

DOCUMENT RESUME

ED 249 028

RC 014 984

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 TITLE Learning Styles and Indian Students: A Review of Research.  
 PUB DATE Jul 84  
 NOTE 13p.; Paper presented at the Mokakit Indian Education Research Conference (London, Ontario, Canada, July 25-27, 1984).  
 PUB TYPE Reports - Evaluative/Feasibility (142) -- Speeches/Conference Papers (150) -- Information Analyses (070)

EDRS PRICE MF01/PC01 Plus Postage.  
 DESCRIPTORS \*American Indian Education; \*Canada Natives; \*Cognitive Style; Elementary Secondary Education; \*Eskimos; Foreign Countries; Formative Evaluation; Learning Modalities; \*Process Education; \*Teaching Methods  
 IDENTIFIERS Canada; \*Relevance (Cultural)

ABSTRACT

To accomplish cultural relevance in the classroom for Indian students, changes in instructional methods must complement alterations in course content. Since learning styles, like cultural features, may vary for Indian students, the effective teacher will master a matching teaching style adapted to emphasize unique cultural strengths rather than to compensate for perceived inadequacies. Although there remain individual differences, common patterns of intellectual abilities, thinking styles, and interests characterize those who share a common cultural background. The resulting learning style encompasses sensory mode and perception, physical setting, general learning conditions, and cognitive processing. Learning style is "the usual or characteristic manner of acquiring knowledge, skills or understanding." Studies of Indian learning styles have focused on perceptual and spatial abilities, environmental factors, impulsive vs. reflective response, relational vs. analytical styles, and simultaneous vs. successive processing. Results indicate Indian student strength in imaginal coding, holistic processing, and simultaneous processing, but relative weakness in verbal coding. Teachers may be able to develop strength in simultaneous processing into successive processing ability. (MM)

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LEARNING STYLES AND INDIAN STUDENTS

A REVIEW OF RESEARCH



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Presented to the  
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London, Ontario  
July, 1984

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## LEARNING STYLES AND INDIAN STUDENTS

## A REVIEW OF RESEARCH

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## Introduction

"I am convinced that if I understood more about the learning styles of my native Indian students, I could do a far better job of helping them reach their educational potential. I know that we, as teachers, are missing many educational opportunities because we assume that all our students learn the same way." These words, from a teacher at a professional development workshop, reflect the concerns of a growing body of teachers and educational researchers.

Attempts to bring cultural relevance to Indian students in the classroom have focussed largely on curriculum--the content, rather than on instruction--the process. Learning style has the potential for focussing cultural relevance on the instructional process. Attempts to improve educational achievement of Indian students have too frequently emphasized a "deficit approach" concentrating on overcoming weaknesses. Learning style has the potential for emphasizing strengths.

There is a great deal of promise to a learning styles approach which, first, attempts to understand differences and similarities in the learning styles of Indian students and, second, attempts to match teaching styles to learning styles.

Research has demonstrated that there is a cultural component to learning style differences (Berry, 1976). Messick concluded that "ethnic groups, independent of socioeconomic status, display characteristic patterns of abilities that are strikingly different from one another" (1976, p. 135). Lesser found that "people who share a common cultural background will also share, to a certain extent, common patterns of intellectual abilities, thinking styles and interests" (1976, p. 137).

This is not to deny individual differences. It is to say that cultural differences are one component of individual differences. Nor is it to say that cultural differences are greater or more important than individual differences. That remains an unanswered question. (For more information on cross-cultural differences and cognitive processes, see Berry, 1976, 1980 and Dasen, 1977).

The purpose of this paper is to review the research on learning style and Canadian native Indian students. The paper includes some references to the broader cross-cultural context of learning style. It also includes some reference to studies of the Metis and the Inuit, as well as the Native Indians of the United States. However the main focus is on Canadian Indians.

### Meaning of Learning Style

There is a confusing array of definitions of learning style. Indeed few studies ever define the term precisely. The reader is usually left with only an implied definition. The semantic problem is exacerbated by confusion with related terms such as cognitive style, teaching style, and learning abilities.

#### 1. Various Meanings

##### 1.1 Sensory Mode and Perception

Many studies limit learning style to sensory input modes, attempting to assess the relative effectiveness of learning through hearing, seeing or touching. Some studies broaden this slightly to include general perceptual abilities. A recent review, using this relatively limiting definition, was provided by Kaulbach (1984).

##### 1.2 Physical Setting

Other studies limit learning style to the physical characteristics of the setting in which the learning takes place. The approach of Dunn and Dunn, particularly through their Learning Style Inventory, uses this approach (Dunn and Dunn, 1978, Davidman, 1981) by emphasizing stimuli and elements.

##### 1.3 General Learning Conditions

My colleagues and I have carried out a series of structured interviews and workshops with teachers. We have found that for many teachers, learning style refers to the broad range of learning conditions surrounding the learner including modality, physical setting, type of instruction and teacher/learner relationships (see also Hunt, 1979, p. 27). We have also found that many teachers do not clearly distinguish between learning style and educational problems faced by their Indian students (Report in preparation).

##### 1.4 Learning style as Cognitive Processes

A considerable amount of research has been carried out which regards learning style as internalized cognitive processes. Indeed this has resulted in confusion with the term "cognitive style" (see discussion below). The concern in such studies is not for environmental and stimulus conditions but for the

cognitive processes by which the learner processes information and which determine how the learner responds to his or her environment. Terms such as impulsive/reflective, verbal/nonverbal, global/analytic and field dependent/field independent are common to such studies.

### 1.5 Style as "Characteristic", "Usual", "Preferred" or "Best"

The connotation of the word "style" varies considerably between researchers. For some it refers to a pervasive psychological characteristic that cuts across intellectual, perceptual and interpersonal functioning (Witkin and Berry, 1975; Keefe, 1979, p. 4; Laboratory of Comparative Human Cognition, 1982, p. 659-663; Gregorc, 1984, p. 51). Style as the "usual" or "preferred" manner of learning is implied in a number of learning style scales (Satterly and Brimer, 1972; Mamchur, 1981). Style is also taken as the "best" or "most effective" manner in which a person learns (Hunt, 1979).

This writer prefers a use of style that connotes a broader application than "preferred" or "best". The use of "style" as the "characteristic" manner in which a learner functions is more effective. This makes it possible to separate out the question of preference and effectiveness. For example there are situations in the characteristic manner of learning to read, for a particular Indian student, is not effective or is not preferred.

## 2. Confusion With Other Terms

### 2.1 Cognitive Style and Learning Style

A great deal of research has been carried out in recent years, on the concept of cognitive style. The application of cognitive style research to learning styles has been of great benefit to learning style research. Unfortunately there is also a great deal of confusion between the meaning of the two terms.

Messick describes cognitive styles as "consistent individual differences in the ways of organizing and processing information . . . . These styles represent consistencies in the manner or form of cognition, as distinct from the content of cognition or the level of skill displayed . . . ." (1976, p. 5). In the Handbook of Human Intelligence, cognitive styles are defined as "characteristic, self-consistent modes of functioning found pervasively throughout an individual's cognition" (Laboratory of Comparative Human Cognition, 1982, p. 658).

A clear distinction between cognitive style and learning style is not given in the literature. This writer prefers a distinction based on the difference between cognition and learning--a distinction which regards learning as one component cognition. Thus learning style is that component of cognitive style which applies to learning.

## 2.2 Teaching Style and Learning

Teaching and learning style can be distinguished on the basis of differences between teaching and learning. They are, in effect, two sides of the same coin; one side involving the learner, the other side involving the teacher. For example, a teacher's most effective teaching style may not correspond to the student's most effective learning style (see Smith and Renzuhl, 1984 for a more complete, practical discussion).

## 2.3 Learning Style and Learning Abilities

There is frequent confusion between learning style and learning abilities. Learning style relates to the characteristic or usual manner by which a student learns; learning abilities related to how effectively or how much a student learns. For example, a student may attempt to learn difficult concepts in science by conjuring up mental images (learning style), even though that student does not learn well (learning ability) by that process.

## 3. Proposed Definition

For the remainder of this paper learning style is defined, unless otherwise indicated, as:

the usual or characteristic manner of acquiring knowledge, skills, or understanding.

This definition is intended to be interpreted in its broadest sense to include all of the processes discussed above, from modality and perception to internal mediation and information processing. We have used this definition in our studies at the University of B.C. and have found that, although it lacks precision, it does convey the general sense in which we are using the term.

## The Studies

Despite a great deal of interest in learning styles by educators and the native Indian community, only a limited amount of research has been carried out. One group of studies dealt with modality and perceptual abilities (MacArthur, 1973, 1978). A much larger group of studies dealt with bipolar distributions, such as field dependence/field independence (Weitz, 1971) and global/analytical processing (Das et al, 1979). A small number of studies has been concerned with teaching and communication styles (Erikson and Mohatt, 1982; Scollon and Scollon, 1981). Very little research has been done on traditional Indian learning styles although two studies (Vernon, 1969 and Weitz, 1971) related general traditional cultures to learning style.

A great deal of attention has been devoted recently to hemispheric specialization and cognitive abilities, often referred to as right brain/left brain differences. Unfortunately a great deal of the writing has not been carefully founded in research and consists of highly questionable overgeneralizations (for example, see Ross, 1982). Excellent summaries of hemispheric specialization studies appear in Bradshaw and Nettleton (1981) and Allen (1983). There are likely some relationships between hemispheric specialization and learning style (Bradshaw and Nettleton, 1981, p. 62). However this writer is not aware of any such studies involving Indian students.

The remainder of this section summarizes the studies under the headings: (1) modality and perceptual studies; (2) bipolar distributions; (3) teaching and communication styles; and (4) traditional learning styles.

### 1. Modality and Perceptual Studies

Kaulback recently reviewed studies of the performance of Indian students on visual, auditory, and kinesthetic perceptual tasks (1984) although most of his studies involved American Indians and Eskimos. He interpreted the results of studies with the Draw-A-Man tests and the Illinois Test of Psycholinguistic Abilities as supporting the hypothesis that "Indian and Inuit children are most successful at processing visual information and have the most difficulty performing well on tasks saturated with verbal content....(However) it is too premature to imply from these results alone that Native children are deficit in their ability to conceptualize through language" (ibid, p. 30).

Vernon found that the most highly developed abilities for Canadian Inuit and northern Indian students were perceptual and spatial abilities (1969). Bowd (1971) found that Native boys had well-developed spatial/mechanical abilities.

These studies relate only indirectly to learning style in that they are concerned with learning abilities not style. There is no indication of the use to which these abilities are put in learning tasks, than if these abilities made up the "characteristic" manner of learning.

### 2. Bipolar Distributions

Many of the approaches to learning style and cognitive style are based on bipolar distributions of characteristics (e.g. impulsive/reflective), each pole having adaptive value in different circumstances. Some of these distributions have been researched extremely carefully, for example field dependence/field independence and simultaneous/successive processing. Others have not.

## 2.1 Field Dependent/Field Independent

Field dependence/field independence (FD/FI) is based on a continuum between those who are dominated by their surrounding field or environment (FD) and those who are independent of it (FI). An individual's position on this continuum is fairly consistent over a variety of perceptual, intellectual and social processes. For example an individual who can readily separate a figure from its embedded background (a perceptual process) will likely be able to separate out, readily, one component from a mathematical problem (an intellectual process). The FI person will impose his or her own structure on a field (spatial or conceptual) more readily. The FD is more socially aware and more responsive to those around him or her (Witkin et al, 1977).

MacArthur (1968) found that Canadian Eskimos and northern Indians, as representatives of hunting/gathering societies were more FI, that is, more able to impose a structure on a field when it has little inherent organization (e.g. unmapped territory), as a result of their living style and child rearing practices.

Weitz (1971) studied two Indian cultural groups, Algonkian and Athapaskan, and within these groups separated out urban, transitional and traditional groups as well as male-female and older-younger. She found that the overall group scored very high on FI; the Algonkians were more FI than the Athapaskans; the traditional people more FI than urban people; females more FI than males; and older people generally more FI than younger people.

There have been no developmental studies which have analyzed changes in FI/FD over the school years, or studies of FI/FD in relation to various types of learning tasks.

## 2.2 Impulsive/Reflective

The impulsive/reflective distribution relates to the speed with which an individual responds to a question, and the corresponding error rate. The impulsive learner responds more quickly and has a higher error rate. The reflective learner responds more slowly and has a lower error rate (Messer, 1976).

No studies of Indian subjects on this distribution have been reported. However, given the apparent cultural differences between Indian and non-Indian students in classroom question-and-answer sessions, this appears to be a fertile area for study.

## 2.3 Relational/Analytical

The relational/analytical conceptual style distribution was



described by Cohen (1969) as emanating from shared-function, primary, social groups (relational style) or formally organized relational groups. Koenig (1981) analyzed responses of Indian, Metis, Inuit and non-native subjects according to their relational and analytic styles. Koenig found that the Native subjects tended to think in relational styles whereas the non-Native subjects tended to think in analytic styles. The results also showed the Indian and Inuit subjects somewhat more analytical than the Metis subjects.

#### 2.4 Simultaneous/Successive

The simultaneous/successive processing dimension put forward by Das et al (1975, 1979) based on work by Luria (1966), has attracted a great deal of research interest.

Simultaneous processing refers to the synthesis of separate elements into a group, or perceiving things as a whole -- a holistic, global process. Successive processing refers to processing information in a serial or sequential order -- an analytic, ordered process (Das et al, 1975). For example, in early reading, sight word vocabulary uses simultaneous processing and phonics uses successive processing.

Krywaniuk (1974) tested low achieving, grade three Indian and white children and found that even though their general ability scores were equivalent, the Indian students scored higher on simultaneous measures and lower on successive measures than the white students. He also found that although both groups showed a similar factor structure, different factor loadings indicated that the Indian students were processing some of the tasks quite differently from the whites. Similar results were also obtained by Das, Manos and Kanungo (1975). Kaufman and Kaufman (1983, pp. 152-4) found similar results with Navajo children but not with a more assimilated group of Sioux children.

My colleagues and I are currently carrying out a study of 7 and 10 year-old Indian and non-Indian students in south-central B.C. to investigate this area more extensively. Preliminary results indicate that the Indian students have a relative strength in simultaneous processing and different factor loadings again showing different processing.

The simultaneous/successive results illustrate a serious mismatch between learning styles of Indian students and the teaching of beginning reading. Most beginning reading programs emphasize successive processes through a phonetic approach. However the strength of Indian students is in simultaneous processing. Is this mismatch part of the cause of the extensive reading problems of Indian students? We are presently developing a multiple intervention study to begin answering that question.

The simultaneous/successive continuum can be related to

other cognitive style continua including FI/FD, serialism/holism, reflection-impulsivity and conceptual level (Das et al, 1979, pp. 140-144), and to the analytic/holistic dichotomy (Bradshaw and Nettleton, 1981, p. 51). It is securely based in a theoretical model and there are number of precise instruments for measuring on the continuum (Das et al, 1979, pp. 51-53). The continuum also relates to the intuitive notion of traditional Indian cultures as holistic and global rather than analytic and sequential.

As a result the simultaneous/successive continuum shows considerable potential for helping researchers and educators to understand the relationship between learning styles and cultural differences as these apply to Indian students.

## 2.5 Other

There are other bipolar distributions which are discussed in the literature, but which have not been applied to Indian students. Some of these are: Action Oriented/Reflection Oriented (Mamchur, 1981); Verbal/Nonverbal (discussed to some extent under Modality and Perceptual studies) and Concrete/Abstract. Two other continua that have been proposed by teachers are Trial-and-Error/Observe-and-Do and Cooperation/Competition/Independence.

## 2.6 Some Tentative Results from Our Studies

Data from our studies at U.B.C. are being analyzed at the present time. They will be reported as completed. Some of our tentative results suggest: (a) relative strength among Indian students in imaginal coding (as measured by paired-associate tasks); (b) relative weakness in verbal coding; (c) relative strength in holistic processing on both verbal and non-verbal tasks; (d) relative strength in simultaneous processing; but a possibility that successive processing abilities develop much slower than simultaneous skills and (e) the possibility of using strengths in simultaneous processing to develop successive processing. Results on other bipolar distributions are not ready to report at this time.

## 4. Teaching and Communication Styles

Teaching and communication styles are related to learning styles; although they are not the same. Some exciting work has been done by Scollon and Scollon (1982), Phillips (1972) and Erickson and Mohatt (1982) on culturally based communication styles as they apply to the classroom. Kleinfeld has completed valuable studies of teacher effectiveness with Indian students (Kleinfeld, 1970).

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