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## Exploring Hong Kong Junior Secondary Students' Learning Styles and Their Impact on Motivation and Learning Strategies

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### Background

In the past two decades, learning styles have attracted much research attention. This research has shown that learning style orientations play an important role in student learning, and they moderate the effectiveness of classroom teaching (Rayner & Riding, 1997; Cassidy, 2004). Student motivation is regarded as one of the most powerful determinants of students' success and failure in school (Hidi & Harackiewicz, 2000; Pintrich, 2003) and it is a central issue in studies of learning and teaching contexts. However, little research has been undertaken into the relationship between students' learning styles and their motivation and learning strategies, especially in a non-Western context like Hong Kong.

### Research Questions

The present study aims to fill in some of the gaps in learning style research by examining students' learning styles in Hong Kong and by seeking answers to two specific questions:

- What are the learning styles of Hong Kong junior secondary students?
- What is the influence of various learning styles on students' motivation and learning strategies?

### Methods

The research instrument used in this study had two sections:

- the 54-items learning style orientation inventory (LOSI) developed by Towler and Dipboye (2003) was employed to measure students' learning styles, including five types of orientations: discovery, group, experiential, structured and observational;
- the 36-items LPQ suggested by Biggs (1992) was used to assess students' three kinds of motivation and learning strategies: surface motivation/strategy, deep motivation/strategy and achievement motivation/strategy.

All items in the two instruments were scored on a 5-point Likert scale from 1 (not at all true of me) to 5 (very true of me). The research instrument was pilot tested and then used with 9,733 Hong Kong junior secondary students (Grades 7 to 9, aged 12 to 16) who participated voluntarily in this study.

### Frame

The research field of learning style is both extensive and confusing. There is no dominant theory in the field and over seventy different approaches have been identified (Cassidy, 2004). Many terms such as cognitive style, problem-solving style, thinking style, are postulated simultaneously with the term "learning style". Occasionally these terms are used interchangeably and at other times they are afforded separate and distinct definitions (Zhang & Sternberg, 2005). Rayner and Riding (1997) have identified three research approaches to learning style: the personality-centered approach, the cognition-centered approach and the learning-centered approach. Following the third approach, the present study defines learning styles as individuals' preferred ways or methods of learning which allow individuals to learn best.

Most of the studies on learning style have been small-scale studies using samples of university students (e.g., Busato, Prins, Elshout, & Hamaker, 1998, 2000; Cassidy, 2004, 2006; Severiens & Dam, 1994; Vermunt, 1998). These studies explored the relationships between learning style and other constructs or factors, such as gender (Severiens & Dam, 1994; Wehrwein, Lujan, & DiCarlo, 2007), assessment strategies (Cassidy, 2006), intellectual ability and achievement motivation (Busato, Prins, Elshout & Hamaker, 2000). However, in the literature, there is a dearth of studies on primary or secondary students' learning style, especially in Hong Kong.

Owing to the considerable variety of individual differences evident in classroom settings, students' performances in the context of the same learning tasks and activities show considerable differences. Biggs (1987, 1992) introduced a 3P theory to explain the relationships between the presage factors, process and performance of student learning which consists of motivation and strategies linking the individual differences to the learning task. The learning process questionnaire (LPQ) developed by him has been widely used in studies on students' motivation and learning strategies, especially in field of higher education (e.g., Chan, 2003; Kember & Leung, 1998; Kember, Wong, & Leung, 1999).

## **Research findings**

### Descriptive analysis

After deleting 10 items of LSOI, the reliability of the five subscales in the LSOI ranged from .72 to .83, and the reliability of the six subscales in the LPQ ranged from .66 to .78, implying that the internal consistency of the instrument used in the present study was acceptable.

The mean and standard deviations are examined. We found that the magnitudes of the means of variables in LSOI, following the sequence from highest to lowest, is experiential, observational, group, discovery and structured. For motivation, the sequence is deep, surface and achieving. For strategy, the order is deep, achieving and surface.

Gender, grade and banding differences were analyzed using T or F test.

### Impact of students' learning styles on motivation and learning strategies

According to the results of confirmatory factor analysis, three factors in LSOI, discovery, experiential and observational have been combined as one factor because there are extremely high correlations among them. Then, structural equation modeling has been used to examine the relationships between learning styles and students' motivation and learning strategies.

Based on these findings, this paper will discuss the following issues related to students' learning styles, motivation and learning strategies:

- (1) the combination of factors in LSOI and its reasons;
- (2) the relationships between learning styles and students' learning;
- (3) match and mismatch between students' learning styles and teaching practices.