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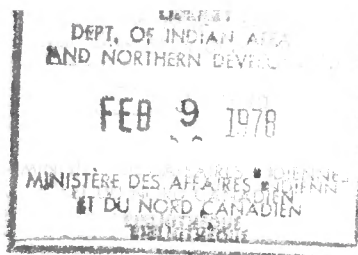
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# Diagnosis of Behavior of Eskimo Students During Prevocational Training

Marilyn E. McDowell



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Marilyn E. McDowell

This dissertation was prepared by the author while a teacher consultant with the Department of Indian and Northern Affairs.

The research was carried out at the Churchill Vocational Centre, Fort Churchill, Manitoba.

It is reproduced here as a contribution to our knowledge of the North. The opinions expressed are those of the author and not necessarily those of the Department.

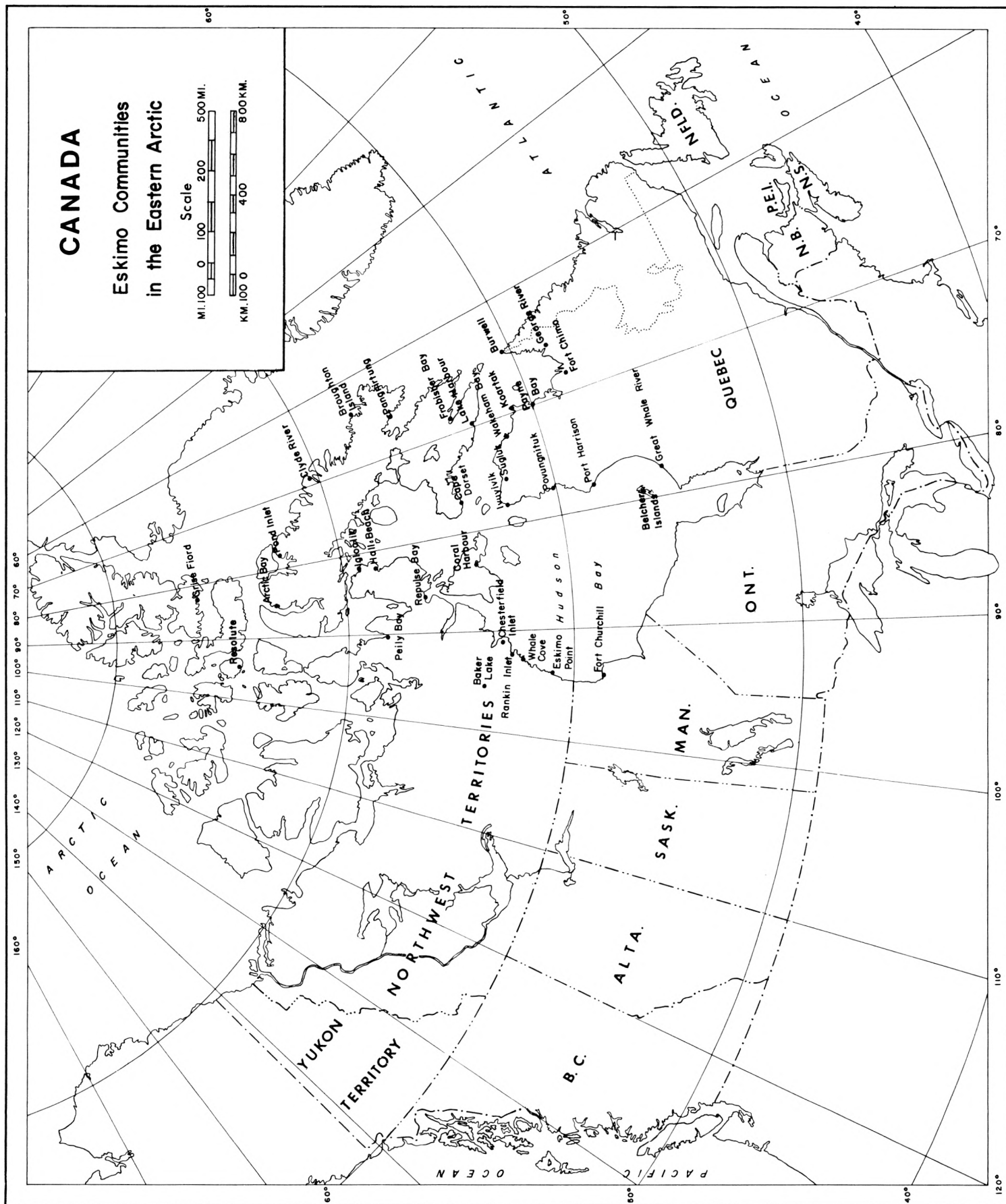
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## Eskimo Communities in the Eastern Arctic



Diagnosis of behavior of Eskimo students  
during prevocational training

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Vocational education is considered a prime means of helping the Canadian Eskimo adjust to the pace of economic and social change and participate in a meaningful way in the developments occurring in Northern Canada. This study is concerned with a program of prevocational education for Eskimo youth from 32 settlements in the Canadian Eastern Arctic who attended a residential school operated by the federal government's Department of Indian Affairs and Northern Development. The students were 15 to 20 years old, at least two years behind the usual age-grade placement, represented all levels of ability, and were enrolled in a three-year program of vocational training and academic upgrading. To achieve effective procedures for guiding the individual growth of students, a diagnostic device was developed and validated to provide a guide for teachers' observations.

Incidents of student behavior considered critical to performance during training and later on the job were observed, recorded, and classified by teachers into a 21-category observation record on which ratings were subsequently obtained for validation of the device. The multitrait-multimethod matrix technique of Campbell and Fiske (1959) as modified by Kavanagh, MacKinney, and Wolins (1971) was applied to assess the convergent

and discriminant validity and provide a basis for further refinement of the device. A 63 x 63 multitrait-multimethod intercorrelation matrix was generated to summarize the ratings (on 21 trait-categories) from three sources (teachers from the home economics, academic, and trades areas) on students (N = 102) plus the grade-scores of the English and mathematics sub-tests of the Metropolitan Achievement Test Battery.

The observation record demonstrated evidence of good convergent validity but weak discriminant validity. Reducing the number of trait-categories brought no gain in discriminant validity. Correlations obtained between trait ratings and grade-scores for the English and mathematics sub-tests indicate a relationship between behavior considered critical to training or job success and academic skills. There is evidence, however, that the device does assess unique characteristics not tapped by standardized achievement tests, although these assessments are subject to considerable source bias or halo effect.

Development and subsequent use of the observation record were considered a useful technique for in-service education of the teachers in that attention was focused on the student: understanding his cultural background, his uniqueness, and identifying his needs; on understanding variables in the learning gestalt so as to improve the effectiveness of the learning situation; on task-oriented, job-related activities; and on developing additional evaluation procedures. However, development and/or use of an evaluation device using an observational technique must be accompanied by observer-rater training to ensure that any culturally stereotyped views held of Eskimos are reduced rather than reinforced.

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## INTRODUCTION

The people of the Canadian Arctic have survived for many centuries in spite of a harsh environment. Today they are exposed to a highly technical culture accompanied by an incipient urbanization and industrialization which threatens erosion of their traditional values and culture, pride, and identity. The inhabitants of the Far North face new challenges to survival.

While the goals of formal education are little understood, those goals of an instrumental nature such as reading, writing, and arithmetic, and vocational training have been accepted (Vallee, 1969). The primary responsibility of vocational education is to help people enter the world of work, or make progress in it, to their advantage and that of society. However, both education and vocational education share the goal of producing an educational environment conducive to the total development of the individual. "Vocational education in its fullest sense should serve as a catalyst to bring about a rapport in education which will permit material, social, and intellectual growth in our society" (Beaumont, 1971, p. 17).

The present study is concerned with a program of prevocational education for Eskimo youth of the Canadian Eastern Arctic. The students come from 32 settlements to attend a residential school in Northern Manitoba operated by the federal government's Department of Indian Affairs and Northern Development (DIAND). They are 15 to 20 years old and are at least two years behind the usual age-grade placement. They represent all ranges of ability. The majority of the young people who have proceeded to further education, occupational preparation, or employment have attended the Churchill Vocational Centre.



To achieve effective procedures for guiding the individual development of students, there is a need for objective observation and a cumulative record of social, mental, emotional, and physical growth of individuals. To meet this need, a diagnostic device was developed which was expected to profile the unique characteristics of a student and provide a basis for guiding his individual development.

Development and subsequent use of the instrument was part of a continuing in-service education program closely related to curriculum development and evaluation. Development of the device was expected to improve:

- 1) Guidance and development of students. By helping the student, instructors and counselors gain a greater awareness of the student's unique characteristics; opportunities may be provided for more effective guidance and instruction of each individual.
- 2) Effectiveness of instruction. According to his value system, an instructor will judge differently from other instructors the incidents of behavior he considers critical to performance. Such differences, when examined in relation to institutional objectives, may reveal to an instructor his own biases as he translates the institution's goals into instruction.
- 3) Curriculum. By determining the characteristics of the students enrolled in the institution, more accurately identifying their needs, and thus more adequately defining the objectives of the institution, a more effective curriculum will be developed.

The diagnostic device was developed by considering incidents of behavior that were considered critical to a student's performance during training and later on a job.

The following postulates were implied in the study:

1. Student behavior is a result of interactions among student, instructor, course, and learning environment variables.
2. Student behavior is relative to the culture in which the student functions.

What a student does is a product of social conditioning and is relative to the cultural setting in which the student functions. A given student behavior is not inherently an asset or a liability. Instead, student behavior is satisfactory or unsatisfactory, effective or ineffective, only to the extent that such behavior conforms or fails to conform to a particular culture's value system or set of objectives or expectations.

While other evaluation instruments were available that could be used in part or with adaptation, and in fact were used, teachers at the Centre were not prepared to accept any other explanation than a cultural one for behavior they felt unable to understand or deal with. Therefore, development of an evaluation instrument using the observational technique was considered.

Since most Eskimos call themselves "Inuit," which simply means "men," this term is used frequently in this study. The word "Eskimo" to describe a member of this race appears to be Algonquin Indian for "raw-meat eater," and was absorbed into French, being first used in 1611 (Rowley, 1960).

## REVIEW OF LITERATURE

This study is concerned with Inuit youth of Canada's Eastern Arctic who, for reasons illustrated in this chapter, have special education needs. In order to present their needs for general education and occupational preparation in the perspective of past and current events, the first part of the chapter reviews selected literature which briefly considers the early history of the Inuit, contacts from the outside world, government policy in Northern Canada, evolving social and economic conditions, and changes in roles and occupations of the Inuit.

The second part of the chapter deals with employment activity and occupational preparation. Initial vocational training efforts and employment trends and forecasts are reviewed. Requirements of employers in general and specifically for Northern indigenes are discussed. Literature related to occupational preparation, curriculum development, and evaluation is selected for review; methods and materials appropriate for development of a prevocational program to meet the needs of Inuit youth are identified. The need for diagnosis in occupational education is discussed, and the development of a diagnostic device using the critical incident technique is delineated.

### Background of the People

Eskimos form part of four nations: Russia, Canada, Denmark, and the United States, and the area they cover is immense, but the numbers of Eskimos in the world may be fewer than 80,000. Some 17,000 of these live in Canada. They are sparsely settled over an area of one million square miles composing 40% of Canada in the regions beyond the tree line. The

tree line extends roughly from the mouth of the Mackenzie River in a southeasterly direction to Churchill on the west coast of Hudson Bay, rings James Bay, and extends across Northern Quebec to Labrador. Like most primitive peoples who hunted and fished for their livelihood, the Canadian Eskimos moved in small bands within a fixed radius, frequenting their favorite haunts but rarely tying themselves down to definite localities.

A race can be defined by its language, its physical type, or how it lives and thinks, which anthropologists call its material and intellectual culture. Among the Inuit, as they call themselves, there is a good agreement between all three characteristics. They have their own language, spoken by themselves and nobody else; they are a distinctive physical type; and they have a culture which is uniquely their own. Only in the Southwest part of their area are there any marked differences in these characteristics (Rowley, 1960).

Their physical type indicates that they came from Asia. Evidence seems to be very much in favor of a theory that it was around the Bering Strait and probably on the Asian side that the Eskimo culture evolved. Radio-carbon dating indicates that the Dorset culture began over 2,500 years ago. Signs of a still earlier people have been found recently. It is not known whether these people were Eskimo or not, but they were probably the first people to spread widely over the Canadian Arctic, and they arrived there some four to five thousand years ago, probably not long after the ice had retreated from the land.

The Canadian Eskimos once ranged farther south than they do now, particularly on the Atlantic seaboard. Early in the seventeenth century, they were reported as far south as the north shore of the Gulf of St. Lawrence,



and they occupied the whole coast of Labrador. In Hudson Bay, they do not seem to have gone much farther south than Cape Jones on the east side or Churchill on the west (Rowley, 1960).

The Eskimos traditionally are mainly a coastal people. They settled by the sea; seals, walrus, fish, polar bears, and whales were their source of food, fuel, and clothing. Centuries ago, one group, however, broke away from the others to follow the caribou herds to the interior, where they formed a culture that was much different and more primitive. They lived on the caribou herds and fish from the inland lakes; they made fires from shrubs instead of blubber and rarely visited the sea.

#### Sequence of outside influences on the Eskimo

The first contact between Europeans and Eskimos probably took place during the Vinland voyages in the first years of the eleventh century when the Vikings visited Labrador and possibly Baffin Island. In 1576, Sir Martin Frobisher sailed into the bay that now bears his name. During the next 300 years, he was followed by other explorers (Smith, 1963). The influence of the explorers was transitory, but they did introduce new goods and the concept of trade.

During the nineteenth century, the whalers became a more significant influence on the Eskimos. The Scottish whalers sailed each year from Scotland and worked in Baffin Bay. The American whalers worked for the most part in Hudson Bay and did not go home until their ships were full of oil and baleen, which often took two or three years.

Commercial whaling activities upset the balance of nature in the Arctic and depleted some of the resources. The white whale became practically

extinct in the quest to meet world demands for oil and bone. The whalers introduced disease, racial intermixture, some trade, and replaced with manufactured goods, the tools and weapons, stove cooking vessels, and skin boats made of local materials. The aboriginal economy was shattered for those Eskimos with whom the whalers came in contact. Their customs and social life were little changed, however, and because they were still engaged in the sea mammal hunting, they viewed commercial whaling activity as a cooperative venture (Rowley, 1960; Jenness, 1964).

As whaling declined in the twentieth century, the fur trade gradually took its place. The Hudson's Bay Company had been trading in Southern and Western Canada since 1667 and had ships passing through Hudson Strait almost every year during that time. The first trading posts were established in this area in the 19th century. By 1923, a chain of trading posts had been built along both shores of Hudson Strait and along the east and west coasts of Hudson Bay (Canada DIAND, 1973).

Their influence was widespread in varying degrees. With the introduction of new goods and bartering, the traders prevented the Eskimo ever again being independent. Firearms and ammunition became indispensable. The fur market was not stable, being dependent on the whims of fashion. As well, the availability of white fox was subject to cyclical fluctuations. After several peaks during the early years of the century up to World War II, the fur market collapsed in 1949 (Jenness, 1964). Although the new economy was precarious, life for the Eskimo became a little easier. The old Stone-Age wandering life was becoming less attractive.

While the traders blazed the trail in most parts of the North, the missionaries and police were not far behind. These three cared for the

welfare of the Eskimo up until the 1950's when the question of what to do about the North became a national concern and the Department of Northern Affairs and Natural Resources was created to deal specifically with the area.

#### Role of the federal government in Northern Canada

As Smith (1963) has pointed out, much of the activity that has taken place in the Canadian North has been prompted by a concern over issues of territorial sovereignty. International law recognizes a number of basic modes of acquiring territory: discovery has been considered to given an "inchoate" or temporary title which must be perfected subsequently by other means. Occupation or effective possession has always been an important means of establishing and maintaining sovereignty.

Canada acquired arctic lands from Great Britain through two great land transfers. The former territories of the Hudson's Bay Company, comprising Rupert's Land and the old Northwestern Territories, were transferred in 1870. Although the sensitive boundaries with the United States along the 49th parallel and 141st meridian were well established, neither British nor Canadian officials could define precisely the other limits of the territories being transferred.

The Hudson's Bay Company has held Rupert's Land under Charter from the Crown for almost exactly 200 years prior to the transfer. During this time, the Charter was continually under attack from the French colony until 1763, from fur interests based in Montreal until 1821, and from the Canadas, separate or united, until confederation in 1867. The Company did,

however, occupy the territories it held under Charter by establishing trading posts and sending traders throughout the area.

In 1880 Great Britain handed over to Canada its remaining Territories or territorial rights. The circumstances of the transfer of 1880 were quite different, however, from the earlier transfer. The islands in question were even less inhabited than the remote parts of Rupert's Land, having no permanent white population and only a scattering of wandering Eskimos. Britain was anxious to hand over to Canada all her remaining territories or rights in the region, her primary motive for doing so was to forestall any attempt by the United States to establish herself there (Smith, 1963).

Thus, within a period of ten years, the young Dominion of Canada found itself responsible for virtually the northern half of the continent and adjacent islands, except Alaska and Greenland. Development was rapid in the more habitable, southerly parts of the West, but in the remoter northerly parts, especially the islands, little or nothing was done for 15 years after 1880. The Dominion government attempted to discover from the Hudson's Bay Company what action might be required in these territories but could get little information and so decided, in effect, to do nothing at least until some influx of population or other circumstance warranted it (Dominion Order in Council, P.C. No. 1839, Sept. 23, 1992; cited by Smith, 1963).

For many years to follow the policy seemed to be to preserve the Eskimos as a native race and not to interfere more than necessary with their primitive ways. Government assistance was limited to small issues of relief to the temporarily destitute or to those who could not be supported by their own people. The government was content to allow the missions to



provide medical services and education. Since the traders realized that the Eskimos could trap only if they were well fed and clothed, every encouragement was given to them to continue to live off the country and to trade only the skins and blubber that were surplus to their real needs. That the aboriginal economy and pattern of Eskimo life was increasingly and irreversibly changed with the coming of the white man was a fact not recognized by the government until much later.

During the two decades preceding World War I, involvement with other countries and their nationals in the North prompted the government to initiate a number of measures designed to bring the northern territories under effective control. Northwest Mounted Police and government expeditions were dispatched for the purpose of asserting Canadian sovereignty. Scientists of various kinds were regularly included to attempt to bring back more knowledge of the region.

There was little activity during the war and immediately afterwards, with the exception of the Canadian Arctic Expedition under Vilhjalmur Stefansson which operated in the western Arctic from 1913 to 1918. Not long after the war was over, government activity in the north was resumed on a larger scale than before and since that time has continued in successively expanding fluctuations of activity. The ship patrol of the eastern Arctic was reinstituted on an annual basis. The Mounted Police accompanied the patrol, and a number of permanent and semi-permanent police posts were established. A Northwest Territories Council, provided for in 1905, was finally appointed in 1921 and functioned continually thereafter (Smith, 1963). Its ordinances, along with federal statutes and orders in council, left little activity in the Territories outside regulation. Some

of the more important were those licensing scientists and explorers, regulating exportation of furs, and protecting Eskimo archeological ruins. A federal order in council created the Arctic Islands Game Preserve in 1926 with boundaries following the lines of Canada's claim of the sector of territory right up to the North Pole. Another order in council, one year earlier, created the Northern Advisory Board, whose particular concern was the matter of sovereignty (Smith, 1963).

Canada's legal position with respect to land has been relatively secure since the 1930's, but issues of sovereignty involving territorial passages, air space, and environment protection are still open. The recent surge of military presence in the Far North is once again prompted by the government's wish to demonstrate effective sovereignty and security in the North.

However, it was World War II and the rapid development of long-range air travel that began to break down the isolation of the Arctic. Airstrips relating to defense installations and meteorological and radio stations were established in many places. There was extensive mapping activity. The day labor required for construction of airstrips and other military installations changed the economy of the Eskimos in certain areas from one of hunting and trapping to wage earning. Other interests also started to move North. The situation of the Eskimo people became a matter of national concern to the Canadian public.

Canada, as it merged from the great depression and two world wars, had tended to concentrate its economic and social energies on developments closer to its centers of population. With a population of 15 million in a country second only in size to Russia, the Inuit must have seemed a long

way from the rest of Canada. There were few informed observers with knowledge of conditions and the Inuit language to report conditions that existed. Unlike arctic lands in other countries, the Canadian Arctic was of little economic, political, or military significance until about 20 years ago. For these reasons, development in Arctic Canada has come at a much later date than in other Arctic lands.

The Department of Northern Affairs and National Resources was created late in 1953 to deal specifically with the North. Initial efforts of this department were largely concerned with establishing basic services - education, health, welfare, housing. Economic development as such was limited to encouraging renewable resource harvesting projects and the development of cooperatives, more often producer than consumer at first, which helped the Inuit market their carvings and handicrafts. The basic education program and the vocational training and adult education programs were initiated and expanded, being regarded as the main means of preparing the Northern indigenous residents to take an active part in the economic development of their own land.

By the mid-1960's, there was evidence of social and political awareness growing among the residents of the Far North as well as in the rest of Canada until today questions of aboriginal rights, land claims, resource development, and the environment are debated in the national arena. The government's national objectives in the North which were formulated in 1972 are an attempt to articulate a policy of participatory democracy (Chrétien, 1972).

### History of education in Northern Canada

The early history of education in many countries has followed a uniform pattern: in almost every country, formal schools were first conducted by religious groups. Not long after the Hudson's Bay Company established fur trading posts throughout vast areas of Northern Canada, missionaries of the Anglican and Roman Catholic churches came North for the purpose of Christianizing the Eskimos and Indians. They established missions close to trading posts. Education in the early days stressed basic skills as well as practical arts - to equip the people for a life of hunting and trapping. At the time no one foresaw the need for any preparation beyond these basic skills.

Up to 1950, no less than eight different agencies operated schools in Northern Canada. Certain responsibilities had been carried out by the Canadian government under a series of different departments. The Department of Mines and Resources, which later became the Department of Northern Affairs and Natural Resources, opened the first schools in the Eastern Arctic in Cape Dorset in 1949 and a year later in Coral Harbour. Two more schools were added in 1951 and 1955. New school construction continued up until 1967, with 20 schools opening in a five-year period between 1957 to 1962. In 1956 all mission school teachers became federal employees subject to qualification standards set for all teachers employed by the Canadian government, and by 1958 only a few part-time mission schools remained in the Eastern Arctic District (Devitt, 1965).

During this period, Inuit families were gradually moving into settlements. Pupil residence facilities and local boarding arrangements made school attendance possible for many of the children whose parents still



lived in nomadic hunting camps. Pupil residences in the Eastern Arctic were small family type units operated by an Eskimo house mother under the supervision of the school principal.

A program of publicly supported universal university education was approved in 1963, and the same year saw the opening of the first two kindergarten classrooms to be followed by others in subsequent years. By 1964 85% of the children aged 6 to 15 in the Eastern Arctic were registered in school (Devitt, 1965). Progress for most students, however, was slow due to sporadic attendance, the necessity of learning English as a second language, and the imposition of a school routine and curriculum that must have seemed alien indeed to their traditional ways and values. Adult education programs had been initiated by local teachers and others. These early efforts were concerned primarily with learning English as a second language, basic literacy, and such topics as using money and store foods. Vocational training was arranged to meet the demands for workers with skills that the Inuit could learn to perform despite lack of facility with English and the rudiments of a formal education. Training was arranged for individuals and for groups of Inuit both in Northern locations and in Southern Canada.

By 1964 the need had become obvious for a program of vocational education specially designed for the large majority of the Inuit youth who, at 15 to 21 years of age, had not been able to progress beyond grade 4 or 5. Most of these youth spoke little or no English. No Inuit adult in the Eastern Arctic had ever attended school; neither had a sizable number of older teen-agers.

### Current conditions

Investigators of social change in Northern Canada have indicated that relations between Eskimo and whites display features of a caste system. Dailey and Dailey (1961) found no evidence of real Eskimo-white social interaction of any kind, and even in the work situation the language barrier kept interaction to a minimum between Eskimo and white miners at Rankin Inlet.

Willmott (1961) pointed out that evidence from other parts of the world shows that caste lines are barriers to the assimilation of indigenous peoples and that these boundaries tend to become firmly fixed when the indigenous group forms the labor pool for the economy. Willmott forecast that if the Eskimos are to provide the labor and the whites the supervision, the industrialization of the North could strengthen caste lines and perpetuate the Eskimos' inferior economic position.

Ervin (1969) pointed out that the whole Arctic is facing an incipient urbanization with the coalescing of people into concentrated communities in which Northern people experience minority group status and its attendant marginality. Ervin found that the conflicting life styles which exist between Northerners and the Southerners with a resultant value disjunction is occurring particularly in the age group 25-50.

Parsons (1970) shows clear evidence that the transient white population at Inuvik acquires what has become a stereotyped image of the Eskimo. He finds evidence that whites attach negative valuations to many of the qualities they perceive in Eskimos and that the longer they remain in the North, the more likely they are to view native people in terms of the popular stereotype. There is no statistically significant relationship between

their conformity to stereotypes and the frequency of their contacts with native people. Furthermore, there is no indication that frequency of contact is likely to increase with increasing duration of Northern service. He suggests that "the newcomer arrives relatively 'uncontaminated' by stereotyped images and subsequently acquires these images, undergoing a kind of conversion, over time, to the perceptions and attitudes of his associates" (Parsons, 1970, p. 40).

Smith (1973) also examined these stereotyped images of native Northerners. He found that variants of the cultural explanation for Native peoples' apparent lack of success and achievement in the educational and occupational sphere have been elaborated into relatively fixed stereotypes about Native people, and these stereotypes play a significant role in guiding interaction between Native people and Eurocanadians. Smith points out that while cultural differences between Eskimo and Eurocanadian groups have been amply illustrated, he questions whether it is necessary to invoke the culture concept to explain differential behavior.

In a study of occupational preferences of virtually the whole population of over 1,000 students in secondary (grades 7-12) and prevocational and special occupational classes across the Arctic and Subarctic, Smith shows that ethnic differentiation in Northern Canada accounts for little differentiation in evaluations of occupations. Rather, evaluations of occupations of the various ethnic groups are remarkably similar, especially where representatives of the ethnic groups examined come together in one place of instruction. Smith interprets this to mean that the type of culturalist position which assumes that ethnic groups in the North necessarily possess a residue of aboriginal cultural values and attitudes toward occupa-

tions incompatible with "modern" (quotation marks, his) attitudes and values towards such aspects of contemporary Northern life as the occupational system can safely be rejected.

Smith does not say that there are no (emphasis his) cultural differences between northern ethnic groups, even with respect to occupational evaluations, simply that (a) their cultural differences seem not to follow ethnic group boundaries but to crosscut them in significant ways and (b) that these cultural differences seem to have little to do with aboriginal derivation and much more to do with learned responses to common experience with social structural characteristics which transcend ethnic boundaries.

Simple ethnic labels such as Eskimo, Metis, Indian, and Eurocanadian almost certainly obscure significant cultural, regional, class, and other kinds of differentiation internal to these simple categories. Smith suspects that differential access to opportunity alternatives rather than culture may account for differences in occupational preference or achievement (Smith, 1973).

Born (1970) perceives Eskimos on the Belcher Islands to suffer from "socio-economic inadequacy" (p. 26). He attributes a growing dependency on government handouts to this sense of inadequacy in an alien social environment. Lantis (1950) in assessing the status of the Alaskan Eskimo suggests that factors other than economic exploitation or loss of subsistence economy should be sought to account for a growing Eskimo dependency. She suggests examining the more subtle factors of prestige, leadership, opportunity for social advance, and economic self-direction for clues to the root of this problem.



There is inequality in the distribution of prestige, power, resources, and facilities among Canada's ethnic groups; on every index of prestige, power, and command over valued resources, the native peoples of Canada are the least advantaged of its ethnic groups (Vallee, 1969).

#### The changing role of work and occupation

The historical, cultural, and social determinants of what constitutes work in modern society differs from traditional Eskimo society. According to Prien and Ronan (1971), the economic system has predominant relevance in Western civilization while cultural and social system values and considerations are predominant in others. There is evidence that compensation in Eskimo society, beyond attaining a subsistence level of living, is determined more by social variables - for example, the ability to share, than by productivity which is a derivation of the economic system. The possibility of setting goods aside for future use has not had much relevance in traditional Eskimo society, as Parsons (1970) has pointed out. In traditional culture, preoccupation with the present and relative disregard for all but the immediate future probably was an adoptive mechanism in the sense that it might function to allay anxiety in a harsh environment where disaster could take many forms and might strike at any time. Too much concern with the dangers of starvation at some future date might, for example, interfere with patterns of food sharing.

In western society, employed work and leisure time have been most frequently considered antithetical. Moral value has been attached to work (Wrenn, 1964). For various reasons, work no longer offers a psychic struggle against nature or the economic system: some satisfactions have been

displaced, there has been a decay in religious faith, and happiness and satisfactions are sought in this life. Patterson (1964a) claims that work is more than a means of subsistence and that in our complex society it has an immense influence on our whole lives. Perhaps more than any other single thing, a man's occupation molds his life (Super, 1957). It determines his social class, his place of living, style and manner of living, his dress, his hours of work and his hours at home, and his avocations. Indirectly, it affects his attitudes and opinions, his goals and values, including the way he feels about education, his outlook on life, and his politics.

In traditional Eskimo life, work merged with other human activities. The highest value was set on being a good hunter (Lantis, 1959). Even today the man who hunts commands respect. Ability to function on the land is regarded as a crucial means of implementing or reinforcing a man's self-concept and self-worth (Lubart, 1969).

Chance and Foster (1962) find that while male Eskimos still have numerous opportunities to gain recognition and prestige, traditional ways for women to gain prestige such as skin sewing, meat butchering, and making traditional clothing have been lost to a large extent with little introduced to take their place. Chance (1966), in a study that attempted to relate cultural change, identity, and personality adjustment, found Eskimo women tended to have higher emotional disturbance scores than men. An explanation may be that more women than men have less real contact, yet high identification, with western culture and thus suffer identity confusion. The view that there may be more problems of acculturation and iden-

tity for women is supported by other investigators (Lubart, 1969; Stevenson, 1968).

Stevenson (1968), in a study of Eskimos relocated to employment in two mining towns, points out that the men and children had the rules of work or school set out for them and had models available to them. Such models for the women were separated by physical if not social distance and usually by a language barrier.

Erikson (1968) finds that in general it is the inability to settle on an occupational identity which most disturbs young people. The aboriginal Eskimo society was static; there was no choice of occupational role. Adult roles were restricted to that of hunter for the males and that of cleaner and sewer of skins for the female members. The only other role that existed was that of shaman.

Eskimo children learned adult skills not merely through imitative play but through directed practice (Pettitt, 1956). Learning is reinforced by praise, and the accomplishments of youths are gradually rewarded with the privileges of maturity. Thus, the work role could be assumed gradually, and the concept of work was indistinguishable from other human activities.

#### Government policy for the 1970's

For a variety of reasons, large areas of Northern Canada, particularly the Arctic, seem destined to remain for the foreseeable future regions of special federal interest and responsibility (Chrétien, 1972). A statement of the government of Canada on Northern Development in the 70's was presented to the Standing Committee on Indian Affairs and Northern Development by the Honorable Jean Chrétien, Minister of Indian Affairs and Northern

Development, on March 28, 1972. This statement sets out the government's approach to policy in the Yukon and Northwest Territories directed toward certain national objectives and is intended as the policy framework for the formulation, coordination, and implementation of all federal and territorial programs throughout the 1970's.

People, resources, and environment are identified as the main elements in any strategy for northern development. The statement claims that needs and aspirations of the native peoples are given heaviest emphasis in current thinking. It recognizes poverty as their most pressing problem with all its psychological as well as physical characteristics. Unemployment, underemployment, and low productivity are readily apparent, but underlying causes are identified in this statement as those of erosion of traditional values, inadequacy of game resources, disease, the demoralizing effects of exposure to a highly technical culture, and loss of pride and identity.

The need is recognized to rid northern communities of all forms of segregation, including myths about Eskimos, and to concentrate on means of enhancing the Eskimos' self-respect and livelihood. The government states that it will stimulate and strengthen 'people' programs so that the native peoples can have some hope of adjusting to the pace of economic and social change and preparing themselves for participating meaningfully in northern development. It proposes to achieve this through a program of compensatory employment and training practices.

First on the government's order of priorities in the North for the next decade will be to put into effect guidelines for social improvement. The first of these guidelines suggests the direction that is to be taken by all departments and agencies involved in the North to "consciously create

in government and industry employment opportunities for native peoples through attractive incentives, meaningful targets and where necessary, imposed obligations" (Chrétien, 1972, p. 35).

The guidelines that follow cover diversified education and vocational training, consultation, and counseling services intended to provide the native person with a greater freedom of choice and mobility regarding his life style and occupation.

Smith (1973) cautions that whether the problem is identified as a cultural one or a social-structural one makes a difference, particularly when we engage in programs of planned social change. If we decide the problem is a cultural one, i.e., lies in the learned and patterned modes of thinking, feeling, and acting shared by a group of people, then we would engage in programs of education (in the broadest sense), persuasion, or missionizing. If we decide the problem is a structural one, our program would center around equalization of opportunity and access for persons and groups to informational, power, and economic resources.

However, it has been pointed out by researchers in Northern Canada that stated policy and the way that it is implemented is not always the same (Jenness, 1964; Ervin, 1969).

Valentine (1968), in a critique of current poverty programs in the United States, suggests turning attention back to the dominant social structure rather than proceeding with action programs that are designed to bring the disadvantaged group into the mainstream of the American way of life by changing the group rather than the overall structure of the dominant society.

## Employment Activity and Vocational Training

### Events leading up to the present

Since the coming of the white man, there have been waves of activity in the North of varying intensity and effect on the Inuit population. The tempo of activity reached an unprecedented high level with the construction phase of defense installations and warning systems across the Arctic. Construction began in the early 1950's and reached a peak around 1957-58. Eskimos were drawn to these sites to seek employment as day laborers. A program of formal vocational training was initiated too late to meet the heavy demand for skilled construction workers, however, Eskimo employees were valued for their industriousness and innovative skills in adapting to the harsh environment that often hampered construction in the Arctic. With the appointment of a Superintendent of Vocational Training for the Eastern Arctic in 1961, early efforts were directed to meeting the demand for heavy equipment operators, power plant operators, marine mechanics, and carpenters for maintenance that followed the construction boom. As well, training was offered for ward aides, classroom assistants, janitors, boat builders, fur graders. A broad program of apprenticeship was initiated (Devitt, 1965).

Most training offered in the 1960's required a certain degree of manipulative and intellectual ability but minimum ability with English and other academic skills. Care was taken to offer training in selected occupations to meet the employment needs in particular communities.

Government housing was introduced in the Arctic in two phases - the small 300 square feet 'orange crates' built in the 1950's are being replaced with larger three bedroom rent-to-income houses. The latter program was



initiated in the Keewatin Region in 1967 and in Baffin Island in 1968 and is continuing in order to meet the demands of a rapidly increasing population. The adult education program centered its efforts on providing information about the use and maintenance, rental, and formation of housing associations. The vocational training program prepared carpenter-helpers for the construction phase and later housing maintenance workers to carry out repairs that were necessary with the larger and more sophisticated rent-to-income houses.

#### The employment outlook

There are rich mineral resources in Arctic Quebec and Baffin Island; employment will be available and vocational training required whenever an economic way of extracting or moving the ore closer to the world markets is developed. Employment forecasts and training needs are difficult to determine. Any economic development that takes place in the foreseeable future will do so only with large inputs of government assistance. Because the margin of profitability is low, long-range planning of social and economic resources is required (Chrétien, 1972). If plans for a proposed Arctic gas pipeline proceed, the demand for skilled construction workers will be greater than at any other time in Canadian history. The demands for skilled workers, particularly the highly specialized pipeline workers, will not be met in Canada. Northern indigenes, providing training is undertaken in time before construction begins, will form but a small proportion of the labor force. However, it is expected that maintenance requirements of a pipeline will provide minimum employment once the four- or five-year construction phase is completed.

There continues to be a steady demand for tradesmen, skilled office workers, and other semi-skilled workers, but these demands are coming close to being met more or less adequately. Inuit aides and assistants are employed to work alongside the professional and skilled workers in the North, but the latter are almost exclusively Eurocanadians from Southern Canada or other foreigners. The burgeoning demand that will continue to grow during the 1970's is in the highly skilled areas: in all fields of technology but particularly in electronics communications, environment, and health; administration at middle management levels or above; and in the professions and semi-professions. These are the areas where a high school education or its equivalency is a necessary prerequisite. While a small but growing number of young people are now achieving this level, most of them by attending accelerated academic programs in adult retraining centers in Southern Canada, there is evidence that some of this educationally elite group are not continuing their education to pursue specific occupational goals.<sup>1</sup>

#### Requirements of employers

A program of occupational preparation must be built upon the requirements of the work place. It has been suggested that the public schools concentrate more on developing general vocational attitudes and skills required for a variety of occupations, placing emphasis on the need for continual self-upgrading (Lacy, 1967).

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<sup>1</sup>DIAND education records.

Lacy presented the findings of survey of 130 major business and industrial firms in Wichita, Kansas, which appear to be representative of the results of similar studies. The persons interviewing prospective young workers were mainly concerned with improving worker qualifications that would solve the most problems confronting the interviewer; personnel interviewers in the larger companies tended to stress general qualifications, attitude, education, etc. while production managers or foremen of small companies looked for specific job skills required on the production line during hiring because these smaller companies seldom had training programs. For applicants for training or entry level jobs, the most critical time is during submission of an application form when the total impression created by the applicant is judged. Often people possessing adequate technical skills are still not able to obtain employment or, if hired, are not able to keep the job because of certain other deficiencies. Most employers would make exceptions to education minima or other hiring requirements if the applicant had satisfactory work experience. Getting along with co-workers is the most important attitude for all types of jobs; responsibility and completion of tasks is the most essential work habit. Good grooming, appearance, and manners are desired by employers.

Absenteeism, poor attitude or personality, and inability to do the job were the most frequent causes of termination. Once employed, lack of formal education had little to do with advancement. The Wichita study found that lack of promotion is most often due to inability to do the work, lack of initiative, or poor attitude. Lacy sums up:

It seems apparent that most companies do not fire personnel easily and that they tolerate lack of ability far longer than absenteeism or poor attitude. The inept worker who can get employed

by his ability to satisfy the employment and interview process should be able to keep his job as long as he is faithful in coming to work and gets along with his supervisors (Lacy, 1967).

An employment liaison officer with the Department of Northern Affairs summed up the verbal reports he has received from representatives of various mineral, gas and oil, and construction industries engaged in Northern Canada. Employers are most concerned with traits they identify as reliability and dependability, which are described as the requirement for employees to be at work every day and to perform a full day's work consistently. Also cited as problems are poor personal hygiene and lack of integration with Eurocanadian members of the work crew. Employers claim that interaction takes place only at the initiative of, and when it is to the advantage of, the white employee, for example, when a loan of money or equipment or a partner for a game of poker is required. Although native people may have sufficient command of the English language to meet hiring requirements, they often lack knowledge of the occupational jargon that allows them to comprehend and carry out instructions on the job and participate in informal discussions. Problems associated with drinking are mentioned frequently. It is reported that native employees continually want to go home, and in fact, may disappear without notice if home is in close proximity or fail to return from leave without notification.

Employers can tolerate employees taking time off or not showing up if they are told ahead of time, but employers claim the pattern has been that many native employees simply fail to report at the appointed time and place. Job rotation has been instituted on an experimental basis by several companies employing native people. Crews are rotated so that employees work 17 to 21 days and return to their homes for a week to ten days.

Employers who have used job rotation credit it with eliminating or reducing the problems formerly experienced. Native employees are happier, more reliable, interact with other employees, and the atmosphere of the camp is generally much improved according to reports made to the DIAND employment liaison officer.<sup>1</sup>

#### The need for occupational preparation

The purely aboriginal sea mammal hunting way of life began to be replaced during the last century with the pursuit of fur bearing animals and an economy based on the fur trade. Although fur trading offered a little easier way of life, either mode allowed little more than subsistence living at best and often times extreme hardships or starvation (Jenness, 1964). Entry into a wage economy has brought marginal participation (Ervin, 1969) because the Inuit are relegated to filling lower echelon jobs.

The level of unemployment for the Inuit is extremely high (Chrétien, 1972). It is somewhat difficult to determine, since many of the older men state their primary occupation as that of hunter. Only a few places in Northern Canada today, for example Banks Island and Southampton Island, can support any or all of its population through hunting activity alone. In most places, those who consider hunting and trapping their primary way of gaining a living also depend on seasonal wage employment, sales of handicrafts, government assistance, various government pensions, family allowances, or other forms of assistance. A considerable investment of

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<sup>1</sup> John Monro, Ottawa, Canada, personal communication, March 14, 1973.

resources is required if hunting is chosen as a full-time occupation. The appropriate clothing and equipment are expensive to obtain and maintain, whether land-clothing and dog teams are used or whether the hunter chooses cloth clothing and motorized snow vehicles. There are few young women willing to prepare skins and keep watertight clothing in good repair. The comforts of settlement living that their mothers have come to enjoy dissuade them from considering camp life, and like the young men, they are often attracted by the excitement and activity of the urban centers like Frobisher Bay and Churchill (Honigmann & Honigmann, 1965).

Estimates for the rate of unemployment among young Inuit in the 16 to 30 age group are extremely high. While up-to-date unemployment figures have never been published, the seriousness of the condition is recognized (Chrétien, 1972). With a rapidly increasing birthrate, 55 per 1,000 compared with the Canadian average of 18 per 1,000 in 1969 and reported to be 65 per 1,000 in 1972, the population of the Inuit is one of the fastest growing anywhere in the world (Canada Dept. of Statistics, 1971). Problems associated with unemployed Inuit youth are likely to become more severe. While employment opportunities in the Eastern Arctic are severely limited, there is employment available for those with specialized skills; the level of skill training required is steadily increasing as economic development and social services increase.<sup>1</sup>

Activities in the past have and, as the government's policy statement for the 1970's indicates, will continue to:

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<sup>1</sup>DIAND education records.



concentrate on means of enhancing the Eskimos' self-respect and livelihood, especially through diversified education and vocational training and fundamentally to give them mobility and freedom of choice (Chrétien, 1972, p. 24).

The need was felt for a center where an orientation to the world of work and counseling would be provided. Residence in such a center is considered a prerequisite for enrollment in specialized training courses, many of which for economic reasons will continue to be offered in Southern Canada. The purpose of such a center is to provide Inuit youth with skills that would enhance their employability and mobility. There is a need to help out-of-school youth establish realistic goals attainable within a time framework they consider reasonable.

#### Development of an occupational program

Brunner (1970) offers a clear-cut guide for program development: "a proper curriculum in any subject (or in the total curriculum of the school) requires some statement of objectives, some statement of what kinds of skill we are trying to create and by what kinds of performances we shall know it" (p. 68). Brunner's statement suggests three separate but related elements for implementation. The first element is related to formulating objectives or goals at various levels of program or course development.

Byers (1962) in a study of the level of aspiration of academically successful and unsuccessful high school students found that past academic success is associated with realistic goal setting. Harrison et al. (1972), in their study of two groups of mentally retarded gainers and non-gainers, found that performance-discrepant levels of aspiration were more typical of non-gainers especially after failure and that the more realistic goal setting evidenced by gainers is dependent on wide experience with both success

and failure. Isaacson (1966) has pointed out that individuals are activists; they are self-directing and continuously involved in the decision making process. Vroom (1964) found participation in decision making has positive effects on attitudes and job performance. Ginzberg (1960) has proffered the opinion that in light of the influence of heredity, socioeconomic class, the home and the family, the school, the church, the community, and the culture at large, counseling can be of little help to an individual. He sees the function of counseling as limited to providing information about the world of work. Yet he points out that many young people waste their potentialities by failing to aim high enough, failing to develop a flexible strategy of decision making, and failing to take advantage of their opportunities. These are not problems which will be solved merely by providing occupational information, claims Ginzberg.

Brunner advocates that "the goal must be plain; one must have a sense of where one is trying to get to in any given instance of activity" and that "surely the participation of the learner in setting goals is one of the few ways of making clear where the learner is trying to get to" (p. 68).

Chance (1965) studied problems in acculturation and identity among North Alaskan Eskimos and found that if new goals are desired, clearly seen, and permit easy incorporation into existing social and cultural patterns, "rapid acculturation may be more conducive to socio-cultural integration than slow or moderate change."

The second element Brunner identifies as the requirement for "some statement of what kinds of skill we are trying to create" (Brunner, 1970, p. 68). These skills may be determined by requirements for employment as

well as for good citizenship. There should be a fusion of general education with vocational education.

Analysis of occupations is advocated as a basis for curriculum development in vocational education. "Job analysis is the process of critically evaluating the operations, duties, and relationships of the job" (Scott et al., 1961, p. 140). For an individual to learn to perform a job, he must become aware of each part. If the instructor does not analyze the job, he tends to lump steps or processes together. An instructor may otherwise forget or pass over important aspects if knows the job well. Course content may be developed from analyses of occupations, subject to constant review to prevent obsolescence (U. S. Dept. of Labor, 1972).

Publications of occupational titles, descriptions, and requirements (Canada Dept. of Manpower, 1971; O'Donnell, 1967; U. S. Dept. of Labor, 1965) and guides for job analysis (Fine & Wiley, 1971; Patton et al., 1964) have been found useful for use by curriculum developers, instructors, and students. Functional and occupational analyses of various industries in Northern Canada were made to incorporate up-to-date, accurate information about Northern employment with its idiosyncratic features (Davidson, 1969; Hardy, 1970a, 1970b; Janke, 1969).

Altman (1966) has pointed out that increasing rates of technological improvements, which result in rapidly changing jobs, demand vocational graduates with skills and knowledges which are generalizable among a reasonable variety of jobs of today and tomorrow. There is a requirement for breadth and flexibility in vocational education programs but also a need for providing specific skills that will prelude the necessity for extensive postemployment training and/or job experience before a reasonable level of

job proficiency is achieved. Endeavors to identify tasks common to a number of occupations (Crawford, 1967; Shipley, 1967) assist the curriculum developer in identifying skills for inclusion in a program of occupational preparation.

The third element identified by Brunner is "to have a sense of where one is trying to get to in any given instance of activity." Evaluation involves the identification and formulation of major objectives, their definition in terms of student behavior hoped for, and selection or construction of instruments for appraising objectives or characteristics of personal growth and development. According to Tyler (1949), evaluation is a process to find out how far educational objectives are being realized. The evaluation process must be continual and flexible, and it must make judgments about the worth of the program in whole and in part. "For the exercise of skill is governed by an intention and feedback on the relation between what one has intended and what one has achieved thus far - 'knowledge of results.' Without it, the generativeness of skilled operations is lost" (Brunner, 1970, p. 68).

There are many ways of providing the "knowledge of results" to which Brunner refers as an inspection of textbooks on evaluation reveal. Much has been written to elucidate techniques that may be applied, formally or informally, to judge individual and group development (Gronlund, 1971; Noll & Scannell, 1972; Thomas, 1960). There are a growing number of evaluation instruments being developed for use in occupational education. Among those available for use in preparation for entry level jobs in occupations related to home economics are scales for rating general characteristics and

procedures which contribute to employability of young people in entry level jobs (Nelson & Jacoby, 1967). Also examined were scales intended for use with mentally retarded persons participating in vocational programs in schools or sheltered workshops (Dayan, 1968; Levine & Elzey, 1966). State-ments selected from a published list of 2,000 scaled items also suggest behavior considered important to job performance (Uhbrock, 1961).

Curriculum guides and resource materials also provide examples or suggestions for developing evaluation devices. Cozine (1968), Dalrymple et al. (1970), and the Home Economics Instructional Materials Center (1969a, 1969b, 1971) provide examples of the materials that began to appear after the focus of home economics shifted to include preparation for wage earning.

Evaluation procedures provide for teacher improvement, program improvement, and better student understanding by focusing on the most vital parts of the education process (Tyler, 1949). Korb (1956) also states that the purpose in all evaluative studies should be improvement rather than justification of the program.

Siegal and Siegal (1967) present a multivariate paradigm for educational research through which they seek to understand classroom instruction using a pretheoretical model which emphasized interactions rather than effects. The paradigm they suggest focuses upon interactions between four groups of variables: classroom environment, instructor, learner, and course. Specific variables within each group are suggested although these are not considered exhaustive. The paradigm offers assistance to instructors (and others) for objective analysis of the teaching-learning situation.

The need for a diagnostic instrument

Grieve (1968) at a National Seminar on Research and Evaluation of Occupational Education stated that:

If the process of evaluation is to be meaningful in terms of the goals of education, and specifically occupational education, its purpose cannot be that of screening, that is "screening out," but rather the discovery of abilities, aptitude, and interests which may be developed in an individual to equip him for a kind of work in which he can be successful and which will enable him to be a well adjusted contributing member of society.

Measurement and appraisal of the individual should begin early; he advised educators to watch the progress of the individual in terms of abilities, aptitudes, changing interest, likes and dislikes, attitudes toward work, and use of time. Guidance of individual learners requires objective evidence and a cumulative record of social, emotional, mental, and physical changes.

MacArthur (1962) examined a number of culture reduced tests of general ability and recommended the Progressive Matrices for use in the Northwest Territories. MacArthur reported that it had no loading on the verbal factor in his analysis.

An achievement testing program has been carried out in the Northern school system using the appropriate level of the Metropolitan Achievement Test Battery. Tables of norms were established for the Northwest Territories (Macdonald, 1967). The results of this test have accurately predicted the placement of Inuit students who have continued their education in academic programs in Southern Canada.<sup>1</sup>

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<sup>1</sup>DIAND education records.



Interest and personality inventories have been little used as the content and vocabulary of available tests have been judged to be non-relevant for Inuit students. An exception is Smith's Occupational Preference Questionnaire (1972) which is similar to the study of the prestige ranking scales developed by North and Hatt (1947) and other studies that followed in the United States and elsewhere (cited by Smith, 1972).

Although anecdotal records are considered a useful technique for student assessment, they tend to be subjective and, therefore, anecdotes submitted by teachers may prejudice a student's future if they are retained as part of the student's cumulative record.

Tiffin and McCormick, in defending formal performance appraisal systems, point out that personnel actions have always been influenced by judgments of men by their superiors. They argue for a shift from informal, unsystematic evaluations which may go unrecorded and undefended, whether valid or not, to those that are made more systematically and in a manner that will increase the value to the organization and those being judged. Because the selection of young people for training and employment in Northern Canada is frequently the responsibility of a small number of government representatives, it is important that decisions be made objectively and systematically.

Armstrong (1968) points out that many students have many similarities, but the limited variations create very significant differences. The most important differences tend to be isolated specifics, and the failure in many occupational training programs, Armstrong believes, is the inability of the educational institution to overcome the isolated handicaps. Thus, in looking at the potential entrants to an occupational training program,

Armstrong recommends that prospective students be classified by their deficiencies.

According to Patterson (1964b), evaluation can reveal deficiencies, problems, and needs which are remediable or modifiable, and these form the basis for special services, training, or treatment which will modify or destroy the prediction indicated by the evaluation. Patterson believes that results of evaluation, if they are to be most effective, must be incorporated into a counseling process which gives the individual an understanding of himself, of his assets, and liabilities. Patterson cautions that we must not concentrate only on liabilities. In his opinion:

One of the problems of current methods of assessment is their almost complete orientation to or use for the measurements of deficits. We need to pay more attention to the assets, which everyone possesses in some measure, so that the client and those interested in his adjustment can facilitate their development and use (Patterson, 1964b, p. 129).

Patterson believes that personality factors are necessary elements in the vocational adjustment of mentally handicapped persons. He points out that the general attitude has been that standardized tests are inadequate and that the work sample approach is a better method of assessing aptitudes. He questions whether the brief work sample is useful; he believes ratings based on prolonged observation in a work setting appear to hold promise for the evaluation of personal-social factors in work adjustment (Patterson, 1964b).

McGehee and Thayer (1961) state that:

The diagnostic approach concentrates on the individual trainee: what individuals should learn to perform a specific task or job; whether or not and how well they are learning these required items; and what can be done to facilitate acquisition and retention of the skills, knowledge, and attitudes required to perform the job. The purpose of diagnosis is to correct training proce-

dures, to facilitate learner progress, or to correct the learner's efforts to acquire the necessary behavior (pp. 259-260).

Diagnostic procedures, say McGehee and Thayer, go hand in hand with evaluation.

While the level of skill of Northern students entering occupational training and the type of employment for which they are being prepared has steadily increased, one factor has remained persistent: few provisions exist for Inuit handicapped persons. Inuit with severe physical or mental handicaps or illness may be placed in institutions in southern Canada, but diagnoses and treatment facilities are difficult to obtain, and adjustment away from other Inuit may make treatment unfeasible. Armstrong (1968) points out that there is a need for occupational training that will accept poorly qualified workers and bring them up to the quality needed by industry for defined job-clusters. Thus while traditional goals are acceptable for some institutions, others are likely to have the goal of producing well-qualified workers out of persons who, in traditional schools, would have been considered inadmissible.

Performance on the job (or in a training situation) cannot be adequately assessed by a single dimension. Ghiselli (1956) claims that it is necessary to consider several criterion variates for a given job and that not all are equally important to the performance of that job. For example, in judging the performance of typists, one would consider typing speed, number of errors, neatness, absences, etc. Workers on the same job might be evaluated in terms of different criteria measurement. For example, the value of a salesclerk may be judged by his volume of sales or goodwill to the organization he promotes.

Many patterns of job performance are possible. Some characteristics, considered liabilities on some jobs, may be thought unimportant or even assets in other situations (Ghiselli, 1956). Vocational guidance, instruction, and placement endeavor to assist the student develop those characteristics desirable and possible to improve and to recognize and accept the pattern of characteristics unique to him.

The question of what attributes are relevant to satisfactory performance on the job has received much attention. The generally accepted viewpoint is that overt or performance-oriented behaviors are more relevant to job performance than covert personal ones. Barrett (1966) succinctly summarizes this view:

The major attention is best directed to the product of a man's efforts, and whenever possible he should be studied in terms of what he accomplishes. But when products are inaccessible, performance is suggested as being the next-best level of abstraction to deal with, while pure personality variables have little if any relevance to the performance measurement task (Barrett, 1966, pp. 38-39).

Following this logic, it would appear that personality dimensions should account for little of the variances in job performance. However, as Kavanagh (1971) pointed out after reviewing the literature relevant to the topic, the difficulty in rating personality traits reliably has complicated the problem, and perhaps (*italics his*) this difficulty has led to the tacit acceptance of the superiority of performance traits. However, he questions whether the empirical evidence to date would support the view that one should abandon the evaluation of an employee's personality traits because they lack relevance for performance appraisal (Kavanagh et al., 1971). Evidence has been presented to support the view that an employee's personality affects his performance on the job (Kavanagh et al., 1971) and

indeed judgments of highly abstract personality traits are still made during hiring and rating procedures (Barrett, 1966).

### The critical incident technique

The "critical incident" technique offers a means of developing a focus on performance dimensions. The technique was originated by John C. Flanagan during World War II on his work for the Aviation Psychology Program of the United States Army Air Force. In Flanagan's words, "The principal objective of job analysis should be the determination of critical requirements. These requirements include those which have been demonstrated to have made the difference between success and failure in carrying out an important part of the job assigned in a significant number of instances" (Flanagan, 1954, p. 329). Essentially, the technique consists of a set of procedures for collecting direct observations of human behavior in various situations. Generally the technique is to ask competent observers to describe the behavior of persons performing tasks which make a real difference in effective task performance. Flanagan explains it thus:

To be critical an incident must occur in a situation where the purpose or intent of the act seems fairly clear to the observer and where its consequences are sufficiently definite to leave little doubt concerning its effects (p. 327).

. . . The essence of the technique is that only simple judgments are required of the observer, reports from only qualified observers are included, and all observations are evaluated by the observer in terms of an agreed upon statement of the purpose of the activity. . . . The accuracy and therefore the objectivity of the judgments depend on the precision with which the characteristic has been defined and the competence of the observer in interpreting this definition with relation to the incident observed.

. . . It is believed that a fair degree of success has been achieved in developing procedures that will be of assistance in gathering facts in a rather objective fashion with only a mini-

mum of inferences and interpretations of a more subjective nature (Flanagan, 1954, p. 335).

Flanagan points out that the classification of the critical incidents is usually inductive and relatively subjective, but once a classification system has been developed for any given type of critical incidents, a fairly satisfactory degree of objectivity can be achieved in placing the incidents in the defined categories (Flanagan, 1954).

Flanagan claims "this procedure was found very effective in obtaining information from individuals concerning their own errors, from subordinates concerning errors of their superiors, from supervisors with respect to their subordinates, and also from participants with respect to co-participants." The technique was used in an industrial setting for the first time in 1949 when Flanagan studied the critical job requirements at the Delco-Remy Division of General Motors Corporation. The critical incident technique has been subsequently used to analyze job requirements in various occupational areas.

Mayhew (1956) described the use of the critical incident technique in various types of educational research. In reporting the work of the Cooperative Study of Evaluation in General Education, Mayhew enumerated difficulties that were encountered in the use of this method:

1. Students and teachers both demonstrated a tendency to report more incidents of ineffective than effective behavior.
2. . . . reporters were more inclined to write evaluations of behavior than descriptions of behavior.
3. Reporters, desiring to record something, frequently described incidents which were not critical. The significance of the technique lies in collecting only those acts which are truly critical. In many situations, one must search long before finding such episodes, hence must be prepared to report no incidents if none are available (Mayhew, p. 593).



Barrett (1966), in discussing use of the critical incidents technique in performance appraisal, describes further difficulties:

Critical incidents, according to the critics, are misleading because only the extreme and unusual elements are reported at the expense of the steady, day-to-day performance, which is the real substance of a man's effectiveness. The unsystematic records kept by the supervisors leave great room for the operation of the bias the system is supposed to eliminate, or at least reduce. The burden of writing the statements eventually leads to resistance (p. 52).

Critical incidents of effective and ineffective behavior were effectively utilized in a training program for new salesmen (Bridgman et al., 1958). The investigators point out that the method offers a strong advantage for purposes of trainee counseling because it provides instructors and supervisors with a record of "specifics" to discuss with the trainee (Bridgman et al., 1958).

In spite of the problems and limitations of the critical incident technique, there are distinct advantages which Mayhew (1956) identifies as:

1. Adequate collection of critical incidents places categories of human behavior on an empirical base thus providing greater validity for any subsequent measuring instrument. To accept this statement implies acceptance of an assumption fundamental to the entire technique, i.e., that observers can distinguish between effective behavior. The growing body of evidence, however, tends to support such an assumption.
2. Collections of critical incidents provide realistic bases for any of a variety of evaluation techniques.
3. The critical incidents themselves can frequently serve as a source for the raw material out of which evaluation items are constructed (Mayhew, 1956, p. 594).

He reiterated Flanagan's claim that one of the values of the technique is in "establishing categories of behavior for which criteria of success are still largely undefined" (Mayhew, 1956, p. 595).

The critical incident method was selected to develop the observation record in the present study because the incidents of student behavior that

are observed and recorded by instructors are task oriented and as such may be readily compared to the established institutional and instructional goals and the occupational analysis and task clusters on which occupational course content is built. Development and subsequent use of the observation record was an integral part in the school's in-service education program for staff and was continually related to evolving curriculum, instruction, and evaluation procedures. The technique is a "natural" and relatively simple method for instructors to use. The method is not unlike the anecdotal records which are often maintained as part of the student cumulative record, however, recording critical incidents of student behavior has the advantage of being relatively simple and objective, and only brief statements are required.

#### Summary

Selected literature related to the Canadian Eskimo, curriculum development and evaluation for occupational programs, and performance appraisal has been reviewed with a view to developing an evaluation instrument for diagnostic use with Eskimo youth during prevocational training.

Several authors have brought out the problems the Inuit in Northern Canada confront as a minority group in an expanding economy which threatens to absorb or destroy their identity. Vocational education is regarded as a prime means of enhancing the Inuit's self-respect and livelihood. If the Canadian ideology of a pluralistic society in which regional and ethnic diversity coexist within overall French-English bilingual dualism (Vallee, 1969), then adaptations are required of both the Inuit and the dominant society.

A diagnostic device was developed as a means of identifying and guiding the kinds of behaviors and adaptations that may need to be made. An observational technique was considered the most appropriate means of developing the device.

## DEVELOPMENT OF THE INSTRUMENT

The purpose of this study was to develop and validate a diagnostic device to guide a teacher's observations of student behavior during vocational training.

Development of the instrument was carried out with 20 teachers who were instructing 220 Eskimo students enrolled in the three-year residential prevocational program at the Churchill Vocational Centre. Incidents of behavior considered critical during training were observed, recorded, and grouped into categories by the teachers to form an observation record. Ratings on the trait-categories were subsequently obtained for validation of the device.

### Collection of Critical Incidents

A procedure for training observer-recorders was developed. The procedure was pretested with the superintendent of vocational education, two vocational counselors, and a former teacher. A frame of reference to guide the observers was presented. The kind of information to be recorded was discussed. The pretest respondents gave oral or written reports of incidents of student behavior.

Observer training was initiated with the group of teachers. Kinds of behavior to be observed and recorded were discussed. The instructor-observers were provided with samples of incidents of behavior considered critical to job performance of training; then they practiced recording incidents they observed or recalled. Pads of paper 3" x 5" were distributed for use in recording, and instructors were asked to record single incidents on a page. The investigator discussed with the teachers, individually and

in groups, specific incidents they observed and recorded. During the training period, three points were emphasized: that any incident of behavior considered by the observer to be critical to training/job performance be recorded, that incidents be recorded singly, and that an objective description of behavior rather than interpretation of the action be recorded. Information was provided to assist teachers gain greater scope in their observations. Training was continued by correspondence and by meetings with the observers. Additional information and assistance was provided with each contact in an effort to improve the quality of recorded incidents.

A frame of reference evolved to help instructor-observers recognize variables associated with job-employer-employee requirements and adjustments, the instructional gestalt in the school, and the cultural background of the students.

#### Development of the Observation Record

The teachers recorded 350 individual incidents of student behavior: the home economics related occupations teachers recorded 56, academic teachers 59, and trades teachers 235 incidents.

The incidents were grouped into categories of behavior by the instructor-observers. Beginning with the trades teachers, each of the three groups of teachers read the incidents submitted by their group and the previous group(s) and sorted them by hand into groups of similar behavior. The teachers labeled some groups with a descriptive statement. Many groups contained only two to five incidents of behavior. At this stage, few incidents of behavior were discarded. The three groups of teachers reached tentative consensus on 26 categories, however, the number of incidents

appeared to be insufficient to group into categories of behavior that were mutually exclusive. Therefore, additional incidents of behavior were recorded. These incidents were added to the original 26 categories if it appeared the incident belonged to the same general category of behavior. The incidents were used as they had been recorded by the teachers following the period of rater-training. The language of the instructor-observers was retained with little or no editing.

The teachers were asked to examine the 26 categories of behavior that resulted from the above sorting and adding procedures. This first stage observation record is included in Appendix A. In order to comment on the appropriateness and usability of the categories, they were asked to use the 26 categories containing specific incidents of behavior both as an observation schedule and then as a rating instrument. Each teacher was asked to select five students to evaluate. For each of the five students, the teacher first checked or circled specific behaviors he had observed of the student or wrote in additional behaviors where necessary. Second, the teacher assigned an overall score for each category using the one to five scale. Teachers were asked to include comments and suggestions that occurred to them as they used the device. The categories of behavior did not appear to be mutually exclusive when the resulting ratings were examined by the investigator.

The instrument was revised on the basis of the researcher's review of the literature on rating instruments, examination of the raw data, and discussions with teachers and students involved in the project. The teachers' wording was retained as much as possible for the specific behaviors that were listed under the descriptive title of each category. The revised

instrument of 21 categories was presented to the teachers for discussion and final consensus. Suggestions which met with group consensus were incorporated. The 21 category observation record (on which rating data were subsequently collected) is included in Appendix A.

#### Sampling Plan

Because the data were to be analyzed by the multitrait-multimethod procedure of Campbell and Fiske (1959), which requires measurement of more than one trait or variable by more than one method, certain restrictions were placed on the sampling plan. Students ( $N = 102$ ) were rated on 21 trait-categories by three methods, that is, teachers from three different instructional areas: home economics related occupations, academic, and trades. The unit of analysis is the student rated on 21 traits by three sources.

The sample of student ratees and teacher raters was selected so there were five independent groups of teachers and students. Each group consisted of three teachers, each from a different area of instruction, rating about 20 students. The five different groups of students, exclusively male or female because of class grouping, were selected from the first, second, or third year of the three-year vocational program. Individual students in each group were rated by three teachers who met the group in three different areas of instruction: home economics related occupations, academic, and trades. Two departures from this plan were necessary. Because a second year girls' class did not receive instruction in the vocational trades area, the group guidance teacher was selected as the third rater for this group. Only part of the group of the third year boys were enrolled in a



foods course in the home economics area, so a physical education teacher was selected to rate this group. The sampling plan is included in Appendix B.

#### Data Collection

The rating procedure was pretested by asking the superintendent of vocational education and two vocational counselors to rate one student each. Reported times to rate one student on 21 trait-categories ranged between three and one-half and seven minutes.

During an in-service meeting of the teaching staff that developed the instrument, the purpose of the observation record was reviewed, and the procedure for assessing its validity was discussed. Teachers were asked to make their assessments independently and were assured that individual differences in the way they used the 99-point rating scale would be standardized through statistical procedures.

The observation record and instructions for its use as a rating scale were distributed to the 15 teachers in the sample (Appendix A). Each teacher was assigned a preselected group of students to rate. The sampling design of five independent groups of teachers and students was followed. Raters were asked to rate each ratee on the 21 trait-categories, making a global assessment of the student's performance on each category using the 1 to 99 scale. Each category was considered to be defined by the specific incidents of effective and ineffective behavior listed within it, as well as by its descriptive title. The investigator recorded two sets of scores for language and mathematics sub-tests of the Metropolitan Achievement Test

(Elementary, Intermediate, or Advanced Battery) for each of the students in the sample.

#### Data Analysis

The ratings for each student were coded for computation according to the coding plan shown in Appendix C and were punched on IBM cards.

The 1 to 99 scale was transformed to a scale of normal deviates by a method reported in a thesis by Liu (1971). Different response sets must be taken into account when considering rating data for personality variables since it is recognized that individuals use scales differently (Tyler, 1965). The transformation procedure controls for two kinds of response sets: amount and location of response variability. It is believed that responses at the ends of the scale are made with greater certainty than those at the middle of the scale. In addition, some individuals tend to locate their responses at the scale extremes whereas others tend to use the middle of the scale. The response set of an individual rater may vary depending on the trait under consideration.

Since each rater in the sample rated about 20 students on each trait, it is possible to control for the response set of each rater for each trait. The original numerical responses of 1 to 99 were non-linearly transformed by referring to a cumulative normal curve table and the corresponding normal deviate substituted for the original response. Response differences in the ends of the scale were heavily weighted while response difference toward the middle of the scale was given less weight. For example, a response of a value of 1 becomes -2.33, a response of 50 is 0, and a response of 99 is +2.33. The resulting normal deviates were used in the

remainder of the statistical analysis. The second part of the transformation was to obtain a standard deviation for each rater across the approximately 20 ratees. The response to each ratee was divided by this standard deviation.

Using the transformed scores, five intercorrelation matrices (63 x 63) were calculated. The 21 trait-categories as rated by each kind of teacher were intercorrelated not only with each other but also with the 21 ratings by each of the other two kinds of teachers. The standardized test scores for language and mathematics were included in the last two rows and columns. Hence, a 65 x 65 intercorrelation matrix was generated for the five groups. Subsequently, the five within-group matrices were pooled. The resulting pooled matrix was analyzed by Campbell and Fiske's (1959) multi-trait-multimethod technique.

This technique was selected because it enables decisions related to convergent and discriminant validity properties of the device to be made. Convergent validity is a confirmation of the existence of a trait or a behavior by independent measurement procedures. This is the kind of validation typically reported in the psychological literature. Discriminant validity may be defined as the extent to which a given trait is differentiable from other traits. Discriminant validity is necessary for the establishment of novel or unique traits. Campbell and Fiske (1959) caution that ratings can be invalidated by too high correlations with ratings of other traits from which they were intended to differ.

The Campbell and Fiske procedure may be applied whenever more than one trait is measured by more than one method. In the terminology of Campbell and Fiske, each test or task (observation, rating, etc.) employed for

measurement purposes is a trait-method unit, a union of a particular trait content with measurement procedures not specific to that content. Campbell and Fiske point out that the systematic variance among ratings can be due to responses to the measurement features as well as responses to the trait content. In the present study, ratings were obtained for each student ( $N = 102$ ) on 21 categories of behavior (traits) from three sources: teachers in three instructional areas were considered to constitute relatively independent methods of measurement.

Because interpretation of the large multitrait-multimethod matrix by conventional approach would be awkward and susceptible to subjective interpretations, the correlations from the matrix were summarized by analysis of variance into a more explicit, interpretable, and comparable form as suggested by Kavanagh, MacKinney, and Wolins (1971).

The following three-way classification model was hypothesized to describe the data:

$$Y_{ijk/l} = u + \alpha_i + \beta_j + \gamma_k + (\alpha\beta)_{ij} + (\alpha\gamma)_{ik} + (\beta\gamma)_{jk} + \Sigma_{ijk}$$

where  $Y_{ijk/l}$  = rating of student for the traits by sources

$\alpha_i$  = effect of student  $i = 1, 2, 3, \dots, n_1$  where

$$\begin{aligned} n_1 &= 21, \\ n_2 &= 22, \\ n_3 &= 18, \\ n_4 &= 17, \\ n_5 &= 24. \end{aligned}$$

$\beta_j$  = effect of trait  $j = 1, 2, 3, \dots, 21$

$\gamma_k$  = effect of source  $k = 1, 2, 3$

$$\Sigma_{ijk} \sim \text{NID}(0, \sigma^2)$$

Students were considered as random and trait-categories and sources (kinds of teacher-raters) as fixed. From this model, the following four sources of variance were estimated:

- a) person (student) variance which indicates the overall amount of agreement (convergent validity) on students over sources (kinds of teacher-raters) and trait-categories;
- b) student by trait-categories variance which indicates the degree of discriminations on trait categories by raters (discriminant validity);
- c) student by source variance which indicates the amount of source bias - halo in the rating situation; and
- d) error.

Thus, in the analysis of variance model used to describe the data, halo effects, discriminant validity, and person effects or convergent validity can be investigated. The computational formulas for the sums of squares of these four effects from the correlation matrix, the degrees of freedom, and the expected mean squares are presented in Table 1. These calculations are derived directly from correlations in the multitrait-multimethod matrix in Appendix D.

Since a large  $N$  (102) diminishes the practical significance of  $F$  ratios, variance components were calculated directly from the correlation matrix to clarify the results of the analysis of variance.

The variance components allow comparison of the amount of variance due to each source in Table 1, particularly relative to unexplained variance (error) while controlling for the size of the sample. The computational

Table 1  
Analysis of Variance: Computational Formulas

Source	df	SS
Student (P)	N-5	$Nnm(\bar{r}_o)$
P x Trait (T)	$(N-5)(n-1)$	$Nnm(\bar{r}_{wt} - \bar{r}_o)$
P x Source (S)	$(N-5)(m-1)$	$Nnm(\bar{r}_{ws} - \bar{r}_o)$
Error (E)	$(N-5)(m-1)(n-1)$	$Nnm(1 - \bar{r}_{wt} - \bar{r}_{ws} + \bar{r}_o)$

$\bar{r}_o$  = average correlation of all the elements in the matrix, including the ones in the main diagonals;

$\bar{r}_{wt}$  = average correlation between sources within traits; computation -- the sum of the validity diagonals times two plus nm divided by  $nm^2$ ;

$\bar{r}_{ws}$  = average correlation between traits within sources; computation -- the sum of the monomethod-heterotrait triangles times two plus nm divided by  $mn^2$ ;

N = number of students;

n = number of traits;

m = number of sources (kinds of teachers).

formulas are shown in Table 2. The regions of the matrix from which these computations are derived are shown in Table 3.

The following nomenclature is used in analysis of the matrix.

Heterotrait-heteromethod triangles are composed of correlations in which neither the trait nor the method are the same. Individual differences in students may be inferred from these correlations. Campbell and Fiske (1959) point out that traits ratings may be invalidated because of too high correlations with other ratings purporting to measure different

Table 2

Variance Components: Computational Formulas

Source	Variance component
Student (P)	$\bar{r}_\beta + \frac{\bar{r}_{wt} - \bar{r}_\beta}{n} + \frac{\bar{r}_{ws} - \bar{r}_\beta}{m}$
S x Trait (T)	$\bar{r}_{wt} - \bar{r}_\beta$
S x Source (S)	$\bar{r}_{ws} - \bar{r}_\beta$
Error (E)	$1 - \bar{r}_{wt} - \bar{r}_{ws} + \bar{r}_\beta$

$\bar{r}_\beta$  = average correlations of hetero-hetero triangles;

$\bar{r}_{wt}$  = average correlation of validity diagonals;

$\bar{r}_{ws}$  = average correlations of monomethod-heterotrait triangles;

n = number of traits;

m = number of sources (kinds of teachers).

traits. Such invalidation occurs when values in the heterotrait-heteromethod triangles are as high as those in the validity diagonal. In Table 3, each hetero-hetero triangle is enclosed by a broken line.

Validity diagonals are composed of correlations of measures in which the trait is common while the methods differ. Convergent validity is based on the magnitude of these correlations. Discriminant validity is inferred when the magnitude of the values in the validity diagonal exceeds the magnitude of the heterotrait-heteromethod correlations in the same row and column. Validity diagonal entries are underlined.

Heterotrait-monomethod triangles are composed of correlations of traits measured by the same method or kind of teacher. Method bias is inferred when these correlations are elevated in relation to the magnitude



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of the heterotrait-heteromethod correlations. Each heterotrait-monomethod triangle is enclosed by a solid line.

#### Refinement of the Observation Record

Reduction of the number of trait-categories was made on the basis of convergent validity of the stimuli. Traits with the higher validity diagonal values were selected, and using the short computational formulas in Table 2, variance components were calculated.

Three indexes were calculated using the formula true variance/true plus error variance; the computational formulas are in Table 4. Both variance components and indexes indicate the amount of convergence, discrimination, and method bias in the matrix; the usefulness of the latter is that they provide indexes to compare validity of selected traits and methods within the study. Indexes of the reduced matrix were examined to determine whether validity was improved or decreased relative to the total matrix.

Table 4

#### Multitrait-Multimethod Indexes: Computational Formulas

Source	Index
Student (P)	$\frac{VC_P}{VC_P + VC_E}$
P x Trait (T)	$\frac{VC_{P \times T}}{VC_{P \times T} + VC_E}$
P x Source (S)	$\frac{VC_{P \times S}}{VC_{P \times S} + VC_E}$

VC = Variance component

### Examination of the Trait Matrix

Inspection of the multitrait-multimethod matrix was undertaken following the criteria for convergent and discriminant validity of Campbell and Fiske (1959) to add to the information provided by the summarization procedures previously carried out.

Campbell and Fiske suggest that careful examination of the multitrait-multimethod matrix will indicate to the experimenter what his next steps should be: which concepts or traits need sharper delineation, which methods (rating groups) should be discarded or replaced, and which traits are poorly measured because of excessive confounding method variance.

### Comparison of Rating Sources

The total matrix was partitioned by combinations of raters (three kinds of teachers): Home Economics-Academic, Academic-Trades, and Trades-Home Economics. These combinations were studied by the variance components analysis. Since direct comparisons between the combinations were not possible because the error variance differed, variance indexes were computed for each combination.

### Comparison of English and Mathematics with Traits

The appropriate level of the Metropolitan Achievement Test (Elementary, Intermediate, or Advanced Battery) had been administered to the students in the sample. Two sets of grade-scores were recorded for the English and mathematics sub-tests. Correlations of these scores with the 21 traits for each of the three rating groups were presented in the last two rows and columns of the 65 x 65 matrix.

## FINDINGS AND DISCUSSION

The purpose of this study was to improve the effectiveness of instruction, guidance, and placement of prevocational students through the development of a diagnostic device. Development and subsequent use of the instrument was part of a continuing in-service education program closely related to curriculum development and evaluation. Incidents of student behavior considered critical to performance during training and later on the job were observed, recorded, and classified into a 21-category observation record on which ratings were subsequently collected.

## Analysis of the Observation Record

The multitrait-multimethod matrix technique (Campbell & Fiske, 1959) as modified by Kavanagh, MacKinney, and Wolins (1971) was applied to assess the ability of the instrument to evaluate student behavior and to provide a basis for further refinement.

Multitrait-multimethod matrix

In order to demonstrate evidence for convergent and discriminant validity by Campbell and Fiske's (1959) analysis, more than one trait and more than one method are required. In this study, 102 students were rated on 21 traits (categories of behavior) by three methods, that is, teachers from three sources: the Home Economics, Academic, and Trades instructional areas of the school which were considered to constitute relatively independent methods of measurement. The 63 x 63 multitrait-multimethod matrix representing the ratings from three sources on students plus the grade-scores for English and mathematics is included in Table 11 in Appendix D.

Since the matrix is rather large and unwieldy, the data were summarized by the procedure of Kavanagh, MacKinney, and Wolins (1971). The matrix was partitioned according to the source of the ratings, and correlations in the blocks of the matrix were averaged for use in subsequent computations. These averaged correlations are shown in Table 5.

Table 5  
Averaged Correlations<sup>a</sup> for Regions of the Matrix

Source	Home economics related occupations teachers				Academic teachers				Trades teachers			
	1	2	3	21	1	2	3	21	1	2	3	21
Home Economics Related Occupations Teachers	1											
	2											
Academic Teachers	3											
	21											
Trades Teachers	1											
	2											
	3											
	21											

The diagram illustrates the averaged correlations for three groups of teachers. The groups are Home Economics Related Occupations Teachers, Academic Teachers, and Trades Teachers. Each group has four variables (1, 2, 3, 21). The diagonal elements represent the correlations within each group. Dashed lines indicate the boundaries between the three groups.

Group	Variable	Correlation
Home Economics Related Occupations Teachers	1	57
	2	
	3	
	21	
Academic Teachers	1	24
	2	29
	3	29
	21	49
Trades Teachers	1	33
	2	22
	3	36
	21	37

<sup>a</sup>Decimal points have been omitted.

### Analysis of variance

Table 6 presents the analysis of variance computed from the averaged correlations in the matrix shown in Table 5. The results indicate that the main effect of Student, the Student x Trait, and the Student x Source interactions were significant ( $p < .01$ ). These results suggest that the following inferences be made. The Student effect indicates that students were differentiated on the basis of the measuring instrument that was developed in the study. The Student x Trait effect indicates that there was a weak degree of differentiation on ratings of students according to what trait was under consideration. In addition, the Student x Source effect suggests that the ratings received by the students were subject to a method bias or halo effect by the raters. Considering the Student x Trait interaction effect which indicates the discriminant validity of the device, it must be noted that the F ratio is rather small for the large degrees of freedom of the significance test. To clarify the results of the analysis of variance, variance components were computed. They are also presented in Table 6.

### Variance components

The variance components indicate that the Student x Trait interaction effect is less in magnitude than sampling error variance, which suggests that there is little differentiation on traits when the instrument is used.

Agreement of raters on person variance or convergent validity is evident in the large variance component for the main effect of Student. However, there is a large Student x Source or halo effect on the ratings which tends to confound the results on person variance. The large rater halo complements the fact of low discriminant validity, that is, there is a

Table 6

Analysis of Variance, Variance Components, and  
Indexes for the Multitrait-Multimethod Matrix

Source	df	SS	MS	F	Variance component	Index
Student (P)	97	2634.66	.27	71.47**	1.290	.786
P x Trait (T)	1940	1028.16	.53	1.39**	.068	.166
P x Source (S)	194	1285.20	6.62	17.42**	.298	.467
Error	3880	1477.98	.38		.340	

\*\* $p < .01$ .

carry-over across ratings of different traits. Two possibilities occur for interpreting the magnitude of the Student x Trait effect: that either there is slight discrimination over all the traits or that traits vary in their ability to discriminate. Thus, even though there is good agreement across raters on traits, there is little discrimination within traits which suggests reducing the number of trait-categories on which responses are required.

Hence, it was apparent that there was a need to further refine the device. To provide a basis for comparison of matrices of different sizes, indexes need to be calculated which allow matrices with differing error variances to be compared. Therefore, indexes were calculated for the total matrix using the formulas in Table 4 and are presented in Table 6. The indexes were used to study the effectiveness of the reduction of the matrix.



## Refinement of the Observation Record

The decision of which traits to retain may be based on the degree of convergent validity, a criterion Kavanagh et al. (1971) suggested as appropriate. Turning to an examination of the total matrix, three trait categories showing the highest degree of convergent validity were identified. These are Trait 1, Understanding Work, Trait 4, Following Instructions, and Trait 5, Creativeness. A reduced matrix is presented in Table 7. Variance components and indexes for the reduced matrix are presented in Table 8.

Table 7  
Multitrait-Multimethod Matrix for Three Selected Traits

Traits		Home economics teachers			Academic teachers			Trades teachers		
		1	4	5	1	4	5	1	4	5
Home Economics Teachers	1									
	4	87								
	5	73	73							
Academic Teachers	1	<u>44</u>	42	33						
	4	34	<u>41</u>	31	74					
	5	33	32	<u>33</u>	62	69				
Trades Teachers	1	<u>47</u>	44	34	<u>57</u>	49	53			
	4	43	<u>43</u>	36	55	<u>55</u>	52	79		
	5	41	43	<u>38</u>	47	47	<u>52</u>	73	82	

Several points are immediately evident when the variance components for each effect are compared across matrices. The ratings for the reduced matrix contain less sampling variance (error) than the larger matrix. Inspection of the variance components for the Student effect indicates that

Table 8

Estimates of Variance Components and  
Indexes for Three Selected Traits

	Variance component	Index
Student (P)	.528	.713
P x Trait	.041	.161
P x Source	.290	.576
Error	.213	

agreement among raters, or convergent validity, remains approximately the same on three traits as on 21 categories of behavior. The similarity of variance components for the Student x Trait effect shows that there is little change in discriminant validity when the number of stimuli are reduced. The substantially larger source bias (Student x Source effect) indicates that even more halo operates when the number of rating dimensions is reduced.

Thus the decrease in error when fewer rating stimuli are considered did not lead to any more agreement between raters. Furthermore, greater differentiation on traits did not occur, and there is evidence of more bias within raters. Therefore, it appears that while ratings on either three or 21 categories of the behavior record show evidence of convergent validity, there is no evidence that differentiation among traits occurs. Hence, reducing the number of stimuli in the instrument appears to bring no gain in scientific efficiency.

### Examination of the Trait Matrix

While the analysis of variance technique allows summarization of the data in a more explicit, interpretable, and comparable form, as Kavanagh et al. (1971) stated, they also advised that "in order to extract full information from the multitrait-multimethod investigation for decision purposes, the researcher should consider the matrix of correlations and the variance components as complementary" (p. 39). Therefore, an inspection of the matrix was undertaken (Appendix D).

Examination of entries in the validity diagonals shows evidence of good convergent validity that was indicated by the analysis of variance and the variance components calculated earlier. Many of the values are significantly different from zero and thus, according to Campbell and Fiske's criterion for convergent validity, sufficiently large to encourage further examination of the data.

The evidence for discriminant validity is threefold. The first criterion for discriminant validity requires that a validity diagonal should be higher than the values lying in its column and row in the heterotrait-heteromethod triangles. That is, a validity for a variable should be higher than the correlations obtained between that variable and any other variable having neither trait nor method in common. Only four correlations satisfy this criterion completely:

Trait 1, Understanding Work ( $r = .44$ ),

Trait 19, Personal Deportment and Appearance ( $r = .47$ ), and

Trait 20, Ability to Communicate ( $r = .49$ )

in the Home Economics-Academic block and in the Trades-Academic block

Trait 13, Perseverance ( $r = .50$ ).

While none of the validity diagonal entries exceeds other correlations in the same row and column across all three heterotrait-heteromethod blocks, Trait 1, Understanding Work, comes closest. Intercorrelations in the Home Economics-Academic, Home Economics-Trades, and the Trades-Academic blocks of .44, .47, and .57, respectively, shows two exceptions in the latter two blocks.

Trait 1, Understanding Work, when measured by two different methods (rating groups) has a higher discriminant validity than any other variable in the adjacent triangles having neither trait nor method in common.

Trait 4, Following Instructions, with correlations of .41, .44, and .55 has in each respective block, four, seven, and five other intercorrelations that are higher than their respective validity diagonal entries.

For Trait 5, Creativeness, the validity diagonal entries are .33, .38, and .52. There are six, five, and three intercorrelations in the same row and column of the adjacent heterotrait-heteromethod triangles that are higher than the validity diagonal entries, exceeding them by .04, .05, and .01, respectively.

Certain traits show no evidence of discriminant or convergent validity. Trait 10, Safety, is the most obvious example with correlations of .01, .07, and .12 in the Home Economics-Academic, Home Economics-Trades, and Trades-Academic blocks, respectively.

The second criterion for discriminant validity, that the values in the validity diagonal be higher than those correlations between that trait and other traits with a common rater, is not met.

The validity correlations in the heteromethod diagonal are generally exceeded by the correlations in the corresponding row and column of the

monomethod triangle. The correlation for each measure is greater than the correlation between two different measures of the same trait. These findings indicate presence of a method or halo effect.

The third criterion for discriminant validity, that the same pattern of trait interrelationship be shown in all of the heterotrait triangles of both the monomethod and heteromethod blocks is met, even though the general levels of correlations between the heterotrait triangles vary moderately. Correlations are generally lowest in the Home Economics-Academic block and highest in the Trades-Academic blocks.

#### Comparison of Rating Sources

The large variance component for the students by source effect suggested further investigation of the method bias or halo by raters. Using the Kavanagh et al. (1971) procedure, the matrix was partitioned, and variance components were computed for each pair of rating groups: Home Economics-Academic, Home Economics-Trades, and Academic-Trades teachers. The variance components were not directly comparable since the error variance differed for each pair of sources, therefore, indexes were computed using the ratio of true variance/true plus error variance (Table 4).

The variance components and indexes for each pair of rating groups are presented in Table 9. The relative sizes of the indexes may be compared directly across the paired groups of raters.

The relative magnitude of the indexes for Student effect over Student x Source effect for two pairs of rating groups, the Home Economics-Academic and the Academic-Trades teachers, suggests that the Academic teachers were slightly better in providing convergence in ratings with less source bias

Table 9  
Comparison of Rating Sources

Rating source	Home economics and academic teachers	Home economics and trades teachers	Academic and trades teachers
Variance Components			
Student (P)	.40	.48	.45
P x Trait (T)	.03	.04	.14
P x Source (S)	.27	.32	.31
Error	.44	.32	.26
Indexes			
P	.44	.60	.63
P x T	.06	.11	.35
P x S	.38	.50	.54

or halo. Ratings of the Trades teachers appear to be most subject to halo effect, however, source bias accounts for a large proportion of the variance in the ratings by all three groups.

#### Comparison of English and Mathematics with Traits

Grade-scores for the English and mathematics sub-tests of the Metropolitan Achievement Test (the Elementary, Intermediate, or Advanced Battery) for each student were coded along with the rating data. Correlations of the English and mathematics scores with ratings on the 21 traits by each type of teacher appear in rows 64 and 65 of the matrix shown in Table 11 in Appendix D. (Columns 64 and 65 have been omitted.)

Table 10 summarizes correlations obtained between traits as measured by the three types of teachers and the English and mathematics sub-test grade-scores. A numeric value of .38 was selected because it was substan-

Table 10

Correlations<sup>a</sup> of English and Mathematics Scores<sup>b</sup> with Traits

Trait	Home		Academic		Trades	
	economics		teachers		teachers	
	Eng.	Math.	Eng.	Math.	Eng.	Math.
1. Understanding Work	<u>45</u>	<u>43</u>	<u>41</u>	<u>56</u>	<u>44</u>	<u>52</u>
2. Intellectual Curiosity	<u>43</u>	<u>40</u>	<u>35</u>	<u>43</u>	<u>35</u>	<u>39</u>
3. Judgment	<u>42</u>	<u>38</u>	<u>33</u>	<u>44</u>	<u>46</u>	<u>46</u>
4. Following Instructions	<u>50</u>	<u>42</u>	<u>40</u>	<u>45</u>	<u>38</u>	<u>47</u>
5. Creativeness	<u>44</u>	<u>31</u>	<u>41</u>	<u>46</u>	<u>35</u>	<u>37</u>
6. Ability to Work Independently	<u>37</u>	<u>30</u>	<u>28</u>	<u>39</u>	<u>33</u>	<u>40</u>
7. Rate of Productivity	<u>31</u>	<u>38</u>	<u>35</u>	<u>47</u>	<u>32</u>	<u>45</u>
8. Quality of Work	<u>40</u>	<u>46</u>	<u>30</u>	<u>48</u>	<u>36</u>	<u>34</u>
9. Orderliness	<u>25</u>	<u>27</u>	<u>32</u>	<u>38</u>	<u>30</u>	<u>31</u>
10. Safety	<u>22</u>	<u>14</u>	<u>02</u>	<u>18</u>	<u>22</u>	<u>19</u>
11. Use of Time	<u>28</u>	<u>40</u>	<u>21</u>	<u>34</u>	<u>20</u>	<u>30</u>
12. Work Interest	<u>26</u>	<u>30</u>	<u>21</u>	<u>32</u>	<u>33</u>	<u>36</u>
13. Perseverance	<u>23</u>	<u>26</u>	<u>22</u>	<u>33</u>	<u>31</u>	<u>40</u>
14. Reaction to Pressure	<u>20</u>	<u>24</u>	<u>33</u>	<u>38</u>	<u>37</u>	<u>43</u>
15. Reaction to Criticism, Suggestions	<u>21</u>	<u>25</u>	<u>25</u>	<u>32</u>	<u>18</u>	<u>24</u>
16. Emotional State	<u>13</u>	<u>21</u>	<u>07</u>	<u>22</u>	<u>09</u>	<u>19</u>
17. Self-Confidence	<u>25</u>	<u>42</u>	<u>33</u>	<u>45</u>	<u>21</u>	<u>28</u>
18. Cooperativeness	<u>24</u>	<u>21</u>	<u>10</u>	<u>19</u>	<u>17</u>	<u>20</u>
19. Personal Deportment and Appearance	<u>22</u>	<u>24</u>	<u>21</u>	<u>26</u>	<u>27</u>	<u>24</u>
20. Ability to Communicate	<u>43</u>	<u>41</u>	<u>46</u>	<u>47</u>	<u>42</u>	<u>46</u>
21. Reliability	<u>16</u>	<u>27</u>	<u>08</u>	<u>22</u>	<u>20</u>	<u>21</u>

<sup>a</sup>Correlations above .38 are underlined.<sup>b</sup>Sub-tests of the Metropolitan Achievement Test (Elementary, Intermediate, or Advanced Battery).

tially beyond the numeric value necessary for significance beyond the .01 level. Further, correlations of this size helped to delineate those traits which appeared to assess components similar to those measured by the English and mathematics sub-test scores. Inspection of the table shows that correlations above .38 occur more frequently between mathematics than between English and the traits rated.



Examination across all three rater scores indicates that correlations above .38 are obtained between both sub-test English and mathematics with three traits:

Trait 1, Understanding Work (where the range for  $r = .41$  to  $.56$ ),

Trait 4, Following Instructions ( $r = .38$  to  $.50$ ), and

Trait 20, Ability to Communicate ( $r = .41$  to  $.47$ ).

For all three types of teachers, sub-test mathematics correlations above .38 occur with three additional traits:

Trait 2, Intellectual Curiosity ( $r = .40$ ,  $.43$ , and  $.39$ ).

Trait 3, Judgment ( $r = .38$ ,  $.44$ , and  $.46$ ), and

Trait 7, Rate of Productivity ( $r = .38$ ,  $.47$ , and  $.45$ ).

Judgment is also seen by the Home Economics and Trades teachers to be related to English, but a lesser relationship is expressed by Academic teachers ( $r = .33$ ).

In addition, there are differences among different types of teachers in the correlations obtained between English and mathematics and certain other traits. For example, Academic teachers indicate that there is a relationship between scores for Creativeness and mathematics ( $r = .46$ ) and English ( $r = .41$ ), while Home Economics teachers indicate a relationship between scores for this trait and English ( $r = .44$ ). Correlations of scores for Creativeness with English and mathematics obtained by the Trades teachers were lower,  $.35$  and  $.37$ , respectively.

Scores on Quality of Work for both Academic and Home Economics teachers when correlated with mathematics indicate a relationship ( $r = .48$  and  $.46$ ) and Home Economics teachers' scores on this trait have a correlation of  $.40$  with English.

Correlations between scores on Self-Confidence and mathematics by the Home Economics and Academic teachers indicate a relationship ( $r = .42$  and  $.45$ ). Only the scores by Trades teachers indicate a significant relationship between Perseverance and mathematics ( $r = .40$ ).

Scores by Academic and Trades teachers indicate a relationship between mathematics and Ability to Work Independently ( $r = .39$  and  $.40$ ) and mathematics and Reaction to Pressure ( $r = .38$  and  $.45$ ).

As might be expected, there is little correlation between standardized test scores and Trait 19, Personal Deportment and Appearance. Correlations range between  $.21$  and  $.24$ .

The correlations obtained between standardized academic performance tests and certain traits contained in the observation record are generally highest between those traits which are shown to have the best convergent validity. While these correlations are fairly moderate, they do provide evidence that the traits deemed important for job success are associated with the academic skills.

When these trait-categories are examined, with particular attention directed to the incidents of behavior that define each category, this relationship becomes even more apparent. For example, Trait 1, Understanding Work, includes retention of knowledge and skills and application of learnings from one situation to another. Trait 5, Creativeness, which showed evidence of having less discriminant validity and higher intercorrelations with other traits, includes a number of descriptive incidents which are similar to those in Trait 4, Following Instructions, and Trait 6, Ability to Work Independently. Indeed, examination of the definitive incidents within the first six trait-categories, Understanding Work, Intellectual

Curiosity, Judgment, Following Instructions, and Creativeness, and Trait 20, Ability to Communicate, show close similarity. This observation was borne out by the correlations between these traits when the multitrait-multimethod matrix in Table 11 (Appendix D) was examined.

Further, the correlations obtained between the trait ratings and the standardized test grade-scores obtained by the academic teachers are generally higher than those obtained by the home economics or trades teachers. It is assumed that the academic teachers would have more knowledge of a student's academic ability as demonstrated by the standardized test scores and/or classroom performance, therefore, their trait ratings might be more subject to halo effect which has been shown to operate in the ratings on this observation device.

Lack of discriminant validity obtained on the device developed in this study is not surprising, since evidence of lack of discriminant validity and the presence of halo are frequently found in the literature on rating scales.

#### Discussion

While the observation record, in either refined or total form, did not discriminate among students on traits, correlations above .38 between academic grade-scores and certain traits indicate that both the standardized test and the observation record assess related skills. However, this relationship is less than perfect which suggests that the observation record assesses some unique characteristics that are not measured by standardized achievement tests. Therefore, the device may be helpful when used (in a

refined form for reasons of practical efficiency) in conjunction with other methods of evaluation.

Development of the observation record was considered a useful in-service technique in that it encouraged teachers to become more diligent observers of student behavior. Examination of incidents of behavior suggested that certain skills might be evaluated more appropriately by other methods. Evaluation techniques that allowed student participation were adopted. Critical incidents of behavior were incorporated into other evaluation devices, for example, check lists, which were frequently developed from occupational and task analyses.

The criticisms of the critical incident technique that were reviewed in Chapter 2 were experienced in this study. Initially observers recorded more incidents of ineffective than effective behavior, however, this was soon realized and self-corrected. Reporters were inclined to write evaluations rather than descriptions of behavior. Following training and practice, observers recorded incidents more objectively. As they sought to understand student behavior, teachers generally became more cautious in their interpretations and considered a wider range of variables that might interact to affect student behavior. Teachers frequently expressed lack of knowledge of job performance that would be required of students. The extent that this was a real deficiency varied across teachers; apart from trades instructors, the majority lacked work experience outside teaching, and all but a few lacked first hand knowledge of living and working conditions in Arctic communities where students would become employed. Even more strongly expressed, however, was their lack of knowledge of the student's cultural background. As in-service sessions proceeded, they more

actively sought to remedy these deficiencies. Greater knowledge lessened the inclination to resort to a cultural explanation for difficulties that students experienced.

For some observers, there was initial resistance to recording incidents: it was the investigator's opinion that these teachers considered the process too time consuming, the outcome not worthwhile, or that their own inadequacies would be revealed. Resistance decreased or disappeared during observer training. During development of the instrument, the number of incidents recorded gradually increased, leveled out, then diminished rather sharply toward the end of the period of collecting critical incidents and developing the observation record. Subsequent use of the instrument as an observation schedule could be expected to follow a similar pattern.

During the procedure of classifying incidents into categories of behavior, teachers tended to group together only two to three incidents of either effective or ineffective behavior. At the investigator's urging, larger categories were formed using both effective and ineffective incidents thought to describe opposite extreme poles of dimensions of student behavior.

One teacher expressed the opinion that being forced to record only extremes of behavior gave no opportunity to record behaviors exhibited by the majority of the students. It may be that consideration of only incidents that are critical to effective or ineffective job performance eliminates consideration of the widest range of individual differences, however, as Flanagan pointed out, these behaviors are not likely to be critical to effective job performance. However, the collection of critical incidents

drew attention to unusual or exceptional behaviors observed of certain students, which indicated that their needs were not being met by the school program. Recognition and discussion of the incidents brought forth suggestions for remediation.

Examination of the raw data provided supervisors with a more intimate knowledge of student behavior (and the teachers' problems) and provided specific examples with which to initiate discussions with teachers regarding remediation. Supervision and leadership were considered to be more effective with the student-focused thrust provided during the process of developing the diagnostic instrument.

Development of the instrument was carried out as part of the total inservice education program in the Churchill Vocational Centre. Activities focused on the student: understanding his cultural background, his uniqueness, and identifying his needs; on understanding variables in the learning gestalt so as to improve the effectiveness of the learning situation; on task-oriented, job-related activities; and on evaluation. Although it would be difficult to determine in any quantitative way, it is believed that the process of developing the observation record contributed to improvements in the effectiveness of instruction, the curriculum, and guidance and development of students.

## SUMMARY

The Inuit or Eskimo of the Canadian Arctic today face new challenges to survival as urbanization and industrialization threaten to erode their traditional values and culture, pride, and identity. A program of compensatory employment and training practices is viewed as a prime means of helping Northern people adjust to the pace of economic and social change and prepare themselves for meaningful participation in Northern development.

The present study was carried out at the Churchill Vocational Centre, a residential school in Northern Manitoba operated by the federal Department of Indian Affairs and Northern Development for Eskimo youth from 32 settlements in the Canadian Eastern Arctic. The students were 15 to 20 years old, at least two years age-grade retarded, represented all levels of ability, and were enrolled in a three-year prevocational program. A diagnostic device was developed as a means of identifying and guiding the kinds of behaviors and adaptations that may need to be made by both Inuit youth and their instructors (and later their employers) in the dominant society.

The device was expected to profile the unique characteristics of individual students and provide a basis for guiding individual growth and development rather than dwell on cultural differences. The device was expected to improve:

- 1) Guidance and development of students. By helping the student, instructors and counselors gain a greater awareness of the student's unique characteristics, opportunities may be provided for more effective guidance and instruction of each individual.



- 2) Effectiveness of instruction. According to his value system, an instructor will judge differently from other instructors incidents of behavior he considers critical to performance. Such differences, when examined in relation to institutional objectives, may reveal to an instructor his own biases as he translates the institution's goals into instruction.
- 3) Curriculum. By determining the characteristics of the students enrolled in the institution, more accurately identifying their needs, and thus more adequately defining the objectives of the institution, a more effective curriculum will be developed.

Thus, a diagnostic device was developed and validated to provide a guide for teachers' observations of student behavior during vocational training.

Development and subsequent use of the instrument were part of a continuing in-service education program closely related to curriculum development and evaluation. Incidents of student behavior considered critical to performance during training and later on the job were observed, recorded, and classified into a 21-category observation record on which ratings were subsequently obtained for validation of the device.

The multitrait-multimethod matrix technique of Campbell and Fiske (1959) as modified by Kavanagh, MacKinney, and Wolins (1971) was applied to assess the ability of the instrument to evaluate student behavior and to provide a basis for further refinement. This procedure may be used whenever more than one trait is measured by more than one method. In this study, students ( $N = 102$ ) were rated on 21 traits (categories of behavior) by three methods, that is, teachers from three sources: the home economics,

academic, and trades instructional areas of the school which were considered to constitute relatively independent methods of measurement.

A 63 x 63 multitrait-multimethod intercorrelation matrix was generated to summarize the ratings from three sources on students plus the grade-scores of the English and mathematics sub-tests of the Metropolitan Achievement Test Battery. The summarization technique of Kavanagh et al. (1971) was applied, and the data were analyzed to determine the convergent and discriminant validity of the device.

Analysis of variance indicated that each source of variance was significant ( $p < .01$ ). The Student effect indicated that there was person variance or convergent validity attributable to the measurement device used. However, the Student x Source effect indicated that ratings on students were subject to a method bias or halo effect by raters. In addition, the Student x Trait effect indicated weak discrimination on trait-categories by raters. Since the sample size influences the interpretation of the F ratios, variance components were computed to clarify the analysis of variance.

Variance components analysis indicated evidence that there was agreement of raters on person variance or convergent validity. However, the halo effect on the ratings tends to confound the first result. In addition, the Student x Trait interaction effect is less in magnitude than sampling error variance which suggests weak discriminant validity. The larger rater halo complements the fact of low discriminant validity, that is, there is a carry-over across ratings of different traits.

There were two possibilities for interpreting the Student x Trait effect: that either there was slight discrimination over all traits or

that the traits varied in their ability to discriminate. Even though there was good agreement across raters on traits, there was little discrimination within traits which suggested reducing the number of trait-categories on which responses were required.

An effort was made to reduce the number of trait-categories in the observation record by analyzing three traits selected on the basis of the evidence for convergent validity demonstrated, a criterion Kavanagh et al. (1971) suggest as appropriate. The effectiveness of the reduced matrix was studied by variance components analysis and indexes computed for the reduced and the total matrices which allowed matrices with different error variances to be compared. The results indicate that there was little change in convergent validity or discriminant validity, a decrease in sampling variance (error) but that there was substantially larger source bias or halo effect. Thus the decrease in unexplained error variance when fewer rating stimuli were considered did not lead to evidence of any more agreement between raters nor that greater differentiation on traits occurred but rather to evidence of more bias within raters. Hence, reducing the number of trait-categories brought no gain in scientific efficiency.

Inspection of the multitrait-multimethod matrix was undertaken in order to extract full information that might suggest future steps to be taken. According to Campbell and Fiske's (1959) criteria, evidence for convergent validity was indicated by the magnitude of the correlations in a number of entries in the validity diagonals. However, only four correlations satisfy minimal requirements for discriminant validity completely, and there is not general agreement on these across all three rating

sources. Understanding Work comes close, however, and Following Instructions and Creativeness follow.

There is evidence that home economics teachers discriminate on Personal Deportment and Ability to Communicate, while trades teachers indicated discrimination on Perseverance.

When the rating sources were compared by variance components analysis and indexes for the partitioned matrix, there was evidence that academic teachers were slightly better in providing convergence in ratings with less halo effect. However, this result may be explained by the presence of criterion contamination or greater rater halo since academic teachers were more aware of the academic ability of students as measured by standardized tests and/or their assessment of classroom performance. The correlations obtained between trait ratings for each rating source with the grade-scores for the English and mathematics sub-tests were generally of greater magnitude between those traits which showed the highest degree of convergent validity. While these correlations were moderate ( $r = .38$  to  $.56$ ), they provided evidence that the trait-categories of behavior considered critical to training or job success are associated with academic skills. However, the less-than-perfect relationship also suggests that the observation record assesses unique characteristics not tapped by standardized achievement tests.

While the diagnostic device developed in this study demonstrated evidence of good agreement on students across raters (convergent validity), there was little differentiation according to what trait was being assessed, and the assessments were subject to source bias or halo effect to a considerable degree. However, development and subsequent use of the device was

considered a useful technique for in-service education in that attention was focused on student behavior.

The process of developing the diagnostic device reported in this study contributed to improvement in the prevocational education program offered to Inuit youth at the Churchill Vocational Centre. The instrument was developed as part of an in-service education program which focused on the student. The study showed how involvement of the teachers in the process of instrument development encouraged

- a) identifying the student's needs, based on an appreciation of his unique characteristics, awareness of his cultural background, and realization of the adaptations that may be required for full participation in a modern technology;
- b) improving the learning environment, as a result of analyzing learning variables in the teaching-learning gestalt; and
- c) devising additional evaluation procedures, to provide each student with a "knowledge of results" (Brunner, 1970, p. 68) that may enable him to become an active participant in activities that affect his life.

#### Recommendations

Reports of critical incidents of job performance from employers of Inuit young people are most useful in determining job requirements. As a greater number of Inuit are placed in meaningful employment, information from employers will be increasingly available to more adequately identify expectations of the work place. However, there is a need for those in the

dominant Canadian society - instructors, foremen or supervisors, personnel officers, and co-workers - to accept and adapt to the Inuit.

Any evaluation technique used in a program of occupational preparation for Inuit youth should assess the extent to which this acceptance and adaptation as well as other educational objectives have been achieved. The instruments or methods employed should contribute to dispelling cultural stereotypes and ethnocentric attitudes. The diagnostic device described in this study was developed by teachers who tend to rate students' occupational skills similarly to employers (Nelson & Jacoby, 1967). Thus, ethnocentric judgments are built into the instrument. If, however, development and use of such an instrument is accompanied by observer-rater training which emphasized determination of essential job requirements, understanding the cultural background of the Inuit, and identifying individual differences, then perhaps the use of such an instrument may serve to make more objective and systematized the judgments men have always made of other men (Barrett, 1966) and culturally stereotyped views of the Inuit that are held by Eurocanadian instructors, employers, and others may be reduced rather than reinforced.

## REFERENCES

- Altman, James W. Research on general vocational capabilities (skills and knowledges). Pittsburgh: American Institute for Research, Institute for Performance Technology, 1966.
- Armstrong, Charles M. Evaluation of occupational education: Identification and measurement of student output variables. Delmar, N.Y.: World Wide Education and Research Institute, ca. 1968.
- Barrett, Richard S. Performance rating. Chicago: Science Research Associates, 1966.
- Beaumont, John. Philosophical implications of the vocational amendments of 1968. In Gordon F. Law (Ed.), Contemporary concepts in vocational education. Washington, D.C.: American Vocational Association, 1971.
- Born, David Omar. Eskimo education and the trauma of social change. Ottawa: Canada Department of Indian Affairs and Northern Development, 1970.
- Bridgman, C. S., Spaeth, J., Driscoll, P., & Fanning, J. Salesmen helped by bringing out jobs' "Critical incidents." Personnel Journal, 1958, 36, 411-414.
- Brunner, Jerome. The skill of relevance or the relevance of skills. Saturday Review, April 18, 1970, 66-68.
- Byers, J. L. A study of the level of aspiration of academically successful and unsuccessful high school students. California Journal of Educational Research, 1962, 13, 209-216.
- Campbell, D. T., & Fiske, D. W. Convergent and discriminant validation by the multitrait-multimethod matrix. Psychological Bulletin, 1959, 56, 81-105.
- Canada Department of Indian Affairs and Northern Development. Eskimos of Canada. Ottawa: Author, 1973.
- Canada Department of Manpower and Immigration. Canadian Classification and Dictionary of Occupations. Vol. 1. Ottawa: Author, 1971.
- Canada Department of Statistics. Canada 1971: Annual handbook of present conditions and recent progress. Ottawa: Author, 1971.
- Chance, Norman A. Acculturation, self-identification and personality adjustment. American Anthropologist, 1965, 67, 372-393.
- Chance, Norman A. The dynamics of change in the Eskimo of North Alaska. In Stanford University, Case studies in cultural anthropology. New York: Holt, Rinehart & Winston, 1966.



- Chance, Norman A., & Foster, Dorothy. Symptom formation and pattern of psychopathology in a rapidly changing Alaskan Eskimo society. College University of Alaska, Anthropological Papers, 1962, 11 (1), 32-42.
- Chrétien, Jean. Canada's North: 1970-1980. Ottawa: Information Canada, 1972.
- Cozine, June. A pilot study for gainful employment in home economics. Stillwater, Oklahoma: Oklahoma State University Extension, 1968. 4 vols.
- Crawford, Lucy C. A competency pattern approach to curriculum construction in distributive teacher education. Blacksburg, Virginia: Virginia Polytechnic Institute, College of Arts and Sciences, Department of Education, 1967.
- Dailey, Robert C., & Dailey, Lois A. The Eskimo of Rankin Inlet: A preliminary report. Ottawa: Northern Co-ordination and Research Centre, 1961.
- Dalrymple, J. I., Lowe, P. K., & Nelson, H. Y. Preparation for a dual role: Homemaker-wage earner with adaptations to Inner-City youth. Vol. 2. Resource curriculum materials. Washington, D.C.: United States Office of Education, Department of Health, Education, and Welfare, 1970.
- Davidson, Brian G. Functional and occupational analysis of the Indian and Eskimo Co-operative Association. Ottawa: Canada Department of Indian Affairs and Northern Development, 1969.
- Dayan, Maurice. Validation of the vocational capacity scale utilizing institutionalized retardates. Pineville, Louisiana: Training and Research Department, Pinecrest State School, 1968.
- Devitt, W. G. History of education in the Northwest Territories. In A report prepared by members of the Canadian Association of School Superintendents and Inspectors, The Canadian Superintendent, 1964. Toronto: Ryerson Press, 1965.
- Erikson, Erik H. Identity: Youth and Crisis. New York: W. W. Norton & Co., 1968.
- Ervin, A. M. Conflicting style of life in a Northern Canadian town. Arctic, 1969, 22, 90-105.
- Fine, Sidney A., & Wiley, Wretha W. An introduction to functional job analysis: A scaling of selected tasks from the social welfare field. Methods for manpower analysis, no. 4. Kalamazoo, Michigan: W. E. Upjohn Institute for Employment Research, 1971.

- Flanagan, John C. The critical incident technique. *Psychological Bulletin*, 1954, 51, 327-358.
- Ghiselli, Edwin E. Dimensional problems of criteria. *Journal of Applied Psychology*, 1956, 40, 1-4.
- Ginzberg, Eli. Guidance--limited or unlimited. *Personnel & Guidance Journal*, 1960, 38, 732-735.
- Grieve, William R. Measurement and appraisal of competencies. Paper presented at the National Seminar on Research in Evaluation of Occupational Education, Raleigh, North Carolina, September, 1968.
- Gronlund, Norman E. Measurement and evaluation in teaching. (2nd ed.) New York: Macmillan, 1971.
- Hardy, Russell. Occupational analysis of the communications industry in the Northwest Territories. Ottawa: Canada Department of Indian Affairs and Northern Development, 1970a.
- Hardy, Russell. Functional analysis of the transportation industry in the Northwest Territories. Ottawa: Canada Department of Indian Affairs and Northern Development, 1970b.
- Harrison, Robert, Singer, Judith, Budoff, Nelson, & Tolman, Rosalind. Level of aspiration as a function of learning-potential status in the educable mentally retarded. *Psychological Reports*, 1972, 30, 47-57.
- Home Economics Instructional Materials Center. Child Care Aide. Lubbock, Texas: Texas Tech University, Home Economics Instructional Materials Center, 1969a.
- Home Economics Instructional Materials Center. Food Service Employee. Lubbock, Texas: Texas Tech University, Home Economics Instructional Materials Center, 1969b.
- Home Economics Instructional Materials Center. Orientation to the World of Work. Lubbock, Texas: Texas Tech University, Home Economics Instructional Materials Center, 1971.
- Honigmann, John, & Honigmann, Irma. Eskimo townsmen. Ottawa: University of Ottawa, Canadian Research Centre for Anthropology, 1965.
- Isaacson, Lee. Career information in counseling and teaching. Boston: Allyn & Bacon, 1966.
- Janke, John. Occupational analysis of selected federal activities in the Northwest Territories. Ottawa: Department of Indian Affairs and Northern Development, 1969.
- Jenness, Diamond. Eskimo administration: II. Canada. Montreal: Arctic Institute of North America, Technical Paper No. 14, 1964.

- Kavanagh, Michael J., MacKinney, Arthur C., & Wolins, Leroy. Issues in managerial performance: Multitrait-multimethod analyses of ratings. *Psychological Bulletin*, 1971, 15, 34-49.
- Korb, L. How to measure the results of supervisory training. *Personnel*, 1956, 32, 378-391.
- Lacy, Jack. Desirable requisites of the manpower pool for industrial and commercial occupations. Paper presented to the Regional Conference on the Policy Issues and Development Problems of Post-High School Vocational-Technical Education, Ames, Iowa, November, 1967.
- Lantis, Margaret. Alaskan Eskimo cultural values. *Polar Notes*, 1959, 1, 35-48.
- Lantis, Margaret. Present status of the Alaskan Eskimo. Paper presented at the Alaskan Science Conference, Fairbanks, Alaska, 1950.
- Levine, Samuel, & Elzey, Freeman F. Personal-social and vocational scale for mentally retarded. Unpublished manuscript, San Francisco State College, 1966. ERIC ED 010 594.
- Liu, A. A theory-based scale for measurement of affective responses to personality and attitude inventories. Unpublished doctoral dissertation, Iowa State University, 1971.
- Lubart, J. M. Psychodynamic problems of adaptation--Mackenzie Delta Eskimos. Ottawa: Canada Department of Indian Affairs and Northern Development, 1969.
- MacArthur, R. S. Assessing the intellectual ability of Indian and Metis pupils at Fort Simpson, N.W.T. Ottawa: Canada Department of Indian Affairs and Northern Development, 1962.
- Macdonald, H. A. Norms for Metropolitan Achievement Test Battery. Ottawa: Canada Department of Indian Affairs and Northern Development, 1967.
- McGehee, William, & Thayer, Paul W. Training in business and industry. New York: John Wiley & Sons, 1961.
- Mayhew, Lewis B. The critical incident technique in educational evaluation. *Journal of Educational Research*, 1956, 49, 591-598.
- Nelson, Helen Y., & Jacoby, Gertrude P. Evaluation of secondary school programs to prepare students for wage earning in occupations related to home economics. Final Report of Project OE5-85-110 to the United State Department of Health, Education, and Welfare, Office of Education, 1967. 2 vols.
- Noll, V. H., & Scannell, D. P. Introduction to educational measurement. Boston: Houghton Mifflin Co., 1972.

- North, Cecil C., & Hatt, Paul. Jobs and occupations: A popular evaluation. Opinion News, Sept., 1947, 3-13.
- O'Donnell, B. Description of home and community occupations related to home economics: Description of specific occupations classified into six clusters, index to areas of work and worker trait groups for individual occupations. Selected from the Dictionary of occupational titles, volumes 1 & 11, 3rd ed., 1965. East Lansing, Michigan: Michigan State University, College of Education, Educational Publication Services, 1967.
- Parsons, George F. Arctic suburb: A look at the North's newcomers. Ottawa: Canada Department of Indian Affairs and Northern Development, 1970.
- Patterson, Cecil H. Counseling: Self-clarification and the helping relationship. Borow, Henry (Ed.), Man in a world at work. Boston: Houghton Mifflin Co., 1964a.
- Patterson, Cecil H. Method of assessing the vocational adjustment of the mentally handicapped. Training School Bulletin, 1964b, 61, 129-152.
- Patton, J. A., Littlefield, C. L., & Self, S. A. Job evaluation: Text and cases. (3rd ed.) Homewood, Ill.: Richard D. Irwin, Inc., 1964.
- Pettitt, George A. Primitive education in North America. Publications of Archaeology and Ethnography (Berkeley, University of California Press), 1956, No. 43, 1-182.
- Prien, E., & Ronan, W. Job analysis: A review of research and findings. Personnel Psychology, 1971, 24, 371-396.
- Rowley, G. W. The Eskimos. Ottawa: Arctic Circular, 1960, 2, 15-22.
- Scott, W. P., Clothier, R. C., & Spriegael, W. R. Personnel management: Principles, practices, and a point of view. New York: McGraw-Hill, 1961.
- Shiple, Anna Frances. Analysis of tasks in three home related occupations. Unpublished master's thesis, Iowa State University, 1967.
- Siegal, L., & Siegal, L. C. A multivariate paradigm for educational research. Psychological Bulletin, 1967, 68, 306-326.
- Smith, Derek G. Natives and Outsiders: Pluralism in the Mackenzie River Delta, Northwest Territories, Canada. Unpublished doctoral dissertation, Harvard University, 1972.
- Smith, Derek G. Occupational preferences of Northern students. Ottawa: Canada Department of Indian Affairs and Northern Development, 1973.

- Smith, Gordon W. Territorial sovereignty in the Canadian North: A historical outline of the problem. Ottawa: Canada Department of Northern Affairs and National Resources, 1963.
- Snedecor, George W., & Cochran, William G. Statistical methods. Ames, Iowa: Iowa University Press, 1967.
- Stevenson, D. S. Problems of Eskimo relocation for industrial employment. Ottawa: Canada Department of Indian Affairs and Northern Development, 1968.
- Super, Donald E. The psychology of careers. New York: Harper & Brothers, 1957.
- Thomas, R. Murray. Judging student progress. (2nd ed.) Toronto: Longmans, Green and Co., 1960.
- Tiffen, Joseph, & McCormick, Ernest J. Industrial psychology. Englewood cliffs, N.J.: Prentice-Hall, 1965.
- Tyler, Leona E. The psychology of human differences. (3rd ed.) New York: Appleton-Century-Crofts, 1965.
- Tyler, Ralph. Basic principles of curriculum and instruction syllabus for education 305. Chicago: Chicago University Press, 1949.
- United States Department of Labor, Manpower report of the President: A report on Manpower requirements, resources, utilization, and training. Washington, D.C.: Author, 1972.
- United States Department of Labor, Manpower Administration. Dictionary of occupational titles. Vol. 2. Occupational classification and industry index. (3rd ed.) Washington, D.C.: Author, 1965.
- Uhbrock, Richard S. 2000 scaled items. Personnel Psychology, 1961, 375-420.
- Valentine, C. A. Culture and poverty: Critique and counter-proposals. Chicago: University of Chicago Press, 1968.
- Vallee, Frank G. Eskimos of Canada as a minority group: Social and cultural perspectives. Paper presented to the Conference on Cross-Cultural Education in the North, Montreal, August, 1969.
- Vroom, Victor H. Some personality determinants of the effects of participation. In Smelser, N. J., & Smelser, W. T. (Eds.), Personality and social systems. New York: John Wiley, 1964.
- Willmott, W. E. The Eskimo community at Port Harrison, P. Q. Ottawa: Canada Department of Northern Affairs and National Resources, 1961.

Wrenn, C. Gilbert. Human values and work in American life. In Borow, Henry (Ed.), Man in a world at work. Boston: Houghton Mifflin Co., 1964.

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APPENDIX A



26-Category Student Performance Record  
and Instructions for Rating

CHURCHILL VOCATIONAL CENTRESTUDENT PERFORMANCE RECORD

The purpose of this diagnostic device is to identify behavioral characteristics of students at the Churchill Vocational Center. The device is intended to identify actual performance and not presumptive ability. The kind of behavior each individual exhibits at present is indicated by singling out, by circling the letter beside the phrases which best describe him. Words or phrases may be added to give a complete description either under the appropriate trait category or at the end.

The Performance Record will be used initially as a rating scale to allow statistical analyses. Incidents of student behavior were recorded and grouped by teachers into 26 trait categories.

Only samples of behavior that fall at either extreme of a behavioral trait are included. The rating for each trait should be an overall judgment, using a 5-point scale ranging from 1 for non-effective behavior to 5 for effective behavior. The following scale may assist:

slight amount  
fair amount  
fairly large amount  
large amount  
very large amount

To summarize the directions:

1. Circle or X words and phrases that best describe behavior observed.
2. Assign a numerical score between 1 and 5 to an overall judgment of each trait.
3. Complete each category.

CHURCHILL VOCATIONAL CENTRE  
STUDENT PERFORMANCE RECORD

Student \_\_\_\_\_ Teacher \_\_\_\_\_ Course \_\_\_\_\_ Year \_\_\_\_\_ Date \_\_\_\_\_

<u>RATING</u>	<u>NON-EFFECTIVE BEHAVIOR</u>	<u>EFFECTIVE BEHAVIOR</u>
—	<p>1. MENTAL ABILITY</p> <p>cannot think through or visualize a process</p> <p>cannot pick up where he left off without coaching</p> <p>cannot apply basic learnings to calculations or layout</p> <p>never has the answer to a question</p>	<p>catches on quickly</p> <p>retains knowledge, skills</p> <p>can apply learnings from one situation to another</p>
—	<p>2. INTELLECTUAL CURIOSITY</p> <p>gives little thought to "why"</p> <p>responds to new ideas with interest and alterness</p>	<p>asks questions, often beyond the lesson level</p> <p>pursues answers to question, whether or not directly raised</p> <p>asks for extra assignments, reference material, work</p>
—	<p>3. CREATIVE ABILITY</p> <p>stuck if he has to use imagination</p> <p>unable to create own design; depends on others for ideas</p> <p>likes to follow a pattern or set of instructions</p>	<p>thinks of substitute materials</p> <p>suggests new ways to do something</p> <p>uses initiative to improve a project</p> <p>likes to meet his own designs, ideas</p>

<p>— 4. STANDARDS, TOLERANCES</p> <p>insists on starting over if error is made  requests fresh material if error is made  quits after making a series of errors  cannot distinguish when to use quick/rough  or careful finishing techniques</p>	<p>can meet reasonable tolerances or standards  uses time, material, technique appropriate to product required  apologizes for (but completes) work with an unusual number of errors  recognizes, expresses dissatisfaction about dirty work place, tools, machines  -- thinks conditions reflect output  insists on correcting an error to his satisfaction</p>
<p>— 5. ABILITY TO WORK INDEPENDENTLY</p> <p>needs a great deal of supervision, instruction as he progresses  unable to work on his own  depends on classmates  cannot make/follow a work plan</p>	<p>can develop, adapt, or follow a work plan  sets to work with minimum instruction  likes to figure things out for himself  identifies step where help is needed; can go ahead on his own  can work ahead at his own speed</p>
<p>— 6. ATTENTIVENESS, INTEREST, AMBITION</p> <p>daydreams, forgets, inattentive, easily distracted  finds excuses not to work  short attention/concentration/interest span  does not respond or participate  engages in horseplay, distracts others  sloughs off work  wastes time, waits for others to do task</p>	<p>eager to learn, to work, to finish assignment  takes pride in work  asks for or looks for more work  oriented toward achievement  concentrates, how quickly time passes  continues activity outside or after course ends  appears to enjoy work</p>

<p>— 7. PERSISTENCE, STICK-TO-IT-IVENESS  quits if difficulty is encountered  quits after trying unsuccessfully  goes on to something else if a mistake is made  loses interest in subject after achieving poorly</p>	<p>determined to finish a task, even when difficulties slow progress  tries again after an error is made</p>
<p>— 8. REACTION TO PRESSURE  is confused when under pressure  does not perform best in exams</p>	<p>works well under reasonable pressure</p>
<p>— 9. RESPONSIBILITY, RELIABILITY  evades responsibility  forgets, misuses school or personal belongings  neglects assignments  says he completed work another has done for him</p>	<p>responds to needs of situation  sees what needs to be done and ensures it is done  will catch up on missed work  can be counted on to do what he says he will do  returns materials, reports missing, or broken equipment, etc.</p>
<p>— 10. WORK HABITS  not able to organize work on his own  produces little  requires prodding to work  work is quick/sloppy, inconsistent  does not use correct technique  comes unprepared  dislikes/evades clean-up work  exposed to injury through careless/fool-hardy practices  unwilling to participate in practical work</p>	<p>plans his work/anticipates next step  work is consistently well done  takes pride in work, care in use of equipment  work is orderly/clean/neat/quick/thorough  uses safe practices  follows job through to completion  willing to do any task</p>

- |  |   |
|--|---|
| — 11. RECOGNITION OF ABILITY<br>never seeks help, but is behind everyone<br>and knows it<br>would not ask when he did not know what to<br>do<br>does not recognize limits of ability in<br>selecting projects  | notifies instructor of error/difficulty<br>asks for help stating his difficulty<br>asks for special job within ability range<br>whenever possible   |
| — 12. FOLLOWING INSTRUCTIONS<br>does not follow instructions, even simple<br>ones<br>does not read/listen to instructions<br>requires individual demonstration<br>requires repeated instructions   | follows instructions with little or no<br>assistance<br>can replicate work correctly with minimum<br>instruction<br>repeats instruction as he works   |
| — 13. JUDGING, COMPREHENDING<br>cannot visualize or plan through a complete<br>project<br>unable to plan a sequence of work<br>strives for results only on jobs that<br>interest him<br>can replicate a demonstration with skill<br>but little understanding | comprehends job objectives clearly<br>applies learnings to present, future sit-<br>uation<br>understands why he is allowed to make mis-<br>takes  |
| — 14. SELF-CONFIDENCE<br>needs constant reassurance<br>lacks confidence to try an assignment<br>feels he is always a loser<br>has difficulty making the smallest deci-<br>sions<br>under or over estimates ability<br>boastful                               | has unusual poise and dignity<br>contributes to class work, discussion<br>has a fairly good idea of his own ability<br>chooses to work with a student not often<br>asked<br>responds to needs of others |

- |   |   |  |
|---|---|--|
| — 15. WORKING WITH OTHERS                   | interrupts, disrupts others<br>blames others for mistakes, horseplay<br>does not help/share/work with others<br>forcefully gets what he wants<br>lets others do the work  | organizes, carries out group activities<br>without being officious or bullying<br>helps another, even at inconveniences to<br>self<br>volunteers to do extras to benefit all<br>tolerant, considerate of others<br>patient, anxious to help others |
| — 16. ACCEPTANCE OF ORGANIZATION PROCEDURES | argues with, rejects instructions, insists<br>on own method with poor results<br>misuses, wastes materials<br>does not conform to expected behavior with<br>no consideration of others                              | adapts to routine of a situation<br>fits into the established program of work  |
| — 17. USE OF TIME                           | wastes time<br>does not complete assignment in allotted<br>time<br>cannot see need for punctuality<br>works past cleanup call<br>completes work/cleanup early, then does<br>nothing                                 | uses every spare minute<br>can adhere to a time schedule<br>first to arrive, last to leave<br>goes on to other work without being told   |
| — 18. EMOTIONAL CONTROL                     | complains of feeling ill or lazy<br>moods/work is erratic<br>angers or offends easily<br>withdraws, absents, quits with no explanation<br>mutters complaints, especially in Eskimo<br>blames other people, machines | even tempered, even under provocation or<br>stress<br>cheerful, friendly<br>apologizes for immature behavior<br>adjusts to new conditions; recognizes distant fields (home or south) look greener  |

- |                                       |  |   |
|---------------------------------------|--|---|
| — 19. ATTENTION SEEKING               | seeks attention by asking for help/intentional error/misdemeanor/feigned illness or injury<br>directs instructor to his interests without concern for needs of others<br>asks permission to do the routine taunts, teases, then cries when rebuked | takes an active part without hogging or interrupting  |
| — 20. CRITICISM                       | reacts unfavorably to criticism<br>sulks when wrong or reprimanded<br>feels badly when attention is drawn to error<br>mutters in Eskimo when reprimanded   | accepts criticism of work and tries to improve<br>recognizes mistakes, accepts explanations<br>asks how he is doing   |
| — 21. MANUAL DEXTERITY                | does not want to do manipulative work<br>lacks manual dexterity<br>practical work is hesitant and clumsy   | prefers hand tool methods to machines<br>takes pride in hand methods<br>enthusiastic about practical work, less enthused about theory   |
| — 22. PERSONAL DEPORTMENT, APPEARANCE | personal habits are not socially acceptable<br>speech often seems rude or inappropriate<br>wears inappropriate clothing<br>frequently makes social blunders  | conducts himself in a socially acceptable way<br>apologizes for errors of behavior, corrects speech<br>jokes with adults in an acceptable way<br>maintains neat, clean appearance<br>dress, deportment is attractive, appropriate |



—	<p>23. LANGUAGE</p> <p>verbal or written instructions poorly understood</p> <p>evades work requiring writing/reading</p> <p>reluctant to speak up</p> <p>grumbles in Eskimo when displeased</p>	<p>can follow verbal/written instructions</p> <p>tries to improve vocabulary/spelling/verbal expression</p> <p>speaks up</p> <p>can ask for information, identify difficulty, explain to others</p> <p>repeats instructions</p>
—	<p>24. ORIENTATION TO PEOPLE</p> <p>prefers to work alone</p>	<p>prefers to work on group project</p> <p>works well with others - children</p>
—	<p>25. ORIENTATION TO DATA</p> <p>makes errors with numbers</p> <p>makes errors with information</p>	<p>does well on paper; with theory</p> <p>likes working with numbers/words/symbols/ideas</p>
—	<p>26. ORIENTATION TO THINGS</p>	<p>appreciates fine tools</p> <p>likes precision work</p>

ADDITIONAL NOTES ON STUDENT BEHAVIOR:

21-Category Student Performance Record  
and Instructions for Use As a Rating Scale

CHURCHILL VOCATIONAL CENTRESTUDENT PERFORMANCE RECORDInstructions for use as a Rating Scale

This is the STUDENT PERFORMANCE RECORD which has been developed co-operatively with you and is directed by Department of Indian Affairs and Northern Development and Iowa State University of Science and Technology. You are asked to participate in the next step of this research by using the STUDENT PERFORMANCE RECORD as a rating scale. You are requested to rate the students that are identified. No substitution should be made as the sample of students and raters has been carefully selected.

It is extremely important for you to rate each trait. If you omit any categories, it will hinder the development of the final form of the PERFORMANCE RECORD.

You are asked to make an overall rating for each trait category. Each trait is defined by specific behaviours you recorded and grouped into categories. The behaviours are polarized at either extreme of desirability or effectiveness for performance in a work situation. The student is rated on his overall performance for each trait.

Please make a judgement on the basis of what you know about the student. One of the assumptions of the study is that you will judge the students the same way their future employers will judge them. Some of the judgements employers will make will be based on limited information.

You are asked to rate each category by using a number from 1 to 99. Your judgement on a student's behaviour on every trait will be based on your estimation of what is required in the world of work and what students may be expected to do in a training situation.

- (a) If you believe the student exhibits completely non effective behaviour with respect to the trait, write 1 in the blank provided for your rating.
- (b) If you believe that the student exhibits completely effective behaviour with respect to the trait, write 99 in the blank provided for your rating.
- (c) If you do not know how to answer, you are unsure, you do not feel the trait is clear, or you do not have an opinion, or you believe the student exhibits neither effective nor non effective behaviour with respect to the trait, write 50 in the blank provided for your rating.
- (d) Use numbers 2 to 49 and 51 to 98 to indicate intervening levels at which the student exhibits non effective or effective behaviour.

---

When rating the trait categories, please use the following scale.

'	'	'	'	'	'	'	'	'	'	'
1	10	20	30	40	50	60	70	80	90	99
completely					neither					completely
NON-EFFECTIVE					EFFECTIVE nor					EFFECTIVE
BEHAVIOUR					NON-EFFECTIVE					BEHAVIOUR
					BEHAVIOUR					

---

These ratings will be used only to statistically test the STUDENT PERFORMANCE RECORD as a diagnostic tool and will not be retained on individual student records.

CODE	
Group	Reading
Sex	Mathematics
Year	I.Q.
Student	
Teacher	

Student \_\_\_\_\_  
 Course \_\_\_\_\_  
 Teacher \_\_\_\_\_

# CHURCHILL VOCATIONAL CENTRE

## STUDENT PERFORMANCE RECORD

When rating the trait categories, please use the following scale.										
,	,	,	,	,	,	,	,	,	,	,
1	10	20	30	40	50	60	70	80	90	99
completely NON-EFFECTIVE BEHAVIOUR					neither EFFECTIVE nor NON-EFFECTIVE BEHAVIOUR					completely EFFECTIVE BEHAVIOUR

TRAIT NO.	YOUR RATING	NON-EFFECTIVE BEHAVIOUR	EFFECTIVE BEHAVIOUR
1.	_____	UNDERSTANDING WORK a. Unable to think through or visualize a process b. Cannot pick up where he left off without coaching c. Cannot apply basic learnings to calculations or layout	A. Catches on quickly B. Retains knowledge, skills C. Can apply learnings from one situation to another
2.	_____	INTELLECTUAL CURIOSITY a. Gives little thought to "why"	A. Pursues answers to questions, whether or not directly raised
3.	_____	JUDGEMENT a. Cannot distinguish between good or poor standards b. Cannot distinguish when to use quick/rough vs. careful finishing techniques c. Fails to select tools, materials or method for work assignment d. Unable to plan a sequence of work e. Unable to analyze and correct errors	A. Can meet reasonable tolerances or standards B. Uses time, material, techniques appropriate to product required C. Comprehends objectives of a task clearly D. Can develop, adapt or follow a work plan E. Can analyze what he has done and made required adjustments
4.	_____	FOLLOWING INSTRUCTIONS a. Has difficulty following written instructions b. Has difficulty following verbal instructions c. Requires demonstration, often individually d. Requires repeated instructions	A. Follows instructions with little or no assistance B. Sets to work with minimum instruction

TRAIT YOUR  
NO. RATING

5.             
CREATIVENESS  
a. Stuck if he has to use imagination  
b. Unable to create own design  
c. Depends on others for ideas  
d. Likes to follow a pattern or set of instructions  
A. Thinks of substitute materials  
B. Thinks of new ways to do a task  
C. Uses initiative to improve a project  
D. Likes to make his own designs, ideas
6.             
ABILITY TO WORK INDEPENDENTLY  
a. Needs a great deal of supervision  
b. Unable to work on his own  
c. Depends on others  
A. Can work ahead at his own speed  
B. Can go ahead on his own  
C. Likes to figure things out for himself
7.             
RATE OF PRODUCTIVITY  
a. Slow  
b. Produces little  
c. Does not complete task in allotted time  
A. Quick worker  
B. Works quickly and efficiently  
C. Completes tasks in allotted time
8.             
QUALITY OF WORK  
a. Work is sloppy  
b. Work is poorly done  
c. Does not correct errors  
A. Work is consistently well done, thorough
9.             
ORDERLINESS  
a. Work habits are untidy, disorderly  
b. Evades clean up  
A. Work is orderly, clean, neat  
B. Takes care in use of equipment
10.             
SAFETY  
a. Exposed to injury through careless practices  
b. Exposed to injury through foolhardy practices  
A. Uses safe practices  
B. Reports any broken or unsafe equipment  
C. Corrects unsafe conditions
11.             
USE OF TIME  
a. Wastes time  
b. Cannot see need for punctuality  
A. Uses every spare minute  
B. Can adhere to a time schedule
12.             
WORK INTEREST  
a. Forgets, inattentive, easily distracted  
b. Does not respond or participate  
c. Evades work  
A. Eager to learn, to work, to finish assignment  
B. Asks for or looks for more work  
C. Continues activity outside or after course ends
13.             
PERSEVERENCE  
a. Quits if difficulty is encountered  
b. Loses interest after achieving poorly  
A. Determined to finish a task even when difficulties  
    slow progress  
B. Tries again after an error is made

TRAIT YOUR  
NO. RATING

- |     |       |   |  |
|-----|-------|---|--|
| 14. | _____ | REACTION TO PRESSURE<br>a. Performs poorly when under pressure<br>b. Quits if pressure becomes too great  | A. Works well under reasonable pressure  |
| 15. | _____ | REACTION TO CRITICISM, SUGGESTIONS<br>a. Reacts unfavourably to criticism<br>b. Does not accept suggestions readily<br>c. Sulks when reprimanded  | A. Accepts suggestions and tries to improve<br>B. Recognizes mistakes, accepts explanations<br>C. Asks how he is doing   |
| 16. | _____ | EMOTIONAL STATE<br>a. Moods/work is erratic<br>b. Angers or offends easily<br>c. Complains of feeling ill or lazy<br>d. Withdraws, absents, quits with no explanation<br>e. Blames other people, machines | A. Even-tempered, even under provocation or stress<br>B. Cheerful<br>C. Can adjust to new conditions   |
| 17. | _____ | SELF-CONFIDENCE<br>a. Needs constant reassurance<br>b. Lacks confidence to try an assignment<br>c. Has difficulty making the smallest decisions<br>d. Under or over estimates ability                     | A. Has unusual poise and dignity<br>B. Contributes to class work, discussion<br>C. Makes decisions, carries out tasks with assurance<br>D. Has a fairly good idea of his ability |
| 18. | _____ | COOPERATIVENESS<br>a. Rejects instructions, insists on own methods<br>b. Does not conform to accepted behaviour<br>c. Disrupts others<br>d. Does not help/share/work with others                          | A. Fits into the established program of work<br>B. Adapts to routine of a situation<br>C. Works harmoniously with others   |
| 19. | _____ | PERSONAL DEPORTMENT AND APPEARANCE<br>a. Personal habits are not acceptable<br>b. Speech often seems rude or inappropriate<br>c. Clothing/grooming is inappropriate                                       | A. Conducts himself in a socially acceptable way<br>B. Converses, jokes in an acceptable way<br>C. Maintains neat, clean appearance  |
| 20. | _____ | ABILITY TO COMMUNICATE<br>a. Understands poorly verbal/written instructions<br>b. Evades work requiring writing/reading<br>c. Reluctant to speak up   | A. Can follow verbal/written instructions<br>B. Tries to improve vocabulary/spelling/verbal expression<br>C. Speaks up<br>D. Can ask for information                             |
| 21. | _____ | RELIABILITY<br>a. Evades responsibility<br>b. Forgets, misuses school or personal belongings<br>c. Neglects assignments   | A. Can be counted on to do what is required<br>B. Returns materials, reports missing or broken equipment<br>C. Will catch up on missed work                                      |



APPENDIX B: SAMPLING PLAN



## CHURCHILL VOCATIONAL CENTRE

## STUDENT PERFORMANCE RECORD

Sample of Ratees and Raters for Statistical Analysis

Alternative 1: 20 students ) 5 groups and no overlap.  
                   3 teachers )

<u>Students</u>	<u>Teachers</u>	<u>Course</u>	<u>Semester of Last Meeting</u>
Boys Year 1 Class A + D (21)	Miss Smith Mr. Taylor Mr. Barry	H.E. Acad. Trades	4 4 3/4
Boys Year 1 Class B + C (22)	Miss MacFarlane Mr. Gill Mr. Yetman	H.E. Acad./ Guid. Trades	1 or 2 4 4/3
Girls Year 2 Class A + B (19)	Mrs. Herman Mr. Blais Mrs. Evenson	H.E. Acad. Guid.	4 4 3
Girls Year 3 Class A + B (18)	Miss Anderson Mr. Wilson Mr. Cannon	H.E. Acad. Trades	1 or 2/4 4 4
Boys Year 3 Class A, B + C (25)	Mr. Grundy Mr. McCallion Mr. Sollid	Phys. Ed. Acad. Trades	4 4 4

## APPENDIX C: CODING PLAN

Coding Plan

<u>Column</u>	<u>Identification</u>
1	Group 1-5
2	Sex 1 or 2 (male or female)
3	Class year 1, 2, or 3
4-5	Student number
6	Card no. 1
7-48	Teacher 1 responses to 21 traits on student in 2 digit fields
49-80	Card 1 Teacher 2
7-16	Card 2
17-54	Card 2 Teacher 3

## APPENDIX D: TOTAL MATRIX

NAMES OF TRAIT-CATEGORIES  
FOR THE OBSERVATION RECORD

1. Understanding Work
2. Intellectual Curiosity
3. Judgment
4. Following Instructions
5. Creativeness
6. Ability to Work Independently
7. Rate of Productivity
8. Quality of Work
9. Orderliness
10. Safety
11. Use of Time
12. Work Interest
13. Perseverance
14. Reaction to Pressure
15. Reaction to Criticism, Suggestions
16. Emotional State
17. Self Confidence
18. Cooperativeness
19. Personal Deportment and Appearance
20. Ability to Communicate
21. Reliability



[illegible]

<sup>a</sup>E = English.  
<sup>b</sup>M = Mathematics.