Learning Styles of the Academically Talented

An Honors Thesis (ID 499)

by

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PROBLEM STATEMENT

Until recently individual learning style has received little attention among educators. Nevertheless, the understanding of learning processes helps educators make instructional methods more responsive to the needs of individual students. Dunn, Dunn, and Price (1981) have hypothesized that factors such as environment, emotion, physical set, sociology, and psychology affect student learning. Research reveals that college students can accurately predict their preferential learning style for high academic achievement (Farr, 1971). The purpose of this study was to determine the specific learning style characteristics of academically talented (Honors College) college students. The research data gathered in the PEPS profiles could be used to match learning environments to specific learning styles. As a future educator, my personal goal is to nurture and promote these academic talents and preferences in elementary students in order to enhance college and adult learning. The ultimate goal is to promote achievement in the Honors College program by considering the dominant student learning styles of those individuals assessed.

REVIEW OF LITERATURE

Many colleges and universities have special programs designed for the academically talented and the underachieving student similar to the Honors College program at Ball State University. Regardless of the school or program, college students can accurately predict the modality in which they will achieve superior performance (Farr, 1971). In fact, students score higher on tests and have a better attitude toward school when taught in their preferred style (Domino, 1970; Farr, 1971). When learning, teaching, and testing are done in accordance with student learning styles, colleges can produce students with greater academic achievement (Cafferty, 1980; Carbo, 1980; White, 1980) and improved, positive attitudes toward learning (Copenhaver, 1979; Domino, 1970).

Despite new knowledge of learning styles acquired in the early 1970's (Farr, 1971; Domino, 1970), it was still difficult to accurately identify a person's style simply by observation (Dunn, Dunn, and Price, 1977; Marcus, 1977). This was primarily because different elements affected different individuals with varying intensities, increased external motivation affected element preference, and factors changed over time (Copenhaver, 1979; Price, 1980). For these reasons, the Dunn's posed a model of eighteen environmental, emotional, sociological, and physical characteristics that affected student learning (Dunn, Dunn, and Price, 1979). Psychological factors were added in 1980 (Dunn, Cavenaugh, Eberle, and Zenhausern, 1982). The Dunn's were not the only people
developing instrumentation for diagnosing learning styles. Renzulli-Smith (1978), Hunt (1979), and Schmeck and Lockhart (1983) also developed varied methods, models, instruments, and techniques for assessing learning characteristics.

The Dunn's Productivity Environmental Preference Survey (PEPS) (Dunn, Dunn, and Price, 1981) was specifically designed for adults. This test, along with the LSI (Dunn, et. al., 1979), has been used to consistently discriminate between extreme populations. Elements tend to reflect patterns of giftedness or underachievement. Studies have found that the gifted (academically talented) are independent and internally controlled (Stewart, 1981). Gifted students are also persistent, nonconforming, and perceptually strong (Dunn and Price, 1980; Kreitner, 1981; Griggs and Price, 1980; Cross, 1982; Cody, 1983), and they dislike imposed structure. At the other extreme, underachievers are generally unmotivated and not persistent in academic matters.

Many people are still unaware of the extent to which learning style and teaching style can be matched. In his study of college students, Domino (1970) showed that improved attitudes toward school resulted from teaching through learning styles. Research has shown that the greater the match between student and teacher style, the higher the student's grade point (Cafferty, 1980). In working with Dunn's twenty elements and Gregorc's four characteristics, it was found that students showed increased academic achievement, improved attitudes toward school, and reduced discipline problems (Carruthers and Young, 1980; Dunn, 1981; Hodges, 1982) when their learning styles were matched with similar teaching styles. Furthermore, because the styles of the gifted (academically talented) require unique instructional strategies, the styles of underachievers undoubtedly also require approaches that differ from those used in conventional classes (Ball, 1982; Cavanaugh, 1981; Dunn, 1981; Hodges, 1982, Schmeck and Lockhart, 1983).

**EXPERIMENTAL HYPOTHESIS**

It is hypothesized that the subjects will have distinguishable group preferences in all five areas of environmental, social, physical, psychological, and emotional learning characteristics. The most predictable variables are motivation, authority-oriented, auditory preference, and mobility. It is hypothesized that these academically talented students will be highly motivated and peer oriented, will prefer auditory instruction over tactile and visual instruction, and will prefer mobility in learning.
PURPOSE STATEMENT

The purpose of this study is to determine which of the specific twenty factors of the Productivity Environmental Preference Survey will actually influence learning styles of this population. The resulting data and analysis is intended to aid in determining course improvements, teaching strategies, individual projects, and productive environmental conditions for academically talented students, specifically Ball State University Honors College students. Following through on revealed preferences will maximize the use of learned skills, remove obstacles to creativity, and maximize performance.

PROCEDURE

The following is a step-by-step methodology for completion of this project:

Population and Sample

The experimental group consisted of 41 Ball State University Honors College students. The population was broken down into a stratified random selection of nine freshmen, ten sophomores, eleven juniors, and eleven seniors. (Honors College students averaged a verbal SAT score of 550-560 and ranked in the top ten percent of their high school graduating class.) The selection of students was done with a random numbers table and a computerized list of all Honors College students.

Instrumentation, Procedure, and Administration

**PEPS.** The PEPS, originally designed by Kenneth and Rita Dunn, is the first comprehensive approach to diagnosing an adult's individual learning style. It is an important tool for determining the conditions under which an individual is most likely to produce, achieve, create, solve problems, make decisions, and learn. The survey contains many highly subjective and relative questions that contribute to the understanding of an individual's preferences in the following five categories; physical, emotional, social, psychological, and environmental. Each adult's productivity style is based on a complex set of reactions to varied stimuli, feelings, and previously determined repetitive patterns. Therefore, the words "work", "think", "read", "write", and "concentrate" are used interchangeably throughout the survey in order to compare answers for questions that seem to ask the same thing in varied ways. The five areas of learning are broken down into
twenty elements that were developed through content and factor analysis. These twenty areas include:

1. noise 11. learn in several ways
2. light 12. auditory
3. temperature 13. visual
4. design 14. tactile
5. motivation 15. kinesthetic
6. persistent 16. requires intake
7. responsible 17. evening/morning
8. structure 18. late morning
9. learning alone/peer oriented 19. afternoon
10. authority figures present 20. needs mobility

All subjects were given the Productivity Environmental Preference Survey (PEPS) which is a self reported learning styles survey designed to determine specific individual learning style characteristics. The surveys consisted of one-hundred questions answered on the Likert scale; strongly agree is a 5 and strongly disagree is a 1. The questionnaire was distributed in Honors College classrooms, dormitories, and through the mail. Individuals were encouraged to complete the survey in a setting of their choice at whatever time intervals they found most convenient. They were also encouraged to give immediate reactions to each question on a "feeling basis." Therefore, a formal testing situation was eliminated. All subjects remained anonymous. The only information gathered on subjects was sex and grade level. Upon completion, the surveys were coded by grade level and sent to Price Systems in Lawrence, Kansas to be machine scored. The returned data included an individual profile for each subject as well as a group profile.

INTERPRETATION AND RESULTS

Each individual score profile is identifiable by a single or double letter code. The individual profile consists of a raw score, standard score (mean of 50, standard deviation of 10), PEPS area headings and a graph of the relative location of each person's standard score in each area. The standard score scale ranges from 20 to 80 and is calculated based on the number of adults who have taken the PEPS. Individuals who score a standard of 60 or above strongly prefer that area as a factor when they study or work. Individuals having a standard score of 40 or less do not prefer that factor. Any score between 40 and 60 is varied with respect to how much that factor influences the individual or is important to him/her.
The individual standard scores are used to form group summaries to determine which factors influence which groups of people.

**RESULTS FOR STANDARD SCORE OF 60 OR HIGHER**

The four areas of strong preference (standard score of 60 or higher) for the 41 Honors College subjects were:

- **#19--afternoon**
  -- strong for 23/41 subjects for 56.1% *

- **#11--learning in several ways**
  -- strong for 21/41 subjects for 51.2%

- **#16--requires intake**
  -- strong for 19/41 subjects for 46.3%

- **#20--mobility**
  -- strong for 13/41 subjects for 31.7%

*All percentages rounded to the nearest one tenth percent due to population size (1 subject=2.4% of total population)

The only two factors showing a majority strength (50% with a standard score of 60 or higher) were "afternoon preference" and "variety of learning." Consistently, this population prefers to do work or learning in the afternoon and in a variety of ways that may include working alone, working with colleagues, or working with a supervisor or instructor. The preference for these factors is made stronger when compared to the low number of students who don't prefer these areas (standard score of 40 or lower). 56% of the subjects have a strong preference for "afternoon" learning (standard score of 60 and higher) compared to only 12.2% who don't prefer this factor (standard score of 40 or lower). This leaves 31.7% with varied response to afternoon learning. 51.2% strongly prefer (standard score of 60 and higher) "several ways" of learning while only 7.3% don't prefer this factor (standard score of 40 and below). 41.5% of the subjects have varying preference in respect to this factor of varied learning, neither adding to nor detracting from the strength of this area. While factor #16, "requires intake", falls short of a majority (46.3% standard score of 60 or higher) it is still considered strong as only one subject (2.4% of the total population) does not prefer intake. Thus, the Honors College population generally prefers intake of food, drink, and general nutrition during learning or to promote general learning at some point.
RESULTS FOR STANDARD SCORES OF 40 AND BELOW

The four strongest non-preferred areas for the 41 Honors College subjects were (these factors are decisively not preferred):

#17--evening/morning  
--not preferred by 24/41 subjects for 58.5%

#02--light  
--not preferred by 15/41 subjects for 36.6%

#04--design  
--not preferred by 13/41 subjects for 31.7%

#01--noise level  
--not preferred by 11/41 subjects for 26.8%

The only factor not preferred by a majority (50% or better with standard score of 40 or lower) was #17, "evening/morning." Consistently, 58.5% of this population prefers to schedule difficult tasks in the evening. Since 56.1% showed a strong preference for afternoon learning it can be deduced that 14.6% of the subjects preferred both afternoon and evening learning dependent upon the type of learning, studying, or work being done.

Only two other factors retain significance among standard scores of 40 or below when compared to standard scores of 60 and above. 31.7% of the subjects have a standard score of 40 or below on the factor of "design" thus preferring an informal design or learning climate. Only 3 subjects, 7.3% of the total population, strongly preferred a formal design or structure. (This is the typical classroom setting with straight chairs in neatly arranged rows.) The factor of "light" shows 36.7% of the subjects with standard scores of 40 or below, thus preferring indirect or subdued light. In comparison, 20% prefer bright illumination (standard score of 60 or above for this factor) leaving 43.3% with varied preference in respect to this factor of light. Therefore, the strength of the factor is balanced and no general conclusion can be drawn.

CONCLUSIONS

According to the data gathered in this project Honors College students prefer afternoon learning, learning in several ways, intake while learning, and mobility in learning. The only factor predicted to influence the entire
group was mobility. They also prefer evening work, subdued light, and informal design. None of these factors was predicted to strongly affect Honors College students. The factors that are typically strong for academically talented students did not show up as strong or weak preferences for this experimental population. This may be due to uncontrolled variables such as setting for survey response, differing interpretation of wording used in survey questions, age differences of subjects, and a possible biased population considering its small size. The factors of "motivation", "authority-oriented", and "auditory preference", generally strong preferences for academically talented students (Dunn and Price, 1980; Cross, 1982; Schmeck, 1982; Cody, 1983), were too varied in this study to draw conclusions.

Suggestions for Honors classes/students: allow a lot of flexibility in assignments; students should take advantage of the strongest segment of the time energy curve for both afternoon and evening and schedule classes and study groups at these times (avoid morning); assignments should show variety including independent projects, small group assignments, opportunity to work one-to-one with a professor, written and oral presentation, and multi-media learning; students should be allowed to move around and intake food, beverage, etc. while learning and studying; classroom arrangements should be informal discussion settings (circles instead of rows of desks, conference tables instead of desks, informal arrangements for discussion/study groups in dormitory, lounges, etc.; subdued light (no need for individual bright lighting in classroom or in study area); and a moderately quiet study/work setting.
BIBLIOGRAPHY


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