without such an accommodation, the developing world will continue to see the polarization of successive cohorts of secondary school entrants, by vocational and general curricula, into able and less able groupings. Groupings which eventually give definition to the social fabric of the wider society.

How do we get away from the rigid structure? Perhaps by redefinition of the concept of vocational education, by taking a fresh look at those school level effects which really make a difference with
respect to adaptability in industry. Perhaps this kind of inquiry may engender a new set of questions and options relevant to an accommodation. These might include:


2. Accelerating high school for some and topping it with vocational training (Corazzini, 1967).

3. Expanding the aims of vocational education to include social values such as citizenship—in other words "liberalizing" vocational education (Warmbrod, 1974).

4. Making training less specific.

5. Focusing training on adults (Lewis, 1962).

For comparative purposes, if the scene is shifted from a developing to a developed setting, specifically the United States, we find that the concerns with respect to what constitutes "vocational" education are quite similar.

In the United States, the Vocational Education Act of 1963 encouraged vocational educators to assume broader goals—goals reflecting human development and long term employment needs. Since compliance with the provisions of this and subsequent legislation (Vocational Act of 1968) correlates with funding, much attention has been paid to interpretation of the provisions, a good deal of it toward the redefining of goals. The flavour of this mood can be captured by the following excerpt from a report of the Committee on Vocational Education Research and Development (1976):
Vocational education programs are today more varied in content, employ more sophisticated instructional methods, and attempt to teach more than occupational skills. While a major objective is still to prepare people for work in order to meet the needs of the economy, a second objective, which emerged in the 1960's is to increase the employment options available to each person. Vocational education has become concerned with developing flexible occupational and decision-making skills so that students may choose any of several occupations after graduation. A third, usually implicit, objective is motivating students to learn basic academic skills. (p. 9)

In similar vein, Warmbrod (1974) in an address to the American Association of Teacher Educators in Agriculture called for a removal of barriers between vocational education and general education. This he contended, called for a two part strategy:

The first is to broaden the purpose of vocational education in the secondary schools from that of a narrow 'trade-school orientation' that equates vocational education with skill training to a more liberal concept that recognizes the contribution vocational education can and does make to a variety of adolescent. The second part of the strategy is a realization of the fact that skills, knowledge and attitudes which enhance or impede entry to and progress in the world of work are not limited to those acquired to courses with the label 'vocational'. (1974, p. 6)

These comments are similar in essence to those of Page (1966) who in a more general context had argued that "the process of education is a continuous one, wherein each stage constitutes a logical preparation for the next" (p. 498). Page saw the two types of education as essentially complementary, and wondered whether it was not possible for educational authorities in countries where a dual system existed "to define the desirable balance to be achieved between the two types of training, either within a single educational cycle or
or within the framework of successive or parallel cycles" cognizant of the peculiar social and economic conditions of each country (p. 498).

Eugene Staley (1971) has proposed a model which seems to have the merit of accommodation. In his plan, the general education phase of schooling will be capped off by a phase which is decidedly occupational in nature, but consisting of instruction in generic skills or clusters. A feature of this approach would be career guidance and counseling.

While proposals of the type posited by Staley seem reasonable, many question the need even to have so-called pre-occupational programmes within the formal school. The feeling is that the best vocational education is essentially liberal education—that attempts to link what goes on in the school (beyond mathematics, science, language, etc.) with industry is redundant. This point of view has been stated by Suchodolski (1966), Taussig (1968), and Psacharopoulos (1980). The latter has shown some partiality toward liberal education which he argues "generates the heuristics by which problems might be tackled. . . ."

Implied in the above line of thinking is the belief that specific skills are best learnt on the job and that what the young worker should take to the market place above all else is sound intellectual training. Indeed Stoikov (1975), has argued that there is a "liability to obsolescence" characterizing skill training which makes attempts at training within formal schools, and especially at the secondary level, a highly questionable course of action.
Industrial Arts Versus Vocational Education

Within the larger debate of general education versus vocational education resides the industrial arts--vocational education question which is perhaps less well known to economists than it is to educators. Essentially, advocates of industrial arts hold the belief that the schools should provide all students with instruction geared towards an understanding and appreciation of the industrial technology. In this sense, industrial arts is to be interwoven into the regular curriculum as a part of the general education fare. Unlike vocational education, it is not concerned with job training in the specific sense, but only to the extent that knowledge about jobs helps to explain the personnel function of industry.

The philosophical origins of this approach could be traced to the early writings of Comenius and Rousseau. In the twentieth century, the writings of John Dewey and Alfred North Whitehead have had profound effect. What is now called the vocational education-general education debate was recognized and addressed by them both. Dewey called it the knowing-doing dichotomy, and in his writings showed a particular distaste for any "liberal" education which was devoid of "activity". He believed that "knowing" was informed by "doing," and that the Athenian view of liberal education had run its course. According to Dewey:

> The most direct blow at the traditional separation of doing and knowing and at the traditional prestige of purely intellectual studies... has been given by the progress of experimental science. If this progress has demonstrated anything, it is that...
there is no such thing as genuine knowledge and fruitful understanding except as the offspring of doing. The analysis and rearrangement of facts which is indispensible to the growth of knowledge and power of explanation and right classification cannot be attained purely mentally—just inside the head. Men have to do something to the things when they wish to find out something; they have to alter conditions. (1900, p. 321)

Whitehead, in making a case for the efficacy of "technical studies" in the liberal curriculum, in manner similar to Dewey argued that:

The antithesis between a technical and a liberal education is fallacious. There can be no adequate technical education which is not liberal, and no liberal education which is not technical. (1929, p. 48)

He argued further that:

...we must rise above the exclusive association of learning with book learning. First hand knowledge is the ultimate basis of intellectual life. (1929, p. 51)

Educators in the United States have interpreted the meaning of Dewey and Whitehead as evidence for including a work oriented component of education into the school curriculum as part of the intellectual training of children.

Towers and others have posited a "praxiological" domain of the knowledge universe within which practical studies such as industrial arts could be located (Towers, Lux, & Ray, 1966).

Lux and Ray have advanced the idea that through the study of industrial arts (properly conceived), students would better be able to make labour market decisions, adding rhetorically:
Each year in this country there are nearly a million high school dropouts and more than a million non-college-bound high school graduates. And approximately forty percent of all who enter college drop out before graduation.

What have they had in their background to provide the necessary knowledges and skills to contribute to the growth of the economy and the maintenance of a stable society? In today's rapidly changing culture, the key salable skills are flexibility and adaptability in efficient doing as a citizen, producer, and consumer. An educational program based solely on the formal, descriptive, and prescriptive disciplines will not provide the knowledges and skills necessary for entry into the labor market. On the other hand, a secondary school program geared to occupational practices which may be obsolete within a few years is grossly inefficient.

A program which provides a study of the fundamental principles of practice (praxiology) together with selected practice and a broad theoretical base may meet the challenge of the future. (Lux & Ray, 1970, p. 307)

As can be gleaned from the above excerpt, industrial arts is posited as a rival pedagogical approach to vocational education in preparing youth for the world of work. Lux (1975) argued elsewhere against the notion of an industrial arts--trade and industrial education continuum. DeVore (1970) has also argued in like vein that "...it is necessary to reject the occupational, pre-vocational, and industry bases for the development of industrial arts curriculum and reassert the philosophical base to be general education which is concerned with education and not training; long term goals rather than short term goals (p. 23).

Essentially then, industrial arts could be viewed as a rival hypothesis to the notion that pre-vocational education in the formal
school must very nearly reflect the actual occupation. Its aim is broader than this. It is a general education solution to the problem of gearing people for the world of work and as such could be said to have as its goal the development of industrial technological literacy (Lux, 1978).

Vocational Education—Research
Findings in the United States

Much light has been thrown on the vocational-general education debate by research findings. This is not to say that fundamental issues have been resolved. Indeed, there are some aspects of this debate—such as the effect of vocational education on social order—which may never be adequately answered by research. Research from a human capital perspective has been earlier treated. The focus now is on findings with broader criteria, and more in keeping with some of the stated claims of the vocational educator. Of necessity these studies are essentially follow-up in nature, some cross-sectional, others longitudinal, with emphasis on labour market performance.

Some of the key variables studied in almost every case included:

1. Labour market performance variables such as:
   A. Initial earnings (salaries or wage rates)
   B. Time taken to find first job
   C. Relationship of present job to training
   D. Employment profile (number of jobs held during period under study)
   E. On-the-job training
   F. Unemployment profile

2. Effect of personal characteristics such as:
   A. Race
   B. Sex
3. **Effect of family influences such as:**
   
   A. Socio-economic class  
   B. Father's income  
   C. Father's (and mother's) highest level of schooling  

4. **Attitude variables such as:**
   
   A. Attitude to former school and programme  
   B. Attitude to present job  

5. **School variables which were essentially:**
   
   A. Variance explained by schooling  
   B. Variance explained by curriculum  

6. **Geography— that is— how much did area of residence contribute to job success (finding a job)**

7. **The economy—essentially—what was the unemployment rate.**

The labour market performance of graduates is mixed according to the findings. Some studies (Kaufman et al., 1967; Grasso, 1975; Grasso & Shea, 1979) could find little difference in initial earnings between vocational and non-vocational graduates. Such differences that were found were for the most part statistically insignificant. (It should be stated though that earnings were **consistently** greater for vocational graduates.) Other studies (Eninger, 1968; Li, 1981) found significant differences in initial earnings, in favour of vocational graduates.

There was difference also with respect to the general question whether type of programme made a difference. Nolfi et al (1978), Grasso (1975), Grasso and Shea (1979) did not find any market advantage for any group studied due to curriculum pursued. (The Nolfi study was emphatic about this.) Eninger (1968) found that vocational students held more full time jobs.
There appeared to be some consensus across studies with respect to some variables. It would appear that vocational graduates seemed more satisfied with their jobs than other graduates. Eninger (1968) and Kaufman et al. (1967) were among those who so found.

An ominous finding on which there again appeared to be consensus was that in large measure, vocational graduates seemed to find work not consistent with their training. Among studies so reporting included Eninger (1968), Sommers (1971), Kaufman et al. (1967), and Nolfi et al. (1978).

Another finding or observation of some interest was that narrow skill training may not be necessary (Sommers, 1971).

Other aspects of each of the major studies are now presented in order to provide the contextual framework from which the findings emanated.

Eninger's study involved a stratified sample of 100 schools from throughout the United States, each of which offered three or more trade and industrial (T & I) courses. Stratification was by geography, enrollment and school type. The study was reported in two volumes. Volume One presented findings relating to the classes of 1953, 1958, and 1962, while Volume Two focused mainly on the class of 1962.

Labour market profiles of the graduates were examined, and comparisons were made between vocational and academic students. The general finding was that large numbers of students had moved away from their field of study. However, so long as vocational graduates
remained in their area of training, they consistently out-performed other groups on all of the labour market and attitude variables.

John T. Grasso (1975) worked with a male sample of high school graduates. In this study he attempted to compare vocational and general education graduates on the variables knowledge of occupations, attitudes to the adequacy of job preparation, level of skill, wages, and unemployment experience. A socio-economic index consisting of the weighted average of at least three of five of the following components:

1. Father's level of education,
2. Mother's level of education,
3. Educational level of the oldest sibling,
4. Father's occupation when the respondent was fourteen, and
5. An index of the availability of reading materials in the home.

A scholastic aptitude index consisting of two elements:

1. General Educational Development (GED), a measure of literacy, and
2. Specific Vocational Preparation (SVP), a measure of time needed to perform a task at a certain minimum level.

Among findings were:

1. that there was no truth to the hypothesis that vocational and commercial students possess greater general occupational awareness information than others,
2. that it did not appear that vocational graduates found jobs requiring higher skill levels than did other graduates,
3. that the notion that vocational graduates got better jobs, and that academic graduates were set adrift in the labour market was a myth,
4. that family background was a significant variable,
5. that post-school training was a significant variable, and
6. that most students (80%) expressed a desire for more training.

These two studies could be said to be almost diametrically opposed in their findings.

Sommers et al. (1971) conducted a national follow-up survey of vocational education graduates, using an academic control group. Among other things, they found that just about 25 percent of the vocational graduates got jobs in the fields of their training. Some relatedness was found between socio-economic status of job, relatedness of job and job satisfaction. Many of the vocational graduates sought further education (college).

A general conclusion was that narrow and specific training did not play a useful role.

The study conducted by Nolfi et al. (1978) bears mention because of some rather sobering findings, including the notion that schooling has negligible effects on earnings (p. 123). Other findings included (1) that the variables studied accounted for only 15% of total variance, (2) that participating in on-the-job training, having a
positive attitude and wealthy parents raises income (p. 74), and (3) that academic achievement was the most significant ability attribute determining earnings success. This study found that generally, schooling did not correlate strongly with unemployment or wages earned. Neither did programme type make any difference.

The most recent of these studies, Li (1981) has found, contrary to previously held views (Mincer, 1974; Taussig, 1967; Corazzini, 1968), that initial earnings differences hold over time. -Li found that "...contrary to the generalizations from previous studies, the initial financial advantages acquired by vocational students were not eroded in the process of time, at least not during the first ten years" (Li, 1981, p. 73).

The contrary nature of the findings reported could be due to a number of reasons, chief of which may well be the difficulties inherent in trying to measure the true effects of any educational programme. The fact that many studies have failed to establish labour market advantages in favour of vocational graduates however, is disturbing. Also worrisome, is the somewhat consistent finding that many students find employment almost totally unrelated to the special training they received.

In an underdeveloped setting where opportunities for recycling into the educational system are severely limited this extremely dysfunctional latter finding would not only constitute a waste of public funds, but more importantly a severe dilemma for the students so displaced.
Investment in vocational education may best be postponed, if it disrupts rather than enlightens the career paths of those who are supposed to be beneficiaries of such investment.

Are Students Ready?  
Focus on Vocational Maturity

A central question often dwelt upon by those who are discomforted by the system of enforced vocational choice in the Trinidad and Tobago comprehensive school is whether students are ready for such choice at the age of 14. There is the intuitive feeling that this practice is fundamentally unsound. There are signs that these concerns are being felt even at the very highest levels of the Ministry of Education as evidenced by the terms of reference issued a Cabinet appointed committee on technical-vocational education. The committee was asked, among other things, to consider:

1. the preparedness of students to benefit from technical/vocational programmes;
2. the maturity of students to make career choices at the age of fourteen (14) (1982).

In this section of the review the focus will be on what psychologists refer to generally as "vocational development," or "vocational readiness." Particular attention will be focused on the construct known as "vocational maturity." It is an attempt to point to the direction in which the local concerns should be headed.

* Researcher's emphasis
On the American scene, Eli Ginzberg unsettled vocational counselors in the 1950's by claiming that they did not have an adequate theory upon which to conduct professional work in their field. Along with his associates (Ginzberg et al., 1951) he proceeded to outline a tentative theory of occupational choice which though not uniquely original (Super, 1953) served the purpose of putting order to subsequent scholarly work in vocational development. Ginzberg posited that using known developmental stages as a crude frame of reference it was possible to identify three periods of choice determination in the young namely (1) a period of fantasy choice (between ages 6 and 11) and coinciding with the latency period, (2) a period of tentative choice coinciding roughly with early and late adolescence (between 11 and 19), and (3) a period of realistic choice coinciding with early adulthood, at the transition between school and work.

It was contended that because the period of tentative choices encompassed the whole of adolescence, a period known to be characterized by "libidinal pressures for immediate instinctual gratification," by a struggle to become emotionally free from parental dictates, and by resolution of other emotional conflicts rooted in childhood:

... only when the period of conflict and tension comes to an end at about the age of seventeen and eighteen, when the individual has succeeded in channeling anew the manifold emotional pressures upon him, that he finally acquires a solid foundation with which to cope with the problems of adulthood. At this point he is ready to relinquish his earlier tentativeness and finally face the fact that he must make a definitive choice. (Ginzberg et al., p. 69)
Occupational choice was described as

...a process; the process is largely irreversible; compromise is an essential aspect of every choice. (p. 186)

In a subsequent publication, Ginzberg (1952) reminded the profession of psychology that the theory as presented was tentative, and that it needed to be tested and validated among different populations.

Psychologists did take up this challenge. Super (1953), pointing to alleged shortcomings in the theory as proposed, posited his own "theory of vocational development" based on a dozen tenets, one of which (similar to Ginzberg) was "life stages."

Further attempting to improve upon the formulation of Ginzberg and his colleagues, Super (1955) proposed the construct of "vocational maturity" as a logical derivative of vocational development. "Vocational maturity" was a measure of "...the degree of development, the place reached on the continuum of vocational development..." (p. 153). A vocational maturity quotient was envisaged consisting of a ratio of vocational maturity to chronological age. What Super was proposing was that it might be possible to assess (like I.Q.) the VMQ of each individual based on normative data for his chronological age.

Further refinement of the construct followed. Super and his colleagues (1957) in positing a "framework for research" in vocational development recognized five life stages, namely:

1. Growth (Birth - 14)
2. Exploration (Age 15 - 24)
3. Establishment (Age 25 - 44)
4. Maintenance (Age 45 - 64)
5. Decline (Age 65 and above). (p. 40)
The exploration stage (a stage of interest to the present study) was elaborated upon in a manner much in keeping with the rationale of the Ginzberg et al. (1951) theory, the early stage of this period being characterized as one of fantasy and tentativeness.

An important feature of this "framework" was that the construct "vocational maturity" was now deemed to be definable in two ways thus:

Vocational maturity I focuses on life stages and is indicated by the actual life stage of an individual in relation to his expected life stage (based on his chronological age). Vocational maturity II focuses on developmental tasks and is represented by the behavior of the individual in handling the developmental tasks with which he is actually coping. (p. 132)

One of the co-authors of this framework later saw the dual definition of "vocational maturity" as an obstacle (Crites, 1961), and called for "a reduction of the definitions linguistically and numerically" as a prelude to further research. He proposed instead a definition inclusive of behavior and tasks from which it was possible to extract two independent measurable variables, namely, degree of vocational development and rate of vocational developments both hinting at the need for normative data.

The review to this point has focused on early attempts at theory building—attempts to come to grips with the dimensions of vocational development. The work of the foremost theory builders has been highlighted, namely Ginzberg, Super and Crites. The next phase of this section focuses on relevant research.
The framework posited by Super et al. (1957) was given its first major research test with the study of the vocational maturity of ninth grade boys from Middletown, New York (Super & Overstreet, 1960). A comparison of this data with subsequent measurements of the same group in the twelfth grade was also later reported (Jordaan & Heyde, 1979).

It is instructive to present efforts that the first authors saw fit early in the report on their study to editorialize on the school practice of forced curricular choice at the end of junior high and in high schools. Noting that such school decisions tend to "influence the student's subsequent vocational career by limiting future educational and vocational choices," they argued that if the vocational maturity of a student could be ascertained, especially if "normative data indicating the vocational behaviour typical at different life stages were available" (Super & Overstreet, 1960, p. 10).

The Study of 9th Grade Boys

Scope of the Study

The stated scope of the study was "to observe the vocational behavior of a group from relatively early in the vocational choice making process until a time when the careers of many in the groups should be stabilized. . ." (p. 14).

Indices of Vocational Maturity

Because of the pioneering nature of this study, it was necessary to isolate mutually exclusive indices of the vocational maturity
construct. Twenty preliminary indices, posited a priori, were grouped into five "dimensions," namely:

1. orientation to vocational choice,
2. information and planning about the preferred occupation,
3. consistency of vocational preferences,
4. crystallization of traits, and
5. wisdom of vocational preference.

Of the twenty original indices, six appeared to be "internally consistent and positively interrelated" after analysis. Five of these appeared to cluster around the dimension "orientation to choice tasks."

These five indices, namely:

1. concern with choice,
2. acceptance of responsibility,
3. specificity of information,
4. specificity of planning, and
5. extent of planning.

generated 27 variables which were factor analyzed.

Five factors, accounting for only 38% were extracted, these were:

Factor 1 - Planning Orientation
Factor 2 - Independence of work experience
Factor 3 - The long view ahead
Factor 4 - The short view ahead
Factor 5 - The intermediate view ahead
Factor 2 appeared to be orthogonal, and was not considered as being a characteristic of the construct vocational maturity. Of the four other factors, "Planning Orientation" emerged dominant across the five indices.

In addition to locating indices and their factor structure, the researchers also identified correlates of vocational maturity, including socio-economic status, and intelligence. Variables associated with vocational maturity, e.g. Biosocial characteristics were also identified.

All subjects in this study were subjected to a battery of tests, and a schedule of interviews.

**General Findings**

Some of the more important findings of this study regarding the vocational maturity of 9th grade boys were:

1. Concern with vocational choice was found to be rather general.

2. The boys in the study had substantial specific information about occupations, but had done little planning about getting needed information for making a choice at the high school level.

3. Slightly less than 50% of the boys wished to enter occupations which seemed to call for more than their measured intelligence level.

4. About half of the boys had vocational preferences which did not correlate with their measured interests.
With respect to the general question of "Wisdom of Choice," the researchers on the basis of overall findings concluded that:

Apparently the typical ninth grade boy has not yet reached a stage at which wisdom of vocational preference can be expected, according to the measures of wisdom used in this study. (p. 147)

On the overall question of the implications of findings for education and guidance, they concluded that:

...the data...suggest that a substantial number of boys are not ready, in the ninth grade, to decide on direction of endeavor, or, specifically, on a future occupation. This early adolescent stage is one, not of making and implementing a vocational choice, but rather of developing planfulness, of preparing to make a series of educational and occupational decisions. (p. 152)

As reported earlier, the group of ninth graders in this study was followed up in the 12th grade (Jordaan & Heyde, 1979), and even later in life, the study beginning in 1951, and ending in 1973. Of interest here is the stability of the responses of the boys across grades.

A general finding was that approximately two-thirds of all subjects had 12th grade vocational preferences which were at variance with those expressed in the 9th grade. A further finding was that at both grade levels students seemed to be considering several fields of work, some not related by type or by level. Across grades, the boys expressed very little confidence in their stated commitments. Five of ten 9th graders and four of ten at the 12th grade had occupational interests not in keeping with their measured interests. Approximately half of all the boys seemed to aspire to goals which
were at variance with their socio-economic resources, no observable differences being noted between ninth and twelfth graders.

These findings of drastic discrepancies in vocational interests when measured longitudinally have been corroborated elsewhere (Kohout & Rothney, 1964; Flanagan & Cooley, 1965). The former researchers in an experimental study, found that such discrepancies persisted in spite of special counseling. Both experimental (84%) and control (88.7%) groups were "Inconsistent" in their choice of occupational category when measured in high school and at periods 2-1/2, 5, and 10 years after graduating from high school.

Flanagan and Cooley in their massive "Project Talent" study (N = 400,000) found significant changes in vocational interest, one year after high school, in both boys and girls. They were impressed that career choices made at the high school level were at best tenuous, and proposed a compromise which will allow students to select a broad field, in order not to lose time in preparing for a career.

This section of the review began by acknowledging that many concerned educators in Trinidad and Tobago have expressed reservations informally about forced choice in our schools. The writer has participated in several of these discussions and debates on this issue and has himself been distressed by the meaning of forced choice. While the present study was not seeking to assess the vocational maturity of the subjects, there was need to have a reasonably full
understanding of the psychological implications of a decision at age 14. A purely economic assessment of the status of graduates would mask these deeper underlying phenomena.

It would appear, based on the weight of the theory and the related research reviewed, that there is questionable psychological basis for forced vocational choice during the school years. Any choice made during these years would have to be considered as unstable. However, the research reported was set in a different cultural context, and perhaps some of the findings may not hold in Trinidad and Tobago. This concern is addressed more closely in the ensuing review of a study of the vocational maturity of Jamaican high school students. At least the Jamaican situation would be more instructive.

In this study, Mahy (1980) positing culture as a variable, sought to examine the nature of the vocational maturity of new secondary school students in Jamaica. The sample consisted of 1074 9th and 11th graders from 18 randomly selected classrooms in nine schools. The independent variables of interest were grade level, sex and geographic location, with the possibility of some interaction.

Factorial analysis of variance showed two of the main effects to be significant at the .05 level namely sex and grade level. Further analysis, specifically a computation of the Omega squared statistic, showed sex to be of no practical significance as a variable. Grade level was the only variable across which vocational maturity could be expected to differ. This was of course consistent with mainstream research findings. The researcher however, wanting to see whether the
nature of the change across grade level was in any way uniquely 
Jamaican proceeded to factor analyze student responses to 50 items on 
the Crites Attitude Scale.

Seven interpretable factors emerged, explaining 52% of total variance. Since the Crites scale could normally be expected to generate five factors, there appeared to be a cultural variant at work. Also, the researcher observed that when the seven factor solutions (namely vocational indecision, vocational awareness, parental influence, work as a means to income, vocational rigidity, vocational altruism, and freedom to do what I want to do) were compared with the Crites factors, there was generally marked dissimilarity. These differences allowed the conclusion that:

On the whole, the seven factors which were identified by the Jamaicans seemed to give a deeper insight into the pattern of vocational development or vocational attitude maturity in the context of their culture. (Mahy, p. 58)

Of crucial interest to the present study was the nature of the observed differences between 9th and 11th graders, especially with the vocational maturity of 9th graders (the equivalent of third formers in Trinidad and Tobago). The results of the factor analysis forced the conclusion that 11th grade students are more vocationally mature than their 9th grade counterparts (p. 63). Chi square analysis identified 22 of 50 items on the Crites scale on which the grade level responses were significantly dissimilar. With respect to the point in time vocational maturity of 9th graders, the following passage was instructive:
Ninth grade students showed a greater degree of indecision in their vocational attitudes; their lack of vocational awareness was evident in that they did not know how to get into jobs or what courses to take in school. They manifested more rigidity in vocational choice and were more dependent on their parent's advice on a vocation than the older group of students. The chance factor was more evident in this age group, and so was a general lack of vocational readiness and preoccupation about regarding work mainly from the point of view of the effort involved. (Mahy, p. 78)

It is clear that culture changes the nature of the indices of vocational maturity, different social and economic factors causing young citizens to adopt different attitudes towards work. Rampant unemployment, for example, would drastically alter the idealism of the young, work in this context becoming a matter of survival, with choice being a luxury.

But it is clear that fundamentally the psychological make up of the Jamaican child seems the same as that acknowledged by vocational maturity theorists in the developed setting.

Of course, it would be foolhardy to generalize throughout the Caribbean from the findings of a single study, especially since it was cross-sectional in nature and thus not having the same power as if it were longitudinal, each subject then being his own control. The clear need therefore is for relevant research on the local scene.

In the meantime, the discomforting weight of the theoretical and research evidence tilts the debate in favour of those who advocate postponement of choice. There appears to be strong evidence for feeling that our planners erred in opting for a system of forced choice,
In order to be able to adequately interpret data reflecting the occupational status of the subjects of this study it was necessary to be able to make a priori determinations as to the extent factors other than schooling were operating. What, for example, was the effect of socio-economic status and its various constituents? It was felt that the senior comprehensive school graduate would most likely have come from the lower or lower-middle class, given public knowledge that the children of the middle class and above tend to enter the prestige grammar school, and hence SES might be a factor.

This section of the review of literature examines relevant theory and research on non-school variables and how they could be expected to behave when the dependent variable in question is some measure of occupational status. It is necessary to borrow extensively here from the discipline of sociology.

The acknowledged classic study in the field of sociology in which correlates of post-school occupational success were examined was The American Occupational Structure (Blau & Duncan, 1967). Using the 1962 occupational status of respondents as the dependent variables, the researchers, a priori, utilized a five variable path model to encapsulate their hypothesis. The model explained 33% of total variance, with zero-order correlations with occupational success as follows:
1. Father's education - .32
2. Father's occupation - .40
3. Respondent's education - .60
4. First job - .54

Education was shown to represent the strongest direct effect on occupational achievement with a path coefficient of .39. The authors observed that:

A man's social origins exert a considerable influence on his chances of occupational success, but his own training and early experience exert a more pronounced influence on his success chances. (p. 402)

It is noteworthy here to point to the way in which these empirical findings seemed to validate an early contention of Super (1957), that:

It is only through the mediation of the school and of employment services that young people actually have opportunities to find outlets which are appropriate to their abilities and interests when these are not like those of their parental social status group. (p. 103)

The present study focuses on the early labour market performance of senior comprehensive graduates. How much of this early performance could be attributed to the school? How much to social class? How much to the peculiar nature of first jobs? Blau and Duncan note that some occupations are "distinctive early occupations," meaning that the number of men who hold them as first jobs tend to exceed both the number of fathers who held these jobs, and the number of men who worked at them later in their careers. These jobs tended to be at the lower white-collar and blue-collar levels. They reported also,
that due to "cross-generational solidarity," men from all origins showed reluctance to move out of the occupational group they had entered. This latter observation appeared to corroborate an earlier research finding (Hollingshead, 1949) that parental social status group is a severe constraint on job seeking efforts. Super (1959, p. 103) had also made a similar observation. He noted:

Since most jobs are obtained through contacts and through direct application, most beginning workers are limited to jobs at their parental societal level. This is one reason why fathers and sons tend to have jobs which place them at the same level: the job getting resources of the son are limited to the father, relatives, and neighbors, all of whom tend to be at the same occupational level. The vocational plans and first jobs of American high school seniors resemble the occupations of the fathers more closely than they do the occupations appropriate to the boys' intelligence.

A further finding of Blau and Duncan of great import to the present study was that men who began careers in white-collar jobs experienced a greater degree of "net intergenerational mobility" than their blue-collar counterparts. According to these researchers,

The collectivities of men who start work on various manual levels experience little mobility, notwithstanding much movement on the part of their individual members in contrast to the collectivities of men starting in white-collar jobs. . . (p. 56)

The poignancy of this Blau and Duncan statement is readily apparent. If social class serves to depress the value of education for the blue-collar child, committing him irreversibly to the lot of his kin, then wouldn't a blue-collar curriculum in the school serve to further ensure that he remains locked in the social class of his kin?
Another way of putting the question, is why have blue-collar, manual type vocational occupations in schools at all, if social class already makes these assignments in the market place? The only apparent purpose vocational training appears to serve, given social class, is in making the selection process easier for the industrialist. The point has been hinted in earlier discussions on screening.

The basic five variable model has undergone several refinements since the landmark study. One refinement was the addition of social-psychological variables, notably intelligence and motivation (Duncan, Featherman, Duncan, 1968; Sewell, Haller, Portes, 1969). The latter group in addition included the new variable "significant others influence." This variable was to reflect the extent to which supportive teachers, parents, etc. had influence on student occupational success. This version of the model explained 34% of total variance in occupational attainment, not much of an improvement on the original model.

Sewell, Haller and Ohlendorf (1970) in a replication study aimed at determining the generalizability of the earlier model (Sewell et al., 1969) found it accounting for 40% of the variance in early occupational status and 57% of the variance in educational attainment. Antecedent variables were found to be more effective in accounting for educational attainment than for occupational status. Educational attainment alone accounted for 38% of the variance in occupational status. If this path model could be shown to hold in the Trinidad and Tobago context, it would mean that the school one attends is to a large degree determined at birth.
In still further refinements, Duncan, Featherman, and Duncan (1972) presented an elaboration of their earlier work (1968) exploring more fully the social-psychological variables. A notable conclusion of this work was that:

The occupational level at which a man begins his career is substantially predictive of the level at which he will be found at any age between 25 and 64. (p. 252)

Is this the case in Trinidad? We cannot be sure, without the research evidence, but the notion is indeed chilling. We may well be using education to order the lives of people irreversibly. Should the school be so intrusive? So actively involved in the process of social stratification?

If social class affects occupational attainment, it obviously affects income. Two studies which have addressed this relationship have found significant correlation. Jencks (1972) found that family background explains 15% of variation in income in America. Sewell and Hauser (1975) found that ability factors, schooling and occupational status mediated the effect of family background on income.

In the single study found in which the relationships discussed above were explored in the Trinidad and Tobago situation, Baksh (1975) used a causal six-variable causal model to explore the correlates of student educational expectation. Of the independent variables examined, namely: socio-economic status, family type, academic performance, parental encouragement, and peer influence, only parental encouragement appeared promising, showing a zero order correlation of .465 with the dependent variable (student educational expectation).
The total model explained 21.9% of variance, pointing to weaknesses in its structure. As Baksh noted "a substantial number of the differences ("variation") in educational plans among the Trinidadian students is due to variables not included in the model" (p. 97).

As stated earlier, the purpose of this section of the review was to search for plausible fixed independent variables which may have been active even before the students in the study would have made a curriculum choice in the schools. Identification of an understanding of the way in which these variables could be expected to have effect would help interpretation of findings. A more complete explanation of student post-school occupational status becomes possible.

The review has shown that SES in its diverse elements such as father's occupation, father's educational level, intelligence, etc. all interplay with schooling to affect the status of the first post-high school job. These variables, combined with the status of the first job, to confer later occupational status, usually within a class stratum.

**Synthesis**

The review of literature has attempted to span the range of concerns surrounding the problem of this study. We began by looking at the broad issue of education and development. Education was seen to have spread phenomenally worldwide during the 1950's and 1960's especially in the developing world. Research, focusing mainly on the
theories of "modernization" and "dependency" has been in progress, with attempts being made to explore whether some of the promises of expanded education, e.g. economic growth and social equality have been realized.

Human capital theory and research were reviewed, with concern being shown for attempts to fit the rate of return model in the third world context. The skepticism of scholars such as Balogh and W. Arthur Lewis in this respect was presented. The apparent demise of this technique as suggested by Blaug was also discussed. Vocational education was shown to be a special application of the human capital approach, with the work of Foster being highlighted. Caveats attending Foster's work were highlighted.

The review also focused on the World Bank Sector Policy Paper to present insight into Bank lending policy and philosophy.

Vocational education in the United States was looked at from two perspectives: (1) rate of return studies, and (2) follow-up studies (non-economic criteria). The issues were shown to be not much different than those addressed in the developing setting. There was for example a chasm between general and vocational education.

The philosophical issue of whether there was merit in separating vocational from general education was addressed. Some authors, e.g. Timar and Blaug thought this to be a particularly disagreeable factor in third world conceptions of education.

The question of the vocational maturity of early adolescents was reviewed, with focus on the work of Super, Crites, Mahy and others.
The weight of the evidence here seemed to be against forced choice at the early age of fourteen (14).

Finally, the review focused on non-school variables such as socio-economic status (father's occupation, father's education, etc.), intelligence, parental influence, etc. on student occupational status.

As we move towards an analysis of the data relevant to this study, the background presented by this review of literature will assist immensely in shaping our insight and perception. Trinidad and Tobago is but one other case of a developing country attempting to improve its stock of skilled people with the ultimate aim being increased industrial productivity. The origin of the problem was colonial neglect which bred "technological illiteracy." The signs seem to point toward failure of the vocational effort toward these ends, but only the data will be able to tell for certain.
Overview

In this chapter the focus will be on activities surrounding the conception, design and execution of the study. Along with expected core features will be found an evaluation framework which served as a point of departure for the methodology, and a brief discourse on the relative merits of practical versus theoretic research. The latter feature served to add needed balance in the approach to data analysis—a device to ensure a reasonable blend of science and common sense.

The chapter is organized as follows:

1. Toward a framework for evaluating vocational education.
2. The design.
3. The questionnaire—design and validation.
4. Selecting the sample.
5. Conducting the survey—project concern.
6. Data analysis procedures—identification of variables.
7. A word on practical versus—theoretic research.

Toward a Framework for Evaluating Vocational Education in Trinidad and Tobago

This study seeks to evaluate technical—vocational education as it exists in the senior comprehensive schools of Trinidad and Tobago.
In the sense that it is the evaluation of a programme it could be considered evaluative research. Before any attempt is made to establish the framework within which vocational education might best be evaluated it is necessary to describe in broad terms the nature of evaluation, to distinguish the major differences between "basic research" and "evaluative research," and further to discuss some related issues.

It seems apt to begin with the question "why do we evaluate?". There is a school of thought which suggests that the purpose of evaluation is to determine the extent to which programme objectives (goals) are being met (Tyler, 1942). Another view is that evaluation is the collection and use of information for decision making purposes (Cronbach, 1963; Stufflebeam, 1974). Yet another position is that the process of evaluation is not value free, that it rightly must involve the making of judgements about programme worth (Suchman, 1967; Scriven, 1973; Stake, 1973).

The need for proper evaluation has spawned the development of a relatively new field of inquiry called "evaluation" research, or "evaluative" research. This line of inquiry is said by Cronbach (1980) to be ". . . the liveliest frontier of American social science." It is the result of heavy government involvement in the financing of social programmes such as "Head Start," and the concern of social scientists that the judgement of the worth or effects of such programmes be informed by empirical data. An early call for such an approach was made by Campbell (1969). Campbell proposed an
experimental approach to social reform rather than an approach in which politicians became so ideologically committed to programme success that they could not tolerate learning of failure.

It has become necessary to make distinctions between an approach to inquiry which is called "basic" research, and one called "evaluative" research. Suchman (1967) has defined evaluative research as "...utilization of scientific research methods and techniques for the purpose of making an evaluation" (p. 7). He noted that whereas basic research is concerned primarily with the search for knowledge and with hypothesis testing, evaluative research is concerned with the extent to which a given programme achieves some desired result.

Consistent with the applied nature of evaluative research is the belief that such efforts are useless if results go unused. Carol Weiss (1966) in her landmark paper (reprinted in Weiss, 1972) stated flatly that:

> The basic rationale for evaluation is that it provides information for action. Its primary justification is that it contributes to the rationalization of decision-making. Although it can serve such other functions as knowledge building and theory-testing, unless it gains serious hearing when programme decisions are made, it fails in its major purpose.* (p. 319)

Suchman in similar vein, pointing to functional differences between basic and evaluative research, argued that "the 'success' of an evaluation project will be largely dependent on its usefulness to the administrator in improving services" (1967, p. 21). This, he observed, was a fundamental difficulty of this type of research.

* Researcher's emphasis
But basic and evaluative research are not discrete entities. There are possibilities for procedural unity. Suchman's compromise was that evaluative research could constitute a blending of scientific and administrative criteria, the former aimed at enhancing the degree of confidence placed in such studies, and the latter catering to the demand that studies be useful.

Discussions surrounding methodology or intent still do not necessarily imply utilization. The researcher and the administrator may have divergent views of what constitutes usefulness. Useful data might prove an embarrassment to the administrator, for example. So the evaluative researcher cannot naively cloak himself completely in the mantle of objectivity—as though context is not important. He must seek to understand this context or wallow in futility. Some have referred to this as the political dimension.

The evaluative researcher operates in a politically charged context. Weiss (1970, 1975) has addressed this issue at length. In the earlier of these offerings she wrote:

> Evaluation has always had explicitly political overtones. It is designed to yield conclusions about the worth of programs and, in so doing, is intended to affect the allocation of resources. The rationale of evaluation research is that it provides evidence on which to base decisions about maintaining, institutionalizing, and expanding successful programs and modifying and abandoning unsuccessful ones.

Others such as Brickell (1978), have also drawn attention to the ubiquity of external political factors, and the need for bridging the gap between researcher and administrator given politics.
The concern for utilization, perhaps because of these pressing real world influences, appears to have become more dominant than that for scientific soundness (Weiss, 1975). This concern has prompted Edwards et al. (1975) to posit that "the central issue of evaluation research... is the requirement for a usable conceptual framework and methodology that links inferences about states of the world, the values of decision makers, and decisions," and to offer a model so based. It has also prompted a plethora of studies and papers seeking to understand the nature of the tenuous link between evaluative research findings and usage (see Argawala Rodgers, 1977; Patton, 1978; Connolly et al., 1980; Cook et al., 1980; Leviton & Hughes, 1981).

As distasteful as the notion of utility might be to the purist, the evidence is such that the work of the evaluative researcher is not quite finished once the report is written. Dispassionate probing oblivious to context leads to futility. This study, set as it was in the politically charged context of educational administration in Trinidad and Tobago, proceeded with the nature of this context in mind.

**Evaluation Frameworks**

In the preceding section of the framework, an attempt was made to highlight the nature of fundamental philosophical differences between basic and evaluative research—differences which must have bearing on methodology. Now, the focus shifts to the nature and conduct of evaluations, with focus on exemplars and models. The ideas
of Tyler, Cronbach, Scriven, Suchman, Stufflebeam et al., and Stake are reviewed in turn.

Ralph W. Tyler

Tyler's primary contribution to evaluation theory was a landmark article (1942) reported in the *Journal of Educational Research*. This paper focused on purposes, underlying assumptions, and the conduct (procedures) of evaluation.

Six purposes of evaluation were posited, namely:

1. "...to make a periodic check on the effectiveness of the educational institution," (p. 492)
2. "...to validate the hypotheses upon which the educational institution operates," (p. 492)
3. "...to provide information basic to guidance of individual students," (p. 493)
4. "...to provide a certain psychological security to the school...staff, to the students, and to parents," (p. 493)
5. "...to provide a sound basis for public relations" (p. 494), and
6. "...to help both teachers and pupils to clarify their purposes and to see more correctly the directions in which they are moving." (p. 494)

Among the varied assumptions suggested by Tyler was that evaluation sought to check the extent to which stated programme objectives were actually being realized. Given this assumption, a necessary procedural step was for a school to formulate statements of objectives. There was to be constant revision of these objectives—recurring evaluation.
Cronbach's 1963 article entitled "Course Improvement Through Evaluation" is considered one of the classics in the field of educational evaluation. In this paper evaluation was defined as "...the collection and use of information to make decisions about an educational program" (p. 672). Cronbach argued that evaluation should go a bit further than checking effectiveness through matching goals with outcomes. According to him, "...the greatest service evaluation can perform is to identify aspects of the course where revision is desirable" (p. 675). Cronbach rejected a unidirectional approach to evaluation calling instead for multiple measures of worth, and for multiple approaches including process studies, proficiency and attitude studies, and follow-up studies. These ideas (process, and proficiency and attitude respectively) seem to have anticipated Scriven's formative and summative evaluations. "The follow-up study" he argued, "comes closest to observing ultimate educational contributions..." but added that the time differential between the teaching of the particular course and actual follow-up was a limitation.

The work of Michael Scriven pervades discussion of educational evaluation in the United States. Perhaps his best known work in this regard is his Methodology of Evaluation in which he distinguished
between formative evaluation and summative evaluation (Scriven, 1966). Formative evaluation as posited was essentially process evaluation, while summative evaluation focused on product. The one was concerned with the individual parts of programmes as they were put in place, while the other checked whether the sum of the parts could be justified.

In a later work, Scriven proposed the somewhat provocative idea of Goal-Free-Evaluation (Scriven, 1974). He explained that consideration of goals prior to making an evaluation may well be a confounding step. Goal-free-evaluation allowed "the evaluation of actual effects" (p. 35). Scriven saw this as being crucial in terms of describing unintended effects, perhaps believing that such information allowed a much broader understanding of likely returns to a given programme (Scriven, 1974).

Suchman's "Categories of Evaluation"

Edward A. Suchman, in a significant work (1969) (cited earlier), posited five "categories of criteria" against which a programme could be evaluated. These were (1) Effort, (2) Performance, (3) Adequacy of Performance, (4) Efficiency, and (5) Process. Effort in this model was a measure of "the quantity and quality of activity that takes place. . .regardless of output." Performance evaluation measured the results of effort rather than the effort itself." It required a clear statement of objectives. Adequacy of performance matched the extent to which performance was consistent with total need.
Efficiency was concerned with the performance of a programme relative to alternative paths "...in terms of costs--in money, time, personnel and public convenience." Process evaluation analyzed the reasons why a programme produced the results it did (Suchman, 1967, p. 61).

Suchman further classified the "effort" and "performance" segments of this model as being "evaluative." The "adequacy of performance" and "efficiency" criteria he deemed "administrative," and the "process" component he deemed "research."

The process component was perceived to add explanatory power to the overall evaluation. It was further divided into four classes focusing on (1) programme attitudes, (2) population attributes, (3) programme situational context, and (4) programme effects, each of which needed specification. Cognizant of the fact that judgements are typically based on an assessment of effects, a systematic way of specifying effects was presented as follows:

1. Unitary or multiple effects
2. Unintentional or side effects
3. Duration of effects
4. Type of effect
   A. Cognitive
   B. Attitudinal
   C. Behavioral. (Suchman, 1967, p. 67)

The CIPP Model (Stufflebeam et al.)

This model (CIPP or Context, Input, Process, Product) of educational evaluation was proposed by Stufflebeam et al. (1971). The authors defined educational evaluation as:
A most striking feature of this proposed model was the ubiquity of evaluation. Context evaluation seemed to be concerned with the very nature of programme objectives. It was intended to set "...the boundaries of the system to be evaluated," (p. 218) and then to describe and analyze it. Input evaluation was intended to provide information leading to the making of allocative decision. Process evaluation provided an on-going stream of information as needed during the life of the programme. Product evaluation focused on "attainments" through comparison with pre-stated criteria. It could be conducted during the course of a programme.

If there is any flaw in such a model it may well be that the evaluation becomes almost indistinguishable from the other management activities inherent in a programme. The evaluator or evaluating arm of the programme may be too close to the programme to make objective judgements. However, the notion of thinking about evaluation even at the planning stages of a programme, and having this an on-going affair is not without merit.

Robert E. Stake

Stake's landmark work (1967) followed, and was informed by the works of Cronbach and Scriven. In it, support was given to Scriven's idea of evaluation as judgement, as well as description.
Stake argued further that in order to evaluate, educators needed three types of data, namely antecedent, transaction, and outcome. Antecedent data would provide a contextual base, describing conditions prior to enactment of the programme. Transactions sought to describe process, and outcomes were described as "the consequences of education--immediate and long-range, cognitive and conative, personal and community wide."

These categories of data were to be cross-referenced with the judgemental and descriptive outcomes of evaluation in a comprehensive matrix.

**Synthesis**

The models described all sought to present a disciplined way of performing what could otherwise be a perplexing task. But programme evaluation is still not a clear-cut activity, and each model presented might be deficient when a global approach to evaluation is taken. There would be times when we need to know what the goals are and times when we do not. Some situations may call for description while others may require judgement. Some situations may demand an efficiency measure where others do not. Successful evaluation will call for a synthesis, each approach acting in concert, soloing as the situation dictates. But while there are some differences in the way evaluation is perceived by the authors of the works reviewed, certain anchoring ideas emerge which need to be identified with a view to possible utilization in the building of an evaluative framework suitable for assessing vocational education.
Some of these components include:

1. Evaluation should take off from programme objectives (Tyler, 1942).

2. It should be an ongoing process (Tyler, 1942).

3. Evaluation should be concerned with the situational context (Suchman, 1967; Stufflebeam et al., 1971).

4. Evaluation should be concerned with inputs including antecedent attributes (Suchman, 1967; Stufflebeam et al., 1971; Stake, 1967).

5. Evaluation should be concerned with organismic or process attributes (Cronbach, 1963; Suchman, 1967; Stufflebeam et al., 1971; Scriven, 1966, & Stake, 1967).

6. Evaluation should include an efficiency measure (Suchman, 1967).

7. Unintended outcomes should be chronicled (Scriven, 1966; Suchman, 1967).

8. Evaluation should be a judgemental task. The worth or value of a programme at each stage should be judged (Suchman, 1967; Scriven, 1967; Stake, 1967).

9. The follow-up study is a useful evaluative tool (Cronbach, 1963; Suchman, 1967).
Evaluating Vocational Education

In keeping with what appears to be mainstream thought, the position taken in this study is that vocational education can perhaps best be evaluated within a framework reflecting multiple criteria. While the major criterion has to be the utilitarian end—whether the trainee found employment in the occupation for which he or she was trained—attention should be paid to whether other less costly ways could not be found to achieve the same ends, e.g. on-the-job training. Also, information from employers need to be blended with follow-up information from graduate trainees. There may also be need to determine just how long it takes (and at what cost both to the school system and in terms of productivity lost in industry) to convert a young trainee into a full-fledged worker.

Some are in agreement with the need for a broader evaluation framework, and have called for the inclusion of diverse measures more in keeping with a broader definition of vocational education (Lecht, 1974; Li, 1981; Grasso, 1979). Lecht has said that vocational education evaluation should be concerned with both "educational" and "manpower" outcomes. Grasso has suggested looking at qualitative variables such as "self-esteem" and self-help propensities.

The attempt by Li (1981) at devising a paradigm geared towards a synthesis of outcomes is noteworthy. Li, arguing that "vocational education could serve its major function even though cost-benefit analysis may turn out negative results" (Li, 1981, p. 23), used a model aimed at measuring three major attributes namely Processes of
learning, Returns to trainees and Impact on Society. This model seemed to satisfy Lecht's call for a blend of educational and manpower measures.

The call for a synthesis of evaluation approaches does not diminish the potential value of each single approach in providing needed information. Rather, it is based on the notion that before one can make a case for or against vocational education a comprehensive knowledge base comprised of the sum total of multiple measures of effect must be established. In addition to cost-benefit analysis of programmes or follow-up of graduates there would be the need for other evaluative techniques such as learner assessment, employer surveys, consultative team reports, and evaluation of education and training personnel (Wentling & Lawson, 1975). Each of these evaluative approaches could fit under the umbrella of a comprehensive evaluative research strategy.

A strategy of evaluative research might be a feature of vocational education programmes if not only because of the high costs of such programmes, certainly because of the questionable educational (and indeed labour market) advantages to be derived from narrow skill training. Questions which such research could address with the individual in focus include:

1. Is this programme consistent with the student's interests, perceived needs, and attributes?
2. Is this programme providing necessary general education skills?
3. Is this programme related to the real world of work?
4. Can the student apply the skills he or she has learned across a broad spectrum of occupations?
5. Does participation in this programme confer upon each student a clear labour market advantage?
6. Does this programme teach citizenship?
7. Does this programme contribute to the spirit of self-help?
8. Does this programme allow further educational opportunities?
9. How do students feel:
   A. about the relative status of their programme vis-a-vis alternative programmes, and
   B. about their social status vis-a-vis that of students who pursue other programmes.

With respect to the society, it seems reasonable that an evaluative research framework should be concerned with the following questions.

1. Does this programme add to the overall level of literacy in the society?
2. Is this programme cost effective, or can we achieve the same ends utilizing less time, money and talent?
3. Does this programme contribute to national economic development?
4. Does this programme assist in relieving unemployment, and related problems such as juvenile delinquency?
The Follow-Up Study

The follow-up study has distinct merits as a method of evaluating educational programmes. In the case of vocational education it is uniquely suited in research which tests hypotheses pertaining to relationships between training on the one hand, and employment and earnings on the other (Wentling & Lawson, 1975; Paul, 1975; McKinney, 1978). It is also the method through which data for cost benefit analyses can be collected. Paul (1975) has posited that follow-ups are useful when measuring both process and product outcomes of a programme.

But there are shortcomings with this method, primarily centered around the fact that it is cross-sectional in nature. Another limiting factor is that the time lapse between training and the evaluation may be such as to cast doubt on the reliability of the data (Morrel, 1979).

With limitations aside however, the intuitive appeal and power of the follow-up is such as to make it an indispensible tool of researchers seeking to evaluate vocational education.

Cost-Benefit Analysis

Cost-benefit analysis seeks to measure efficiency. It provides the quantitative dimension, and is therefore the primary method of assessing the returns on investment in vocational education vis-a-vis alternative allocative choices (Wentling & Lawson, 1975; Hu & Stromsdorfer, 1979). An obvious limitation is the difficulty of measuring "benefits."
By itself, this approach is only partially useful as an evaluative tool in vocational education (Li, 1981), and should be part of a wider framework which includes qualitative measures. Both Taussig (1968) and Corazzini (1968) have observed that there might be social effects well beyond the reach of the cost-benefit calculus. Some have suggested the need for a cost-effective approach (Levin, 1981) in view of these difficulties.

Summary

It should be clear that the sweep of the evaluative framework proposed allows for a variety of modes of inquiry. It is well beyond the scope of any one study. What is needed, is a piecing together of evidence, systematically gathered from diverse sources, with focus on qualitative as well as quantitative criteria, and on the individual as well as the society. The educational planner in Trinidad and Tobago could only benefit from the information which a multifaceted approach to evaluation such as suggested will generate.

The Design

This study was follow-up in nature. It involved taking a cross-section of senior comprehensive graduates at a point in time (the period October 1982 to April 1983) and examining their responses to a mail questionnaire. The design (following Campbell & Stanley, 1963; Li, 1981; & Rossi, 1982) was as follows:
Stream After Programme

General Pre-Technician $X_1$ $0_1$
Education Academic $X_2$ $0_2$
Specialized Crafts $X_3$ $0_3$

The primary research question was whether there were differences between $0_1$, $0_2$, and $0_3$ which could reasonably be attributed to $X_1$, $X_2$, and $X_3$. In particular, were there differences between $0_3$ taken alone, and $0_1$ and $0_2$ taken together, which could largely be explained by the $X$'s.

Since it was felt by the researcher that stream was but one of many factors contributing to $0$ measures, a belief substantiated to a large extent by theory and by previous research as identified in the literature review, several other independent variables were posited as rival hypotheses. The full list of independent variables included:

- On-the-Job Training—OJT
- Stream
- Technical Elective
- Sex
- Ethnicity
- School
- Socio-Economic Status (SES)
- Geographic Location

The variables sex and ethnicity selected themselves by virtue of the composition of the population of the schools in question. Geography, a variable of interest in Bennett (1979) was included in keeping with the pattern of industry in Trinidad. There was the possibility for example that some students, simply by virtue of living in the South, would have an advantage in terms of access to oil and oil-related industries, or to the industrial estate at Pt. Lisas.
The dependent variables of interest, the O measures, were:

1. Time taken to find the first job.
2. Percentage of time in full-time employment.
3. Perceptions of preparedness for the first job.
4. Degree of satisfaction with the first job.
5. Satisfaction with subject choice.
6. Status at the time of the survey.
7. Ideal career choice.
8. Starting salary—first job.
9. Starting salary—current or most recent job.
10. Job mobility.
11. Job-type or classification.
12. Ability to find full-time employment

Nature of the Design

The design of the study as outlined could be described as being ex post facto (or causal comparative) in nature since the researcher was not in a position to manipulate any of the variables in question. The "experiment" had already taken place in effect, and the researcher was now testing the "results" for differences such as there might be. Since this was an evaluative study, there was the added concern as to whether the "experiment" should have been conducted at all. The researcher felt justified that this was an appropriate design given the problem at hand based on a definition which viewed ex post facto research as "...that research in which the researcher attempts to determine the cause, or reason, for existing differences in the behavior or status of groups of individuals" (Gay, 1981, p. 197).
Weaknesses in the Design

There is consensus in educational research literature that the major weakness in ex post facto designs is the inability of the researcher to exercise proper control over the variables in question (see Gay, 1981; Campbell & Stanley, 1963; Van Dalen, 1973; Kerlinger, 1973).

The design is really a modification of Campbell and Stanley's "Static Group Design" in which there is complete absence of randomization. Campbell and Stanley have noted that in this type of design valid interpretation becomes possible only after all possible covariates have been identified and accounted for (1963, p. 241). Isaac and Michael (1972) have concurred with Campbell and Stanley on this latter point.

Strengths of Ex-post Facto (Causal Comparative) Research

Limitations aside, ex-post facto research is perhaps the most useful way to study macro-level, system wide, educational problems. When the sweep of concern is broad, particular, experimental type, studies present but minute facets of the full picture. Ex-post facto studies provide synthesis—they generate the heuristics which the educational planner needs to work from as he wrestles with large scale problems.

Kerlinger (1973) though extolling the virtues of experimental research and pointing to the major methodological weaknesses of ex-post facto research saw fit to concede that:
. . . It can even be said that ex-post facto research is more important than experimental research. . . the most important social scientific and educational research problems do not lend themselves to experimentation, although many of them do lend themselves to controlled inquiry of the ex-post facto kind. (1973, p. 392)

He went on to cite studies by Piaget, and the landmark *Equality of Educational Opportunity*, Coleman et al. (1966) as exemplars which have utilized ex-post facto design, and added:

If a tally of sound and important studies in the behavioral sciences were made, it is possible that ex-post facto studies would outnumber and outrank experimental studies. (1973, p. 392)

**Discussion**

In this study, the onus is on the Trinidad and Tobago school system to illustrate that streaming actually leads to differentiated, measurable, labour market effects in comprehensive school graduates. While the researcher has identified several possible covariates of post-school perceptions and performance in addition to stream, the intent is mainly to contribute toward an understanding of the dynamics of our school system. If however, stream did not exhibit explanatory power, its invalidity as a sorting device would have been demonstrated, and the researcher would then seek to identify those variables which actually made a difference to the extent that they could be identified. Failure to identify all such variables would not detract from the value of the probe. Rather it would point to the zone of ignorance within which educational planners in Trinidad and Tobago might flounder in the absence of information generated by research; the capricious nature of planning by blind faith.
Restatement of Hypotheses to be Tested

In Chapter One, twelve hypotheses were set forth in null form to be tested. Since it is the researcher's basic position that stream is essentially a weak variable when explanations are sought concerning post school perceptions and performance, there is unity between the research and null hypotheses. The researcher is predicting no difference of merit between the graduates of the various streams on all of the criteria in question.

Research Hypotheses

The researcher hypothesises that:

$H_1$: There is no significant difference between academic pre-technician and specialized crafts graduates in the amount of time taken to find their first job.

$H_2$: There is no significant difference between academic, pre-technician and specialized crafts graduates in the percentage of time spent in full-time employment since graduation.

$H_3$: There is no significant difference between academic, pre-technician and specialized crafts graduates in the starting salaries for their first job.

$H_4$: The stream a student pursues and the type of job he or she finds are independent of each other.

$H_5$: There is no significant difference between academic, pre-technician and specialized crafts graduates with respect to their level of satisfaction with their first job.
There is no significant difference between academic, pre-technician and specialized crafts graduates with respect to the starting salary of their current or most recent job.

There is no association between the stream to which a graduate belonged and his or her status at the time of the salary.

There is no significant difference between academic, pre-technician and specialized crafts graduates with respect to their satisfaction with subject choice.

There is no association between the stream to which graduates belonged and their ideal career choices.

There is no significant difference between the proportions of academic, pre-technician and specialized crafts graduates who ever held a full-time job.

There is no significant difference between the proportion of academic, pre-technician and specialized crafts graduates who have changed jobs.

There is no significant difference between academic, pre-technician and specialized crafts graduates with respect to their perceptions of preparedness for their first job.

The Sample Design

The universe originally envisaged for the selection of a sample for this study was all fourteen full-fledged (containing a technical/
vocational wing) comprehensive schools in Trinidad. After dis-
cussions with the Director of the National Training Board, the researcher
took the decision that five of the schools eliminated themselves since
they had graduated but one group of students at the time. The
decision was made also to include graduates of St. Augustine Senior
Comprehensive in the sample though this school did not meet the
criterion of having a full-fledged vocational programme. It was felt
that the fact that this school was the earliest of all comprehensives,
and that its clientele were pre-technician and academic it would pro-
vide useful contrast with other schools in the study. The final
tally was therefore ten schools.

It should be stated at this stage that the National Training
Board of Trinidad and Tobago, through its Executive Director, Mr.
Albert Alleyne, had taken the decision to provide funding and adminis-
trative support for the execution of the study. This added a
realistic flavour to the efforts, allowing decisions to be based on
felt, concrete needs, rather than on abstract terms of reference.

It was felt that a sample of 1000 graduates, 100 each from the
ten schools would provide useful estimates on the dependent variables
in question. The final schools were as follows:

Arima Senior Comprehensive  Marabella Senior Comprehensive
Barataria Senior Comprehensive  Mucarapo Senior Comprehensive
Chaguanas Senior Comprehensive  Pleasantville Senior Comprehensive
Fyzabad Senior Comprehensive  Siparia Senior Comprehensive
Malick Senior Comprehensive  St. Augustine Senior Comprehensive

The only criteria for assignment into the sample were (1) graduation
with the classes of 1979 and 1980, and (2) stream. No deliberate
attempts were made to control the ethnic mix or to balance the sexes in the sample, since it was felt that these components would sort themselves out by default in keeping with the status quo.

Once the rough figure of 100 was agreed upon for each school, the next step was to ensure that the various strata (by programme) in each of these schools were included. Since the group of primary interest was the specialized craft graduates, the researcher took the decision that roughly half the sample should constitute these graduates. The remaining 50% were to be divided roughly in a 3:2 ratio (pre-technician to academic) in keeping with their relative numbers in the schools.

It should be pointed out that specialized craft students comprise roughly twenty to twenty-five percent (20% to 25%) of the population of a full-fledged senior comprehensive. The researcher was in effect over-sampling this group in order to get a fuller picture of the way in which schooling affects their post-school experiences.

Sampling Procedure/Field Work

The field procedure followed was to visit each of the schools in question seeking records of graduates of the classes of 1979 and 1980. When such records were available, they were typically organized by stream and technical elective. Using the ratio 5:3:2 (specialized craft to pre-technician to academic) as a guide, the sample was drawn initially by random start, and thereafter by systematic selection. In this way all the sub-elements of the population in question were represented.
Specifically, the sampling procedure was as follows:

1. The number of graduates in each stream in a given school was determined from inspection of the records.

2. The total number in each stream was divided by the number desired for that stream, yielding the sampling interval (50:30:20 were the rough numbers).

3. A random number was drawn between 1 and the number equal to the nominal value of the interval (say 5). The graduate holding this position on the list (say 3) became the first entrant in the sample for that stream. Other graduates entered as dictated by the interval (3, 8, 13, ..., n, etc.) until the list was depleted.

In cases where the sampling interval turned out to be a fraction it was rounded up or down to the nearest whole number with an eye on attaining the desired mix. For example, an interval of four would allow wider representation for an under-subscribed technical elective than one of 5.

In the end, some streams got a bit more than their projected quota, but considering that records were not always available, these were allowed to stand. (As would be shown, the figure of 1000 was not attained in the end.)

The plan as described worked well in the following schools:

Siparia Senior Comprehensive
Barataria Senior Comprehensive
St. Augustine Senior Comprehensive
Arima Senior Comprehensive
In the case of Chaguanas Senior Comprehensive, records for some graduates were missing. The researcher made the determination to sample only academic and pre-technician graduates on site, and to sample specialized craft graduates from National Training Board records which appeared to be more thorough.

After futile attempts to obtain records from Malick, Fyzabad, Pleasantville and Mucurapo Senior Comprehensives (Mucurapo had just been assigned a new principal who expressed unfamiliarity with the record keeping system) the researcher made the determination that samples from these schools would be provided from National Training Board records. Since these records were largely of students with technical bias (overwhelmingly specialized craft), the schools in question provided an in-depth look at the craft trainee. Again, when sampling took place, the procedure was to have a random start, followed by systematic selection to ensure representation of the various technical electives.

Marabella was the only school for which the researcher had records prior to the start of field procedures upon request from the principal. The early presentation of these records saved a great deal of time. Though they appeared incomplete, the researcher was able to sample from them as described before.

In summary then, the sample was chosen as follows:

St. Augustine Senior Comprehensive - Systematic Sample, on site

Siparia Senior Comprehensive - Systematic Sample, on site
Barataria Senior Comprehensive - Systematic  
Sample, on site

Arima Senior Comprehensive - Systematic  
Sample, on site

Chaguanas Senior Comprehensive - On site systematic sampling  
of academics and pre-technicians only. Specialized craft  
sampling from National Training Board records.

Malick Senior Comprehensive - National Training Board records
Mucurapo Senior Comprehensive - National Training Board records
Fyzabad Senior Comprehensive - National Training Board records
Pleasantville Senior Comprehensive - National Training Board records

Marabella Senior Comprehensive - Systematic sampling of lists  
provided by the Principal

The breakdown was as follows:

<table>
<thead>
<tr>
<th>School</th>
<th>Year</th>
<th>Stream</th>
<th>Population</th>
<th>Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sipara S.C.</td>
<td>1980</td>
<td>Academic</td>
<td>212</td>
<td>21</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pre-Technician</td>
<td>365</td>
<td>31</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Specialized Craft</td>
<td>226</td>
<td>56</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Total</strong></td>
<td><strong>803</strong></td>
<td><strong>108</strong></td>
</tr>
<tr>
<td>Arima S.C.</td>
<td>1980</td>
<td>Academic</td>
<td>219</td>
<td>22</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pre-Technician</td>
<td>312</td>
<td>31</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Specialized Craft</td>
<td>194</td>
<td>49</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Total</strong></td>
<td><strong>725</strong></td>
<td><strong>102</strong></td>
</tr>
<tr>
<td>Chaguanas S.C.</td>
<td>1978-1980</td>
<td>Academic</td>
<td>468</td>
<td>49</td>
</tr>
<tr>
<td></td>
<td>1980</td>
<td>Pre-Technician</td>
<td>260</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Specialized Craft</td>
<td>223</td>
<td>48</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Total</strong></td>
<td><strong>728</strong></td>
<td><strong>99</strong></td>
</tr>
<tr>
<td>Barataria S.C.</td>
<td>1980</td>
<td>Academic</td>
<td>306</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pre-Technician</td>
<td>449</td>
<td>31</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Specialized Craft</td>
<td>223</td>
<td>48</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Total</strong></td>
<td><strong>978</strong></td>
<td><strong>99</strong></td>
</tr>
<tr>
<td>Malick S.C.</td>
<td>1978-1980</td>
<td>Pre-Technician</td>
<td>160</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>1980</td>
<td>Specialized Craft</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marabella S.C.</td>
<td>1979-1980</td>
<td>Academic</td>
<td>132</td>
<td>41</td>
</tr>
<tr>
<td></td>
<td>1980</td>
<td>Pre-Technician</td>
<td>169</td>
<td>55</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Specialized Craft</td>
<td>301</td>
<td>96</td>
</tr>
</tbody>
</table>
As can be seen, the final sample fell short of the projected 1000 subjects. This was due mainly to problems, previously cited, in obtaining records from some schools. Given the time frame within which the researcher had to work, two visits seemed sufficient to ascertain whether records were available or not.

Another detail to be noted is that while the study was interested in 1979 and 1980 graduates, students from the classes of 1978 and 1981 did make their way into the sample. This was due to a number of factors, including (1) some students repeated a year in school, and (2) others were included simply because they appeared on National Training Board lists and constituted prime targets for observation (having pursued a technical programme).

In the final analysis personnel at the National Training Board were satisfied that the sample was such that it could provide reasonable estimates concerning the overall picture of the consequences of

<table>
<thead>
<tr>
<th>School</th>
<th>Year</th>
<th>Stream</th>
<th>Population</th>
<th>Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>St. Augustine S.C.</td>
<td>1979</td>
<td>Academic</td>
<td>355</td>
<td>22</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pre-Technician</td>
<td>834</td>
<td>64</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Specialized Craft</td>
<td>1189</td>
<td>86</td>
</tr>
<tr>
<td>Fyzabad S.C.</td>
<td>1978-1980</td>
<td>Pre-Technicians</td>
<td>111</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Specialized Craft</td>
<td>111</td>
<td>50</td>
</tr>
<tr>
<td>Pleasantville S.C.</td>
<td>1978-1980</td>
<td>Pre-Technician</td>
<td>Approx.</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Specialized Craft</td>
<td>200</td>
<td>100</td>
</tr>
<tr>
<td>Mucurapo S.C.</td>
<td></td>
<td>Pre-Technician</td>
<td>111</td>
<td>111</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Specialized Craft</td>
<td>111</td>
<td>111</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Totals</td>
<td>5146</td>
<td>901</td>
</tr>
</tbody>
</table>
streaming in the comprehensive school, with special focus on specialized crafts.

**Questionnaire Development and Validation**

The questionnaire used in this study was suggested largely by the stated objectives. The researcher borrowed from Eninger (1965), Kaufman et al. (1967) and Lewis et al. (1976), to ensure consistency with standard practice for the type of research in question. Glock and Stark (1966) was consulted for format.

Initial drafts were commented upon by the researcher's doctoral committee. Final commitment was not however made until the researcher had traveled to Trinidad and held discussions with prominent individuals in the hierarchy of technical education. Sources of input here included:

1. Mr. Albert Alleyne - Executive Director, National Training Board
2. Mr. Hugh Gaskin - Technical Vocational Supervisor
3. Mr. Trevor Peters - Technical Vocational Supervisor
4. Mr. Jonathan Burgess - Technical Vocational Supervisor
5. Mr. Roland Maunday - Ag. Head Technical Teacher Training Unit
6. Mr. Keith Martin - Evaluation Officer, National Training Board

Pressures of time did not permit a pilot. This constituted a potential source of weakness of the study. The researcher felt however that since the primary purpose of pilots is to gain estimates of
population parameters (variance, etc.), and since the study itself could be said to be a pilot (being the first of its kind), searching for estimates, not much was lost by omission of this step.

A concern felt, was whether students would misunderstand some of the directions and questions on the questionnaire. Careful perusal of the returns did not reveal this generally to be the case, one question (Question 8) proved to be ambiguous and was thrown out of the analysis with only minimal loss of information. For Question 5, too, some graduates had difficulty computing the length of time periods called for. In most cases, however, the researcher was able to recoup these from the dates provided in the job history section of the questionnaire. Perhaps this was considered by students to be too tedious or time-consuming a process.

From the job history section of the questionnaire also, the researcher was able to calculate the percentage of time spent in full time work, and to validate or make determinations with respect to just how much time the student took to find employment.

Despite these situations requiring some measure of administrative judgement, the best evidence of the correctness of decisions made prior to the actual survey was the unexpected high response rate and the relatively few unusable returns. The researcher felt assured that the questionnaire as designed had largely served its intended purpose.
The study was headquartered at the National Training Board (NTB), the technical-vocational arm of the Trinidad and Tobago Ministry of Education. The official blessings of the Director of School Supervision and the approval of the Executive Director of the NTB had ensured this.

The researcher was given a temporary appointment as an officer in the Evaluation Unit with access to clerical and ancillary staff. Official cover such as this gave the study (christened Project Concern by the researcher) much appreciated legitimacy, and undoubtedly was largely responsible for the excellent response.

Key events and dates were as follows:

October 19, 1982 - First mailing (9 schools, excluding St. Augustine S.C.)

November 2, 1982 - First mailing - St. Augustine graduates

November 8, 1982 - Second mailing begins

November 22, 1982 - Second mailing (St. Augustine S.C. only)

November 29, 1982 - Third mailing begins, all subjects

April 11, 1983 - Final mailing (20% sample of non-respondents)

These events (up to the 20th week of the study) are summarized in the graph shown in Fig. 1.

The final tally as of April 11, 1983 was as follows:

Total Returns (net) . . . . . . 615
Usable . . . . . . . . . . . . . . 607
Repeats . . . . . . . . . . . . . 29
Address Unknowns . . . . . . . . 42
Deceased . . . . . . . . . . . . . 1
Out of Country . . . . . . . . . . 1
Rate of Questionnaire Return—
Project Concern

Weeks After Original Mailing

Figure 1
Reliability Estimates

The high number of repeats made it possible to conduct a reliability check on the data. The approach was to correlate information given by the graduates on their first response with that given on a subsequent response. Two variables were used for the check, namely time taken to find the first job, and initial salary. There was marked similarity in the responses (n = 24), the Pearson Product Moment (r) being .81 on the time variable, and .95 on the salary variable.

Data Analysis Procedures

Data analysis required the use of both descriptive and inferential statistics. Contrary to popular research trends, the researcher assigned a great deal of importance to the somewhat less glamorous but very informative means, frequencies, variances, etc. associated with key variables. Mean salaries, times, and percentages were perhaps the most useful of all statistics generated.

Following Kerlinger and Pedhazur (1973), linear regression analysis was used to make determinations about the relative contributions of the various independent variables in question, with special focus on stream. It was felt that this technique best suited the design given the number, and mixed nature of the independent variables in question. Independent and dependent measures of interest were as follows:
Independent Variables | Dependent Variables
---|---
Sex | - Time taken to find the first job
Ethnicity | - Satisfaction with the first job
Geography | - Initial salary first job
School | - Initial salary—current on most recent job
Technical Elective | - Preparedness for the first job
Stream | - Percentage of time in full-time employment since graduation
OJT

Socio-economic status (SES), a variable which earlier in the study was thought to have promise for entry into the regression models, was excluded after preliminary perusal of the descriptive statistics revealed it to be homogeneous across streams and positively skewed across the sample. (See Fig. 3.)

From the Statistical Analysis System (SAS) the STEPWISE procedure was needed for the regression analysis. In this procedure, an independent variable enters the regression model only if it meets certain pre-determined criteria. The researcher first set a stringent $p = .01$ for all variables, then set $p = .05$ for those which failed to show significance initially.

Where the variable stream proved to be a significant entrant in the regression equation, Scheffe post-hoc comparison (unequal N) were effected to determine the direction of significance. In situations where the hypotheses dealt with relationships between variables, the Chi Square test of Independence was used, followed by the computation of Cramer’s $V$ (if significance was found). Where there was need to compare percentages the Irwin-Fisher Exact Test was used. This later test has been said to be the most powerful method of resolving $H_0: P_1 = P_2$ (Marascuilo & McSweeney, 1977, p. 111).
A Word on Interpretation--Practical Versus Theoretic Research

This study was conceived with a utilitarian end in mind. The intent was to aid in the understanding of the dimensions of a practical problem—whether beliefs inherent in curricula decisions made in the Trinidad and Tobago comprehensive school system are valid. There is mixed feeling in the research community concerning whether research should be geared to a practical end. Some hold strongly, that the job of research ends when hypotheses are posited and tested. This final section of the chapter on methodology addresses these issues briefly, and points to some ways in which the researcher sought to give meaning to the data.

The discussion begins by recognizing two related dichotomies namely (1) basic versus applied research, and (2) experimental versus ex-post facto research. Some time ago, Kerlinger (1977) and Jackson and Keislar (1977) in the same issue of the Educational Researcher both argued against attempts to make immediate links between educational research and practice. Kerlinger argued that there was little connection between the two, and further, that "two major obstacles to research influencing educational practice in the long term are the
pragmatic-practical notion that research should pay off and that it
should be relevant to contemporary social and educational problems"
(p. 5). Kerlinger continued, that the assumption that educational
practice can be improved, or that educational problems could be solved
by research was false. His position was that:

It is unrealistic...to ask how a piece of
scientific research will produce such and such
educational results. This demand has probably
weakened educational research more than any
other single cause. (p. 7)

As far as Kerlinger was concerned, utility was but a short term end.
Basic research was more enduring.

These sentiments were also echoed by Jackson and Kieslar who
felt that the notion of usefulness was "a stereotypic view" (p. 13).
These authors called attention to the filtering of "fundamental" re-
search—a time consuming process.

In a retort to these offerings, Slavin (1978) argued that funda-
mental or basic research was not education, but rather psychology
or sociology. What education needed was "more, not less, research
directed at the improvement of instruction and the schooling experience
of children" (p. 7).

Slavin was here covering ground earlier traversed by Schwab
(1971), who in one of a series of articles on "The Practical" had
written thus:

...Education in general and the field of cur-
iculum in particular have been inveterately
theoretic and that this theoretic bent has let
education down. Educators have sought theory
(theory of curriculum, theories of teaching and
learning) as if such theories would be sufficient
to tell us what and how to teach. Educators have applied theories from the behavioral sciences toward solution of practical problems as if these borrowed theories could be applied simply and directly. Meanwhile, educators themselves, as well as others, bear witness to the fact that problems so attacked have been poorly solved. (1971, p. 493)

The practical, in Schwab's view, was characterized by particularity, as opposed to the generality of the theoretic.

Schubert (1980), in calling for a "recalibrating" of educational research invoked Schwab, calling for situationally specific research. Recognising a dichotomous situation, he called for dialogue, noting that:

Surely the question is not whether theoretical or practical research should dominate educational inquiry; rather, it is how to generate a conscious sensitivity among those who create and use research so that they might discover the degree that each mode best serves particular research purposes. (1980, p. 23)

If attention is now diverted back to an earlier discussion of ex-post facto methodology in this study, and to Kerlinger's concession that perhaps most of the profound work in educational research was done via this method, we get a better appreciation of the dichotomy and upon reflection we may even discern a paradox. This paradox comes about because the best studies seemingly cannot align with the supposed best methodologies.

As we focus on methodology, and the apparent need by many in the educational establishment to affect scientific aura, we sometimes forget that scientific inquiry in social research is fraught with
possibilities of error. People do not behave the way chemicals do. Cameron (1961) has thrown considerable light on this matter. In a discussion of attempts in the field of psycho-pharmacology to conduct human experiments in scientific tradition, he wrote thus:

... As we have increased the range of our investigative work upon human behaviour, we have come to recognize with each forward stride that the philosophy of science which has operated so well in the physical sciences, simply cannot be applied to the much more complex phenomenon of the living human being.

If we review briefly the basic premises of the experiment as it is carried out in physics and chemistry, we will see this more clearly. The first premise is that a sample for investigation will resemble the whole. If we are to carry out experiments into the properties of helium gas, we may be reasonably sure that the sample which we have is the same as any other sample which any other experimenter may obtain, or which exists free in nature. The same is true of investigations into radium or into the chemistry of steroids. The second assumption is that the sample will not be changed by removal from the setting in which it occurs in nature, and that it will not be changed by moving it to the laboratory from the setting. A third premise—and here I venture to say that our colleagues in the physical sciences are in a measure mistaken even with respect to experimentation in their own field—is that the experimenter remains an observer; that he does not participate in and by his participation, affect the outcome of the experiment. The fourth premise is that all the variables, save that with which we wish to experiment, can be controlled.

Without labouring the matter, let me say categorically that literally not one of these premises is valid when one comes to experiment with human behaviour. (p. 269)

As we shift the discussion from methodology to analysis, we come to the question how do we summarize and make sense of data. The
purpose of statistical analysis, it would seem, is to help in the interpretation and understanding of phenomena. But statistics are not very good at summarizing qualitative phenomena. Slavishly relying on tests of significance when qualitative interpretations are equally warranted becomes bad scholarship. A substitute for thought.

Tyler (1931) asked the question: "Is a difference which is statistically significant necessarily of social significance? When a difference is reported as not of statistical significance, does it follow that there exists no difference of importance?" (p. 115).

Cronbach (1975) in similar vein suggested that:

The time has come to exorcise the null hypothesis. We cannot afford to pour costly data down the drain whenever the effects present in the sample 'fail to reach significance'. (p. 124)

Carver (1978) derisively noted that "statistical significance testing has involved more fantasy than fact" (p. 378). He continued that "emphasis on statistical significance over scientific significance in educational research constitutes a corrupt or of the scientific method." Education would be better off, he contended, if it "stopped testing its results for statistical significance."

Cronbach called for the reporting of descriptive statistics along with the more elegant inferential statistics. Carver, like Gill et al. (1980) called for the reporting of the "practical significance" of effects noted, via the Omega squared statistic ($\Omega^2$).

This aside in the methodology has been taken to point to the researcher's philosophical bent in approaching the analysis of data.
If differences observed appeared to be consistent by inspection, yet statistically insignificant, these differences would have to be explored for possible meaning. The intent was not to let science make a fool out of common sense.

The goal overall was to piece together the effects of the Trinidad and Tobago comprehensive curriculum in a manner such that the educational planner could readily understand. This required a sensible balance of the theoretical and the practical.
CHAPTER 4

DATA ANALYSIS AND HYPOTHESIS TESTING

Introduction

This study began by describing the efforts of the government of Trinidad and Tobago toward increasing the supply of skilled manpower in the country via a programme of pre-employment (vocational) education in the senior comprehensive school. The literature review established that these efforts fitted into a pattern of action in developing countries—a pattern of action based on the belief that formal schooling could be so manipulated as to bring about economic transformation: that the link between school and work could be ordered. The literature also revealed a lack of evidence supportive of this belief. If anything, one could discern more skepticism than support for the efficacy of pre-employment formal education. Studies based in the Caribbean (Bennett, 1979; Oxtoby, 1977) contributed to this skepticism.

Based on this absence of support and nagging skepticism in the literature, the researcher challenged the validity of the hypothesis implicit in the actions of the government, namely, that investment in pre-employment (vocational) education leads to a pattern of post-school labour market advantages for beneficiaries of such education. Advantages over those who receive different types of education within the same educational institution during the same time period. Other
plausible explanations for any differences which might occur among graduates (such as sex, geography, ethnicity, social class, etc.) were posited, and a set of testable hypotheses were set forth. These hypotheses, in effect, disputed what appeared to be the mistaken beliefs and expectations of the educational authorities regarding the outcomes of pre-employment (vocational) education.

Given this backdrop, the purposes of this chapter are twofold: (1) to present a description of the findings, and (2) to use these findings to test the several hypotheses advanced. In the process of so doing, the effects of pre-employment (vocational) education in Trinidad and Tobago will be revealed, general education (in the form of academic and pre-technician education) serving as contrast, indicating whether or not these effects are unique. The rest of the chapter is organized as follows:

1. The respondents—Nature of the sample.
2. Status at the time of the study.
3. The first job.
4. The current or most recent job.
5. Engaging the labour market.
6. Post-school educational experiences.
7. Focus on guidance and placement.
8. Discussion.
9. Hypothesis testing.
Of an initial target of 901 graduates, a total of 615 responded to the survey after four mailings. Of this total, 607 returns were found to be usable. A fifth mailing was embarked upon using a shortened version of the questionnaire, but returns here served only to determine the nature of non-respondents. These did not enter the analysis in any other way. Those who responded were different in many ways, perhaps best summarized under the following headings:

1. Sex,
2. Ethnicity,
3. Achievement (14 + composite score),
4. Socio-economic status,
5. Geography (region),
6. School,
7. Stream,
8. Technical elective, and
9. OJT (On-the-Job Training).

Sex

The breakdown of the respondents by sex is shown in Table 1. As stated before, no deliberate attempt was made to control the composition of the sample on this variable. As can be seen, 58.3% of the respondents were male, and the remaining 41.7% female.
Table 1
Composition of Respondents by Sex

<table>
<thead>
<tr>
<th>Sex</th>
<th>No.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>354</td>
<td>58.3</td>
</tr>
<tr>
<td>Female</td>
<td>253</td>
<td>41.7</td>
</tr>
<tr>
<td>Total</td>
<td>607</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Ethnicity

Trinidad and Tobago is a multi-racial society, the two numerically dominant groups being people of African and East Indian descent. These groupings also dominate senior comprehensive school enrollment. Again, no attempt was made to manipulate entry into the sample by ethnicity. The researcher felt that this would sort itself out by default. For descriptive and analytic purposes, the sample was dichotomized according to ethnicity into East Indian and Non-East Indian groupings. The last names of respondents were used to make these assignments. Table 2 shows the composition of the sample by ethnicity. As shown, students of East Indian descent (as determined by last names) comprised 47.6% of the final sample. Other students, (overwhelmingly students of African descent so far as could be determined) comprised the remaining 52.4%. It should be noted at this early stage that ethnicity did not assist in the understanding of any of the phenomena under scrutiny in this study. It proved to be a weak variable.
Table 2
Composition of Respondents by Ethnicity

<table>
<thead>
<tr>
<th>Ethnicity</th>
<th>No.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indian</td>
<td>289</td>
<td>47.6</td>
</tr>
<tr>
<td>Non-Indian</td>
<td>318</td>
<td>52.4</td>
</tr>
<tr>
<td>Total</td>
<td>607</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Stream

Three streams are under focus in this study in keeping with the structure of the comprehensive school. These are: (1) Pre-technician, (2) Academic, and (3) Specialized Crafts (vocational). The Specialized Crafts was the stream of primary concern. Graduates here comprised 44% of all respondents. The Pre-Technician grouping (a mixture of academic and technical subjects) comprised 31.5%, while the Academic graduates comprised 24.5% of all respondents. Table 3 shows the final breakdown by stream.

Table 3
Composition of Respondents by Stream

<table>
<thead>
<tr>
<th>Stream</th>
<th>No.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-Technician</td>
<td>191</td>
<td>31.5</td>
</tr>
<tr>
<td>Academic</td>
<td>149</td>
<td>24.5</td>
</tr>
<tr>
<td>Specialized Crafts</td>
<td>267</td>
<td>44.0</td>
</tr>
<tr>
<td>Total</td>
<td>607</td>
<td>100.0</td>
</tr>
</tbody>
</table>
Tables 4 and 5 respectively summarize the composition of the final sample by sex, ethnicity, and stream. A heavy male bias in the specialized craft stream is to be noted (79.4% male as opposed to 20.6% female).

Achievement

The only achievement measure available for students was their fourteen plus results. For purposes of this study only a composite of English and mathematics scores was used. Since graduates came from different year groups and the test is not standard across years there are difficulties inherent in trying to attach meaning to these scores. However, we do get a rough picture of the overall performance level of graduates prior to their entry into the senior comprehensives. It could be seen from the tables that generally the scores are quite low across streams, specialized crafts students appearing to have performed worst of all (see Tables 6 and 7 and Figure 2). We are left to speculate whether these scores were a factor in assigning students to streams. But it seems clear, judging from the low percentage of high scores on this examination, that the clientele of the senior comprehensive school (as reflected in the sample) might largely be the below average student.

Socio-Economic Status

It is important to know something about the socio-economic background of the respondents. Questions 21 and 22 in the questionnaire focused on the home, seeking information on parental level of education,
Figure 2

Frequency Polygons for 14 Plus
Composite Math and English Scores

- Specialized Crafts
- Pre-Technical
- Academic
Table 4

Summary of Respondents by Stream and Sex

<table>
<thead>
<tr>
<th>Sex</th>
<th>Pre-Technician</th>
<th>Academic</th>
<th>Specialized Crafts</th>
<th>All Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
<td>%</td>
<td>No.</td>
<td>%</td>
</tr>
<tr>
<td>Male</td>
<td>93</td>
<td>48.7</td>
<td>49</td>
<td>32.9</td>
</tr>
<tr>
<td>Female</td>
<td>98</td>
<td>51.3</td>
<td>100</td>
<td>67.1</td>
</tr>
<tr>
<td>Total</td>
<td>191</td>
<td>100.0</td>
<td>149</td>
<td>100.0</td>
</tr>
</tbody>
</table>
Table 5
Summary of Respondents by Stream and Ethnicity

<table>
<thead>
<tr>
<th>Ethnicity</th>
<th>Pre-Technician</th>
<th>Academic</th>
<th>Specialized Crafts</th>
<th>All Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
<td>%</td>
<td>No.</td>
<td>%</td>
</tr>
<tr>
<td>Indian</td>
<td>87</td>
<td>45.6</td>
<td>84</td>
<td>56.4</td>
</tr>
<tr>
<td>Non-Indian</td>
<td>104</td>
<td>54.4</td>
<td>65</td>
<td>43.6</td>
</tr>
<tr>
<td>Total</td>
<td>191</td>
<td>100.0</td>
<td>149</td>
<td>100.0</td>
</tr>
</tbody>
</table>
Table 6  
Average Fourteen Plus Composite Score*  
(Math and English) by Stream

<table>
<thead>
<tr>
<th>Stream</th>
<th>Mean</th>
<th>SD</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-technician</td>
<td>93.7</td>
<td>24.3</td>
<td>97</td>
<td>34.0</td>
</tr>
<tr>
<td>Academic</td>
<td>93.7</td>
<td>25.5</td>
<td>63</td>
<td>22.1</td>
</tr>
<tr>
<td>Specialized Crafts</td>
<td>84.3</td>
<td>24.1</td>
<td>125</td>
<td>43.9</td>
</tr>
<tr>
<td>All Streams</td>
<td>89.59</td>
<td>24.9</td>
<td>285</td>
<td>100.0</td>
</tr>
</tbody>
</table>

* Possible score = 200

and occupational status. Initially Duncan and Hollingshead indices were used to make socio-economic status (SES) determinations. Scores obtained by these means correlated highly ($r = 0.82$), hence only Duncan scores were retained. Figure 3 shows the frequency polygon for the distribution of Duncan index scores throughout the sample. In this index, a high score, indicates high social standing. For example, the SES index scores for an architect, teacher and labourer respectively are 90, 72, and 9. The index reflects a composite of factors including education and job status. It is a crude but useful estimate—pointing in the direction of one's intuitive beliefs about the social background of the typical senior comprehensive child. As can be seen from Figure 3 there was a dearth of professional parents (in the upper ranges) in the sample. Only a smattering of civil servants (teachers, etc.) were discerned. The positive skewness of the curve points to heavy concentrations of parents in the labouring and semi-skilled classes.
Mean - 25.64
Median - 21.16

Frequency Polygon for Group Socio-Economic Scores (Duncan)

Figure 3
## Table 7

Frequency Distributions of Fourteen Plus Composite Scores

<table>
<thead>
<tr>
<th>Scores</th>
<th>Pre-Technician</th>
<th>Academic</th>
<th>Specialized Crafts</th>
<th>All Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
<td>Z</td>
<td>No.</td>
<td>Z</td>
</tr>
<tr>
<td>150-164</td>
<td>2</td>
<td>2.1</td>
<td>2</td>
<td>3.2</td>
</tr>
<tr>
<td>135-149</td>
<td>3</td>
<td>3.1</td>
<td>2</td>
<td>3.2</td>
</tr>
<tr>
<td>120-134</td>
<td>8</td>
<td>8.2</td>
<td>6</td>
<td>9.5</td>
</tr>
<tr>
<td>115-119</td>
<td>22</td>
<td>22.7</td>
<td>8</td>
<td>12.7</td>
</tr>
<tr>
<td>90-104</td>
<td>18</td>
<td>18.6</td>
<td>18</td>
<td>28.6</td>
</tr>
<tr>
<td>75-89</td>
<td>23</td>
<td>23.7</td>
<td>13</td>
<td>20.6</td>
</tr>
<tr>
<td>60-74</td>
<td>12</td>
<td>12.4</td>
<td>8</td>
<td>12.7</td>
</tr>
<tr>
<td>45-59</td>
<td>8</td>
<td>8.2</td>
<td>5</td>
<td>7.9</td>
</tr>
<tr>
<td>30-44</td>
<td>1</td>
<td>1.6</td>
<td>1</td>
<td>1.6</td>
</tr>
</tbody>
</table>

**Totals** | 97  | 100.0 | 63  | 100.0 | 125 | 100.0 |

**Note:** Possible score = 200
Table 8 shows the Duncan index score distributions by stream. There is predictable marked similarity here, as evidenced by the mean index scores.

Table 9 shows the distribution of the job-types of parents or guardians. As can be discerned, 74.1% of those heads of households for which graduates provided information belonged to the skilled, semi-skilled or unskilled categories. Though this factor could not help in the determination of job-type differences of graduates by stream, it was (one suspects) a very powerful factor in determining the final assignment of a large proportion of the graduates to their job-type.

Parental education is reflected in Table 10. Clustering around the elementary level is evident. Also glaring, is the absence of parents for whom high school or university training is reported. The one very striking observation one can make from the educational distribution of household heads reported here was that students in the sample were generally better educated than their parents and guardians (assuming highest level of education attained is a good index). This might indeed be one of the most significant contributions of the comprehensive school.

**Geography**

The geographic mix of the sample is indicated in Table 11. As can be seen in the table, the response rate of students from the south was high, causing the final percentage of southern
Table 8
Frequency Distributions of Socio-Economic Index Scores (DUNCAN)

<table>
<thead>
<tr>
<th>Scores</th>
<th>Pre-Technician</th>
<th>Academic</th>
<th>Specialized Crafts</th>
<th>All Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
<td>%</td>
<td>No.</td>
<td>%</td>
</tr>
<tr>
<td>77-86</td>
<td>--</td>
<td>--</td>
<td>1</td>
<td>.4</td>
</tr>
<tr>
<td>67-76</td>
<td>3</td>
<td>1.6</td>
<td>11</td>
<td>5.6</td>
</tr>
<tr>
<td>57-66</td>
<td>2</td>
<td>1.1</td>
<td>1</td>
<td>.71</td>
</tr>
<tr>
<td>47-56</td>
<td>18</td>
<td>9.8</td>
<td>22</td>
<td>15.6</td>
</tr>
<tr>
<td>37-46</td>
<td>19</td>
<td>10.4</td>
<td>12</td>
<td>8.5</td>
</tr>
<tr>
<td>27-36</td>
<td>21</td>
<td>11.5</td>
<td>12</td>
<td>8.5</td>
</tr>
<tr>
<td>17-26</td>
<td>58</td>
<td>31.7</td>
<td>42</td>
<td>29.8</td>
</tr>
<tr>
<td>7-16</td>
<td>62</td>
<td>33.9</td>
<td>52</td>
<td>36.8</td>
</tr>
<tr>
<td>Total</td>
<td>183</td>
<td>100.0</td>
<td>141</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Mean = 24.6 Mean = 24.14 Mean = 27.18
Overall Mean = 25.64
Table 9
Frequency Distributions of the Job-Type of Parents/Guardians

<table>
<thead>
<tr>
<th>Job-Type</th>
<th>Pre-Technician</th>
<th>Academic</th>
<th>Specialized Crafts</th>
<th>All Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
<td>%</td>
<td>No.</td>
<td>%</td>
</tr>
<tr>
<td>Professional/Managerial</td>
<td>11</td>
<td>6.1</td>
<td>7</td>
<td>5.1</td>
</tr>
<tr>
<td>Clerical/Sales</td>
<td>20</td>
<td>11.1</td>
<td>22</td>
<td>16.2</td>
</tr>
<tr>
<td>Service</td>
<td>4</td>
<td>2.21</td>
<td>5</td>
<td>3.7</td>
</tr>
<tr>
<td>Agricultural, Fishery, Etc.</td>
<td>9</td>
<td>4.97</td>
<td>2</td>
<td>1.5</td>
</tr>
<tr>
<td>Skilled Occupation</td>
<td>49</td>
<td>27.1</td>
<td>28</td>
<td>20.6</td>
</tr>
<tr>
<td>Semi-Skilled</td>
<td>27</td>
<td>14.9</td>
<td>24</td>
<td>17.7</td>
</tr>
<tr>
<td>Unskilled</td>
<td>61</td>
<td>33.7</td>
<td>48</td>
<td>35.3</td>
</tr>
<tr>
<td>Total</td>
<td>181</td>
<td>100.0</td>
<td>136</td>
<td>100.0</td>
</tr>
</tbody>
</table>
Table 10
Frequency Distribution of the Educational Background of Parents/Guardians

<table>
<thead>
<tr>
<th>Education</th>
<th>Pre-Technician</th>
<th>Academic</th>
<th>Specialized Craft</th>
<th>All Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
<td>%</td>
<td>No.</td>
<td>%</td>
</tr>
<tr>
<td>Never Attended School</td>
<td>9</td>
<td>4.9</td>
<td>4</td>
<td>2.9</td>
</tr>
<tr>
<td>Some Elementary</td>
<td>64</td>
<td>34.8</td>
<td>45</td>
<td>32.4</td>
</tr>
<tr>
<td>Completed Elementary</td>
<td>72</td>
<td>39.1</td>
<td>60</td>
<td>43.2</td>
</tr>
<tr>
<td>Some High</td>
<td>10</td>
<td>5.4</td>
<td>11</td>
<td>7.9</td>
</tr>
<tr>
<td>Completed High</td>
<td>20</td>
<td>10.9</td>
<td>13</td>
<td>9.4</td>
</tr>
<tr>
<td>Complete Teacher's College</td>
<td>1</td>
<td>.005</td>
<td>3</td>
<td>2.2</td>
</tr>
<tr>
<td>Complete Technical</td>
<td>8</td>
<td>4.3</td>
<td>3</td>
<td>2.2</td>
</tr>
<tr>
<td>Attended University</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>184</td>
<td>100.0</td>
<td>139</td>
<td>100.0</td>
</tr>
</tbody>
</table>
Table 11
Regional Composition of the Sample

<table>
<thead>
<tr>
<th>Region</th>
<th>No.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>East</td>
<td>113</td>
<td>18.6</td>
</tr>
<tr>
<td>Central</td>
<td>97</td>
<td>15.9</td>
</tr>
<tr>
<td>North</td>
<td>134</td>
<td>22.1</td>
</tr>
<tr>
<td>South</td>
<td>263</td>
<td>43.3</td>
</tr>
<tr>
<td>Total</td>
<td>607</td>
<td>100.0</td>
</tr>
</tbody>
</table>

students in the sample to be 43.3%. Later in the study, geography will be explored as a possible factor in the determination of post-school success.

Year
Graduates from four classes (1978-1981) were represented in the sample. In some instances the actual graduating year for a few students could not be ascertained. Table 12 shows the breakdown by graduating year and stream to the extent that this was known. As can be seen, most of the students were 1979 and 1980 graduates, and this was the case for all three streams.

School
The breakdown of respondents by school and stream is shown in Table 13. The preponderance of Specialized Crafts students in Pleasantville and Mucurapo could be noted. This was due to sampling
<table>
<thead>
<tr>
<th>Year</th>
<th>Pre-Technician No.</th>
<th>Academic No.</th>
<th>Specialized Crafts No.</th>
<th>All Cases No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1978</td>
<td>2</td>
<td>3</td>
<td>9</td>
<td>14</td>
</tr>
<tr>
<td>1979</td>
<td>55</td>
<td>40</td>
<td>97</td>
<td>192</td>
</tr>
<tr>
<td>1980</td>
<td>117</td>
<td>84</td>
<td>147</td>
<td>348</td>
</tr>
<tr>
<td>1982</td>
<td>14</td>
<td>13</td>
<td>6</td>
<td>33</td>
</tr>
<tr>
<td>Other</td>
<td>20</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>191</td>
<td>146</td>
<td>267</td>
<td>607</td>
</tr>
</tbody>
</table>

Table 12
Composition of the Sample by Graduating Year and Stream
Table 13
Composition of the Sample by School

<table>
<thead>
<tr>
<th>School</th>
<th>Pre-Technician</th>
<th>Academic</th>
<th>Specialized Crafts</th>
<th>All Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
<td>%</td>
<td>No.</td>
<td>%</td>
</tr>
<tr>
<td>Arima</td>
<td>24</td>
<td>12.6</td>
<td>15</td>
<td>10.1</td>
</tr>
<tr>
<td>Barataria</td>
<td>22</td>
<td>11.5</td>
<td>12</td>
<td>8.1</td>
</tr>
<tr>
<td>Chaguanas</td>
<td>27</td>
<td>14.1</td>
<td>19</td>
<td>12.8</td>
</tr>
<tr>
<td>Fyzabad</td>
<td>16</td>
<td>8.4</td>
<td>2</td>
<td>1.3</td>
</tr>
<tr>
<td>Malick</td>
<td>8</td>
<td>4.2</td>
<td>3</td>
<td>2.0</td>
</tr>
<tr>
<td>Marabella</td>
<td>21</td>
<td>10.9</td>
<td>33</td>
<td>22.1</td>
</tr>
<tr>
<td>Mucurapo</td>
<td>9</td>
<td>4.7</td>
<td>10</td>
<td>6.7</td>
</tr>
<tr>
<td>Pleasantville</td>
<td>21</td>
<td>10.9</td>
<td>3</td>
<td>2.0</td>
</tr>
<tr>
<td>Siparia</td>
<td>21</td>
<td>10.9</td>
<td>22</td>
<td>14.8</td>
</tr>
<tr>
<td>St. Augustine</td>
<td>22</td>
<td>11.5</td>
<td>30</td>
<td>20.1</td>
</tr>
<tr>
<td>Total</td>
<td>191</td>
<td>100.0</td>
<td>149</td>
<td>100.0</td>
</tr>
</tbody>
</table>
from National Training Board (NTB) files. Since these schools were established earlier than most of the others their contribution to an understanding of the workings of the system is invaluable.

Technical Elective

The Specialized Crafts and Pre-Technician students in the sample were further categorized by technical elective. The technique of systematic sampling allowed a wide cross-section of electives to be represented in the sample. The breakdown is shown in Table 14. Again, it is evident that male students were more likely to pursue a technical elective. The male to female ratio on this variable is approximately 2:1. One can also observe the traditional bias of males in building and mechanical trades, and females in white collar business oriented technical areas.

OJT

Because On-the-Job Training (OJT) (as sponsored by the National Training Board) has now become a more or less standard feature of the national plan for the vocational training of specialized craft students, the data were examined using an OJT non-OJT dichotomy. This dichotomy served to point differences (to be highlighted later) between these two groups with implications for some aspects of the national plan. Table 15 shows the breakdown of the sample by OJT. OJT participants comprised 14% of the respondents.
Table 14

Frequency Distribution of Technical Electives by Sex (Specialized Crafts and Pre-Technician)

<table>
<thead>
<tr>
<th>Technical Electives</th>
<th>Sex</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male No.</td>
<td>%</td>
<td>Female No.</td>
<td>%</td>
</tr>
<tr>
<td>Auto &amp; Diesel</td>
<td>31</td>
<td>10.7</td>
<td>2</td>
<td>1.4</td>
</tr>
<tr>
<td>Shorthand/Typing</td>
<td>3</td>
<td>1.0</td>
<td>27</td>
<td>18.4</td>
</tr>
<tr>
<td>Accounts/Book-keeping</td>
<td>3</td>
<td>1.0</td>
<td>27</td>
<td>18.4</td>
</tr>
<tr>
<td>Clothing and Textiles</td>
<td>4</td>
<td>1.4</td>
<td>9</td>
<td>6.1</td>
</tr>
<tr>
<td>Food and Nutrition</td>
<td>2</td>
<td>0.7</td>
<td>20</td>
<td>13.6</td>
</tr>
<tr>
<td>Electronics</td>
<td>16</td>
<td>5.5</td>
<td>1</td>
<td>0.7</td>
</tr>
<tr>
<td>Machine Shop</td>
<td>32</td>
<td>10.9</td>
<td>--</td>
<td>----</td>
</tr>
<tr>
<td>Carpentry</td>
<td>15</td>
<td>5.2</td>
<td>--</td>
<td>----</td>
</tr>
<tr>
<td>Woodwork</td>
<td>13</td>
<td>4.5</td>
<td>--</td>
<td>----</td>
</tr>
<tr>
<td>Metalwork</td>
<td>14</td>
<td>4.8</td>
<td>1</td>
<td>0.7</td>
</tr>
<tr>
<td>Electrical Inst.</td>
<td>40</td>
<td>13.7</td>
<td>7</td>
<td>4.7</td>
</tr>
<tr>
<td>Draughting</td>
<td>29</td>
<td>10.0</td>
<td>12</td>
<td>8.2</td>
</tr>
<tr>
<td>Welding</td>
<td>38</td>
<td>13.1</td>
<td>--</td>
<td>----</td>
</tr>
<tr>
<td>Plumbing</td>
<td>29</td>
<td>10.0</td>
<td>--</td>
<td>----</td>
</tr>
<tr>
<td>Masonry</td>
<td>3</td>
<td>1.0</td>
<td>1</td>
<td>0.7</td>
</tr>
<tr>
<td>Aircon. &amp; Refrig.</td>
<td>13</td>
<td>4.5</td>
<td>1</td>
<td>0.7</td>
</tr>
<tr>
<td>Business Studies</td>
<td>--</td>
<td>----</td>
<td>16</td>
<td>10.8</td>
</tr>
<tr>
<td>Clerk-Typist</td>
<td>--</td>
<td>----</td>
<td>14</td>
<td>9.5</td>
</tr>
<tr>
<td>Garment Construction</td>
<td>--</td>
<td>----</td>
<td>2</td>
<td>1.4</td>
</tr>
<tr>
<td>Agricultural Science</td>
<td>6</td>
<td>2.0</td>
<td>8</td>
<td>5.4</td>
</tr>
<tr>
<td>Total</td>
<td>291</td>
<td>100.0</td>
<td>147</td>
<td>100.0</td>
</tr>
</tbody>
</table>
Table 15
On-the-Job Training Status
of Respondents

<table>
<thead>
<tr>
<th>Status</th>
<th>No.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>OJT</td>
<td>85</td>
<td>14</td>
</tr>
<tr>
<td>Non-OJT</td>
<td>522</td>
<td>86</td>
</tr>
<tr>
<td>Total</td>
<td>607</td>
<td>100</td>
</tr>
</tbody>
</table>

Summary

As illustrated in the preceding segments of the chapter, the respondents who are the subjects of this study could be said to adequately reflect both sexes and the dominant ethnic groups to be found in the Trinidad and Tobago senior comprehensive school. As far as could be determined from scores on the fourteen plus examinations, students were of less than average academic ability (composite average of 89.6), from blue collar (lower SES) homes (Duncan average of 25.64), in which parents or heads typically did not receive beyond a primary school education.

Students were for the most part graduates of the classes of 1979 and 1980, and were distributed throughout the main geographic regions (with some bias towards the south). Of those who reported pursuing a technical elective, only a third were female. Roughly 14% of the sample indicated having participated in the National Training Board (NTB) sponsored OJT programme.
Having described the way in which some background (independent) variables had bearing on the nature of the sample attention is now focused on labour market indicators. A good starting point is the reported status of the graduates at the time of the survey.

Status at the Time of the Survey

The question (Q.9) asked was "At present how do you spend most of your time?". The responses are summarized in Table 16, by stream, and in Table 17 by sex. Several factors stand out as one peruses the data in Table 16. If we focus on students who reported working at a full time job at the time (row 1) we find the percentage of specialized craft graduates so reporting (47.7%) to be greater than that in the other streams. The same holds for graduates reporting self-employment, the specialized craft percentage being a comparatively high 12.1%. By pooling rows 1, 7, 8 and 9 together we get a picture of that segment of the sample who could be said to have had stable employment at the time of the survey. On the whole, it could be seen that at the time of the survey, 49.2% (297 of 603) of all graduates reported stable employment.

If we shift the object of focus to row 4 in Table 16, those students who indicated they were "looking for work" at the time, higher proportions of academic and pre-technician students seemed to be so doing.

When the focus shifts to whether students were at school at the time (row 5), academic, followed by pre-technician graduates reported
### Table 16

Status of Respondents at the Time of the Survey (by Stream)

<table>
<thead>
<tr>
<th>Status</th>
<th>Pre-Technician</th>
<th></th>
<th>Academic</th>
<th></th>
<th>Specialized Craft</th>
<th></th>
<th>All Cases</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
<td>%</td>
<td>No.</td>
<td>%</td>
<td>No.</td>
<td>%</td>
<td>No.</td>
<td>%</td>
</tr>
<tr>
<td>Working Full Time</td>
<td>70</td>
<td>36.6</td>
<td>44</td>
<td>29.7</td>
<td>126</td>
<td>47.7</td>
<td>240</td>
<td>39.7</td>
</tr>
<tr>
<td>Working Part Time</td>
<td>20</td>
<td>10.5</td>
<td>11</td>
<td>7.6</td>
<td>24</td>
<td>9.1</td>
<td>55</td>
<td>9.1</td>
</tr>
<tr>
<td>On Temporary Lay-Off</td>
<td>8</td>
<td>4.2</td>
<td>2</td>
<td>1.4</td>
<td>12</td>
<td>4.5</td>
<td>22</td>
<td>3.7</td>
</tr>
<tr>
<td>Looking for Work</td>
<td>39</td>
<td>20.5</td>
<td>36</td>
<td>24.3</td>
<td>33</td>
<td>12.5</td>
<td>108</td>
<td>17.9</td>
</tr>
<tr>
<td>Going to School</td>
<td>21</td>
<td>11.1</td>
<td>28</td>
<td>19.3</td>
<td>15</td>
<td>5.7</td>
<td>64</td>
<td>10.6</td>
</tr>
<tr>
<td>Keeping House</td>
<td>6</td>
<td>3.2</td>
<td>6</td>
<td>4.1</td>
<td>3</td>
<td>1.1</td>
<td>15</td>
<td>2.5</td>
</tr>
<tr>
<td>Undergoing OJT</td>
<td>3</td>
<td>1.6</td>
<td>2</td>
<td>1.4</td>
<td>2</td>
<td>0.8</td>
<td>7</td>
<td>1.2</td>
</tr>
<tr>
<td>Self-Employed</td>
<td>6</td>
<td>3.2</td>
<td>2</td>
<td>1.4</td>
<td>32</td>
<td>12.1</td>
<td>40</td>
<td>6.6</td>
</tr>
<tr>
<td>Family Business</td>
<td>4</td>
<td>2.1</td>
<td>2</td>
<td>1.4</td>
<td>4</td>
<td>1.5</td>
<td>10</td>
<td>1.7</td>
</tr>
<tr>
<td>At Home</td>
<td>13</td>
<td>6.8</td>
<td>14</td>
<td>9.7</td>
<td>12</td>
<td>4.5</td>
<td>39</td>
<td>6.5</td>
</tr>
<tr>
<td>Taking a Course</td>
<td>1</td>
<td>0.5</td>
<td>1</td>
<td>0.7</td>
<td>1</td>
<td>0.3</td>
<td>3</td>
<td>0.5</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>191</td>
<td>100.0</td>
<td>148</td>
<td>100.0</td>
<td>264</td>
<td>100.0</td>
<td>603</td>
<td>100.0</td>
</tr>
</tbody>
</table>
Table 17

Status of Respondents at the Time of the Survey (By Sex)

<table>
<thead>
<tr>
<th>Status</th>
<th>Male</th>
<th>Female</th>
<th>All Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
<td>%</td>
<td>No.</td>
</tr>
<tr>
<td>Working Full Time</td>
<td>168</td>
<td>48.0</td>
<td>72</td>
</tr>
<tr>
<td>Working Part Time</td>
<td>36</td>
<td>10.3</td>
<td>19</td>
</tr>
<tr>
<td>On Temporary Lay-off*</td>
<td>15</td>
<td>4.3</td>
<td>7</td>
</tr>
<tr>
<td>Looking for Work*</td>
<td>51</td>
<td>14.6</td>
<td>57</td>
</tr>
<tr>
<td>Going to School</td>
<td>18</td>
<td>5.1</td>
<td>46</td>
</tr>
<tr>
<td>Keeping House*</td>
<td>1</td>
<td>0.3</td>
<td>14</td>
</tr>
<tr>
<td>Undergoing OJT</td>
<td>5</td>
<td>1.4</td>
<td>2</td>
</tr>
<tr>
<td>Self-Employed</td>
<td>38</td>
<td>10.8</td>
<td>2</td>
</tr>
<tr>
<td>Family Business</td>
<td>7</td>
<td>2.0</td>
<td>3</td>
</tr>
<tr>
<td>At Home*</td>
<td>9</td>
<td>2.6</td>
<td>30</td>
</tr>
<tr>
<td>Taking a Course</td>
<td>2</td>
<td>0.6</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>350</td>
<td>100.0</td>
<td>253</td>
</tr>
</tbody>
</table>

* Rows used for unemployment determinations.
in proportionately larger numbers than specialized crafts graduates that were going to school. Overall, 10.68% of students so reported. One notes that this was at least two years into the post-senior comprehensive period for most of the graduates. That schooling remained a viable option still is noteworthy, particularly in light of the many in our system who have never had the privilege of secondary schooling. The low showing of specialized craft graduates here, combined with their high showing in the self-employment category makes it appear that self-reliance might be one of the attributes of this type of curriculum. Is the specialized craft graduate really less dependent on the society? This would be a major attribute.

A final question to be resolved here is how many of the graduates were out of work at the time of the survey, and what were the percentages by stream. If part-time employment and schooling are ignored, then this question could look at rows 3, 4, 6 and 10. The overall unemployment figure based on these rows is 30.38%. By stream, the figures are 33.6% of pre-technicians, 38.6% of academics, and 22.7% of specialized crafts.

When this question is addressed using the variable sex as the measure, it becomes evident that sex might be a stronger variable than stream in determining who finds employment and who doesn't. Of the 253 females who responded to the question, 107 (the sum of rows 3, 4, 6 and 10) or 42.5%, indicated that they were either out of work, or seeking work at the time. In the case of the males the corresponding figures were 76 out of 350 (21.7%).
The First Job

Time

Oxtoby (1977) had reported in the case of technical school graduates in Barbados that generally a period of unemployment followed graduation. Of interest to the present study was the rapidity with which students were absorbed into the labour market. Was this time period dependent on stream? Time is of course a crucial variable for the craft graduate. The longer he or she takes to find employment the more likely the chance that the first job may be unrelated to training. Students may become frustrated, and may grasp at the first job opportunity that comes their way irrespective of its type.

Table 18 shows the breakdown by stream, with time the dependent variable. There appears to be marked differences in the time it took

Table 18

<table>
<thead>
<tr>
<th>Stream</th>
<th>Mean</th>
<th>SD</th>
<th>No. of Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-technician</td>
<td>12.5</td>
<td>9.1</td>
<td>123</td>
</tr>
<tr>
<td>Academic</td>
<td>9.6</td>
<td>8.2</td>
<td>71</td>
</tr>
<tr>
<td>Specialized Crafts</td>
<td>7.9</td>
<td>8.4</td>
<td>208</td>
</tr>
<tr>
<td>All Cases</td>
<td>9.6</td>
<td>8.8</td>
<td>402</td>
</tr>
</tbody>
</table>
the graduates to find their first job. Specialized crafts graduates required the shortest period of time to find the first job (7.89 months) followed by academic and pre-technician graduates. But stream may not be the only determining factor here.

Table 19 shows the breakdown by sex. It is apparent that girls take substantially more time than boys to engage the labour market.

Table 19

<table>
<thead>
<tr>
<th>Sex</th>
<th>Mean</th>
<th>SD</th>
<th>No. of Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>7.9</td>
<td>7.9</td>
<td>278</td>
</tr>
<tr>
<td>Female</td>
<td>13.3</td>
<td>9.5</td>
<td>124</td>
</tr>
</tbody>
</table>

On average, a female graduate could expect to spend over five months more than her male counterpart before finding her first job. Table 20 summarizes the combined influences of sex and stream on time. The mean time taken by males become closer, diminishing the power of stream. At every level of stream females consistently reported taking more time to find the first job.

Table 21 shows the breakdown by OJT. The OJT participant can be seen to take over three months less time to become engaged on the labour market.
Table 20

Influence of Sex and Stream on the Time Taken (in Months) to Find the First Job

<table>
<thead>
<tr>
<th>Stream</th>
<th>Sex</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mean</td>
<td>SD</td>
<td>N</td>
<td>Mean</td>
<td>SD</td>
<td>N</td>
<td></td>
</tr>
<tr>
<td>Pre-technician</td>
<td>9.5</td>
<td>7.5</td>
<td>72</td>
<td>16.7</td>
<td>9.5</td>
<td>51</td>
<td></td>
</tr>
<tr>
<td>Academic</td>
<td>8.7</td>
<td>8.2</td>
<td>31</td>
<td>10.4</td>
<td>8.2</td>
<td>40</td>
<td></td>
</tr>
<tr>
<td>Specialized Crafts</td>
<td>7.2</td>
<td>7.9</td>
<td>175</td>
<td>11.7</td>
<td>9.6</td>
<td>33</td>
<td></td>
</tr>
</tbody>
</table>

Table 21

Time Taken (in Months) to Find the First Full-Time Job (By OJT)

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>SD</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>OJT</td>
<td>6.63</td>
<td>6.44</td>
<td>82</td>
</tr>
<tr>
<td>Non-OJT</td>
<td>10.29</td>
<td>9.09</td>
<td>317</td>
</tr>
</tbody>
</table>

Next, the variable geography is explored. Can we expect time differences based solely on geography? Does living in a particular geographic region confer a labour market advantage or disadvantage? Table 22 shows the breakdown on the dependent variable time, by geography. A non-uniform picture can be discerned. Graduates who resided in the North reported taking less time (7.34 months) to find their first job than other graduates. Central graduates appeared to fare worst of all (averaging 11.85 months).
Having examined the average amount of time needed using stream, sex, and geography as units of analysis, the focus now shifts to technical electives. Technical education authorities should have great interest in the rapidity with which graduates of the various technical programmes are absorbed into the labour market. The breakdown by technical elective is shown in Table 23. As expected, traditional female areas do not fare very well, the shorthand-typing elective faring worst of all (students averaging 15.4 months before finding their first job). Of the traditional trades, welding graduates report the shortest period of unemployment before the first job (5.8 months).

### Job-Type (First Job)

The focus now shifts from time taken to find the first job to the types of first jobs found by graduates. From the literature review there was some support for the notion that some jobs tended to be first jobs (Blau & Duncan, 1964). Also, that the social class of one's kin...
Table 23

Influence of Technical Electives on Time (in Months) Taken to Find the First Full-Time Job

<table>
<thead>
<tr>
<th>Technical Elective</th>
<th>Mean</th>
<th>SD</th>
<th>No. of Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auto and Diesel</td>
<td>7.2</td>
<td>6.8</td>
<td>33</td>
</tr>
<tr>
<td>Shorthand/Typing</td>
<td>15.4</td>
<td>9.4</td>
<td>30</td>
</tr>
<tr>
<td>Accounts/Bookkeeping</td>
<td>15.2</td>
<td>9.2</td>
<td>30</td>
</tr>
<tr>
<td>Clothing and Textiles</td>
<td>13.3</td>
<td>9.9</td>
<td>13</td>
</tr>
<tr>
<td>Food and Nutrition</td>
<td>12.1</td>
<td>7.2</td>
<td>22</td>
</tr>
<tr>
<td>Electronics</td>
<td>6.9</td>
<td>6.1</td>
<td>17</td>
</tr>
<tr>
<td>Machine Shop</td>
<td>7.2</td>
<td>7.9</td>
<td>32</td>
</tr>
<tr>
<td>Carpentry</td>
<td>7.5</td>
<td>7.8</td>
<td>15</td>
</tr>
<tr>
<td>Woodwork</td>
<td>10.7</td>
<td>8.3</td>
<td>13</td>
</tr>
<tr>
<td>Metalwork</td>
<td>8.6</td>
<td>6.7</td>
<td>15</td>
</tr>
<tr>
<td>Electrical Installation</td>
<td>7.2</td>
<td>2.7</td>
<td>47</td>
</tr>
<tr>
<td>Draughting</td>
<td>10.9</td>
<td>9.4</td>
<td>41</td>
</tr>
<tr>
<td>Welding</td>
<td>5.8</td>
<td>7.5</td>
<td>38</td>
</tr>
<tr>
<td>Plumbing</td>
<td>7.5</td>
<td>8.1</td>
<td>29</td>
</tr>
<tr>
<td>Masonry</td>
<td>4.3</td>
<td>2.1</td>
<td>4</td>
</tr>
<tr>
<td>Airconditioning &amp; Refriger.</td>
<td>9.8</td>
<td>12.5</td>
<td>14</td>
</tr>
<tr>
<td>Agricultural Science</td>
<td>15.6</td>
<td>11.6</td>
<td>14</td>
</tr>
<tr>
<td>Business Studies</td>
<td>16.2</td>
<td>12.1</td>
<td>16</td>
</tr>
<tr>
<td>Garment Construction</td>
<td>----</td>
<td>---</td>
<td>3</td>
</tr>
<tr>
<td>Clerk Typist</td>
<td>15.6</td>
<td>10.8</td>
<td>16</td>
</tr>
</tbody>
</table>

was a very important determining factor (Hollingshead, 1949; Super, 1957).

For purposes of this study, seven broad categories of job types were used.

Job-type was assigned on the basis of graduate description of their
jobs in the job-history section of the questionnaire. One very important categorization to be noted is that of apprentice. Most graduates who reported work in a skilled trade were considered to be apprentices, unless from their description of their tasks it was evident that they worked independently, and were so recognized. Self-employed graduates were also considered exceptions. Graduates who were deemed to be working as trainees or apprentices were categorized at level 6—semi-skilled work. Another point to be noted is that draughting is categorized as a white collar and not a skilled occupation, and this fits into level two (clerical occupations). Table 24 shows the breakdown.

Strong biases by stream are evident. Academic and Pre-technician graduates tend to be of similar standing, both being strongly oriented toward white collar or clerical type occupations. Specialized craft graduates on the other hand are concentrated primarily in the semi-skilled category. Overall, the bias is toward semi-skilled (45.8% of graduates), and clerical work (33.58%). Specialized craft graduates did not monopolize semi-skilled work, nor for that matter skilled work. The charts reveal active engagement of all streams in most job categories. Further analysis will indicate whether distributions observed are significantly different from each other.

Table 25 shows the breakdown of Job-types by sex. This chart reveals the way in which traditional occupational lines are drawn, females clustering around clerical work, and males dominating skilled, semi-skilled and unskilled work. Of those female graduates for whom
Table 24
Frequency Distribution of the Respondents
According to Job-Types (First Job Only)

<table>
<thead>
<tr>
<th>Job-Type</th>
<th>Pre-Technician</th>
<th></th>
<th>Academic</th>
<th></th>
<th>Specialized Crafts</th>
<th></th>
<th>All Cases</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>Professional/ Managerial</td>
<td>1</td>
<td>0.8</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>1</td>
<td>0.3</td>
</tr>
<tr>
<td>Clerical and Sales</td>
<td>54</td>
<td>45.8</td>
<td>37</td>
<td>52.9</td>
<td>42</td>
<td>20.1</td>
<td>133</td>
<td>33.5</td>
</tr>
<tr>
<td>Service</td>
<td>1</td>
<td>0.8</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>1</td>
<td>0.3</td>
</tr>
<tr>
<td>Agricultural, Etc</td>
<td>1</td>
<td>0.8</td>
<td>2</td>
<td>2.9</td>
<td>1</td>
<td>0.5</td>
<td>4</td>
<td>1.0</td>
</tr>
<tr>
<td>Skilled</td>
<td>5</td>
<td>4.3</td>
<td>1</td>
<td>1.4</td>
<td>24</td>
<td>11.5</td>
<td>30</td>
<td>7.5</td>
</tr>
<tr>
<td>Semi-Skilled</td>
<td>41</td>
<td>34.7</td>
<td>22</td>
<td>31.4</td>
<td>119</td>
<td>56.9</td>
<td>182</td>
<td>45.8</td>
</tr>
<tr>
<td>Unskilled</td>
<td>15</td>
<td>12.7</td>
<td>8</td>
<td>11.4</td>
<td>23</td>
<td>11.0</td>
<td>46</td>
<td>11.6</td>
</tr>
<tr>
<td>Total</td>
<td>118</td>
<td>100.0</td>
<td>70</td>
<td>100.0</td>
<td>209</td>
<td>100.0</td>
<td>397</td>
<td>100.0</td>
</tr>
</tbody>
</table>
Table 25

Job-Type Frequency Distribution by Sex

<table>
<thead>
<tr>
<th>Job-Type</th>
<th>Male</th>
<th>Female</th>
<th>All Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
</tr>
<tr>
<td>Professional/Managerial</td>
<td>1</td>
<td>0.4</td>
<td>--</td>
</tr>
<tr>
<td>Clerical and Sales</td>
<td>41</td>
<td>15.0</td>
<td>92</td>
</tr>
<tr>
<td>Service</td>
<td>--</td>
<td>---</td>
<td>1</td>
</tr>
<tr>
<td>Agricultural, Etc.</td>
<td>3</td>
<td>1.1</td>
<td>1</td>
</tr>
<tr>
<td>Skilled</td>
<td>30</td>
<td>11.0</td>
<td>--</td>
</tr>
<tr>
<td>Semi-skilled</td>
<td>156</td>
<td>57.1</td>
<td>26</td>
</tr>
<tr>
<td>Unskilled</td>
<td>42</td>
<td>15.4</td>
<td>4</td>
</tr>
<tr>
<td>Total</td>
<td>273</td>
<td>100.0</td>
<td>124</td>
</tr>
</tbody>
</table>

data were available, 74.2% reported a clerical type first job as opposed to 15.00% males. No female graduate reported a job-type in the skilled category. The senior comprehensive curriculum does not seem to be able to bring about needed change in the sexual bias of occupational patterns.

Salary--First Job

This is of course a most crucial variable. It is the one variable on which a labour market advantage must be illustrated before one stream could be said to hold more promise than another as a pre-employment educational pursuit.
Table 26 shows the breakdown on the variable first salary, by sex and stream. As we focus on the specialized crafts as a whole, a slight salary advantage is observed over other streams. This advantage is lost however when the salaries of male members of the sample are examined alone, pre-technician assuming the advantage here. When the salary of female graduates are examined, academics show an initial salary advantage over other streams. This pattern of instability makes it clear that it is decidedly hazardous to attribute to any one variable the power of determining salary.

Table 26

<table>
<thead>
<tr>
<th>Stream</th>
<th>Sex</th>
<th>Male</th>
<th>Female</th>
<th>All Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Mean</td>
<td>SD</td>
<td>N</td>
</tr>
<tr>
<td>Pre-Technician</td>
<td></td>
<td>$687</td>
<td>364</td>
<td>63</td>
</tr>
<tr>
<td>Academic</td>
<td></td>
<td>605</td>
<td>299</td>
<td>27</td>
</tr>
<tr>
<td>Specialized Craft</td>
<td></td>
<td>644</td>
<td>419</td>
<td>165</td>
</tr>
</tbody>
</table>

Table 27 shows a breakdown, by technical elective on the variable first salary. Though a few of the N's are admittedly small we get a good cross-sectional perspective of the kind of initial salaries graduates commanded. There seems to be a good deal of similarity between the salaries shown.
Table 27
Average Monthly Salaries (First Job) by Technical Elective

<table>
<thead>
<tr>
<th>Technical Elective</th>
<th>Mean (dollars)</th>
<th>SD</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auto and Diesel</td>
<td>$563</td>
<td>$319</td>
<td>25</td>
</tr>
<tr>
<td>Shorthand and Typing</td>
<td>658</td>
<td>290</td>
<td>17</td>
</tr>
<tr>
<td>Accounts/Bookkeeping</td>
<td>543</td>
<td>181</td>
<td>17</td>
</tr>
<tr>
<td>Clothing and Textiles</td>
<td>756</td>
<td>459</td>
<td>10</td>
</tr>
<tr>
<td>Food and Nutrition</td>
<td>552</td>
<td>289</td>
<td>22</td>
</tr>
<tr>
<td>Electronics</td>
<td>828</td>
<td>500</td>
<td>9</td>
</tr>
<tr>
<td>Machine Shop</td>
<td>758</td>
<td>483</td>
<td>23</td>
</tr>
<tr>
<td>Carpentry</td>
<td>692</td>
<td>423</td>
<td>12</td>
</tr>
<tr>
<td>Woodwork</td>
<td>795</td>
<td>366</td>
<td>11</td>
</tr>
<tr>
<td>Metalwork</td>
<td>597</td>
<td>395</td>
<td>11</td>
</tr>
<tr>
<td>Electrical Installation</td>
<td>565</td>
<td>284</td>
<td>47</td>
</tr>
<tr>
<td>Draughting</td>
<td>591</td>
<td>345</td>
<td>24</td>
</tr>
<tr>
<td>Welding</td>
<td>676</td>
<td>588</td>
<td>28</td>
</tr>
<tr>
<td>Plumbing</td>
<td>587</td>
<td>407</td>
<td>22</td>
</tr>
<tr>
<td>Masonry</td>
<td>900</td>
<td>282</td>
<td>2</td>
</tr>
<tr>
<td>Agricultural Science</td>
<td>531</td>
<td>159</td>
<td>6</td>
</tr>
<tr>
<td>Business Studies</td>
<td>723</td>
<td>347</td>
<td>8</td>
</tr>
<tr>
<td>Clerk-Typist</td>
<td>742</td>
<td>346</td>
<td>16</td>
</tr>
<tr>
<td>Airconditioning &amp; Refrig.</td>
<td>500</td>
<td>203</td>
<td>14</td>
</tr>
</tbody>
</table>

The effect of geography on the first salary of the graduates is shown in Table 28. The figures appear uniform except for graduates from the north who average $85.00 less than those from central, the next lowest group. Further analysis will reveal whether we could attribute any importance to geography as an independent variable when
Table 28
Regional Differences in First Salary

<table>
<thead>
<tr>
<th>Region</th>
<th>Mean (Dollars)</th>
<th>SD</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>East</td>
<td>668</td>
<td>292</td>
<td>70</td>
</tr>
<tr>
<td>Central</td>
<td>652</td>
<td>277</td>
<td>56</td>
</tr>
<tr>
<td>North</td>
<td>585</td>
<td>353</td>
<td>99</td>
</tr>
<tr>
<td>South</td>
<td>630</td>
<td>434</td>
<td>153</td>
</tr>
<tr>
<td>All Regions</td>
<td>629</td>
<td>368</td>
<td>378</td>
</tr>
</tbody>
</table>

using first salary as the criterion. This cannot readily be discerned by inspection of the means.

On-the-Job Training (OJT)

Several of the graduates in the study \( N = 85 \) indicated that they had participated in National Training Board sponsored OJT. For purposes of this study, participation in this programme was considered a first job experience. The OJT programme usually runs for a period of six months beyond comprehensive school graduation. The opportunity costs for participants would be the salaries they would otherwise receive had they not been undergoing OJT. Initial OJT salaries should at least match this opportunity cost to be of economic benefit to the graduate. As can be seen from Table 29, the margin between the initial salaries of OJT and non-OJT graduates is substantial ($182 per month). This is indeed a curious phenomenon. OJT is apparently conferring on
Table 29
Salary Differences Due to On-the-Job Training (OJT) Status

<table>
<thead>
<tr>
<th>Status</th>
<th>Mean (Dollars)</th>
<th>SD</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>OJT</td>
<td>$486</td>
<td>$210</td>
<td>80</td>
</tr>
<tr>
<td>Non-OJT</td>
<td>668</td>
<td>393</td>
<td>298</td>
</tr>
</tbody>
</table>

recipients a labour market disadvantage, if we use initial salary alone as the criterion. Considering that the programme is subsidized by the State, it would appear that the greater part of the economic benefit to be derived accrues to participating firms, not to participants.

Job Satisfaction—First Job

The job satisfaction measure allows a check on how the graduates felt about their first job. To what extent did it meet with their satisfaction. The question (Q10j) was "How satisfied were you with this job?". Four categories of responses were allowed, as shown in Table 30. The figure also shows the breakdown by stream and sex. If we group rows 1 and 2 under the heading satisfied, and rows 3 and 4 under the heating dissatisfied and use stream as the unit of analysis, it becomes apparent that 42.85% of the pre-technician graduates who responded (n = 119) indicated dissatisfaction with their first job, with the corresponding figures for academics and specialized crafts being 36.6% (n = 71) and 29.5% (n = 203) respectively.
Table 30

Frequency Distribution for Respondents on the Variable Job Satisfaction

<table>
<thead>
<tr>
<th>Stream</th>
<th>Pre-Technician</th>
<th></th>
<th>Academic</th>
<th></th>
<th>Specialized Crafts</th>
<th></th>
<th>All Cases</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male No.</td>
<td>Female No.</td>
<td>Total No.</td>
<td>%</td>
<td>Male No.</td>
<td>Female No.</td>
<td>Total No.</td>
<td>%</td>
</tr>
<tr>
<td>Very Satisfied</td>
<td>11</td>
<td>8</td>
<td>19</td>
<td>16.0</td>
<td>3</td>
<td>7</td>
<td>10</td>
<td>14.1</td>
</tr>
<tr>
<td>Satisfied</td>
<td>30</td>
<td>19</td>
<td>49</td>
<td>41.2</td>
<td>12</td>
<td>23</td>
<td>35</td>
<td>49.3</td>
</tr>
<tr>
<td>Dissatisfied</td>
<td>21</td>
<td>17</td>
<td>38</td>
<td>31.9</td>
<td>11</td>
<td>12</td>
<td>23</td>
<td>32.4</td>
</tr>
<tr>
<td>Very Dissatisfied</td>
<td>10</td>
<td>3</td>
<td>13</td>
<td>10.9</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>4.2</td>
</tr>
<tr>
<td>Total</td>
<td>72</td>
<td>47</td>
<td>119</td>
<td>100.0</td>
<td>28</td>
<td>43</td>
<td>71</td>
<td>100.0</td>
</tr>
</tbody>
</table>
These figures seem to indicate a pattern of dissatisfaction, felt less by specialized craft graduates than their peers from other streams. Table 31 indicates the means by stream, 1 (very satisfied) being the minimum and 4 (very dissatisfied) being the maximum possible scores. It allows a clearer picture of the feelings of the graduates. Further interpretation of these means will be pursued later in the analysis.

**Table 31**

Mean Job-Satisfaction* by Stream

<table>
<thead>
<tr>
<th>Stream</th>
<th>Mean</th>
<th>SD</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-technician</td>
<td>2.37</td>
<td>.88</td>
<td>119</td>
</tr>
<tr>
<td>Academic</td>
<td>2.26</td>
<td>.75</td>
<td>71</td>
</tr>
<tr>
<td>Specialized Craft</td>
<td>2.07</td>
<td>.85</td>
<td>203</td>
</tr>
<tr>
<td>All Streams</td>
<td>2.20</td>
<td>.85</td>
<td>393</td>
</tr>
</tbody>
</table>

* Score - 1 = Very Satisfied
  2 = Satisfied
  3 = Dissatisfied
  4 = Very Dissatisfied

**Preparedness—First Job**

The opinions of graduates could provide good measures of the extent to which educational programmes meet their stated goals. Graduates in the study were asked to give their opinions on several key variables, one of them being the extent to which they thought secondary education prepared them for their first job. Table 32 shows the responses with stream and sex being units of analysis. Mean preparedness by stream is shown in Table 33.
Table 32

Frequency Distribution for Respondents on the Variable Preparedness for the First Job

<table>
<thead>
<tr>
<th>Preparedness</th>
<th>Pre-Technician</th>
<th>Stream</th>
<th>Specialized Crafts</th>
<th>All Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
<td>Total</td>
<td>Male</td>
</tr>
<tr>
<td>Excellent</td>
<td>5</td>
<td>7</td>
<td>12</td>
<td>3</td>
</tr>
<tr>
<td>Good</td>
<td>23</td>
<td>15</td>
<td>38</td>
<td>5</td>
</tr>
<tr>
<td>Fair</td>
<td>23</td>
<td>21</td>
<td>44</td>
<td>15</td>
</tr>
<tr>
<td>Poor</td>
<td>15</td>
<td>5</td>
<td>20</td>
<td>6</td>
</tr>
<tr>
<td>Totals</td>
<td>66</td>
<td>48</td>
<td>114</td>
<td>29</td>
</tr>
</tbody>
</table>
Table 33
Mean Preparedness* by Stream

<table>
<thead>
<tr>
<th>Stream</th>
<th>Mean</th>
<th>SD</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-technician</td>
<td>2.63</td>
<td>.89</td>
<td>114</td>
</tr>
<tr>
<td>Academic</td>
<td>2.64</td>
<td>.91</td>
<td>70</td>
</tr>
<tr>
<td>Specialized Crafts</td>
<td>2.37</td>
<td>.93</td>
<td>199</td>
</tr>
<tr>
<td>All Streams</td>
<td>2.50</td>
<td>.92</td>
<td>383</td>
</tr>
</tbody>
</table>

* Scale: 1 - Excellent Preparation  
2 - Good Preparation  
3 - Fair Preparation  
4 - Poor Preparation

From Table 32, it can be seen that 17.6% of those pre-technician graduates who responded to this question thought the school had prepared them poorly for their first job. The comparable figures for the academic and specialized crafts streams were 14.3% and 11.0% respectively. Overall, 46.8% of all students gave school a rating of excellent or good on the preparedness question.

When the means are examined (Table 33), the closeness of the academic and pre-technician responses became apparent, with that of the specialized crafts set apart. Once again, from inspection, specialized crafts graduates were more ready than other students to claim that their preparation for their first job was adequate. Generally though, the means were far away enough from 1 (Excellent preparation) to allow the general observation that much was left to be
desired on the variable preparedness. One would expect that at least the mean of the specialized craft stream would approach 1, since the whole business of the school as far as this stream was concerned was to prepare them for a job. The mean here (2.37) indicates that for this group the perception of preparedness was that it was "fair" to "good."

Relatedness

One of the more important dependent variables in this study is the relatedness of the first job to student preparation. Following Rossmann (1978), the perceptions of students were used as indicators. The only really meaningful analysis of this variable comes from examining the specialized craft stream. Though pre-technician responses are included, these serve only the practical interest of trying to determine the extent to which these graduates find careers related to their technical option. Academic students do not enter into the analysis for obvious reasons.

The question asked was "How related was this job to the trade or occupational area you studied in secondary school?". The graduates were asked to respond on a four-point scale as indicated in Table 34. The results here are not encouraging. Of all specialized craft students who responded to the question (n = 204) only 36.80% were able to report finding work which was the "same" as what they were trained for. For males the figure was 38.95% and for females 25%. A further 16.20% of respondents indicated their first job to be
Table 34

Frequency Distributions of Respondents on the Variable Relatedness of Training to Their First Job

<table>
<thead>
<tr>
<th>Relatedness</th>
<th>Pre-Technician</th>
<th></th>
<th>Specialized Crafts</th>
<th></th>
<th>All Cases</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male Female</td>
<td>Total</td>
<td>Male Female</td>
<td>Total</td>
<td>Male Female</td>
<td>Total</td>
</tr>
<tr>
<td></td>
<td>N N Z</td>
<td>N N Z</td>
<td>N N Z</td>
<td>N N Z</td>
<td>N N Z</td>
<td>N N Z</td>
</tr>
<tr>
<td>Same as area of training</td>
<td>9 12.9</td>
<td>9 18.4</td>
<td>18 15.1</td>
<td>67 39.0</td>
<td>8 25.0</td>
<td>75 36.8</td>
</tr>
<tr>
<td></td>
<td>18 20.4</td>
<td>25 18.4</td>
<td>33 16.9</td>
<td>4 15.9</td>
<td>16.2</td>
<td>44 16.9</td>
</tr>
<tr>
<td></td>
<td>18 24.9</td>
<td>30 25.2</td>
<td>6 18.8</td>
<td>30 14.7</td>
<td>43.2</td>
<td>64 14.0</td>
</tr>
<tr>
<td></td>
<td>28 40.0</td>
<td>18 36.7</td>
<td>52 38.7</td>
<td>14 43.7</td>
<td>66 32.3</td>
<td>80 30.2</td>
</tr>
<tr>
<td>Total</td>
<td>70 100.0</td>
<td>49 100.0</td>
<td>119 100.0</td>
<td>172 100.0</td>
<td>32 100.0</td>
<td>204 100.0</td>
</tr>
</tbody>
</table>

188
"highly related" to their training. Overall then, we see that 53% of specialized craft respondents could say with assurance that they found work that was meaningfully related to their training. With respect to the remainder, 32.35% reported their first job as being "not at all" related to their training, while a further 14.7% could find only "slight" relationships between the two. The picture was bleaker for female graduates than for males. A significant percentage of female specialized craft graduates (43.75%) reported their first job as being not related, as opposed to 30.23% of males.

Of those pre-technician graduates reporting on this question, 36.12% reported finding highly related work, or work the same as their area of training. Some of these graduates must have pursued specialized draughting courses, and as such should be expected to find it easier to link training with work. Still, the figure is encouraging for this group, especially given that pre-technicians for the most part pursue a general curriculum. They have the option to pursue or not pursue their technical elective of choice as a career. (Table 35 shows mean values.)

Information in the Job Market

Information is the means by which the supply and demand sides of the labour market are joined. An inefficient or inadequate system of information might distort the true picture of the market place. If graduates do not have information about vacancies, they would have difficulties locating jobs. The study sought to determine the pattern
Table 35
Mean Relatedness* (First Job) By Stream

<table>
<thead>
<tr>
<th>Stream</th>
<th>Mean</th>
<th>SD</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-technician</td>
<td>2.87</td>
<td>1.09</td>
<td>119</td>
</tr>
<tr>
<td>Specialized Crafts</td>
<td>2.42</td>
<td>1.27</td>
<td>204</td>
</tr>
</tbody>
</table>

*Scale: 1 - Same as area of training
2 - Highly related
3 - Slightly
4 - Not at all

of information reported by respondents, by asking how students found out about their first job. Overall, nine categories of answers were identified. Responses are summarized in Table 36.

There seems to be some uniformity in the way in which students from the different streams obtained information about their first job. Personal inquiry along with the word of friends seem to be the primary means of gaining job information, representing 22.6% and 23.08% of all cases respectively. Parents and relatives account for 13.9% of all cases. The school or teachers figured in only 6% of the cases.

Current (Or Most Recent) Job

The farther away one gets from the time of graduation, the more difficult it becomes to attribute labour market experiences to formal schooling. Other factors, such as drive, trainability, further education, etc. play an important, not easily discernible role. As focus is
Table 36
Frequency Distributions Indicating Job Information Patterns

<table>
<thead>
<tr>
<th>Information Source</th>
<th>Pre-Technician</th>
<th></th>
<th>Academic</th>
<th></th>
<th>Specialized Crafts</th>
<th></th>
<th>All Cases</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>Friend/Acquaintance</td>
<td>26</td>
<td>26.8</td>
<td>11</td>
<td>17.5</td>
<td>38</td>
<td>22.2</td>
<td>75</td>
<td>22.7</td>
</tr>
<tr>
<td>Parents</td>
<td>8</td>
<td>8.2</td>
<td>6</td>
<td>9.5</td>
<td>13</td>
<td>7.6</td>
<td>27</td>
<td>8.2</td>
</tr>
<tr>
<td>Relatives</td>
<td>9</td>
<td>9.3</td>
<td>5</td>
<td>7.9</td>
<td>5</td>
<td>2.9</td>
<td>19</td>
<td>5.7</td>
</tr>
<tr>
<td>Teacher/School</td>
<td>5</td>
<td>5.2</td>
<td>--</td>
<td>---</td>
<td>15</td>
<td>8.8</td>
<td>20</td>
<td>6.0</td>
</tr>
<tr>
<td>Advertisement</td>
<td>10</td>
<td>10.3</td>
<td>12</td>
<td>19.1</td>
<td>20</td>
<td>11.7</td>
<td>42</td>
<td>12.7</td>
</tr>
<tr>
<td>Personal Inquiry/Application</td>
<td>19</td>
<td>19.6</td>
<td>20</td>
<td>31.7</td>
<td>43</td>
<td>25.2</td>
<td>82</td>
<td>24.8</td>
</tr>
<tr>
<td>National Training Board</td>
<td>7</td>
<td>7.2</td>
<td>3</td>
<td>4.8</td>
<td>25</td>
<td>14.6</td>
<td>35</td>
<td>10.6</td>
</tr>
<tr>
<td>Family Friend/Acquaintance</td>
<td>9</td>
<td>9.3</td>
<td>5</td>
<td>7.9</td>
<td>12</td>
<td>7.0</td>
<td>26</td>
<td>7.8</td>
</tr>
<tr>
<td>Know Boss</td>
<td>4</td>
<td>4.1</td>
<td>1</td>
<td>1.6</td>
<td>--</td>
<td>---</td>
<td>5</td>
<td>1.5</td>
</tr>
<tr>
<td>Total</td>
<td>97</td>
<td>100.0</td>
<td>63</td>
<td>100.0</td>
<td>171</td>
<td>100.0</td>
<td>331</td>
<td>100.0</td>
</tr>
</tbody>
</table>
extended to the current or most recent job of graduates, these hazards have to be borne in mind. Still, we can perhaps get a good picture as to whether curriculum differences have identifiable lasting effects, and in which direction do we find advantages (if any) pointing.

Table 37 summarizes the responses of those students who reported having a job that could be described as current or their most recent. For comparison, first job analogs are presented in Table 38. Despite the small N's in some columns in Table 37 a definite increase in salary is discernible across the streams and sexes. Another observable change with respect to salary is that male specialized craft students now command the highest of all wages, contrary to the first job. There is also dramatic increase in the salary of male academic students, who, contrary to first job figures, now report earning more than their female counterparts. Considering that the overall average salary for the current or most recent job is $977 (N = 133) we find that it is only these two groups (male academic and specialized craft graduates) who report above average salaries. The average for females (together or by stream) is less than the overall mean.

No consistent pattern can be discerned on the variables preparedness, satisfaction and relatedness as we move from the first job to the current or most recent job. If however the pre-technician stream is isolated, we find all of the mean values on these variables to have decreased (approaching 1), an indication that with time, students from this stream find qualitatively better jobs. As the specialized craft stream is isolated, mean relatedness increase
Table 37
Labour Market Measures—
Current or Most Recent Job

<table>
<thead>
<tr>
<th>Stream</th>
<th>Pre-Technician</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
<td>Male</td>
<td>Female</td>
<td>Male</td>
<td>Female</td>
<td>All Cases</td>
<td></td>
</tr>
<tr>
<td>Mean Salary</td>
<td>948</td>
<td>26</td>
<td>898</td>
<td>10</td>
<td>1011</td>
<td>10</td>
<td>674</td>
<td>9</td>
</tr>
<tr>
<td>Mean Preparedness</td>
<td>2.4</td>
<td>26</td>
<td>2.1</td>
<td>9</td>
<td>3</td>
<td>10</td>
<td>2.5</td>
<td>8</td>
</tr>
<tr>
<td>Mean Relatedness</td>
<td>2.8</td>
<td>26</td>
<td>2.9</td>
<td>9</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Mean Satisfaction</td>
<td>2.07</td>
<td>27</td>
<td>1.77</td>
<td>9</td>
<td>2.4</td>
<td>10</td>
<td>2.2</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>Pre-Technician</td>
<td>Academic</td>
<td>Specialized Craft</td>
<td>All Cases</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>----------------------</td>
<td>----------------</td>
<td>----------</td>
<td>-------------------</td>
<td>-----------</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean Salary</td>
<td>687</td>
<td>63</td>
<td>547</td>
<td>51</td>
<td>604</td>
<td>27</td>
<td>620</td>
<td>40</td>
</tr>
<tr>
<td>Mean Preparedness</td>
<td>2.7</td>
<td>66</td>
<td>2.5</td>
<td>48</td>
<td>2.8</td>
<td>29</td>
<td>2.5</td>
<td>42</td>
</tr>
<tr>
<td>Mean Relatedness</td>
<td>2.9</td>
<td>70</td>
<td>2.7</td>
<td>49</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Mean Satisfaction</td>
<td>2.4</td>
<td>72</td>
<td>2.3</td>
<td>47</td>
<td>2.4</td>
<td>28</td>
<td>2.1</td>
<td>43</td>
</tr>
</tbody>
</table>
dramatically away from 1 (same as area of training) towards 4 (not at all) both for males (2.3 to 2.6), and females (2.8 to 3.5). These numbers force the question whether school effects are not perhaps fleeting; whether in the long run students do not regress toward the careers which circumstance, family, luck, drive and a host of other imponderables dictate?

OJT

It is useful to observe the way in which students who participated in National Training Board sponsored OJT differed in experiences and outlook, and from their non-OJT peers, from the first job to their current or most recent jobs. Table 39 shows this summary.

Table 39

Comparison of OJT and Non-OJT Participants on First and Most Recent Job Indicators

<table>
<thead>
<tr>
<th></th>
<th>OJT</th>
<th></th>
<th></th>
<th>Non-OJT</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>First Job</td>
<td>Last Job</td>
<td>Value</td>
<td>Value</td>
<td>First Job</td>
<td>Last Job</td>
</tr>
<tr>
<td>Mean Salary</td>
<td>$486 80</td>
<td>$989 37</td>
<td></td>
<td>$669 296</td>
<td>$972 97</td>
<td></td>
</tr>
<tr>
<td>Mean Preparedness</td>
<td>2.17 79</td>
<td>2.15 33</td>
<td></td>
<td>2.58 302</td>
<td>2.65 99</td>
<td></td>
</tr>
<tr>
<td>Mean Relatedness</td>
<td>2.06 76</td>
<td>2.28 35</td>
<td></td>
<td>2.77 257</td>
<td>2.87 87</td>
<td></td>
</tr>
<tr>
<td>Mean Satisfaction</td>
<td>2.07 80</td>
<td>1.91 37</td>
<td></td>
<td>2.23 210</td>
<td>1.90 103</td>
<td></td>
</tr>
</tbody>
</table>

A striking jump in salary can be observed as OJT participants changed jobs. The average salary is now $989 as opposed to the
initial $486, $17.00 above the average of non-OJT graduates. Of note too is a shift in the index of relatedness in a negative direction (away from 1).

Engaging the Labour Market

Under this heading the following factors are analyzed: (1) the percentage of time students reported actually working at a full-time job, (2) whether or not stream was an advantage in finding full-time work, and (3) the role of stream in job mobility.

Percentage of Time Engaged

One of the major concerns of the study was the amount of time students actually spent engaged in full-time work since leaving school—What were the factors which determined this, and if stream was one of these factors, what was the extent of its role. The percentage of time spent by each student was calculated from job history data given. Conversion to percentage was necessary since graduates from four different year groups were in the sample. Table 40 shows the

<table>
<thead>
<tr>
<th>Stream</th>
<th>Mean</th>
<th>SD</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-technician</td>
<td>30.79%</td>
<td>30.02</td>
<td>181</td>
</tr>
<tr>
<td>Academic</td>
<td>25.42</td>
<td>31.67</td>
<td>135</td>
</tr>
<tr>
<td>Specialized Craft</td>
<td>49.08</td>
<td>35.13</td>
<td>234</td>
</tr>
</tbody>
</table>
breakdown by stream. The specialized crafts stream graduate on average, seems to have fared best among all graduates when the criterion was percentage of time engaged in full-time work. Still, this stream could only assure full-time work to its graduates 49.08% of the time. Academic stream graduates fare worst of all here, full-time work being assured only 25.4% of the time. One suspects that further pursuit of educational credentials may be part cause for the low academic percentage—students opting for part-time or private schooling instead of work. But it is difficult to accept schooling as an option to work, from a national perspective, when a graduate has already had his educational quota, and returns for more at the expense perhaps of the taxpayer. Educational trends of the respondents will be reviewed later in the study. Another more general reason for overall low engagement—a possible root cause—might be an economy with limited absorptive capacity.

Table 41 shows the breakdown on the variable "percentage," by geography. There is some uniformity here, except for the North, where graduates appear to have had an advantage. As the unit of analysis shifts to sex (see Table 42) we find a pronounced difference in the percentage of time engaged in full-time work since graduation, in favour of males (50.35% to 20.46%). On this criterion, sex seems at least as powerful an independent variable as stream.

When the unit of analysis shifts to OJT, we find that OJT participants reported spending almost twice as much time as other graduates being engaged on the labour market. This is an encouraging sign regarding the effectiveness of the OJT programme (see Table 43).
Table 41
Percentage of Time Spent Engaged in Full-Time Work—By Region

<table>
<thead>
<tr>
<th>Region</th>
<th>Mean</th>
<th>SD</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>East</td>
<td>37.14%</td>
<td>34.26</td>
<td>104</td>
</tr>
<tr>
<td>Central</td>
<td>33.61</td>
<td>33.27</td>
<td>89</td>
</tr>
<tr>
<td>North</td>
<td>46.97</td>
<td>33.25</td>
<td>118</td>
</tr>
<tr>
<td>South</td>
<td>34.05</td>
<td>34.39</td>
<td>242</td>
</tr>
</tbody>
</table>

Table 42
Percentage of Time Spent Engaged in Full-Time Work—By Sex

<table>
<thead>
<tr>
<th>Sex</th>
<th>Mean</th>
<th>SD</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>50.35%</td>
<td>33.74</td>
<td>312</td>
</tr>
<tr>
<td>Female</td>
<td>20.46</td>
<td>26.77</td>
<td>241</td>
</tr>
</tbody>
</table>

Table 43
Percentage of Time Spent Engaged in Full-Time Work—By OJT

<table>
<thead>
<tr>
<th>OJT</th>
<th>Mean</th>
<th>SD</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>OJT</td>
<td>62.1%</td>
<td>27.4</td>
<td>80</td>
</tr>
<tr>
<td>Non-OJT</td>
<td>33.4</td>
<td>33.6</td>
<td>468</td>
</tr>
</tbody>
</table>
The Effect of Stream in the Search for Jobs

A simple test of whether stream confers a labour market advantage is to observe whether students from a given stream appear more likely to find jobs (assuming that students uniformly seek work). Did specialized craft students have an advantage here? Table 44 explores this for those students for whom it was possible to make this determination. From inspection it would appear that the specialized crafts graduate also had an advantage here, 83.0% of those who reported indicating holding a job at some stage since graduation. Pre-technician graduates also seem to do well here, 68.1% reporting at least one contact with the labour market. The poorest of all performers appears to be the academic graduate.

Job Mobility

The final concern in this section is with job mobility; the question of freedom to move within the job market. Job flexibility allows the worker the freedom to make the most financially rewarding and
satisfying choices. Table 45 shows the breakdown on this variable, by stream. Again the specialized craft graduate appears to have greater freedom here, 48% of those for whom data were available indicating making at least one job change. As before, pre-technician and academic graduates trailed, in that order.

Table 45

<table>
<thead>
<tr>
<th>Response</th>
<th>Pre-Technician</th>
<th>Stream</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>Yes</td>
<td>38</td>
<td>38.4</td>
<td>19</td>
<td>31.7</td>
<td>88</td>
<td>48.1</td>
</tr>
<tr>
<td>No</td>
<td>61</td>
<td>61.6</td>
<td>41</td>
<td>68.3</td>
<td>95</td>
<td>51.9</td>
</tr>
<tr>
<td>Total</td>
<td>99</td>
<td>100.0</td>
<td>60</td>
<td>100.0</td>
<td>183</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Post-School Educational Experiences

Earlier in the study it was shown that several of the respondents, across streams, indicated that they were, at the time of the study, engaged in schooling of some sort. Authorities at the National Training Board were interested in the dimensions of this trend, even at the questionnaire development stage, perhaps to gauge how best to cope with this phenomenon. It is well to remember also, that the senior comprehensive school specialized crafts programme was meant to be complete in itself—parallel with programmes in the youth camps, technical schools, trade centres, etc. If we find students from this stream still wanting to pursue training in these institutions, it might
be an indication of programme shortcomings. Also, if we find students looping back into the evening programmes at the senior comprehensive, we could only wonder at what cost, and at the inefficiencies in programme execution which prompted this. Table 46 shows the breakdown of the post-secondary education of respondents across streams.

The most striking statistic here is the number of students who felt it necessary to supplement their education so soon after graduating. Fully 75.9% of the respondents indicated pursuing some further educational experience. As the Specialized Crafts stream is isolated, we find that 69% (185 out of 267) of its students sought further education. Of those who sought further education, 63.7% indicated returning to comprehensive school evening classes. Some 40 students in this stream (21.6% of those indicating further education, and 14.9% of the specialized craft sample) indicated either having attended a trade center, or a technical school (part and full-time).

As we look to the academic stream, we find that many of these graduates seek specific technical training, either through private commercial schools (15.4% of respondents) or to a lesser extent through the technical schools and youth camps. This is an instructive phenomenon, in that it suggests another way in which specific training might be approached. Why not have a comprehensive education first, and specific training in some skill after?
Table 46
Post-Comprehensive Educational Experiences of Respondents

<table>
<thead>
<tr>
<th>Educational Experiences</th>
<th>Pre-Technician</th>
<th>Academic</th>
<th>Specialized Crafts</th>
<th>All Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
<td>%</td>
<td>No.</td>
<td>%</td>
</tr>
<tr>
<td>Youth Camp</td>
<td>9</td>
<td>4.7</td>
<td>4</td>
<td>2.7</td>
</tr>
<tr>
<td>Sr. Comp. Evening Classes</td>
<td>95</td>
<td>49.7</td>
<td>58</td>
<td>38.9</td>
</tr>
<tr>
<td>Full-Time Technical</td>
<td>10</td>
<td>5.2</td>
<td>7</td>
<td>4.7</td>
</tr>
<tr>
<td>Correspondence Course</td>
<td>15</td>
<td>7.9</td>
<td>4</td>
<td>2.7</td>
</tr>
<tr>
<td>Overseas Training</td>
<td>3</td>
<td>1.6</td>
<td>2</td>
<td>1.3</td>
</tr>
<tr>
<td>Part-Time Technical</td>
<td>9</td>
<td>4.7</td>
<td>1</td>
<td>0.7</td>
</tr>
<tr>
<td>Private Commercial/Technical School</td>
<td>18</td>
<td>9.4</td>
<td>23</td>
<td>15.4</td>
</tr>
<tr>
<td>Trade Centre</td>
<td>9</td>
<td>4.7</td>
<td>9</td>
<td>6.1</td>
</tr>
<tr>
<td>No Further Education</td>
<td>23</td>
<td>12.1</td>
<td>41</td>
<td>27.5</td>
</tr>
<tr>
<td>Total</td>
<td>191</td>
<td>100.0</td>
<td>149</td>
<td>100.0</td>
</tr>
</tbody>
</table>
Focus on Guidance and Placement

Often, the difficulty one finds expressed with regard to vocational education is that students (at the age of 14) are too young, too uninformed or naive to rationally make a choice of career. Those who have observed the system of junior secondary and senior comprehensive schools in Trinidad and Tobago often complain that selection procedures are perhaps too arbitrary. There may not be enough of an information base from which to place students into streams. Several questions in the study were directed toward these and related issues; the question of guidance.

Table 47 shows the responses of subjects to the question how they were allocated to streams. It is immediately evident that only about half of all respondents (47.3%) thought they were assigned to their streams on the basis of choice. Only 12.4% of all students thought that the basis for their assignment was their 14 plus results. This is a surprisingly small number, given that this is probably the only function the test serves. But perhaps there is wisdom in not relying on its results, given the uniformly poor performance of the majority of students who take it (as shown earlier). Some schools have opted for tests of their own, in lieu of the 14 plus, as is evident from the percentage of students (16.1%) who indicated having their stream decided on the basis of a placement test.

Once more the focus has to be on the specialized craft stream—those students for whom choice means sacrificing general studies in
Table 47
How Respondents Were Assigned to Streams

<table>
<thead>
<tr>
<th>Placement</th>
<th>Pre-Technician</th>
<th>Academic</th>
<th>Specialized Crafts</th>
<th>All Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
<td>%</td>
<td>No.</td>
<td>%</td>
</tr>
<tr>
<td>14 Plus Results</td>
<td>19</td>
<td>10.7</td>
<td>20</td>
<td>14.5</td>
</tr>
<tr>
<td>Jr. Secondary Reports and Records</td>
<td>18</td>
<td>10.2</td>
<td>4</td>
<td>3.0</td>
</tr>
<tr>
<td>Placement Test</td>
<td>18</td>
<td>10.2</td>
<td>29</td>
<td>21.0</td>
</tr>
<tr>
<td>Subject Choices</td>
<td>92</td>
<td>52.0</td>
<td>58</td>
<td>42.0</td>
</tr>
<tr>
<td>Whether There Was Room in a Class</td>
<td>14</td>
<td>7.9</td>
<td>12</td>
<td>8.7</td>
</tr>
<tr>
<td>Guidance Person's Recommendation</td>
<td>9</td>
<td>5.1</td>
<td>4</td>
<td>2.9</td>
</tr>
<tr>
<td>Don't Know</td>
<td>7</td>
<td>3.9</td>
<td>11</td>
<td>7.9</td>
</tr>
<tr>
<td>Total</td>
<td>177</td>
<td>100.0</td>
<td>138</td>
<td>100.0</td>
</tr>
</tbody>
</table>
favour of narrow training. It is clear from Table 47 that there is no standard method for making allocations here. A large sector of students who responded indicated that they got their subject choice (46.7%), but the remainder acknowledged an array of other means of placement. It appears that the method of assignment is left to the schools, and that the schools differ in assignment procedure. Table 48 explores these differences. The one major school difference seems to be on the use of placement tests. Graduates of Barataria, Marabella and Mucurapo report this method more often than others as the way in which they were placed. None of the schools appear to have a guidance service dealing with assignment to stream. All seem to allow a good measure of choice.

Concerned that graduates might have misgivings about the curriculum they pursued now that they are on the labour market, opportunity was provided (through Question 13) for them to indicate whether this was the case. The question was "Are you satisfied with the choice of subjects you pursued in secondary schools?". Table 49 shows the responses by stream. The picture seems to be one of contentment generally, with academic graduates appearing more prone to having second thoughts. The pre-technician and specialized craft figures are remarkably close if the first two rows are taken to be indicative of satisfaction, and the last two, dissatisfaction. Table 50 shows mean satisfaction across streams, again on a four-point scale ranging from "Very satisfied" (1) to "Very dissatisfied" (4). Again the specialized crafts mean is the lowest, indicating a higher degree of satisfaction with the programmes pursued.
Table 48

How Schools Assigned the Respondents to Streams

<table>
<thead>
<tr>
<th>Placement</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>All Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
</tr>
<tr>
<td>14 Plus Results</td>
<td>8</td>
<td>11.9</td>
<td>5</td>
<td>8.9</td>
<td>5</td>
<td>7.6</td>
<td>5</td>
<td>13.9</td>
<td>2</td>
<td>8.7</td>
<td>6</td>
</tr>
<tr>
<td>Jr. Secondary</td>
<td>3</td>
<td>4.5</td>
<td>2</td>
<td>3.6</td>
<td>7</td>
<td>10.6</td>
<td>9</td>
<td>25.0</td>
<td>1</td>
<td>4.3</td>
<td>2</td>
</tr>
<tr>
<td>Reports and Records</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Placement Test</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subject Choices</td>
<td>36</td>
<td>53.7</td>
<td>20</td>
<td>35.7</td>
<td>40</td>
<td>60.6</td>
<td>12</td>
<td>33.3</td>
<td>14</td>
<td>60.9</td>
<td>17</td>
</tr>
<tr>
<td>Whether There Was Room in a Class</td>
<td>10</td>
<td>14.9</td>
<td>2</td>
<td>3.6</td>
<td>9</td>
<td>13.6</td>
<td>3</td>
<td>8.3</td>
<td>2</td>
<td>8.7</td>
<td>2</td>
</tr>
<tr>
<td>Guidance Person's Recommendation</td>
<td>5</td>
<td>7.5</td>
<td>3</td>
<td>5.3</td>
<td>1</td>
<td>1.5</td>
<td>2</td>
<td>5.6</td>
<td>--</td>
<td>--</td>
<td>4</td>
</tr>
<tr>
<td>Don't Know</td>
<td>5</td>
<td>7.5</td>
<td>2</td>
<td>3.6</td>
<td>3</td>
<td>4.6</td>
<td>3</td>
<td>8.3</td>
<td>1</td>
<td>4.3</td>
<td>8</td>
</tr>
<tr>
<td>Total</td>
<td>67</td>
<td>100.0</td>
<td>56</td>
<td>100.0</td>
<td>66</td>
<td>100.0</td>
<td>36</td>
<td>100.0</td>
<td>23</td>
<td>100.0</td>
<td>68</td>
</tr>
</tbody>
</table>

School Key:
0 - Arima S.C.
1 - Barataria S.C.
2 - Chaguaramas S.C.
3 - Fyzabad S.C.
4 - Malick S. C.
5 - Marabella S.C.
6 - Mucurapo S. C.
7 - Pleasantville S. C.
8 - Siparia S. C.
9 - St. Augustine S. C.
Table 49
Frequency Distributions on the Variable Satisfaction with Subject Choice

<table>
<thead>
<tr>
<th>Satisfied</th>
<th>Pre-Technician</th>
<th>Academic</th>
<th>Specialized Crafts</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
<td>%</td>
<td>No.</td>
</tr>
<tr>
<td>Very Satisfied</td>
<td>59</td>
<td>31.0</td>
<td>34</td>
</tr>
<tr>
<td>Satisfied</td>
<td>99</td>
<td>52.1</td>
<td>67</td>
</tr>
<tr>
<td>Dissatisfied</td>
<td>21</td>
<td>11.1</td>
<td>36</td>
</tr>
<tr>
<td>Very Dissatisfied</td>
<td>11</td>
<td>5.8</td>
<td>6</td>
</tr>
</tbody>
</table>

Table 50
Mean Satisfaction* With Subject Choice—By Stream

<table>
<thead>
<tr>
<th>Stream</th>
<th>Mean</th>
<th>SD</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-Technician</td>
<td>1.91</td>
<td>.80</td>
<td>190</td>
</tr>
<tr>
<td>Academic</td>
<td>2.09</td>
<td>.80</td>
<td>143</td>
</tr>
<tr>
<td>Specialized Crafts</td>
<td>1.78</td>
<td>.84</td>
<td>264</td>
</tr>
<tr>
<td>All Streams</td>
<td>1.90</td>
<td>.83</td>
<td>597</td>
</tr>
</tbody>
</table>

* Scale: 1 - Very Satisfied  
2 - Satisfied  
3 - Dissatisfied  
4 - Very Dissatisfied
Still on the question of guidance and careers, and borrowing from Foster (1965), the graduates were asked to indicate which type of career they would like to follow if completely free to choose. A summary of the responses (by stream) is shown in Table 51. The bias of specialized craft graduates toward the artisan and skilled worker category is readily observable. Also observable is the relatively low percentages of graduates from this group indicating a preference for professional or white collar type careers. But it should be clear that some 40% of those who responded to the question would not pursue an "artisan or skilled worker" oriented career if they had the choice. This is very sobering knowledge.

Graduates from the pre-technician and academic streams show marked preference for professional or white collar oriented careers. From inspection, the spread of these two groups does not appear to be very different.

Why do the specialized craft graduates tend to show an inclination towards skilled careers, while other graduates seem generally to prefer white collar type careers? There is nothing in the background of the subjects that could cause them to behave as a group, save being members of the group. Indeed, being in the specialized craft stream may be conferring a kind of "self-fulfilling prophesy" onto graduates. Their "free" choice may be coloured by assignment to stream.

As we look at the numbers of students in the academic and pre-technician samples who indicate preference for artisan and skilled work
Table 51
Ideal Career Preferences of Respondents

<table>
<thead>
<tr>
<th>Career</th>
<th>Pre-Technician</th>
<th>Academic</th>
<th>Specialized Crafts</th>
<th>All Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>Higher Professional</td>
<td>34</td>
<td>18.1</td>
<td>28</td>
<td>19.7</td>
</tr>
<tr>
<td>Lower Professional</td>
<td>30</td>
<td>15.0</td>
<td>28</td>
<td>19.7</td>
</tr>
<tr>
<td>Teacher</td>
<td>8</td>
<td>4.3</td>
<td>10</td>
<td>7.1</td>
</tr>
<tr>
<td>Clerical and Allied</td>
<td>51</td>
<td>27.1</td>
<td>40</td>
<td>28.2</td>
</tr>
<tr>
<td>Artisans &amp; Skilled Workers</td>
<td>47</td>
<td>25.0</td>
<td>25</td>
<td>17.6</td>
</tr>
<tr>
<td>Commercial (Small Businessman)</td>
<td>4</td>
<td>2.1</td>
<td>7</td>
<td>4.9</td>
</tr>
<tr>
<td>Semi-skilled or Unskilled</td>
<td>1</td>
<td>0.5</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Uniformed Service</td>
<td>10</td>
<td>5.3</td>
<td>4</td>
<td>2.8</td>
</tr>
<tr>
<td>Sportsman-Artist</td>
<td>2</td>
<td>1.1</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Other</td>
<td>1</td>
<td>0.5</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Total</td>
<td>188</td>
<td>100.0</td>
<td>142</td>
<td>100.0</td>
</tr>
</tbody>
</table>
(62 students) the tenuous nature of streaming becomes apparent. There is a certain unpredictability associated with making a career choice that makes questionable any attempt by the school to make career interventions.

Following up on the previous question, the graduates were asked whether they thought they were pursuing the careers of their choice. This question left open the possibility of further education toward the career, perhaps correspondence courses, evening class, etc. It of course also included being engaged in the particular line of work. Table 52 shows the breakdown by stream. Differences by stream will be explored later in this chapter.

Table 52

Responses to the Question Whether Ideal Career Preferences Were Being Pursued

<table>
<thead>
<tr>
<th>Response</th>
<th>Pre-Technician</th>
<th>Academic</th>
<th>Specialized Crafts</th>
<th>All Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No. %</td>
<td>No. %</td>
<td>No. %</td>
<td>No. %</td>
</tr>
<tr>
<td>Yes</td>
<td>104 55.9</td>
<td>70 50.4</td>
<td>162 63.3</td>
<td>336 57.8</td>
</tr>
<tr>
<td>No</td>
<td>82 44.1</td>
<td>69 49.6</td>
<td>94 36.7</td>
<td>245 42.2</td>
</tr>
<tr>
<td>Total</td>
<td>186 100.0</td>
<td>139 100.0</td>
<td>256 100.0</td>
<td>581 100.0</td>
</tr>
</tbody>
</table>

Career Information

Question 16 of the study was designed specifically to determine how much career information students thought they received pertaining to the technical area they pursued. The analysis considers specialized craft graduates only. (See Table 53.)
Table 53
Graduate Perceptions Regarding the Quantity of Career Information They Received

<table>
<thead>
<tr>
<th>Rating</th>
<th>TW</th>
<th>LS</th>
<th>TS</th>
<th>JO</th>
<th>OA</th>
<th>OE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>Abundant</td>
<td>14</td>
<td>6.9</td>
<td>9</td>
<td>4.7</td>
<td>10</td>
<td>5.2</td>
</tr>
<tr>
<td>Adequate</td>
<td>60</td>
<td>29.7</td>
<td>48</td>
<td>25.2</td>
<td>48</td>
<td>25.0</td>
</tr>
<tr>
<td>Some</td>
<td>91</td>
<td>45.1</td>
<td>73</td>
<td>38.2</td>
<td>58</td>
<td>30.2</td>
</tr>
<tr>
<td>None</td>
<td>37</td>
<td>18.3</td>
<td>61</td>
<td>31.9</td>
<td>76</td>
<td>39.6</td>
</tr>
<tr>
<td>Total</td>
<td>202</td>
<td>100.0</td>
<td>191</td>
<td>100.0</td>
<td>192</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Career Information Key:

TW = Type of work performed by typical or average worker
LS = Lifestyle of typical or average worker
TS = Typical salary
JO = Job opportunities
OA = Opportunities for advancement
OE = Opportunities for further education and training
In each of the categories we find students unwilling to claim that they had received "abundant" career information. In all categories also, it is evident that students felt they received less than adequate information. Almost 40% of students in this stream indicated having received no information pertaining to the typical salary of workers in their area of pursuit.

It is difficult to comprehend the basis upon which these students were called upon to make choices, if not on copious career information. Blind faith and circumstance are not substitutes for information. Given that entry into the stream was not based upon any noticeable set of criteria, at least those who were selected into the specialized craft stream should be made thoroughly acquainted with all options available pertaining to the career areas they find themselves in. The labour market would be less of a shock to them.

Question 17 required the graduates to rate a set of occupations on a prestige scale from 1 (very high) to 5 (very low). The final rankings based on the responses are shown in Table 54. There is remarkable similarity across streams in these ratings, the top slots being reserved for the traditional professional occupations. Blue collar or artisan type occupations fare badly in the academic and pre-technician rankings, doing slightly better among the specialized craft respondents. Perhaps an advantage of this stream is that students develop better perceptions of the crafts relative to other traditionally more pretigious occupations.
Table 54
Ranking of Occupations—By Stream

<table>
<thead>
<tr>
<th>Rank</th>
<th>Pre-Technician Occupation</th>
<th>Mean</th>
<th>Academic Occupation</th>
<th>Mean</th>
<th>Specialized Crafts Occupation</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Doctor</td>
<td>1.35</td>
<td>Lawyer</td>
<td>1.40</td>
<td>Doctor</td>
<td>1.45</td>
</tr>
<tr>
<td>2</td>
<td>Lawyer</td>
<td>1.39</td>
<td>Doctor</td>
<td>1.43</td>
<td>Lawyer</td>
<td>1.49</td>
</tr>
<tr>
<td>3</td>
<td>Architect</td>
<td>1.66</td>
<td>Architect</td>
<td>1.83</td>
<td>Architect</td>
<td>1.62</td>
</tr>
<tr>
<td>4</td>
<td>Accountant</td>
<td>1.88</td>
<td>Accountant</td>
<td>1.92</td>
<td>Technical Teacher</td>
<td>2.02</td>
</tr>
<tr>
<td>5</td>
<td>Merchant</td>
<td>1.97</td>
<td>Author</td>
<td>2.02</td>
<td>Merchant</td>
<td>2.04</td>
</tr>
<tr>
<td>6</td>
<td>Author</td>
<td>2.10</td>
<td>Merchant</td>
<td>2.13</td>
<td>Author</td>
<td>2.11</td>
</tr>
<tr>
<td>7</td>
<td>Academic Teacher</td>
<td>2.15</td>
<td>Academic Teacher</td>
<td>2.19</td>
<td>Accountant</td>
<td>2.11</td>
</tr>
<tr>
<td>8</td>
<td>Technical Teacher</td>
<td>2.15</td>
<td>Nurse</td>
<td>2.34</td>
<td>Author</td>
<td>2.11</td>
</tr>
<tr>
<td>9</td>
<td>Nurse</td>
<td>2.33</td>
<td>Technical Teacher</td>
<td>2.35</td>
<td>Academic Teacher</td>
<td>2.12</td>
</tr>
<tr>
<td>10</td>
<td>Auto Mechanic</td>
<td>2.37</td>
<td>Clerk (Govt)</td>
<td>2.49</td>
<td>Nurse</td>
<td>2.33</td>
</tr>
<tr>
<td>11</td>
<td>Clerk (Govt)</td>
<td>2.48</td>
<td>Auto Mechanic</td>
<td>2.52</td>
<td>Carpenter</td>
<td>2.34</td>
</tr>
<tr>
<td>12</td>
<td>Police</td>
<td>2.51</td>
<td>Police</td>
<td>2.52</td>
<td>Clerk (Govt)</td>
<td>2.41</td>
</tr>
<tr>
<td>13</td>
<td>Carpenter</td>
<td>2.56</td>
<td>Secretary</td>
<td>2.73</td>
<td>Plumber</td>
<td>2.47</td>
</tr>
<tr>
<td>14</td>
<td>Secretary</td>
<td>2.68</td>
<td>Carpenter</td>
<td>2.75</td>
<td>Police</td>
<td>2.48</td>
</tr>
<tr>
<td>15</td>
<td>Farmer</td>
<td>2.71</td>
<td>Farmer</td>
<td>2.78</td>
<td>Farmer</td>
<td>2.53</td>
</tr>
<tr>
<td>16</td>
<td>Plumber</td>
<td>2.80</td>
<td>Clerk (Office)</td>
<td>2.86</td>
<td>Secretary</td>
<td>2.63</td>
</tr>
<tr>
<td>17</td>
<td>Soldier</td>
<td>2.82</td>
<td>Soldier</td>
<td>2.89</td>
<td>Soldier</td>
<td>2.66</td>
</tr>
<tr>
<td>18</td>
<td>Clerk (Office)</td>
<td>2.87</td>
<td>Plumber</td>
<td>2.93</td>
<td>Clerk (Office)</td>
<td>2.88</td>
</tr>
<tr>
<td>19</td>
<td>Taxi-driver</td>
<td>3.11</td>
<td>Seamstress</td>
<td>3.13</td>
<td>Seamstress</td>
<td>3.01</td>
</tr>
<tr>
<td>20</td>
<td>Seamstress</td>
<td>3.12</td>
<td>Taxi-driver</td>
<td>3.31</td>
<td>Taxi-driver</td>
<td>3.07</td>
</tr>
</tbody>
</table>

Scale: 1 - Very High 4 - Low 2 - High 5 - Very Low 3 - Medium
Vocational Maturity

An important career related issue is the question of vocational maturity. Fundamental theory and related research in this area were earlier reviewed. In order to get insight into this construct the graduates were asked whether, at age 14, they knew what career they wanted to pursue? Their responses are shown in Table 55. The substantial numbers in the "no" and "undecided" category is the reason why many are discomforted by forced early choice. We find that 31.9% of specialized craft students who responded indicated not being able to make a career decision at this age. This figure is very close to that of students reporting finding work not related (32.35%). Overall, 43.9% of all students who responded to the question indicated either negatively, or that they were undecided.

Table 55
Graduate Responses to Question Whether They Knew What Career They Wanted at Age 14

<table>
<thead>
<tr>
<th>Response</th>
<th>Pre-Technician</th>
<th>Academic</th>
<th>Specialized Craft</th>
<th>All Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
<td>%</td>
<td>No.</td>
<td>%</td>
</tr>
<tr>
<td>Yes</td>
<td>99</td>
<td>55.0</td>
<td>73</td>
<td>54.0</td>
</tr>
<tr>
<td>No</td>
<td>69</td>
<td>38.3</td>
<td>46</td>
<td>34.1</td>
</tr>
<tr>
<td>Undecided</td>
<td>12</td>
<td>6.7</td>
<td>16</td>
<td>11.9</td>
</tr>
<tr>
<td>Total</td>
<td>180</td>
<td>100.0</td>
<td>135</td>
<td>100.0</td>
</tr>
</tbody>
</table>

The problem here for the school system is obvious, if streaming is to remain intact. How could the identity of those students who are
ready to make early career choice be determined? Until a method is found, or procedures are put in place to do the screening required, streaming which leads to vocational placement must remain a hit and miss proposition.

**Discussion**

The preceding section of the chapter consisted of a descriptive analysis of the data. While some judgement was expressed, this was somewhat muted, the intent being to allow the data to speak for themselves. The section presented a profile of graduates in the final sample from several vantage points, and then continued with a detailed description of job, school, and career experiences and perceptions.

In the next section the focus shifts to the testing of hypotheses. A primary concern is to establish just how much do we now know about the factors which make a difference in the labour market experiences and perceptions of graduates. To what extent does stream—the primary independent variable under scrutiny—help in the explanation of differences observed? Do other factors such as sex, geography, OJT, or ethnicity improve our insight into the workings of the labour market from the standpoint of the senior comprehensive school graduate?

The primary statistical tool used is stepwise regression. Chi-Square or the Irwin Fisher Large Sample Exact Test are used where frequencies appear important. The Scheffé test for unequal N samples is used where post-hoc probing seems warranted.
Hypothesis Testing

The first hypothesis to be tested looked at the criterion time taken to find the first job. It was posited as follows:

\[ H_1 \quad \text{There is no significant difference between academic, pre-technician, and specialized craft graduates in the amount of time taken to find their first job.} \]

The first stage in its testing involved determining whether independent variables other than stream might not contribute to the explanation of variance (differences) in the dependent variable time. Stepwise regression was used for this purpose. An alpha level of .01 was set as the requirement for entry into the model. At this significance level, only three independent variables met the entry requirement, namely On-the-Job Training (OJT), sex, and stream. (It should be noted that these were all categorical variables, and as such were dummy coded.)

In the stepwise technique used, the independent variable most highly correlated with the dependent variable in question (in this case time) enters the model first. In this particular model, sex was the first variable to enter explaining 7.5% of variance in time \( (R^2 = .075) \), and at a highly significant \( p = .0001 \) (see Table 56). The next significant variable to enter the model was stream. With its entry, variance explained in the dependent improved modestly from an \( R^2 \) of .075 (7.5%) to an \( R^2 \) of .102 (10.2%). Thus the unique contribution of stream to the explanation of variance in the dependent (time) was 2.7%. The third and final significant variable to enter the model
### Table 56

#### Stepwise Regression Summary for Dependent Variable

**Time Taken to Find the First Job**

<table>
<thead>
<tr>
<th>Step</th>
<th>Variable Entered</th>
<th>$R^2$</th>
<th>Sums of Squares</th>
<th>Degrees of Freedom</th>
<th>Mean Squares</th>
<th>$F$ to Enter</th>
<th>Sums of Squares $F$ to Remove</th>
<th>$P$</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Sex</td>
<td>.07</td>
<td>2284.57</td>
<td>1</td>
<td>2284.57</td>
<td>32.25</td>
<td>2284.57</td>
<td>.0001</td>
</tr>
<tr>
<td></td>
<td>Error</td>
<td></td>
<td>27981.52</td>
<td>395</td>
<td>70.84</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Stream</td>
<td>.10</td>
<td>3106.69</td>
<td>2</td>
<td>1553.34</td>
<td>22.53</td>
<td></td>
<td>.0001</td>
</tr>
<tr>
<td></td>
<td>Regression</td>
<td></td>
<td>27159.39</td>
<td>394</td>
<td>68.9</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Error</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sex</td>
<td>1</td>
<td>1438.27</td>
<td>1</td>
<td>1438.27</td>
<td>20.86</td>
<td>1438.27</td>
<td>.0001</td>
</tr>
<tr>
<td></td>
<td>Stream</td>
<td>1</td>
<td>822.13</td>
<td>1</td>
<td>822.13</td>
<td>11.93</td>
<td>822.13</td>
<td>.0006</td>
</tr>
<tr>
<td>3.</td>
<td>OJТ</td>
<td>.12</td>
<td>3649.22</td>
<td>3</td>
<td>1216.40</td>
<td>17.96</td>
<td></td>
<td>.0001</td>
</tr>
<tr>
<td></td>
<td>Regression</td>
<td></td>
<td>26516.86</td>
<td>393</td>
<td>67.72</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Error</td>
<td></td>
<td>30266.08</td>
<td>396</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td></td>
<td>30266.08</td>
<td>396</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>OJТ</td>
<td>1</td>
<td></td>
<td></td>
<td>542.52</td>
<td>8.01</td>
<td>542.52</td>
<td>.0049</td>
</tr>
<tr>
<td></td>
<td>Sex</td>
<td>1</td>
<td></td>
<td></td>
<td>1264.85</td>
<td>18.68</td>
<td>1264.85</td>
<td>.0001</td>
</tr>
<tr>
<td></td>
<td>Stream</td>
<td>1</td>
<td></td>
<td></td>
<td>761.94</td>
<td>11.25</td>
<td>761.94</td>
<td>.0009</td>
</tr>
</tbody>
</table>

1. **Semi-partial sums of squares.**

**NOTE:** No other variables met the .01 significance level for entry into the model.
was OJT (whether or not a student had participated in OJT, and coded 1 - participated, 0 - did not participate). With the entry of this variable, the $R^2$ (variance explained) improved to .12 (12.05%). Again the unique variance added was quite small.

**Discussion**

Through the stepwise procedure, and the technique of partialing (sorting out unique variance explained when other independent variables have already entered the model) we find that there are three known variables which help in the explanation of why one graduate took more time than another in finding a job. More than this, it is clear now that the most helpful known indicator here is the students' sex. **Stream**, the variable under scrutiny adds but miniscule explanatory power on its own. But it did show significance at the stringent .01 probability level, and hence merited further probing to ascertain the direction of significance.

Following Kennedy (1978) the Scheffe method of post-hoc analysis for unequal N's was used to compare the specialized crafts average time with the average of the two other streams combined, that is:

$$H_0: \bar{x}_3 = \bar{x}_1 + \bar{x}_2$$

The comparison took the form:

$$\frac{1}{2} \bar{x}_1 + \frac{1}{2} \bar{x}_2 + (-1) \bar{x}_3$$

The resulting F proved significant at p .01 (see Appendix E), indicating that graduates from the specialized craft stream took
significantly less time than other graduates to find their first job. H_1 was thus rejected. The educational authorities could say with assurance that specialized crafts students have a labour market advantage on the variable *time*. But they are compelled to concede that knowledge of a student's stream doesn't help explanation very much, sex and OJT being also significant contributors. Particularly disconcerting is the extent of the residual or unexplained variance on the criterion *time* (87.95%). The conclusion one could perhaps draw from this is that much of what determines the speed with which a graduate is absorbed in the labour market lies outside of the control of the school system.

The second hypothesis to be tested focused on the degree to which graduates could expect to be engaged in full-time work. It was stated as follows:

H_2: There is no significant difference between academic, pre-technician, and specialized craft graduates in the percentage of time spent in full-time employment since graduation.

Again stepwise regression was used as a first step, to determine just how much variance in this criterion could be explained by the independent variables posited (sex, geography, stream, ethnicity, etc.). The probability level for acceptance was again set at .01.

As with the criterion *time*, the first independent variable to enter the model was sex (see Table 57) with an R^2 of .18 (or explaining 18% of variance in *percentage*). The next variable to enter was OJT. With its entry into the model at this probability level, the R^2
### Table 57

Stepwise Regression Summary for Dependent Variable Percentage of Time Engaged in Full-Time Work Since Graduation

<table>
<thead>
<tr>
<th>Step</th>
<th>Variable Entered</th>
<th>R²</th>
<th>Sums of Squares</th>
<th>Degrees of Freedom</th>
<th>Mean Squares</th>
<th>F to Enter</th>
<th>Sums of Squares</th>
<th>F to Remove</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Sex</td>
<td>.18</td>
<td>115640.63</td>
<td>1</td>
<td>115640.63</td>
<td>119.97</td>
<td>115640.63</td>
<td>119.97</td>
<td>.0001</td>
</tr>
<tr>
<td></td>
<td>Error</td>
<td></td>
<td>523385.56</td>
<td>543</td>
<td>963.87</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>OJT</td>
<td>.23</td>
<td>148715.05</td>
<td>2</td>
<td>74357.52</td>
<td>82.20</td>
<td>33074.42</td>
<td>36.56</td>
<td>.0001</td>
</tr>
<tr>
<td></td>
<td>Regression</td>
<td></td>
<td>490311.15</td>
<td>542</td>
<td>904.63</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>OJT</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sex</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Stream</td>
<td>.25</td>
<td>156611.86</td>
<td>3</td>
<td>52203.95</td>
<td>58.54</td>
<td>30997.33</td>
<td>34.76</td>
<td>.0001</td>
</tr>
<tr>
<td></td>
<td>Regression</td>
<td></td>
<td>482414.34</td>
<td>541</td>
<td>891.71</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Error</td>
<td></td>
<td>639026.19</td>
<td>544</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>OJT</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sex</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Stream</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


NOTE: No other variables met the .01 significance level for entry into the model.
improved from a value of .18 to .23. The third and final variable to enter the model was stream, improving the $R^2$ value to .25. Other variables could not meet the .01 significance level and thus could not enter the model.

From this first stage in the process of testing the hypothesis of no significant differences in percentage by stream, we find that stream does play a part in determining the amount of time a graduate spends engaged in full-time work after graduation. But the unique contribution of stream is quite small (2% of total variance explained).

Further post-hoc comparisons were required to ascertain the nature of the differences between streams. As before, the Scheffe method (see Appendix E) was adopted, to compare the mean percentage of the specialized craft stream with the average of the means from the two other streams, specifically:

$$H_0: (\bar{x}_3) = \frac{\bar{x}_1 + \bar{x}_2}{2}$$

The comparison took the form:

$$\frac{1}{2} (\bar{x}_1) + \frac{1}{2} (\bar{x}_2) + (-1) \bar{x}_3$$

The resulting F proved significant at the .01 level, forcing rejection of the hypothesis of no significant difference.

But once again the practical significance of the variable stream is tenuous. Sex aside, we begin to get explanatory power only when OJT is in the model along with it. The overall model does hold promise though, these three variables alone (sex, OJT, stream) accounting for 25% of variance on the criterion percentage.
Hypothesis three was tested next. It was stated thus:

\[ H_3: \text{There is no significant differences between academic, pre-technician and specialized craft graduates in the starting salaries for their first full time job.} \]

This is perhaps the most critical hypothesis to be tested in a study such as this, in that it sets the stage for cost-benefit analysis of programmes. Is the stream a factor in determining the amount of the first salary? When the means were analyzed in the descriptive section it was shown that among males pre-technician graduates reported the highest initial mean salary, while among females, academic graduates reported highest initial salaries.

Stepwise regression (see Table 58) revealed OJT to be the only known variable with the power to help explain variance (differences) in the initial salaries of graduates. Even at the .05 level of significance this was the only variable to enter the regression model. Since stream proved not to be a significant explanatory variable there was no need for further analysis. The hypothesis of no difference, as posited by the researcher could not be rejected.

As OJT, the only independent variable to enter the regression model was examined, one finds that the economic value of this variable for the graduate was in a negative direction. Recall that the mean OJT initial salary was $486 while that for a non-OJT participant was $668.

The fourth hypothesis to be tested dealt with whether there was any association between the streams the graduates pursued and the
Table 58

Stepwise Regression Summary for Dependent Variable Salary

<table>
<thead>
<tr>
<th>Step</th>
<th>Variable Entered</th>
<th>$R^2$</th>
<th>Sums of Squares</th>
<th>Degrees of Freedom</th>
<th>Mean Squares</th>
<th>F to Enter</th>
<th>Sums of Squares</th>
<th>F to Remove</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>OJT</td>
<td>.04</td>
<td>2053918.24</td>
<td>1</td>
<td>2053918.24</td>
<td>15.68</td>
<td>2053918.24</td>
<td>15.68</td>
<td>.0001</td>
</tr>
<tr>
<td></td>
<td>Regression</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Error</td>
<td></td>
<td>48862309.47</td>
<td>373</td>
<td>130998.15</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td></td>
<td>50916227.72</td>
<td>374</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


NOTE: No other variables met the .01 significance level for entry into the model.
types of first jobs they found. This hypothesis was stated as follows:

\[ H_0: \text{The stream a student pursues and the type of first job he or she finds are independent of each other.} \]

This hypothesis was in effect saying that all graduates, regardless of stream, will find occupations across a spectrum of jobs, without any noticeable pattern dictated by stream. The Chi Square Test of Independence (one sample) was used to test this hypothesis. The researcher used the data from Table 23 and isolated those job categories where there were heavy concentrations of graduates. Four job-types accounted for 98.5% of those students who reported a first job (391 of 397). The R x C contingency table is shown (Table 59). For six degrees of freedom the obtain Chi-Square (46.77) exceeded that required (22.45) at the .001 significance level, forcing rejection of the hypothesis of no association. Next, the researcher sought to determine the strength of the association between the variables in question (stream and job-type). Cramer's V statistic was computed yielding a value of .24, considered a low degree of association.

We can conclude from the rejection of this hypothesis that stream and job-type are modestly related; that there is a reasonable chance that if we know the stream of a student we could to some extent predict his job-type. But the process will be a tenuous one as examination of the clerical and semi-skilled categories will indicate. As far as the specialized craft stream is concerned, we find a greater tendency for graduates here to report in the skilled category. But this is what we should come to expect.
Table 59
Relationship Between Type of Job Attained and Stream Pursued

<table>
<thead>
<tr>
<th>Job-Type</th>
<th>Stream</th>
<th>Pre-Technician</th>
<th>Academic</th>
<th>Specialized Craft</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clerical and Sales</td>
<td>54 (39.21)</td>
<td>37 (22.84)</td>
<td>42 (70.93)</td>
<td>133</td>
</tr>
<tr>
<td>Skilled</td>
<td>5 (8.84)</td>
<td>1 (5.15)</td>
<td>24 (16.0)</td>
<td>30</td>
</tr>
<tr>
<td>Semi-Skilled</td>
<td>41 (53.37)</td>
<td>21 (31.09)</td>
<td>119 (96.5)</td>
<td>181</td>
</tr>
<tr>
<td>Unskilled</td>
<td>15 (13.56)</td>
<td>8 (7.90)</td>
<td>23 (24.5)</td>
<td>46</td>
</tr>
<tr>
<td></td>
<td>115</td>
<td>67</td>
<td>208</td>
<td>390</td>
</tr>
</tbody>
</table>

Chi Square = 46.77 $\chi^2$ 6: 999 = 22.45

Cramer's V = .244.

NOTE: Expected frequencies in parenthesis.
Hypothesis five was tested next. The concern here was with job satisfaction—a crucial variable for a young worker, perhaps with implications for productivity. This hypothesis stated that:

\[ H_5: \text{There is no significant difference between academic, pre-technician and vocational graduates with respect to their level of satisfaction with their first job.} \]

Once again, stepwise regression analysis was used first of all to determine whether knowledge of a graduate's stream helped in the explanation of the level of job satisfaction he or she expressed. Along with stream, other independent variables identified for possible entry into the model were technical elective, sex, geography, ethnicity and school. Again, a significance level of .01 was set for entry. At this significance level, the only variable allowed to enter was stream (see Table 60). This variable was however quite weak (\( R^2 = .025 \)), suggesting again that comprehensive schooling and streaming provide few answers on qualitative measures such as job satisfaction.

Having however established that stream was a significant variable post-hoc procedures were used to make comparisons. The analysis tested the hypothesis:

\[ H_0: \bar{x}_3 = \bar{x}_1 + \bar{x}_2, \text{ and the comparison took the form:} \]

\[ \frac{1}{2} (\bar{x}_1) + \frac{1}{2} (\bar{x}_2) + (-1)(\bar{x}_3) \]

The resulting F statistic proved significant at the .01 level (see Appendix E) forcing rejection of the hypothesis of no difference as
Table 60

Stepwise Regression Summary for Dependent Variable Satisfaction with the First Job

<table>
<thead>
<tr>
<th>Step</th>
<th>Variable Entered</th>
<th>$R^2$</th>
<th>Sums of Squares</th>
<th>Degrees of Freedom</th>
<th>Mean Squares</th>
<th>$F$ to Enter</th>
<th>Sums of $F$ to Remove</th>
<th>$F$ to Remove</th>
<th>$P$</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Stream Regression</td>
<td>.03</td>
<td>6.17</td>
<td>1</td>
<td>6.17</td>
<td>8.33</td>
<td>6.17</td>
<td>8.33</td>
<td>.0042</td>
</tr>
<tr>
<td></td>
<td>Error</td>
<td></td>
<td>237.27</td>
<td>320</td>
<td>.74</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td></td>
<td>243.44</td>
<td>321</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


NOTE: No other variables met the .01 or .05 significance level for entry into the model.
The mean satisfaction of the specialized craft graduates who responded was significantly higher than the composite mean of graduates from the academic and pre-technician streams. This knowledge however does not mask the fact that some 97% of total variance on the criterion satisfaction went unexplained.

As an adjunct to this hypothesis, the researcher decided to test whether the proportion of specialized crafts students expressing satisfaction with their first job was higher than that of the combined academic and pre-technician groups. The Irwin-Fisher Large Sample test was used for this purpose. This test explores the hypothesis:

$$H_0: \ p_1 = p_2$$

in this case $p_1$ being the specialized crafts proportion, and $p_2$ the combined proportion of the other streams. The Irwin-Fisher procedure generates the Z statistic, which must be larger than $\pm 1.96$ at $x = .05$ to be of significance. In this case the procedure produced a Z of 2.29 indicating that a significantly higher proportion of specialized craft graduates (as compared to all other graduates) indicated that they were satisfied with their first job. The hypothesis of no difference was thus rejected. Table 61 provides details.

Hypothesis six looked at the salary for the current or most recent job. It was stated as follows:

$$H_6: \text{There is no significant difference between academic, pre-technician and specialized crafts graduates with respect to the starting salary of their current or most recent job.}$$
Table 61

Comparison of Group Proportions on Variable Satisfaction

<table>
<thead>
<tr>
<th>Stream</th>
<th>Specialized Crafts</th>
<th>Academic and Pre-Technician</th>
</tr>
</thead>
<tbody>
<tr>
<td>Satisfied</td>
<td>143</td>
<td>113</td>
</tr>
<tr>
<td>Dissatisfied</td>
<td>60</td>
<td>77</td>
</tr>
</tbody>
</table>

\[
P_1 = \frac{143}{203} \quad P_2 = \frac{113}{190} \quad P_0 = \frac{143 + 113}{203 + 190}
\]

\[
= .704 \quad = .594 \quad = .651
\]

\[
Z = \frac{.704 - .594}{\sqrt{(.651)(.349) \cdot (190)}} = \frac{.11}{.048} = 2.29
\]

\[
2.29 > Z_{0.975} = 1.96
\]

Reject \( H_0 \)
As stated before, this hypothesis was proposed with some hesitancy, reason being that it becomes increasingly difficult to isolate unique school effects beyond the short run. However it was felt that perhaps some insight might be provided by the analysis.

Stepwise regression was used to determine whether stream assisted in the explanation of variance in this criterion and what other variables might so assist. The only independent variable showing significance at the .01 level was the salary of the first job. When the p value was increased to .05 the variable sex was the only other to enter. Stream, along with geography, ethnicity, etc showed no explanatory power. The process of hypothesis testing ceased at this point, since no practical insight could be gained from analyzing variances due to stream. The hypothesis of no significant difference could not be rejected.

The model explained 13% of total variance, divided about equally between sex and the first salary. (See Table 62.) Its message is that the only clues that we know of in our attempt to gain insight into salary trends over time are an individual's sex and his or her previous salary. Stream is not a significant factor, neither is ethnicity, geography nor participation in On-the-Job Training.

The next hypothesis to be tested was concerned with the status of graduates at the time of the study. It was posited thus:

\[ H_7: \text{There is no association between the stream to which a graduate belonged and his or her status at the time of the survey.} \]
Table 62

Stepwise Regression Summary for
Dependent Variable **Salary** (Current or Most Recent Job)

<table>
<thead>
<tr>
<th>Step</th>
<th>Variable</th>
<th>Entered R^2</th>
<th>Sums of Squares</th>
<th>Degrees of Freedom</th>
<th>Mean Squares</th>
<th>F to Enter</th>
<th>Sums of Squares to Enter</th>
<th>F to Remove</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Salfir</td>
<td>.06</td>
<td>1624072.90</td>
<td>1</td>
<td>1624072.90</td>
<td>9.55</td>
<td>1623072.90</td>
<td>9.35</td>
<td>.0027</td>
</tr>
<tr>
<td></td>
<td>Error</td>
<td></td>
<td>21704112.96</td>
<td>125</td>
<td>173632.90</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td></td>
<td>23328185.86</td>
<td>126</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Sex</td>
<td>.13</td>
<td>1423846.00</td>
<td>1</td>
<td>1423846.00</td>
<td>8.71</td>
<td>1440281.88</td>
<td>8.81</td>
<td>.0036</td>
</tr>
<tr>
<td></td>
<td>Regression</td>
<td></td>
<td>3047918.90</td>
<td>2</td>
<td>1523959.45</td>
<td>9.32</td>
<td></td>
<td></td>
<td>.0002</td>
</tr>
<tr>
<td></td>
<td>Error</td>
<td></td>
<td>20280266.96</td>
<td>124</td>
<td>163550.54</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td></td>
<td>23328185.86</td>
<td>126</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


**NOTE:** No other variables met the 0.05 significance level for entry into the model.
As shown in Table 63 status at the time of the survey reflected a composite of important factors such as full-time work, unemployment, self-employment, etc. The hypothesis was in effect stating that there would be no perceptible pattern of group (stream) behaviour—that the profiles of all streams would be similar.

The Chi Square test of independence was used in this case. With 20 degrees of freedom the calculated Chi Square value of 78.57 proved significant at \( p = .001 \), \( \chi^2 \) required being 45.31. The hypothesis of no association was thus rejected. Status at the time of the survey appeared to depend to some extent on the stream to which graduates belonged. In order to ascertain the strength of this association, Cramer's V statistic was calculated yielding a value of 0.256, a relationship that would have to be classified as low.

Hypothesis 8 was next tested. It was stated thus:

\[ H_8: \text{There is no significant difference between academic, pre-technician and specialized crafts graduates with respect to their satisfaction with subject choice.} \]

Stepwise regression analysis was again used as before, revealing school to be the only significant independent variable (\( \alpha = .05 \)). No other variable qualified for entry into the model (see Table 64). Since stream was not a factor in the explanation of variance in this model, the process of hypothesis testing ceased. The hypothesis of no significant difference could not be rejected.

Hypothesis 9 challenged the notion that the career ideals of graduates from different streams would be different.
Table 63
Relationship Between the Stream of Graduates and Their Status at the Time of the Study

<table>
<thead>
<tr>
<th>Stream</th>
<th>Pre-Technician</th>
<th>Academic</th>
<th>Specialized Craft</th>
</tr>
</thead>
<tbody>
<tr>
<td>Working Full Time</td>
<td>69</td>
<td>43</td>
<td>126</td>
</tr>
<tr>
<td></td>
<td>(75.5)</td>
<td>(57.61)</td>
<td>(104.89)</td>
</tr>
<tr>
<td>Working Part Time</td>
<td>20</td>
<td>11</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td>(17.44)</td>
<td>(13.31)</td>
<td>(24.24)</td>
</tr>
<tr>
<td>On Temporary Lay-off</td>
<td>8</td>
<td>2</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>(6.97)</td>
<td>(5.32)</td>
<td>(9.69)</td>
</tr>
<tr>
<td>Looking for Work</td>
<td>39</td>
<td>34</td>
<td>33</td>
</tr>
<tr>
<td></td>
<td>(34.57)</td>
<td>(25.65)</td>
<td>(46.71)</td>
</tr>
<tr>
<td>Going to School</td>
<td>21</td>
<td>28</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>(20.30)</td>
<td>(15.49)</td>
<td>(28.20)</td>
</tr>
<tr>
<td>Keeping House</td>
<td>6</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>(4.75)</td>
<td>(1.45)</td>
<td>(6.61)</td>
</tr>
<tr>
<td>Undergoing OJT</td>
<td>3</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>(2.22)</td>
<td>(1.69)</td>
<td>(3.08)</td>
</tr>
<tr>
<td>Self-Employed</td>
<td>6</td>
<td>2</td>
<td>32</td>
</tr>
<tr>
<td></td>
<td>(12.68)</td>
<td>(9.68)</td>
<td>(17.62)</td>
</tr>
<tr>
<td>Family Business</td>
<td>4</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>(3.17)</td>
<td>(2.42)</td>
<td>(4.40)</td>
</tr>
<tr>
<td>At Home</td>
<td>13</td>
<td>14</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>(12.37)</td>
<td>(9.44)</td>
<td>(17.18)</td>
</tr>
<tr>
<td>Taking a Course</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>(.95)</td>
<td>(.73)</td>
<td>(1.32)</td>
</tr>
</tbody>
</table>

Chi Square = 78.57  \( \chi^2 \) 20:999 = 45.31
Cramer's V = .256

NOTE: Expected frequencies in parenthesis.
Table 64
Stepwise Regression Summary for Dependent Variable Satisfaction with Subject Choice

<table>
<thead>
<tr>
<th>Step</th>
<th>Variable Entered</th>
<th>R²</th>
<th>Sums of Squares</th>
<th>Degrees of Freedom</th>
<th>Mean Squares</th>
<th>F to Enter</th>
<th>Sums of 1 Squares</th>
<th>F to Remove</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>School Regression</td>
<td>.01</td>
<td>3.56</td>
<td>1</td>
<td>3.56</td>
<td>5.22</td>
<td>3.56</td>
<td>5.22</td>
<td>.0228</td>
</tr>
<tr>
<td></td>
<td>Error</td>
<td></td>
<td>307.62</td>
<td>451</td>
<td>.6820</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td></td>
<td>311.18</td>
<td>452</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


NOTE: No other variables met the .01 significance level for entry into the model.
There is no association between the stream to which graduates belonged and their ideal career choices.

The thinking here was that given a free hand, there may be no substantial differences in the career choices of graduates. Stream would not be a factor.

The Chi Square test of independence was used to verify this hypothesis (see contingency Table 65). The calculated Chi Square for 16 degrees of freedom (121.81) exceeded that required (39.25) at \( p = .001 \), leading to rejection of the hypothesis of no association. The tentative conclusion one could draw from this result was that with respect to careers, the graduates' responses were to some extent dictated by the stream to which they belonged. The strength of this relationship was explored through the calculation of the Cramer's \( V \) statistic. The yield was .32, indicating a "moderate" degree of association between choice of ideal career and stream.

Hypothesis 10 addressed the question of direct engagement in the labour market. Did the graduate ever hold a full-time job (40 hours a week). This was of course an extremely important concern. The hypothesis was that there would be no significant difference across streams on this variable. It was stated thus:

\[ H_{10}: \text{There is no significant difference between the proportions of academic, pre-technician and specialized craft graduates who ever held a full-time job.} \]

Again, the Irwin Fisher Large Sample Exact Test was used, the hypothesis taking the form \( H_0: P_1 = P_2 \).
Table 65
Relationship Between Stream and Ideal Career Choices

<table>
<thead>
<tr>
<th>Stream</th>
<th>Pre-Technician</th>
<th>Academic</th>
<th>Specialized Crafts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Higher Professional</td>
<td>34</td>
<td>28</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>(23.96)</td>
<td>(18.19)</td>
<td>(33.83)</td>
</tr>
<tr>
<td>Lower Professional</td>
<td>30</td>
<td>28</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>(21.76)</td>
<td>(16.52)</td>
<td>(30.71)</td>
</tr>
<tr>
<td>Teacher</td>
<td>8</td>
<td>10</td>
<td>19</td>
</tr>
<tr>
<td></td>
<td>(11.66)</td>
<td>(8.86)</td>
<td>(16.47)</td>
</tr>
<tr>
<td>Clerical and Allied</td>
<td>51</td>
<td>40</td>
<td>36</td>
</tr>
<tr>
<td></td>
<td>(40.04)</td>
<td>(30.41)</td>
<td>(56.53)</td>
</tr>
<tr>
<td>Artisans and Skilled Workers</td>
<td>47</td>
<td>25</td>
<td>156</td>
</tr>
<tr>
<td></td>
<td>(71.89)</td>
<td>(54.59)</td>
<td>(101.50)</td>
</tr>
<tr>
<td>Commercial</td>
<td>4</td>
<td>7</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td>(9.15)</td>
<td>(6.94)</td>
<td>(12.91)</td>
</tr>
<tr>
<td>Semi-Skilled or Unskilled</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>(.32)</td>
<td>(.23)</td>
<td>(.45)</td>
</tr>
<tr>
<td>Uniformed Service</td>
<td>10</td>
<td>4</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>(7.25)</td>
<td>(5.51)</td>
<td>(10.23)</td>
</tr>
<tr>
<td>Sportsman (Artist)</td>
<td>2</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>(0.94)</td>
<td>(.72)</td>
<td>(1.34)</td>
</tr>
</tbody>
</table>

|                  | 187            | 142      | 264               |

Chi Square = 121.81
\[\chi^2 = 161.999 = 39.25\]

Cramer's V = .32
NOTE: Expected frequencies in parenthesis
As shown in Table 66 the comparison highlighted the specialized crafts and pre-technician streams, their proportions being closer. If the specialized craft proportion proved significantly larger here, it followed that it would prove larger than that of the academic stream. The required statistic was $Z$, and the result was $Z = 3.71$ \( Z_{0.0002} = 3.70 \).

This highly significant difference caused the hypothesis of no difference in proportion to be rejected.

We could say with assurance that significantly higher proportions of specialized crafts graduates appeared to find full-time work as compared to graduates of other streams.

The next hypothesis dealt with the question of job-mobility—whether the graduates tended to change jobs, and the role of stream in such changes as there might be. It was stated as follows:

\[ H_{11}: \text{There is no significant difference between the proportions of academic, pre-technician and specialized crafts graduates who have changed jobs.} \]

Once again, the appropriate test for this proposition was the Irwin-Fisher Large Sample Exact. From observation, it could be seen (see Table 67) that a higher percentage of the specialized crafts graduates reporting on this variable tended to have changed jobs. When the specialized crafts and pre-technician percentages were tested for equality, the result was:

\[
Z = 1.57 \quad Z_{0.025} = 1.96.
\]

Since the calculated $Z$ was less than the required table value at the .05 level, the hypothesis could not be rejected. We could not say that
Table 66

Did Graduates Ever Hold a Full-Time Job?

<table>
<thead>
<tr>
<th>Response</th>
<th>Specialized Crafts</th>
<th>Pre-Technician</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>219</td>
<td>130</td>
<td>349</td>
</tr>
<tr>
<td>No</td>
<td>45</td>
<td>61</td>
<td>106</td>
</tr>
</tbody>
</table>

\[
P_0 = \frac{349}{455} = .767
\]

\[
P_1 = \frac{219}{264} = .829
\]

\[
P_2 = \frac{130}{191} = .680
\]

\[
Z = \frac{(P_1 - P_2)}{\sqrt{\frac{P_0 q_0}{n_1} + \frac{P_0 q_0}{n_2}}} = \frac{.829 - .680}{\sqrt{\frac{.767 \times .233}{264} + \frac{.767 \times .233}{191}}} = 3.70
\]

\[
Z = 3.71 \quad Z_{0.999} = 3.70
\]
Table 67

Comparison of Job Mobility—By Stream

<table>
<thead>
<tr>
<th>Changed Jobs</th>
<th>Stream</th>
<th>Pre-Technician</th>
<th>Specialized Crafts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>38</td>
<td>88</td>
<td>126</td>
</tr>
<tr>
<td>No</td>
<td>61</td>
<td>95</td>
<td>156</td>
</tr>
</tbody>
</table>

\[
\begin{align*}
P_0 &= \frac{126}{282} = 0.447 \\
q_0 &= 0.553 \\
P_1 &= \frac{38}{99} = 0.384 \\
P_2 &= \frac{88}{183} = 0.480 \\
Z &= \frac{(P_1 - P_2)}{\sqrt{\frac{P_0 q_0}{n_1} + \frac{P_0 q_0}{n_2}}} \\
&= \frac{0.384 - 0.480}{\sqrt{\frac{0.447 \times 0.553}{99} + \frac{0.447 \times 0.553}{183}}} \\
&= -0.096 \\
Z &= 1.57 \\
Z_{0.025} &= 1.96
\end{align*}
\]
specialized crafts students displayed a greater degree of job mobility than graduates of other streams.

Despite the failure to reject this hypothesis though, the researcher was impressed with the showing of the specialized crafts graduates on this variable. In relative terms, they appeared to be more mobile than other graduates.

The final hypothesis to be tested pertained to the extent to which graduates thought the school prepared them for their first job. It was stated thus:

\[ H_{12}: \text{There is no significant difference between academic, pre-technician and specialized craft graduates with respect to their perception of preparedness for their first job.} \]

Stepwise regression was used as a first step, with \( \alpha = .01 \). No variables entered the model at this significance level. With \( \alpha = .05 \) the only variable to enter the model was stream (see Table 68), but the variance explained was negligible \( (R^2 = .01) \). Upon inspection of the means it was clear that there was little difference between that of the academic and pre-technician stream (2.64 and 2.63 respectively), hence no post-hoc comparison was warranted. The hypothesis was rejected, the specialized crafts mean on this criterion being significantly different from the rest.

Synthesis

This chapter served the purpose of providing evidence concerning the effects of pre-employment vocational education in Trinidad and Tobago. The source of this evidence was the responses of 607 graduates
Table 68
Stepwise Regression Summary for Dependent Variable Preparedness for the First Job

<table>
<thead>
<tr>
<th>Step 1</th>
<th>Entered</th>
<th>$R^2$</th>
<th>Sums of Squares</th>
<th>Degrees of Freedom</th>
<th>Mean Squares</th>
<th>$F$ to Enter</th>
<th>Sums of 1 Squares</th>
<th>$F$ to Remove</th>
<th>$P$</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Stream</td>
<td>.01</td>
<td>4.55</td>
<td>1</td>
<td>4.55</td>
<td>5.42</td>
<td>4.55</td>
<td>4.52</td>
<td>.0206</td>
</tr>
<tr>
<td></td>
<td>Regression</td>
<td></td>
<td>261.69</td>
<td>312</td>
<td>.83</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Error</td>
<td>Total</td>
<td>266.24</td>
<td>313</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


NOTE: No other variables met the .05 significance level for entry into the model.
from 10 senior comprehensive schools. Among these graduates were students who had pursued the academic and pre-technician streams. These served the purpose of comparison.

The literature had shown that some developing countries saw vocational education as a development tool, but that there was skepticism in many quarters as to how effective a tool it could be. Writers such as Foster (1965) and Blaug (1974) had categorically denounced vocational education as a viable development strategy, claiming that this kind of education prospered only when economic conditions were favourable. Vocational education was more "the cart than the horse" of economic growth. Nearer home, in the Caribbean, Bennett (1979) had chronicled the Jamaican case, reporting the negative findings predicted by many in the literature.

The evidence provided in this chapter was the case of Trinidad and Tobago. How did vocational education in the senior comprehensive school fare?

Variables Under Study

The study focused on aspects of the post-secondary school labour market activities of graduates. The dependent variables studied included:

1. Was the graduate ever able to find full-time work?
2. The time it took to find the first job.
3. What percentage of time was the graduate employed on a full-time basis?
4. How satisfied was the graduate with the first job?
5. The extent of satisfaction with subject choice.
6. Graduate job mobility.
7. Preparedness for the first job.
8. Initial salary—first job.
9. Initial salary—current or most recent job.
10. The status of graduates at the time of the survey.
11. The ideal career choice of graduates.
12. The job-type or classification of the first job found by graduates.

The primary independent variable under study was stream—the type of curriculum pursued by the graduate while in school. There were three levels of this, namely academic, pre-technician and specialized crafts. Other variables were posited as rival hypotheses. These were:

1. Sex
2. Geography (Region)
3. Ethnicity
4. Technical Elective
5. School
6. Socio-economic Status (SES)
7. OJT

Twelve hypotheses were advanced, encapsulating the researchers position that the effects of streaming could not be traced into the market place to any marked degree. Hence, specialized craft graduates
(vocational students) would not perform significantly better than other graduates on any labour market criterion put toward. The research hypothesis were stated in null form in keeping with this position.

Stepwise regression was used as a first step in the testing of all hypotheses which required the comparing of group means. If stream entered the model despite a pre-set P-value (.01 typically) further probing followed utilizing the Scheffe procedure. Where hypotheses referred to relationships between variables, Chi Square tests of independence were utilized. If there was significance, then Cramer's V statistic (a measure of the strength of association) was computed. In situations where it was necessary to compare proportions, the Irwin-Fisher Exact Test was utilized (i.e. testing $H_o: P_1 = P_2$).

Beyond the hypotheses posited and tested, the chapter also revealed information on several related points of interest. These will be briefly reviewed in this synthesis under the heading "Related Concerns."

The Results of Hypothesis Testing

The first hypothesis suggested that the stream to which a graduate belonged had no bearing on the length of time it took to find the first full-time job. This hypothesis was rejected after stream was shown to add significantly to the explanation of variance on the criterion time when it entered the regression model. Post-hoc probing through the Scheffe procedure showed that those students who belonged
to the specialized stream on average took significantly less time to
find a job than the combined average of students from other streams.
An apparent labour market advantage for this group.

However, stream was but one of three variables showing
significance, the others being the graduates' sex, and whether or not
he or she had participated in National Training Board sponsored On-
the-Job training (OJT). Specifically, stream alone explained 1.8% of
total variance. The respective values for sex and OJT were 7.5% and
2.7%. So although the hypothesis had to be rejected, it was evident
that we know much more about the time it would take the graduate to
find the first job if we know the students sex and his or her OJT
status, than if we know the stream only.

Though geographic region did not show as a statistically
significant variable in the regression model, it was clear from
examination of the means that students from the North could expect
to have a shorter unemployment spell after leaving school than students
from other regions. As an example, the North graduate averaged 7.3
months to find the first job, while the Central graduate (the other
extreme) averaged 11.9 months. The practical significance of this
difference is evident.

The second hypothesis addressed the question of the percentage
of time engaged in full-time work. Though there is some relationship
between the amount of time taken to find the first job, and the
percentage of time actually engaged in full-time work, one could not
assume continuous work; hence the need for this test. The hypothesis
had to be rejected, when stream again showed as a significant variable in the regression model. As before, the Scheffe post-hoc procedure resolved the significant statistical differences in the group means in favour of the specialized craft stream. But again, the variables sex and OJT provided much more explanatory information, together accounting for 23.27% of the 24.50% variance explained by the model. Since in actuality, specialized crafts students are more likely than other graduates to participate in OJT (pre-technician and academic students also participate), it could be said that the student who (1) belonged to the specialized craft stream, and (2) participated in OJT, had better chances of being engaged for longer periods of time in the labour market. But the cost of this advantage to the State must be significant given the bureaucracy needed to effect the OJT programme; and the fact that firms are in effect subsidized by the State to allow trainees to remain engaged. The advantage gained here, in social terms, seems more apparent than real.

The third hypothesis examined the prospect that initial salaries might vary significantly according to stream. The researcher doubted this. This was perhaps the most crucial of the hypotheses since it hinged on the economic question. Did stream per se lead to income advantages for the specialized craft stream? Since stream did not enter the regression model, the hypothesis of no significant difference could not be rejected. The only variable of note was OJT, but for the dubious reason that OJT participants actually suffered an income loss of $182.00 per month (when compared to the income of
their non-OJT peers). This was the incentive to the employers—the State supported subsidy—which allowed OJT participants to have the advantage witnessed when percentage was the criterion.

So far as stream per se was concerned, specialized craft graduates did show slightly higher mean salaries when all other variables were held constant. When sex was introduced however these differences disappeared in favour of academic females and pre-technician males.

As this finding is placed in the perspective of previous research in the United States and in Jamaica, the debate as to whether vocational graduates actually gain a labour market income advantage continues unresolved. Studies by Eninger (1965), Hu et al. (1971), Corazzini (1968), and Li (1981) had reported advantages in favour of vocational graduates, while Taussig (1968), Grasso (1975), Lecht (1974), and Bennett (1979) reported disadvantages. Another major work (Kaufman et al., 1967) could not resolve this issue.

On a macro level, the observations of Psacharopoulos regarding the disparities in the returns to vocational education to Columbia, the Phillipines, and Thailand have been reported. There was no clear advantage for either curriculum.

The preliminary evidence from the present study—the case of Trinidad and Tobago—is that if we use first salary (the best evidence) as the index, there is no economic advantage, due to stream. Computation of the cost of vocational education, including the high cost of the OJT programme both to the State and to the graduate (opportunity cost), and the cost of evening classes which are frequented by
specialized craft graduates, may well show the social rate of return on investment in vocational education in Trinidad and Tobago to be less than that of similar investment in other more general programmes.

Hypothesis four asserted that despite differences in school preparation, the types of jobs found by graduates across streams will not differ. Chi Square analysis (test of independence) showed this to be an incorrect assertion. There was association—though weak (Cramer’s V = .24)—between these variables. Said differently, we could to some extent predict the type of job a graduate would find, if we knew his or her stream. But the degree of accuracy with which this could be done remains questionable given the low degree of association indicated by the Cramer’s statistic. Indeed, one may be more incorrect than correct in making such a prediction given the fact that students from all streams tended, by and large, to find jobs in the semi-skilled category.

Hypothesis five looked at the question of job satisfaction. It asserted, once more, that stream had no bearing on the degree of satisfaction expressed by graduates. Regression analysis revealed stream to be the only significant independent variable, and Scheffé post-hoc comparison identified specialized craft stream graduates as reporting a significantly higher degree of satisfaction with their first job. Examination of the frequencies through the stringent Irwin-Fisher Exact Test revealed that a higher proportion of specialized craft graduates (when compared to other graduates combined) indicated being
satisfied with their first job. This hypothesis had therefore to be rejected.

Hypothesis six examined the notion that there might be differences, by stream, between the salaries from the current or most recent jobs held by the graduates. As with hypothesis three, the hypothesis of no difference could not be rejected in this instance. The only known explanatory variable to enter the regression equation was salary-first job.

Examination of the means showed that the male specialized craft graduate held an advantage over all other graduates ($74.00 per month more than his nearest rival—the male academic graduate). Pre-technician female graduates reported earning more than all other female graduates. These conditions made it tenuous to assign any practical significance to stream on this variable.

The seventh hypothesis was concerned with the comparative status of the three different types of graduates at the time of the study. Were there differences in the activity patterns of the graduates that could readily be attributed to their streams. The Chi Square test of independence revealed that there was indeed some significant association between status and stream (forcing rejection of the hypothesis). The extent of this association proved weak however (Cramer's V = .256) again making it tenuous to draw anything but tentative conclusions regarding the relationship between these variables. Nevertheless, the analysis did show the specialized craft graduate reporting more often than others that he or she had a full
time job or was self-employed. Academic stream graduates were more likely than others to report that they were attending school. Pre-technician and academic graduates seemed more likely to be "looking for work."

The eighth hypothesis addressed the matter of satisfaction with subject choice. Were there patterns of affection or disaffection that could be linked with the graduates' stream. This hypothesis could not be rejected since stream proved not to be a significant variable in the regression model. The only known clue regarding how students felt about the subjects they chose (essentially the stream) was the school they attended.

This was very important knowledge. It meant that the schools either varied in the way in which they offered choices to students, or that the quality of curricula offerings, at the school level, varied significantly. This was the only instance in the analyses where school showed significance as a variable.

The ninth hypothesis focused on the issue of careers. It asked the question whether students from different streams would display ideal career choice patterns discernible by stream. The Chi Square test of independence revealed some degree of association between ideal career choice and stream (Cramer's $V = .32$), forcing rejection of the hypothesis as stated. It appeared that some students had their minds made up for them by the schools. Once they were streamed, their ideal career choice tended to align with the stream. The ideal of course is to have the reverse situation be the case—
streaming based on informed career choice. As it was, specialized
craft graduates showed an overwhelming preference for skilled careers,
along with some distaste for professional, teaching or clerical
careers. Their colleagues in the other two streams were of opposite
persuasion.

Hypothesis ten looked at the relative propensities of graduates
of the different streams to find full-time work. Did stream deter-
mine the incidence of acquiring a full-time job. The Irwin-Fisher
Exact Test revealed that the proportion of specialized craft graduates
who reported ever having a full-time job was significantly higher
than that for the other streams. The hypothesis of equality of pro-
portions was therefore rejected. This was of course a significant
finding—addressing as it did the question of employability. It was
another instance also, of differences in the findings between the
present study and that conducted by Bennett (1979). The Jamaican
vocational graduate was reported by Bennett to be less successful than
his counterparts in finding full-time employment. But the reason for
this cannot be attributed to fundamental programme differences, but
rather to contextual economic differences between our two countries.
The Trinidad and Tobago economic boom of the 1970's contrasted sharply
with a Jamaican economic slump. The industrial climate in Trinidad
was hence more ready—had more absorptive capacity for skilled gradu-
ates—than that of Jamaica.

The eleventh hypothesis was concerned with job mobility. Simply,
it was a check on whether there were perceptible stream differences in
the number of graduates who reported having a current job that was different from their first job. The Irwin-Fisher Exact Test did not show any significant differences in the proportions examined thus not allowing rejection.

Hypothesis twelve addressed the question of graduate perceptions of preparedness—the degree to which they thought the school had prepared them for their first job. **Stream** proved to be the only significant variable in the regression model. Examination of the mean preparedness values for the pre-technician and academic streams revealed that they were virtually identical (2.63 and 2.64 respectively on a scale of 1 to 4), larger than the mean value for the specialized craft stream 2.37. No post-hoc procedures were thus necessary, and the hypothesis was rejected. Specialized craft graduates were thus shown to report a significantly higher degree of preparedness than other graduates. But this was the result one should expect given the fact that this was the curriculum most nearly oriented to the world of work.

**Related Concerns**

Beyond the hypotheses posited and tested, several other related concerns were addressed in this chapter. Some of these related to the background of the senior comprehensive student, others to the way in which the school makes assignments to streams, and yet others to labour market outcomes. The important question of how **On-the-Job**
Training (OJT) fared as a variable was also addressed. In this closing section of the chapter these concerns are briefly reviewed.

**Socio-Economic Status of the Respondents**

In the review of literature, the researcher had addressed the question of socio-economic stratification in our school system. It was suggested that when we look at the senior comprehensive school, we really are looking at the thick horizontal layer just beneath the upper crust of the children of the middle and upper classes. Those children who are rewarded with elitist general education in prestige schools devoid of practical (work-oriented) experiences. The data revealed that this was a correct assertion as was evidenced by a positively skewed frequency distribution of Duncan socio-economic index scores. The mean Duncan score for the group was 25.6. This score could better be placed in perspective by comparing with occupations whose scores are similar, e.g.:

Brickmason, stonemason, tile-setters - 27  
Meatcutter - 29  
Apprentice auto mechanic - 25  
Newsboy - 27  
Messengers and officeboys - 28  
Policeman - 39. (Duncan, 1961)

Regarding educational level—a good index of SES—the typical parent guardian or household head with responsibility for students in the study was reported as having not much more than a primary school education. Based on these indexes, the respondents in the study could be said to have originated largely from lower- to lower-middle class homes.
Achievement

Based on the composite math and English 14+ scores (mean 89.6 out of a possible 200) the students of this sample could be described as underachievers. The researcher knew this from first hand knowledge, but the score provided confirmation.

Assignment to Stream

It seems clear from the responses of the graduates that there is no set national plan for assigning students to streams. Approximately 50% of those who responded indicated they had received their subject "choice," but that does not tell us how such "choice" was arrived at. Some students indicated taking placement tests (16.8%) while yet others (12.4%) indicated that their assignment hinged on the 14 plus results. Variation by school was quite evident, some schools such as Barataria and Marabella favouring placement testing, others opting for other means.

One wonders whether the disarray evident here does not work to the disadvantage of a 14-year old? The data provided no evidence of consistency and smoothness at the transition between the junior and senior secondary school. How does a school make a decision in the absence of data and information, that boy X is to be placed in plumbing, and boy Y in masonry? The difficulty, indeed the futility, which this task presents is evident, and probably accounts for the high percentage of "choice" allowed. Its as though the 14-year old is being asked to "pick a card."
Perception of Careers

There was remarkable similarity in the perceptions of students across streams about the relative status and prestige associated with various careers. Contrary to Foster (1965), but consistent with Oxtoby (1977) and Joe (1977), the white collar orientation was quite evident.

Information Concerning the Job Market

It was clear from the data that the school played a very small part in the job search activities of students. This was unlike the Jamaican case as reported by Bennet (1979), where the work experience coordinators, principals and teachers combined were responsible for 64.2% of the jobs found by vocational graduates, and 83.7% of the jobs found by non-vocational graduates. As reflected in the data, the comparable figures for the sample under study was 5.2% of the pre-technician stream, 8.8% of the specialized craft stream, with no academic student reporting being assisted by school personnel.

Without diminishing the value of personal drive in job seeking efforts, it would appear that there is a role here for the school, if only in providing information.

On-the-Job Training

The evidence from this chapter indicated the following information concerning the National Training Board sponsored OJT programmes:
1. OJT participants took significantly less time than other graduates to engage the labour market (the act of participation in a programme being considered engagement).

2. OJT participants spent a significantly higher percentage of time pursuing full time work.

3. OJT participants earned substantially less money ($182.00 per month) while in training than they would have had they been on the open labour market—a very unfortunate and senseless circumstance.

4. OJT participants who changed jobs reported earning slightly more than other graduates $989 as against $972 per month.

Relatedness of Work to Training

This was one of the key concerns of the entire study. It focused on whether specialized crafts (and to some extent pre-technician) graduates were finding work related to their training. The data revealed that 43.75% of female and 32.35% of male specialized craft graduates who responded indicated finding first jobs not at all related to their training. A further 18.75% and 13.95% of female and male specialized craft graduates respectively indicated finding jobs only slightly related to their training.

These are alarming figures given the high costs involved in training the specialized craft graduate. The margin of wastage here is evident. It may very well be though that this wastage is a built-in feature of most vocational programmes, given the observations of
Oxtoby (1977) who reported that almost 25% of the graduates in his study (set in Barbados) were working in non-training related areas, and Eninger (1965) who expressed concern at the high percentage of students so indicating in his study (set in the United States). Eninger concluded from his data that "the great majority of vocational course graduates do not work in the trade studied. Moreover, the majority does (sic) not work in either the trade studied or highly related trades. Most jobs held are in slightly related or completely unrelated trades, where relatedness is judged by the graduates" (pp. 9-35).

The question is whether the Trinidad and Tobago taxpayer could afford to support programmes which high percentages of candidates may never pursue into the job market.

Further synthesis, including the researcher's observations concerning the findings, will be presented in the concluding chapter.
CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

This study tried to ascertain whether there was a rational basis for the inclusion of specialized crafts (or vocational training) in the curriculum of the Trinidad and Tobago senior comprehensive school. It involved a follow-up of 901 graduates from different streams. In the opening chapter, a conceptual framework was developed as a means of anchoring the research. It was shown that "technological illiteracy" was an affliction suffered by most post colonial societies, Trinidad and Tobago included, and that efforts in many of these countries toward the vocationalizing of curricula were intended to eradicate this affliction. This was believed to be a precondition for growth through industrialization. Also presented were research findings from the Caribbean (Bennett, 1979; Oxtoby, 1977) which tended to agree with the common belief that vocationalized curricula in the underdeveloped setting do not fulfill their promise.

Chapter Two consisted of a survey of relevant literature. It began by addressing the phenomenon of "the world educational crisis," and continued by examining various aspects of the "Human Capital" approach to development. The vocationalizing of curricula in the underdeveloped setting was shown to be an aspect of this approach.
The work of Foster (1965) which constituted a refutation of the supposed attributes of vocationalized curricula in the specific case of Ghana, was reviewed and critiqued. The researcher could not agree that Foster had established vocational education as a "fallacious" curriculum approach. More research was called for. In this chapter also vocational education research in the United States was reviewed. It was shown that the issues and concerns here were similar to those which obtained in a developing setting such as Trinidad and Tobago. The chapter also highlighted the philosophical chasm between vocational education and industrial arts. The latter was shown to be more liberal in its approach, providing industrial technological literacy as opposed to specific job training. Discussed too was the question of vocational maturity, with emphasis on theory and research, and a review of the work of Mahy (1981) done in Jamaica. Finally, non-school correlates of occupational success were discussed, with focus on socio-economic indices, and featuring the landmark work of Blau and Duncan (1967) among others.

Chapter Three consisted of an outline of the methodology and related procedures. It featured the development of a framework for the evaluation of vocational education in Trinidad and Tobago. Also included was a description of how the sample was drawn, and the nature of the research design (ex-post facto). The chapter concluded with a brief discussion of the particular merits of adopting a practical approach to data analysis, and why ex-post facto designs—as opposed to experimental designs—are better suited to inquiry such as
was being undertaken. The utilitarian purpose of the research was emphasized.

Chapter Four presented a summary, analysis and interpretation of the data. The twelve hypotheses which spelt out the researcher's beliefs were tested and the results presented. Stream showed significance or positive association when the following criteria were considered:

1. Time taken to find the first job ($R^2 = .03$),
2. Percentage of time spent fully employed ($R^2 = .02$),
3. Degree of satisfaction with the first job ($R^2 = .03$),
4. Perception of preparedness for the first job ($R^2 = .01$),
5. Status at the time of the survey (Cramer's $V = .25$),
6. Job-type—first job (Cramer's $V = .24$),
7. Ideal career choice (Cramer's $V = .32$), and
8. Ability to find full-time employment.

When the following criteria were considered, stream proved not to be a factor:

1. Job mobility.
2. Initial salary—first job.
3. Initial salary—current or most recent job.
4. Degree of satisfaction with subject choice.

As can be seen from the low magnitude of the Cramer's $V$ and $R^2$ values, stream per se proved to be a consistent but very weak variable. So although the specialized crafts stream graduate typically showed
more positively than his counterparts, the great size of the residuals—unknown or unexplained variance—severely dampened the utilitarian value of such knowledge. Said differently, if there were no streaming at all, the differences between one graduate and the other on the criteria examined would remain substantially unaltered.

Apart from the testing of hypotheses, data analysis also revealed that 62.5% of female and 46.3% of male specialized crafts graduates reported finding little or no relationship between their training and first jobs. It was revealed also that the primary criterion by which the graduates were assigned to their particular streams upon making the transition from the junior secondary school was their own choice.

Given this background, the remainder of this chapter focuses on conclusions that could be drawn from the findings along with recommendations.

Conclusions

Based on the findings as outlined in Chapter Four, particularly the results of hypotheses testing, the following conclusions appear prudent:

1. The effects of streaming on the labour market experiences and perceptions of senior comprehensive graduates are discernible, but only modestly.

2. When important labour market criteria such as the time it takes a graduate to find the first job, or the percentage of time he or she has spent fully employed since
graduating are considered, the variables sex and OJT provide more useful explanation of graduate performance than stream per se.

3. So far as the initial salary earned by graduates after leaving school is concerned, the differences wrought by stream are negligible. There is no real evidence allowing the conclusion that the members of any one stream enjoy a distinct economic advantage over members of another.

4. With respect to the starting salary associated with the current or most recent jobs held by graduates, apparent stream differences may well be confounded by the effects of ethnicity, and geography (see Tables 69 and 70) (Appendix F).

5. Streaming exerts only modest influence on the types of jobs obtained by graduates.

6. Specialized crafts graduates appear generally to be more satisfied with their initial jobs than other graduates, but stream proved such a very weak variable here as to make this finding of little utility.

7. Specialized crafts graduates appear more likely than other graduates to find full-time employment. A significantly higher proportion of these graduates reported having ever found full-time work.

8. Specialized crafts graduates rate higher than other graduates the degree to which they believed schooling prepared them for their first job.
Senior comprehensive female graduates appear to reap decidedly less labour market benefits than their male counterparts regardless of their stream. They trail on all important criteria, including salary, time taken to find employment, and percentage of time employed. The most successful appear to be those who pursued the academic stream. Traditional female areas such as business studies, typing, shorthand, etc. seem to confer disadvantages upon recipients especially where the speed of engaging the labour market is concerned. Specialized crafts education in its present form is a definite hindrance to the labour market success of female graduates.

By relying primarily on student choice for making assignments to streams, the schools seem to be acting contrary to established theory and research regarding vocational maturity of 14 year olds. Evidence from this study points to system wide tentativeness—perhaps disarray—on this critical issue. Far from following a national plan, fundamental differences in placement approach, by school, are evident.

A substantial number of students who are prepared for crafts could be expected to find employment inconsistent with their training. In this study, 62.5% of female and 46.3% of male specialized crafts graduates reported finding little or no relationship between their training and
first jobs. Whatever the reasons for this high degree of mismatch, it points to the seemingly inevitable futility of attempting to align two fundamentally different institutions—the school and industry.

12. On-the-Job Training (OJT) is a significant variable so far as speed of employment and percentage of time engaged in the labour market are concerned. But these advantages should not obscure the fact that OJT participants earn an average $182.00 less than their opportunity costs while in training. Advantages had by these participants may be due solely to the fact that they are a good source of inexpensive labour to employers. The strength of this variable cannot be properly assessed until this anomaly is regularized. Even finer assessment will become possible if the marginal cost (to the state) of making OJT possible to a graduate could be determined.

Recommendations

1. It is recommended that more efficient ways be found to initiate young skilled workers in Trinidad and Tobago into industry. The senior comprehensive school seems clearly to be ill suited to this task.

2. The goal of industrial technological literacy could be retained and pursued by way of generic technical programmes—more in keeping with present efforts at pre-technician
education--and geared to all, with the assurance that no labour market advantages will be lost by any. Indeed, as shown in Table 71, students who pursued courses of a pre-technician nature (e.g., woodwork, metalwork, business studies) were able to hold their own along with more specifically trained graduates. With thoughtful curriculum research and planning, the lessons of these successes could be translated into creatively designed programmes.

3. On-the-Job Training should remain a critical concept in overall training efforts. Whether it should be subsidized by the state as at present is another matter. Perhaps what is needed is a system of information about labour demand, the National Training Board acting as a neutral broker linking industry with school guidance services. On the supply side, the school should be offering a student broadly prepared to meet the entry level requirements of a broad range of industries. Firms should be made aware of their responsibilities toward training, and should be discouraged from believing that the school owes industry anything other than a trainable technologically literate graduate.

4. It is recommended that attempts at formal training should begin only after participants have had full exposure to secondary education. Through generic technical programmes
as suggested in recommendation two, and through proper guidance services well supported by a job information base, students will be better placed to make rational career choices.

Recommendations for Further Research

1. There is need for comparative follow-up studies spanning comprehensive and prestige schools to get a closer look at within and between school differences in the experiences of graduates.

2. There is need for a cost-benefit analysis of specialized crafts education.

3. Inquiry needs to be directed toward the vocational maturity of junior secondary school graduates in Trinidad and Tobago.

4. A comprehensive analysis of the costs and effects of the National Training Board sponsored OJT programmes is needed.

5. A longitudinal study of graduates of the senior comprehensive school should be considered. The format could be much the same as that for the present study, with data gathered periodically at some meaningful time interval.

6. A comprehensive study of the needs and perceptions of Trinidad and Tobago employers should provide useful data.
7. Inquiry into non-formal approaches to training in Trinidad and Tobago should be conducted.

8. A historical analysis of the contribution of formal training institutions in the preparation of skilled personnel should be conducted. This might for example, include an analysis of the role of John S. Donaldson Technical Institute in this regard, and could consist of attempts to trace graduates from the school's inception to the present time.

9. A status report on the system of National Craft Examinations is needed. Objective assessment of their relevance, validity, etc. should be a part of this.
APPENDIX A

Questionnaire to Graduates
MINISTRY OF EDUCATION
CONFIDENTIAL

NATIONAL TRAINING BOARD

PROJECT CONCERN

A NATIONAL FOLLOW-UP STUDY OF SENIOR COMPREHENSIVE
GRADUATES

CLASSES OF 1979 AND 1980
CONFIDENTIAL: For Research use only.

DIRECTIONS: This questionnaire is about your secondary and post-secondary school experiences. A few questions relate to your parents, step-parents or guardians.

Most questions can be answered by placing a check (✓) or an "X" in a box provided. Some require short answers. Please answer as thoughtfully and accurately as you can.

You may decline to answer any question. If a question does not apply, please go on to the next one.

We have provided space for your signature. Again this is optional. However, if you would like your name to be placed on file with the National Training Board, or with the Employment Exchange of the Ministry of Labour you may wish to sign your name below.

NAME: ........................................

DATE:  ........................................
To begin, we would like to know a little about your secondary school experiences.

1. Which of the following senior comprehensive schools did you attend?
   - None
   - Arima
   - Barataria
   - Chaguanas
   - Fyzabad
   - Melick
   - Marabella
   - Mucurapo
   - Pleasantville
   - Siparia
   - St. Augustine

2. What year did you graduate from secondary school?
   - 1979
   - 1980

3. Which of the following streams did you pursue?
   - None
   - Academic
   - Pre-Technician
   - Specialized craft

4. If you followed a pre-technician or specialized craft stream, indicate the specific technical subject or course you pursued (check one).
   - Auto and Diesel
   - Shorthand and Typing
   - Accounts/Bookkeeping
   - Clothing and Textiles
   - Food and Nutrition
   - Electronics
   - Machine Shop
   - Carpentry
   - Woodwork
   - Metalwork
   - Electrical Installation
   - Draughting
   - Welding
   - Plumbing
   - Masonry
   - Other (Please state what)

Next we will like to shift to your experiences since graduating from secondary school.
5. Since graduating from secondary-school, how many months have you ...

- [ ]  a. Worked at a full-time job (40 hours or more a week)?
- [ ]  b. Attended school (technical institute, youth camp, teachers' college, University etc.) full-time?
- [ ]  c. Been unemployed and looking for work?
- [ ]  d. Not had a job because you were keeping house?
- [ ]  e. Been unable to work due to illness or injury?

6. How long after graduating from secondary-school did it take you to find your first full-time job? (A full-time job includes participation in a National Training Board sponsored On-the-Job training course).

- [ ]  1 Month
- [ ]  2 Months
- [ ]  3 Months
- [ ]  4 Months
- [ ]  5 Months
- [ ]  6 Months
- [ ]  7 Months
- [ ]  8 Months
- [ ]  9 Months
- [ ]  10 Months
- [ ]  11 Months
- [ ]  12 Months
- [ ]  More than 12 Months
- [ ]  Never worked.

7. Have you ever received National Training Board sponsored on-the-job training in a firm or industry?

- [ ]  YES
- [ ]  NO

8. Was this your very first full-time job?

- [ ]  YES
- [ ]  NO
9. At present, how do you spend most of your time? (Check one).
   a. □ Working at a full time job (40 hours or more per week).
   b. □ Working at a part-time job.
   c. □ On temporary lay-off from a job.
   d. □ Looking for work
   e. □ Going to school
   f. □ Keeping house
   g. □ Undergoing On-the-Job training with the National Training Board
   h. □ Self Employed
   i. □ Working in family business.
   j. □ At home
   k. □ Other (Please state what) ____________________________

Next we turn to a very important part of this exercise dealing with your job history. On the Job History sheet provided, we will like information about the type of work experiences you have had. We want to compare academic and pre-technical graduates with specialized craft.

There are three columns as follows:

Column 1 - Your first job after graduation. This job could be On-the-Job Training under the National Training Board.

Column 2 - The longest job you have held. If this is the same as your first job, then check the box at the top.

Column 3 - Your present or most recent job. Again, if this job is the same as your first or longest jobs, check only the boxes at the top.
# JOB HISTORY SHEET

<table>
<thead>
<tr>
<th>10</th>
<th>FIRST REGULAR JOB (Includes On-the-Job Training)</th>
<th>JOB HELD FOR LONGEST TIME (Includes On-the-Job Training)</th>
<th>CURRENT OR MOST RECENT JOB (Includes On-the-Job Training)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Could be self-employment or family business. (Must not be part-time)</td>
<td>□ same as first job</td>
<td>□ same as first job, □ same as longest job</td>
</tr>
<tr>
<td>a.</td>
<td>What kind of job was this?</td>
<td>□ □ □ □</td>
<td>□ □ □ □</td>
</tr>
<tr>
<td>b.</td>
<td>What are (were) your main tasks on this job? What do (did) you do most of the time?</td>
<td>□ □ □ □</td>
<td>□ □ □ □</td>
</tr>
<tr>
<td>c.</td>
<td>What does (did) the employer you worked for make or do?</td>
<td>□ □ □ □</td>
<td>□ □ □ □</td>
</tr>
<tr>
<td>d.</td>
<td>What month and year did you start and leave this job (assuming that you have left)?</td>
<td>□ □ □ □</td>
<td>□ □ □ □</td>
</tr>
<tr>
<td>e.</td>
<td>□ Have not left</td>
<td>□ Have not left</td>
<td>□ Have not left</td>
</tr>
<tr>
<td>f.</td>
<td>What was your starting salary before deduction for for taxes, national insurance insurance etc.?</td>
<td>□ □ □ □</td>
<td>□ □ □ □</td>
</tr>
<tr>
<td></td>
<td>□ Starting: $</td>
<td>□ Starting: $</td>
<td>□ Starting: $</td>
</tr>
<tr>
<td></td>
<td>hour/week/month (circle one)</td>
<td>hour/week/month (circle one)</td>
<td>hour/week/month (circle one)</td>
</tr>
<tr>
<td></td>
<td>□ Leaving: $</td>
<td>□ Leaving: $</td>
<td>□ Leaving: $</td>
</tr>
<tr>
<td></td>
<td>hour/week/month</td>
<td>hour/week/month</td>
<td>hour/week/month</td>
</tr>
<tr>
<td>g. How many hours a week do (did) you usually work?</td>
<td>FIRST REGULAR JOB</td>
<td>JOB HELD FOR LONGEST TIME</td>
<td>CURRENT OR MOST RECENT JOB</td>
</tr>
<tr>
<td>-----------------------------------------------</td>
<td>------------------</td>
<td>--------------------------</td>
<td>--------------------------</td>
</tr>
<tr>
<td></td>
<td>hours per week</td>
<td>hours per week</td>
<td>hours per week</td>
</tr>
<tr>
<td>h. How related is (was) this job to the trade or occupational area you studied in secondary school?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Did not study a trade or occupational area in secondary school.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>[ ] Same as area of training</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>[ ] Highly related</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>[ ] Slightly</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>[ ] Not at all</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>i. How well did your secondary school education or training prepare you for this job?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>[ ] Excellent Preparation</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>[ ] Good Preparation</td>
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<td></td>
<td></td>
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<tr>
<td>[ ] Fair Preparation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>[ ] Poor Preparation</td>
<td></td>
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<tr>
<td>j. How satisfied are (were) you with this job?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>[ ] Very Satisfied</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>[ ] Satisfied</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>[ ] Dissatisfied</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>[ ] Very dissatisfied</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

275
11. Of all the experiences you have had in secondary school, including the subjects you've studied, which would you say has been the most useful in helping you to adjust to the world of work? (Check one)

☐ Skill in using tools and machines
☐ Mathematical skills
☐ Communication skills (writing, speech, draughting and sketching etc.).
☐ Human relations skills (being able to get along with people).
☐ Other skills (Please state what).

12. Many senior comprehensive students do not get the course they really want to pursue. We would like to get some information concerning how students get into courses, and how many do not get their choices.

When you first got to the senior comprehensive school what determined which stream you got into? (Check one)

a. My 14 plus results
b. My junior secondary school reports and records
c. I took a placement test.
d. My subject choices.
e. Whether there was room in a class.
f. Guidance person's recommendation.
g. Other (Please state what)

h. Don't know.

13. Are you satisfied with the choice of subjects you pursued in secondary school?

☐ Very Satisfied ☐ Satisfied ☐ Dissatisfied ☐ Very Dissatisfied
The next question deals with the career choice you would really like to follow if you were completely free to choose. A listing of broad careers is provided to assist you in making your choice. (Choose only one).

14. What type of career would you follow if you were completely free to choose?

- Higher professional (Doctor, Lawyer, Politician, Dentist, Accountant etc.).
- Lower professional (Nurse, Journalist, Agricultural Officer, Surveyor etc.).
- Teacher (Primary, Secondary, Technical).
- Clerical and Allied (Clerk, Cashier, Bookkeeper, Typist, Bank Clerk etc.).
- Artisans and skilled workers (Electrician, Auto-mechanic, Plumber, Carpenter, Mason etc.).
- Commercial (Small Businessman).
- Semi-skilled or Unskilled workers (Labourers, messenger, bus conductor, watchman, cook etc.).
- Uniformed service (Fireman, Policeman, Soldier, Securityman).
- Sportsman/Artist (Boxer, Poet, Disc Jockey etc.).
- Other (Please state what). ________________________________

15. Are you now following this type of career?  

- YES  
- NO

This next question inquires about the amount of knowledge you had about the technical vocational course or specialized craft of your choice before you got to the senior comprehensive.
16. For your technical-vocational or specialized craft course of study, how much information did you have about each of the following before enrolling?

I did not take a technical/vocational course

<table>
<thead>
<tr>
<th>Abundant Information</th>
<th>Adequate Information</th>
<th>Some Information</th>
<th>No Information</th>
</tr>
</thead>
</table>

a. Type of work performed by typical or average worker in that field
b. Lifestyle of the typical or average worker
c. Typical salary
d. Job Opportunities
e. Opportunities for advancement
f. Opportunities for further education and training

17. How would you rank the following occupations if you had to go on prestige alone.

<table>
<thead>
<tr>
<th></th>
<th>(1) Very High</th>
<th>(2) High</th>
<th>(3) Medium</th>
<th>(4) Low</th>
<th>(5) Very Low</th>
</tr>
</thead>
</table>
a. Auto Mechanic
b. Taxi Driver
c. Author
d. Merchant or business owner
e. Nurse
f. Government Clerk
g. Technical-Vocational teacher
h. Secondary school academic teacher
18. There is a belief that "bright" children should take academic subjects, and that "dull" children should take technical subjects. This set of questions deals with this point.

<p>| | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Very High</td>
<td>High</td>
<td>Medium</td>
<td>Low</td>
<td>Very Low</td>
</tr>
<tr>
<td>1. Medical doctor</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>j. Lawyer</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>k. Policeman</td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>l. Plumber</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>m. Farmer</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>n. Soldier</td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>o. Seamstress</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>p. Accountant</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>q. Architect</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>r. Carpenter</td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>s. Secretary</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>t. Office worker</td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

18. a) Do you believe that academic subjects are for "bright" children and technical subjects for dull children?  
   - Yes  -  No  -  Undecided

b) Did your school use this principle to assign students to streams?  
   - Yes  -  No  -  Undecided

c) Is this how you were assigned to your stream?  
   - Yes  -  No  -  Undecided

d) Do you think that academic subjects are better than technical subjects?  
   - Yes  -  No  -  Undecided

e) Do you believe that academic teachers are better than technical teachers?  
   - Yes  -  No  -  Undecided

Next we would like to find out about any educational or training experiences you may have had after leaving school, not including On-the-Job training.
19. What educational experiences have you had since graduating from secondary school? (Check all that apply)

☐ Attended Youth Camp.
☐ Attended Trade Centre.
☐ Senior comprehensive evening classes.
☐ Full time technical institute.
☐ Correspondence course.
☐ Took O'Levels.
☐ Took National Examinations.
☐ Attended school overseas.
☐ Other (Please specify) __________________________

☐ Had no further education or training.

20. When people attend secondary school, they learn and become interested in many things besides school work. We are interested in learning about your civic social activities now that you have left school. The answers you provide will help us to see whether the school can do more in the area of extra-curricular activities.

Since leaving school, have you ever:

a) JOINED A SPORTS CLUB OR CULTURAL GROUP

b) JOINED THE BOY SCOUTS OR GIRL GUIDES

c) ATTENDED A CIVIC MEETING (e.g. Village Council)

d) VOTED IN A NATIONAL ELECTION

e) DONE VOLUNTEER WORK IN YOUR COMMUNITY

f) BEEN VOTED CAPTAIN OR PRESIDENT OF ANY ORGANIZATION OR GROUP.

Now that we have discussed some of your experiences and activities in the period after graduation, we would like to close by having you share with us some information about your parents, step parents or guardians.

Again, this information would be treated with strictest confidence, and used only for research purposes. It is very important that you answer the next few questions as accurately as you can.
21. Information about your parents (step-parents) or guardians - DURING THE TIME YOU WERE IN SCHOOL.

<table>
<thead>
<tr>
<th></th>
<th>Male Parents or Guardian</th>
<th>Female Parent or Guardian</th>
</tr>
</thead>
<tbody>
<tr>
<td>Living at home with you</td>
<td>YES [ ] NO [ ]</td>
<td>YES [ ] NO [ ]</td>
</tr>
<tr>
<td>Part of the time</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Occupation</td>
<td>1. ___________</td>
<td>___________</td>
</tr>
<tr>
<td>Approximate weekly income while you were in school</td>
<td>$ _____ per week</td>
<td>$ _____ per week</td>
</tr>
</tbody>
</table>

22. What is the highest level of education reached by each parent (step parent) or guardian? (Check one only in each column)

- Male Parent or Guardian
  - [ ] Never attended school
  - [ ] Some elementary school
  - [ ] Completed elementary school
  - [ ] Some high school
  - [ ] Completed high school
  - [ ] Completed Teachers' College
  - [ ] Completed Technical school or Institute.
  - [ ] Attended University.

- Female Parent or Guardian
  - [ ] Never attended school
  - [ ] Some elementary school
  - [ ] Completed elementary school
  - [ ] Some high school
  - [ ] Completed high school
  - [ ] Completed Teachers' College
  - [ ] Completed Technical school or Institute.
  - [ ] Attended University.

Finally we would like to know if you now feel more confident about making a career decision having attended a comprehensive school.

We also would like to know your views about whether students are able to make a career choice at the age of 14.
23. Please respond to the following questions: YES  NO  OR DECIDED
   a) Is 14 a good age at which to make a career choice?
      □ □ □
   b) When you were 14 did you know what career you wanted to pursue?
      □ □ □
   c) Do you now know what career you would like to pursue?
      □ □ □
   d) Do you know how and where to get information about careers?
      □ □ □

Thank you for taking time to complete this questionnaire. We are anxious to know your thoughts and what your experiences have been like.

Please place this completed questionnaire in the envelope provided and return it to the address indicated at the earliest opportunity.

NO STAMP IS NEEDED.

Again, thanks for your cooperation.
APPENDIX B

Correspondence to Ministry of Education and School Officials
The Ohio State University

Academic Faculty of Industrial Technology
200 Welding Engineering Laboratories
190 West 19th Avenue
Columbus, Ohio 43210
Phone 614 422-7471

March 11, 1982

The Permanent Secretary
MINISTRY OF EDUCATION AND CULTURE
Alexandra Street
Port of Spain
Trinidad

Dear Sir:

In order to fulfill dissertation requirements toward the Ph.D. degree in Education my present intention is to conduct a follow-up study of a selected sample of graduates from the senior comprehensive school.

Essentially, the study will consist of a survey and will attempt to compare the career profiles of technical-vocational and non-technical-vocational students. These two groups will also be compared on other selected variables not yet identified.

Tentatively, also an attempt will be made to identify a stratum of students who participated in the OJT program, to see whether their career paths differ significantly on account of the initial placement efforts of the National Training Board.

The purpose of this letter given this context, is to request the Ministry's permission allowing me access to:

1. The names and addresses of graduates of all senior comprehensive school students from the program's inception.
2. The names and addresses of all students who participated in the OJT program implemented by the National Training Board.
3. Any other materials (documents, etc.) which may assist in the research.

I believe that I have the cooperation of Messrs. Burgess, Dyer, and Gaskin in the collating efforts. All that is needed therefore is permission to use lists of names. While I would appreciate assistance in the mechanics of this, a simple okay will suffice.

I am unaware of the stated policy of the Ministry toward cooperation with nationals in the conduct of research, but am hoping that assistance somewhat of the order of that afforded Dr. Franklin Moosie in his study on the perceptions of inner high school industrial arts teachers will suffice.
The Permanent Secretary  
Ministry of Education and Culture  
March 11, 1982  
Page 2

A copy of the completed study will be made available to the Ministry, and the writer also intends to give first consideration to the home job market upon completion of studies here.

Sincerely,

Theodore Lewis  
Graduate Teaching Associate

TL/er
April 23, 1982

Mr. Albert Alleyne
The Executive Secretary
National Training Board
Alexandra Street
P.O.S. Trinidad, West Indies

Dear Sir:

In order to fulfill dissertation requirements toward the Ph.D. degree in Education, my present intention is to conduct a follow-up study of a selected sample of graduates from the senior comprehensive school.

Essentially, the study will consist of a survey, and will attempt to compare the graduates from the general and vocational streams on a number of variables including salary, attitudes to school, time taken to get first job, rate of advancement, employment profile, further education, self-help, etc.

An attempt will also be made to assess the degree to which the occupations reported by graduates are consistent with training pursued in the school. In addition, attempts will be made to ascertain the degree to which variables such as sex, geography and program pursued could explain reported employment and other status, and the cost effectiveness of vocational relative to general education.

Of considerable interest to the National Training Board will be my attempt in this study to ascertain whether graduates who participate in the OJT program show more stable employment and attitude patterns than those who do not. I am of the opinion that this will lend additional credibility to the program.

The purpose of this letter then, given this context, is to request from you the names and addresses of all technical-vocational graduates of the years 1979 and 1980, by school and program. In other words, the data that the operations unit routinely works from in administering the program.

I have also sought the cooperation of the Permanent Secretary, and all principals of senior comprehensive schools, and Messrs. Gaskin, Burgess and Dyer have expressed willingness to help.
I realize that this exercise will involve time and effort on the part of your staff, and would like to express appreciation for this in advance. I make the assumption also that my efforts will be seen within a professional framework, as the attempt of a concerned national to assist in the much needed evaluation of our national educational efforts for policy purposes.

Sincerely,

Theodore Lewis

Theodore Lewis
Graduate Teaching Associate

TL/er
cc: Rupert Griffith
Hugh Gaskin
April 15, 1982

The Principal
San Juan Senior Comprehensive School
San Juan, Trinidad

Dear Sir/Madam:

I am a citizen of the Republic of Trinidad and Tobago and a former industrial arts teacher employed at St. Augustine Senior Comprehensive School. At present I hold the appointment of Graduate Teaching Associate at the above named university, and am in the process of completing requirements toward the Ph.D. degree in Education. I am at the dissertation stage, and my tentative topic is "A Follow-up of the 1979-1980 Vocational and General Graduates of Selected Comprehensive Schools in Trinidad and Tobago."

The intent of this study is to provide baseline data, and also to try to compare the effects of two different types of schooling on career choices and patterns. The primary method will be a survey instrument administered to graduates of the years mentioned. To the best of my knowledge, this may be the first real attempt to systematically evaluate the comprehensive effect via empirical data.

In order to conduct this study I need your assistance, specifically in making available a complete list of the names and addresses of all full time students who graduated in the years 1979 and 1980. This is the population from which my sample will be drawn. I need this information in two categories:

1. Technical-vocational graduates
2. General education graduates (non-technical vocational)

I have sought the assistance of Mr. Hugh Gaskin of the Ministry of Education in this venture, and perhaps he has already contacted you on an informal basis. I have also formally sought the assistance of the Permanent Secretary.

All information provided will be kept confidential and used for research purposes only. Abstracts of the completed study will be sent to you.
This study cannot be conducted without your cooperation. Please assist me as I attempt along with you to make education for our citizens a more meaningful venture. I feel confident that you will appreciate the potential of this study and that you will do your part to help.

Sincerely,

Theodore Lewis
Graduate Teaching Associate

TL/er
APPENDIX C

Correspondence from Ministry of Education and School Officials
Mr. Theodore Lewis  
Graduate Teaching Associate  
Academic Faculty of Industrial Technology  
Ohio State University  
200 Welding Engineering Labs  
190 West 19th Avenue  
Columbus, Ohio 43210  
USA

Dear Sir,

Your letter to the Permanent Secretary, Ministry of Education is being hereby acknowledged.

Permission to use the list of names for research purposes, as indicated in your letter, has been granted.

However, before commencing this research, you are asked to call at the office of the Director of Schools Supervision, Ministry of Education.

Yours faithfully,

[Signature]

Herrod Thompson  
Director of Schools Supervision (Ag)  
for Permanent Secretary  
Ministry of Education
Mr. Theodore Lewis
Graduate Teaching Associate
The Ohio State University
Academic Faculty of Industrial Technology
280 Welding Engineering Laboratories
180 West 18th Avenue
Columbus, Ohio 43210.

Sir,

With respect to your request for information, please find both lists, i.e., Academic and Technical/Vocational.

Much effort went into this preparation. We hope it will be useful to your study and to educational development generally.

My best wishes to you in your pursuit of higher learning.

Yours sincerely,

WESLEY RAMJATTAN
Principal
MARABELLA
SENIOR SECONDARY
COMPREHENSIVE SCHOOL
8th June, 1982.

Mr. Theodore Lewis,
Graduate Teaching Associate,
Academic Faculty of Industrial Technology,
190 West 19th Avenue,
Columbus, Ohio 43210.

Dear Sir,

I wish to refer to your letter of 15th April, 1982 and inform you that all the necessary information requested will be made readily available to you.

However, the required staff to extract this information is non-existent, if therefore you can provide the necessary manpower to extract the said information, I will be very happy to assist you in your research.

Sincerely,

[Signature]

Principal
BARATARIA SENIOR COMPREHENSIVE SCHOOL
Mr Theodore Lewis, Graduate Teaching Associate,
Academic Faculty of Industrial Technology,
200 Welding Engineering Laboratories,
190 West 19th Avenue,
Columbus, Ohio 43210.

Sir,

Re: Graduates for 1979 and 1980.

With reference to your letter dated April 15th 1982
on the subject noted above, I regret to inform you that I
do not have the staff to compile the information requested.

However, should you nominate someone to extract the
information, I will be happy to make the records available
to him.

Yours Sincerely,

[Signature]

Principal,
Mulick Senior Comprehensive School.
APPENDIX D

Initial and Follow-Up Letters to Graduates
Dear

You have been carefully selected from a group of all comprehensive school students who graduated in the years 1979 and 1980 to take part in a research project. As you well know, comprehensive schools are still relatively new. You are in many respects a pioneer. The success of this type of school depends on what you do after graduating.

The research project involves approximately 1000 students from selected comprehensive schools throughout the country.

Every graduate from our schools is important.

Each person who graduates from a comprehensive school deserves recognition as a citizen. A very important step to good citizenship is a job. This project is especially interested in whether you have been able to find a job since graduation, and what type of job. We also would like to know a little about your family background.

Please take a few minutes of your time to assist us in this very important exercise. Your contribution is vital. We have enclosed a questionnaire which we would like you to fill.

---

ALL INFORMATION WILL BE KEPT CONFIDENTIAL.

---

Upon completing the questionnaire, please place it in the envelope enclosed and return it to the National Training Board.

For your convenience, no stamp is needed.

Thanking you,

T. Lewis,
For Director,
Technical/Vocational Education and Training Division, MINISTRY OF EDUCATION (NATIONAL TRAINING BOARD).
MINISTRY OF EDUCATION

NATIONAL TRAINING BOARD

(Serving Vocational and Technical Education and Training)

Address: J.R.C. Flats, 16, Alexandra Street, St. Clair or P.O. Box 380, St. Clair.

Telephones: Director and General Administration: 62-26335
            Research and Planning Unit: 62-26333
            Operations Unit,
            161, Western Main Road,
            ST. JUINS.

1052 11 30.

Dear

Six weeks ago you were sent a questionnaire in the mail which you were required to fill and return to the National Training Board, Ministry of Education. Shortly thereafter we sent you a reminder, having not at that time received a reply from you.

Our records to date show that you have still not replied.

Project CONCERN is the first attempt by this ministry to find out in a systematic manner just how well do Senior Comprehensive graduates perform upon leaving school. We are comparing specialized craft graduates with pre-technician and academic graduates.

We have taken the graduating classes for 1979 and 1980 in the ten (10) schools indicated, and have in each case scientifically drawn a representative sample.

Your name was thus very carefully selected. This study will provide important career information to us in the Ministry as we seek to provide realistic opportunities for our senior comprehensive graduates.

By completing this questionnaire you are doing your part to strengthen comprehensive education in Trinidad and Tobago.

WE CANNOT COMPLETE OUR STUDY WITHOUT YOUR CONTRIBUTION.

Please take a few minutes of your time to assist us in our search for a better comprehensive system. Let's make comprehensive education work.

We thank you for your time and assistance.

Sincerely,

Theodore Lewis
The National Training Board takes pleasure in thanking you for participating in PROJECT CONCERN, which is a national follow-up study of senior comprehensive graduates from ten (10) schools.

A very special THNXK YOU if you have already returned the questionnaire. If you haven't done so already, please devote a few minutes of your time towards this very important exercise. We have included a copy for your convenience.

Completing this questionnaire is an act of good citizenship. By sharing your experience with us, you are making it possible for us to make more informed decisions concerning comprehensive schools.

Again, we are grateful for your assistance.

Sincerely,

[Signature]

for: Director,
Technical/Vocational Education & Training Division.
As Project Concern approaches its final stage, we find that your name is among those graduates who still have not as yet responded to our previous questionnaires. We are still very much interested in you, and would like very much to hear from you.

Enclosed you will find a shortened copy of the questionnaire. We hope that this is more convenient for you. Please take a few minutes of your time to complete and return it to us.

We do not want to proceed without giving you a final opportunity to contribute. If you have already returned a questionnaire or contacted us, please ignore this letter.

Sincerely

[Signature]

Theodore Lewis
Technical/Vocational Education & Training Division, Ministry of Education.
APPENDIX E

Scheffe’ Post-Hoc Comparisons
### Scheffe Post-Hoc Comparison for Mean Satisfaction

<table>
<thead>
<tr>
<th>Stream</th>
<th>Pre-Technician</th>
<th>Academic</th>
<th>Specialized Crafts</th>
</tr>
</thead>
<tbody>
<tr>
<td>n</td>
<td>119</td>
<td>71</td>
<td>203</td>
</tr>
<tr>
<td>Mean</td>
<td>2.37</td>
<td>2.26</td>
<td>2.07</td>
</tr>
</tbody>
</table>

\[
\frac{1}{2} (\bar{x}_1) + \frac{1}{2} (\bar{x}_2) + (-1) (\bar{x}_3)
\]

\[
F = \left[ (.5 \times 2.37) + (.5 \times 2.26) + (-1 \times 2.07) \right]^2_

\[
3-1 \left( \frac{.5^2}{119} + \frac{.5^2}{71} + \frac{-1^2}{203} \right) (.741)
\]

\[
= .06 \overline{= 3.98}_{.015}
\]

At df (2,320) significant at \( p \leq .025 \)
Scheffe Post-Hoc Comparison for Mean Percentage

<table>
<thead>
<tr>
<th>Stream</th>
<th>Pre-Technician</th>
<th>Academic</th>
<th>Specialized Crafts</th>
</tr>
</thead>
<tbody>
<tr>
<td>n</td>
<td>181</td>
<td>135</td>
<td>234</td>
</tr>
<tr>
<td>Mean</td>
<td>30.74</td>
<td>25.42</td>
<td>49.08</td>
</tr>
</tbody>
</table>

\[
\frac{1}{2} (\bar{x}_1) + \frac{1}{2} (\bar{x}_2) + (-1)(\bar{x}_3)
\]

\[
F = \left[ (.5 \times 30.79) + (.5 \times 25.42) + (-1 \times 49.08) \right]^2
= \frac{(3-1) \left( \frac{.5^2}{181} + \frac{.5^2}{135} + \frac{-1^2}{234} \right) (891.71)}{13.39}
= \frac{439.95}{13.39} = 32.86
\]

At df (2, 541) significant at \( p < .01 \)
### Scheffe Post-Hoc Comparison for Variable Time

<table>
<thead>
<tr>
<th>Stream</th>
<th>Pre-Technician</th>
<th>Academic</th>
<th>Specialized Crafts</th>
</tr>
</thead>
<tbody>
<tr>
<td>n</td>
<td>123</td>
<td>69</td>
<td>208</td>
</tr>
<tr>
<td>Mean</td>
<td>12.46</td>
<td>9.65</td>
<td>7.89</td>
</tr>
</tbody>
</table>

\[
F = \left[ .5 \times 12.46 + (.5 \times 9.65) + (-1) \times 7.89 \right]^2 \\
\frac{3-1}{123 \times 69 + 69 + 208} \left( 67.72 \right) \\
= \frac{10.017}{1.417} = 7.06 \\
\]

At df (2, 393) Significant at \( p < .01 \)
APPENDIX F

Regional and Ethnic Differences in Starting Salary--Most Recent Job
Table 69

Regional Differences in Starting Salary (Most Recent Job)

<table>
<thead>
<tr>
<th>Region</th>
<th>Mean</th>
<th>SD</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>East</td>
<td>$1080</td>
<td>$440</td>
<td>26</td>
</tr>
<tr>
<td>Central</td>
<td>839</td>
<td>314</td>
<td>14</td>
</tr>
<tr>
<td>North</td>
<td>852</td>
<td>409</td>
<td>40</td>
</tr>
<tr>
<td>South</td>
<td>1056</td>
<td>462</td>
<td>54</td>
</tr>
</tbody>
</table>

Table 70

Ethnic Differences in Starting Salary (Most Recent Job)

<table>
<thead>
<tr>
<th>Ethnicity</th>
<th>Mean</th>
<th>SD</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indian</td>
<td>$1046</td>
<td>$437</td>
<td>51</td>
</tr>
<tr>
<td>Non-Indian</td>
<td>935</td>
<td>434</td>
<td>83</td>
</tr>
</tbody>
</table>
APPENDIX G

A Ranking of Technical
Electives on Labour Market Criteria
### Table 71

A Ranking of Technical Electives on Selected Labour Market Criteria

<table>
<thead>
<tr>
<th>Technical Electives</th>
<th>Percent</th>
<th>Rank</th>
<th>Time</th>
<th>Rank</th>
<th>Salfir</th>
<th>Rank</th>
<th>Salsec</th>
<th>Rank</th>
<th>Relfirs</th>
<th>Rank</th>
<th>Prepflrs</th>
<th>Rank</th>
<th>Satflrs</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auto &amp; Diesel</td>
<td>53.3</td>
<td>7</td>
<td>7.2</td>
<td>5</td>
<td>$563</td>
<td>14</td>
<td>$1104</td>
<td>4</td>
<td>2.65</td>
<td>10</td>
<td>2.42</td>
<td>8</td>
<td>2.42</td>
<td>16</td>
</tr>
<tr>
<td>Shorthand</td>
<td>20.2</td>
<td>16</td>
<td>15.4</td>
<td>15</td>
<td>658</td>
<td>9</td>
<td>925</td>
<td>13</td>
<td>2.57</td>
<td>8</td>
<td>2.26</td>
<td>4</td>
<td>2.26</td>
<td>12</td>
</tr>
<tr>
<td>Acct/Bookkeeping</td>
<td>26.1</td>
<td>14</td>
<td>15.2</td>
<td>14</td>
<td>542</td>
<td>16</td>
<td>950</td>
<td>12</td>
<td>3.07</td>
<td>12</td>
<td>2.71</td>
<td>15</td>
<td>2.42</td>
<td>16</td>
</tr>
<tr>
<td>Cloth/Textile</td>
<td>46.1</td>
<td>9</td>
<td>13.3</td>
<td>13</td>
<td>756</td>
<td>4</td>
<td>560</td>
<td>16</td>
<td>3.40</td>
<td>16</td>
<td>3.00</td>
<td>17</td>
<td>2.12</td>
<td>8</td>
</tr>
<tr>
<td>Food/Nutrition</td>
<td>24.5</td>
<td>15</td>
<td>12.1</td>
<td>12</td>
<td>552</td>
<td>15</td>
<td>715</td>
<td>15</td>
<td>3.41</td>
<td>15</td>
<td>2.58</td>
<td>11</td>
<td>2.27</td>
<td>13</td>
</tr>
<tr>
<td>Electronics</td>
<td>34.2</td>
<td>11</td>
<td>6.9</td>
<td>2</td>
<td>828</td>
<td>1</td>
<td>917</td>
<td>14</td>
<td>3.5</td>
<td>17</td>
<td>3.2</td>
<td>16</td>
<td>1.9</td>
<td>4</td>
</tr>
<tr>
<td>Machine Shop</td>
<td>57.7</td>
<td>2</td>
<td>7.1</td>
<td>3</td>
<td>758</td>
<td>3</td>
<td>1211</td>
<td>1</td>
<td>2.48</td>
<td>6</td>
<td>2.37</td>
<td>6</td>
<td>1.89</td>
<td>3</td>
</tr>
<tr>
<td>Carpentry</td>
<td>60.6</td>
<td>1</td>
<td>7.4</td>
<td>6</td>
<td>692</td>
<td>7</td>
<td>1064</td>
<td>7</td>
<td>2.18</td>
<td>4</td>
<td>2.08</td>
<td>3</td>
<td>2.08</td>
<td>6</td>
</tr>
<tr>
<td>Woodwork</td>
<td>44.8</td>
<td>10</td>
<td>10.7</td>
<td>10</td>
<td>795</td>
<td>2</td>
<td>1060</td>
<td>8</td>
<td>3.08</td>
<td>13</td>
<td>2.55</td>
<td>12</td>
<td>2.25</td>
<td>11</td>
</tr>
<tr>
<td>Metalwork</td>
<td>54.0</td>
<td>6</td>
<td>8.6</td>
<td>8</td>
<td>597</td>
<td>10</td>
<td>1104</td>
<td>4</td>
<td>2.85</td>
<td>11</td>
<td>2.50</td>
<td>9</td>
<td>2.15</td>
<td>9</td>
</tr>
<tr>
<td>Elect. Inst.</td>
<td>55.6</td>
<td>4</td>
<td>7.21</td>
<td>4</td>
<td>564</td>
<td>13</td>
<td>1067</td>
<td>6</td>
<td>2.12</td>
<td>3</td>
<td>2.05</td>
<td>2</td>
<td>2.10</td>
<td>7</td>
</tr>
<tr>
<td>Draughting</td>
<td>32.0</td>
<td>12</td>
<td>10.9</td>
<td>11</td>
<td>590</td>
<td>11</td>
<td>977</td>
<td>11</td>
<td>2.59</td>
<td>9</td>
<td>2.59</td>
<td>13</td>
<td>2.60</td>
<td>15</td>
</tr>
<tr>
<td>Welding</td>
<td>54.32</td>
<td>5</td>
<td>5.8</td>
<td>8</td>
<td>675</td>
<td>8</td>
<td>1027</td>
<td>9</td>
<td>1.82</td>
<td>1</td>
<td>2.41</td>
<td>7</td>
<td>1.42</td>
<td>5</td>
</tr>
<tr>
<td>Plumbing</td>
<td>51.7</td>
<td>8</td>
<td>7.5</td>
<td>7</td>
<td>587</td>
<td>12</td>
<td>1125</td>
<td>3</td>
<td>2.23</td>
<td>5</td>
<td>2.52</td>
<td>10</td>
<td>1.80</td>
<td>1</td>
</tr>
<tr>
<td>Airco/Refrig.</td>
<td>55.7</td>
<td>3</td>
<td>9.6</td>
<td>9</td>
<td>499</td>
<td>17</td>
<td>1165</td>
<td>2</td>
<td>2.5</td>
<td>7</td>
<td>2.33</td>
<td>5</td>
<td>2.35</td>
<td>14</td>
</tr>
<tr>
<td>Bus/Stud.</td>
<td>18.1</td>
<td>17</td>
<td>16.3</td>
<td>17</td>
<td>723</td>
<td>6</td>
<td>1104</td>
<td>10</td>
<td>2.00</td>
<td>2</td>
<td>2.00</td>
<td>1</td>
<td>1.87</td>
<td>2</td>
</tr>
<tr>
<td>Clerk/Typist</td>
<td>21.4</td>
<td>15</td>
<td>15.6</td>
<td>16</td>
<td>742</td>
<td>5</td>
<td>1019</td>
<td>10</td>
<td>3.22</td>
<td>14</td>
<td>2.6</td>
<td>14</td>
<td>2.20</td>
<td>10</td>
</tr>
</tbody>
</table>

**NOTE:**
- Percent = Percentage of time in which full-time employment was indicated
- Time = Time taken to find job in area
- Salfir = First time entry level salary
- Salsec = Reported starting salary—most recent job
- Relfirs = Relatedness—first job (scale 1-4, one being high)
- Prepflrs = Rating of preparedness
- Satflrs = Rating of satisfaction
APPENDIX H

Terms of Reference for
Cabinet Appointed Committee
on Technical-Vocational
Education
You have been appointed by Cabinet to serve as a Member of the said Committee and in undertaking the exercise referred to above, the Committee should give consideration to the following:

(i) the preparedness of students to benefit from technical/vocational programmes;

(ii) the maturity of students to make career choices at the age of fourteen (14);

(iii) the nature of the programmes in the context of rapidly changing technologies;

(iv) cost-benefit/effectiveness of knowledge and skills acquired;

(v) stock and supply of adequately trained teachers;

(vi) accommodation and equipment provided;

(vii) the range, flexibility, and location of offerings;

(viii) the duration of courses.
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