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Introducing Educational Administration Candidates to Learning-Style Approaches

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What Is Learning Style?

Dunn and Dunn (1992, 1993) define learning style as the way each person concentrates on, processes, internalizes, and remembers new and difficult academic information. They describe it in terms of each individual's:

- environmental preferences for sound, light, temperature, and design;
- emotions toward academic productivity (motivation, internal/external need for structure, persistence, and responsibility);
- sociological inclinations for learning alone, in a pair, with peers, as part of a team, with either a collegial or authoritative mentor or supervisor, or in varied ways as opposed to patterns or routines);
- physiological traits (auditory, visual, tactual, and/or kinesthetic perceptual preferences, time-of-day energy levels, intake (snacking or drinking), and mobility versus passivity needs); and
- global versus analytic processing—as determined by correlations among sound, light, design, persistence, sociological preference, and intake (Dunn, Cavanaugh, et al., 1982; Dunn, Bruno, et al., 1990) (see Figure 1).

Learning style varies with age (Dunn & Griggs, 1995; Price, 1980), achievement level (Milgram, Dunn, & Price,

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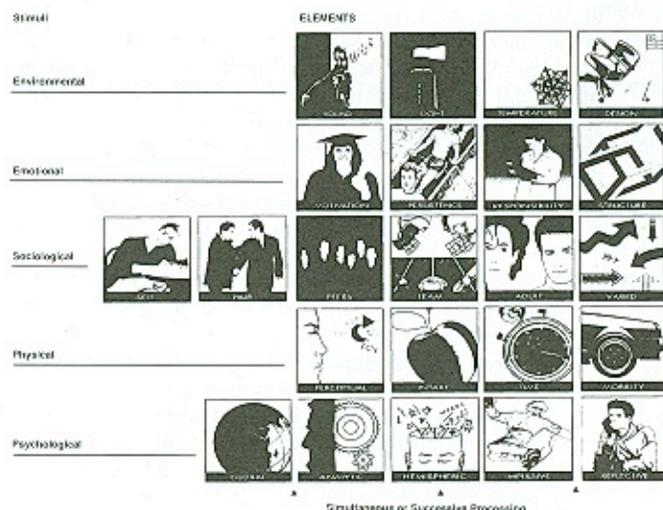


Figure 1. The Dunn and Dunn Learning Styles Model

1993), culture (Dunn & Griggs, 1995; Milgram, Dunn, & Price, 1993) and global versus analytic processing (Dunn, Bruno, Sklar, & Beaudry, 1990; Dunn, Cavanaugh, Eberle, & Zehausen, 1982). Certain learning style elements, such as preferences for warm or cool temperatures, mobility or passivity while concentrating, or processing style tend to remain stable over years. Other elements, such as sound, intake, light, social preferences, and perceptual strengths are often predictable in how and when they change. Even one learning-style element can either promote or inhibit adult productivity (Ingham, 1991), but instruction responsive to an individual's multiple learning-style elements can produce significantly increased academic achievement (Dunn, Ingham, & Deckinger, 1995).

Effects of Learning-Styles Approaches on College Students' Achievement and Attitudes

Several researchers have experimented with teaching undergraduates how to study with approaches that complement the students' learning styles. Without any emphasis on higher-level cognition, significantly increased achievement test scores resulted when students studied **anatomy** (Cook, 1989; Lenehan, Dunn, Ingham, Murray, & Signer, 1994), **bacteriology** (Lenehan, Dunn, et al., 1994), **marketing** (Dunn, Deckinger, Withers, & Katzenstein, 1990), **mathematics** (Dunn, Bruno, Sklar, & Beaudry, 1990), **physiology** (Lenehan, Dunn, et al., 1994) and **subjects across the board** (Clark-Thayer, 1987, 1988; Mickler & Zippert, 1987). In addition, overall grade-point average and attitude toward learning significantly improved (Clark-Thayer, 1987, 1988; Nelson, Dunn, Griggs, Primavera, Fitzpatrick, & Miller, 1993).

Learning Styles Research at St. John's University

Between 1970 and 1996, 18 St. John's University professors and more than 70 doctoral candidates in small teams of from 5 to 6 each, conducted more than 50 studies with the learning styles model developed at that institution (*Research on the Dunn & Dunn Model*, 1996). In Education, two courses in our Secondary Masters Program, three courses in our Elementary Masters Program, and four courses in our Instructional Leadership Doctoral Program focus on learning styles. Many of these courses require that our candidates conduct research with style responsive and style non-responsive resources, methods, and strategies with the students they teach—primary, elementary, or secondary. Faculty involvement in the results of these studies gradually increased their interest in learning styles. Eventually, in autumn, 1995, professors in our "other" doctoral program, Educational Administration and Supervision, voted to add one learning style course to

that program. Research with learning styles has also been conducted by professors in business (Dunn, Deckinger, Withers, & Katzenstein, 1990; Dunn, Ingham, & Deckinger, 1995), math (Dunn, Bruno, Sklar, & Beaudry, 1990), reading (Drew, Dunn, Quinn, Sinatra, & Spiridakis, 1994), counseling (Griggs, 1991), and law (Dunn & Boyle (submitted)).

Identifying Adults' Learning Styles

The *Productivity Environmental Preference Survey* (PEPS) (Dunn, Dunn, & Price, 1979, 1982, 1991) identifies adults' learning-style preferences. It consists of 100 statements that elicit self-diagnostic responses on a five-point Likert scale in approximately 25 minutes. Data collected from each assessment yields a computerized profile of each individual's preferred learning style. The PEPS is easy to administer and interpret and has been used by researchers at more than 90 institutions of higher education (*Research on the Dunn and Dunn Model*, 1996).

In 1979, Kirby reported that the PEPS had "established impressive reliability and face and construct validity" (p. 72). Since then, the PEPS has evidenced predictive validity (Dunn, Bruno, et al., 1990; Ingham, 1991; Lenehan, Dunn, et al., 1994; Nelson, Dunn, et al., 1993). In a comparative analysis of the conceptualizations and psychometric standards of nine different instruments that measure learning styles, the Dunn and Dunn assessments for K-12 students and adults were rated as having good or better reliability and validity (Curry, 1987). LaMothe, Billings, Cobb, Nice, & Richardson (1991) reported PEPS' reliability and validity specifically for nurses.

Conversely, Murray-Harvey (1994) reported that the PEPS test-retest reliability collected from two administrations to 406 Australian college students showed, "... this approach to learning is relatively stable over time, but learning style is not as stable a construct as has been claimed" (PsycLIT Database Copyright 1995 American Psychological Association, all rights reserved.)

Construct validity for the PEPS was established by Buell & Buell, (1987), Ingham (1991) and LaMothe, Belcher, Cobb, & Richardson, 1991). More recently, a meta-analytic study of 42 experimental studies conducted between 1980-1990 with the Dunn and Dunn Learning-Style Model by researchers at 13 different institutions of higher education revealed that students whose characteristics were accommodated by educational interventions responsive to their learning styles could be expected to achieve 75% of a standard deviation higher than students whose styles were not accommodated (Dunn, Griggs, Olson, Gorman, & Beasley, 1995).

Matching Study Approaches With Students' Learning Styles

Dunn and Klavas (1990) developed a software package to analyze each individual's preferred learning style based on the Dunn, Dunn, and Price PEPS computerized profile. The analysis of individuals' styles is then converted by a computer program into a series of directions for studying and doing homework based on each individual's "strong preferences" (PEPS scores of between 20-29 or 70-80) and "preferences" (PEPS scores of between 30-40 or 60-69). Each person's set of directions for study is called his/her "Homework Prescription".

Nelson, Dunn, et al. (1993) identified 1,089 randomly assigned community college students' learning styles with the PEPS and then gave students in the experimental group homework prescriptions for studying with complementary strategies. The homework treatment impacted significantly on student achievement ($p > .01$) and retention ($p > .0001$) and the experimental group's dropout rate was reduced to 20% in contrast with that college's usual 39% rate. Those results were meaningful in light of Demitroff's (1974), Trent and Rhyle's (1965), and Van Allen's (1988) earlier findings that poor study habits resulted in

inadequate student scholastic performance and led to either voluntary or involuntary withdrawal from college.

Lenehan, Dunn, et al., (1994) identified the learning styles of 203 subjects randomly selected from the total population of 296 incoming, full-time, predominantly female ($n = 178$), freshmen nursing and transfer students enrolled in entry-level Anatomy and Physiology ($n = 134$) and Bacteriology ($n = 69$) courses at a small, private four-year college in the suburban northeast. Students in the control group were provided conventional study-skill guides, tutoring, and advisement assistance whereas students in the experimental group were provided homework prescriptions based on their identified learning-style preferences. Students in the experimental group achieved statistically higher science grades, grade point averages, and curiosity about science scores and statistically lower anxiety and anger scores than students in the control group. Data suggested that learning-styles-based homework prescriptions were more effective than conventional study guidelines and that their use in one subject affected grades in other subjects.

Why Introduce Learning-Style Strategies to Educational Administration Candidates?

Practicing or prospective school administrators enrolled in educational administration programs have demanding schedules and responsibilities. Because they tend to be capable professionals, they may do course assignments sufficiently well to earn good grades, but they may be engaging in short-term superficial, rather than in long-term, deep and embedded, learning (Schmeck, 1977). Thus, without realizing it, they may experience only scant retention of data they study—a good reason for introducing them to learning styles. Therefore:

(1) Using the PEPS to identify educational administration candidates' learning-styles and providing them with homework prescriptions based on their individual styles may make studying and remembering comprehensive information easier. Thus, candidates may perform better in courses than previously.

(2) If homework prescriptions facilitated candidates' learning and retention, they also could use this strategy to better interpret and retain complicated legislative regulations, often obscure Board and staff agendas, and communications from Board members, community representatives, parents, and others.

(3) If successful with homework prescriptions themselves, administrators are likely to make them available to students in their schools. Based on the meta-analysis described herein (Dunn, Griggs, et al., 1995), giving students homework prescriptions based on their learning styles is likely to increase achievement.

(4) In addition, knowledge of learning styles would enable administrators to describe to their teaching staffs how students can capitalize on their perceptual strengths. For example, see the boxed directions for students with different perceptual strengths.

Auditory Learners should:

- listen to the class lecture and then take notes, if analytic. If global, they should listen to the class lecture and map* or illustrate the information. They then should read their notes aloud and tape record them, after which they should play aloud. If global, they could write their notes on pre-shaped and pre-sequenced Task Card outlines (see Figure 2). When they are ready to review, they can cut the Task Cards apart and study by piecing the questions and answers together. (*To "map" is to outline information through a series of related boxes, shapes, and other graphics with only few words or numbers.)
- read the text aloud, tape record it as they read, and play it back. As they listen to the tape, they should take notes or map or illustrate the information;

- have a classmate read sections of the text aloud while they take notes or map the information as it is read.
- say the key words or needed information to themselves and reinforce it by focusing on what they have written or using the information in a tactual crossword puzzle they create.

Visual Learners should:

- highlight important words or sentences in their texts. They should xerox the page before they do this if they do not own the book.
- color code their notes or the tactual games they (and/or their tactual classmates) create to help them remember the difficult or complex information.
- read and re-read the words and definitions while studying.
- read the text and directions silently while illustrating or mapping what they read.

Tactual Learners should:

- begin studying by developing hands-on resources such as Flip Chutes, Electroboards, Pic-A-Holes, Task Cards (see Figure 2), or Learning Circles (see Figure 3). These are student-created manipulatives made from paper to include all the new and difficult information required by a given topic. For example, each Task Card in a set poses a question on its left side. On its right side, is the related answer. Either the textbook or the teacher poses the questions; the students research the answers. Students cut the questions and answers of each Task Card set into halves, mix them up, and try to piece together the right question and the correct answers. After studying this way for a given amount of time (based on the student's age or academic level and the difficulty of the information), students then reinforce the same information through their secondary or tertiary perceptual strength (Kroon, 1984). Although each tactual resource differs from another, basically students learn by touching and seeing rather than by listening and writing. They then reinforce with another modality—such as a kinesthetic floor game. Directions for creating these resources are available (Dunn & Dunn, 1992, 1993).
- develop a series of symbols (like mnemonics or memory joggers) to synthesize the information they need to learn. They do this by touching, writing, illustrating, or highlighting key words with colors or graphics.
- take notes on a lap-top computer or write them onto multi-part Task Cards. Then review with a different manipulative.
- trace (by physically touching and following the pattern of each letter) the major words in the constructs they read and need to remember. Tedious? Yes; but effective when the information is comprehensive and challenging.
- if global, organize their notes into colored shapes (boxes, hearts, circles) and develop symbols to indicate items of maximum, major, minimal, or lesser importance. If analytic, organize their notes in the traditional manner—sequentially.

Kinesthetic Learners should:

- create floor games and walking games to teach themselves the difficult information they need to remember.
- walk back and forth along the perimeter of the room while they study or read.
- sit in a rocking chair while they study or read.
- study on a bike or exercise table.

(4) Encourage students to study in their sociological style (alone, in a pair, in a small group, with a tutor, or with an expert.)

(5) Teach students to monitor their own successes by keeping notes on what they do to teach themselves each week and then comparing the grades they earn with each approach.

(6) Suggest that motivated students work with a classmate or two to program and contract their textbooks (Dunn & Dunn, 1993).

Conclusions

The first studies concerned with encouraging college students to study with learning-style approaches increased achievement and attitude test scores. The next step is to alert practicing and potential administrators to the potential of this learning-style approach for school-age students by having them experience the benefits first hand.

Author's Note

One possible reason for Murray-Harvey's findings is that students must be well prepared prior to administration of the PEPS; specific procedures should be followed (Dunn, 1996; Dunn & Dunn, 1992, 1993). Because Murray-Harvey is not a certified learning styles trainer with this model (Dunn, 1996), she may not have been aware of, and, thus, may not have followed, the required procedures for adequately preparing students.

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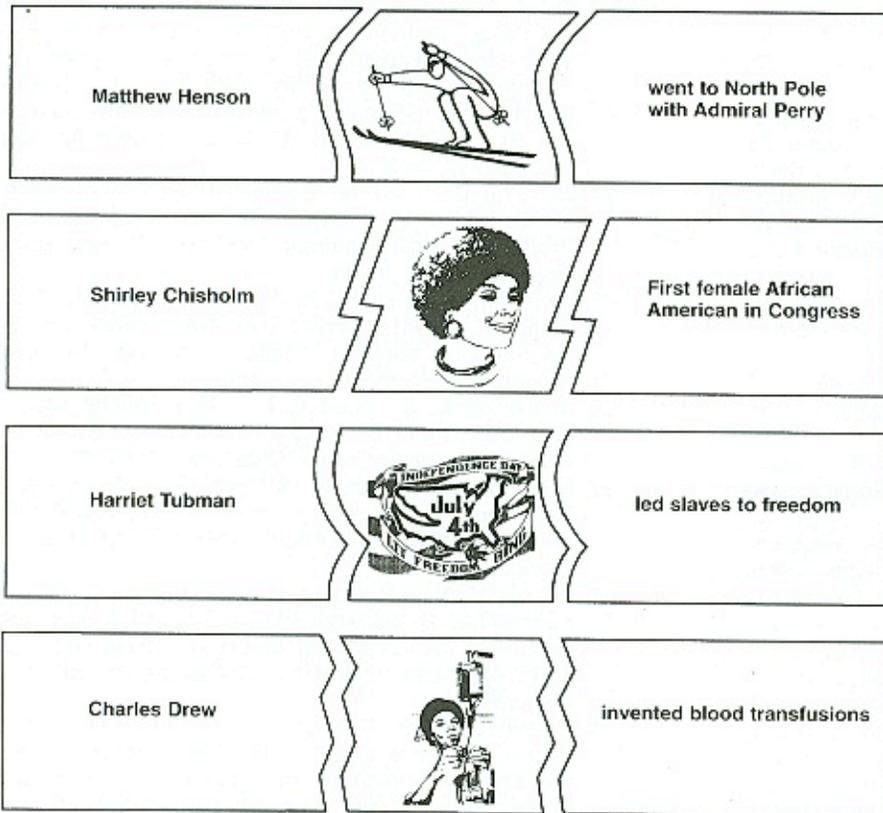


Figure 2. Pattern for Multi-Task Card

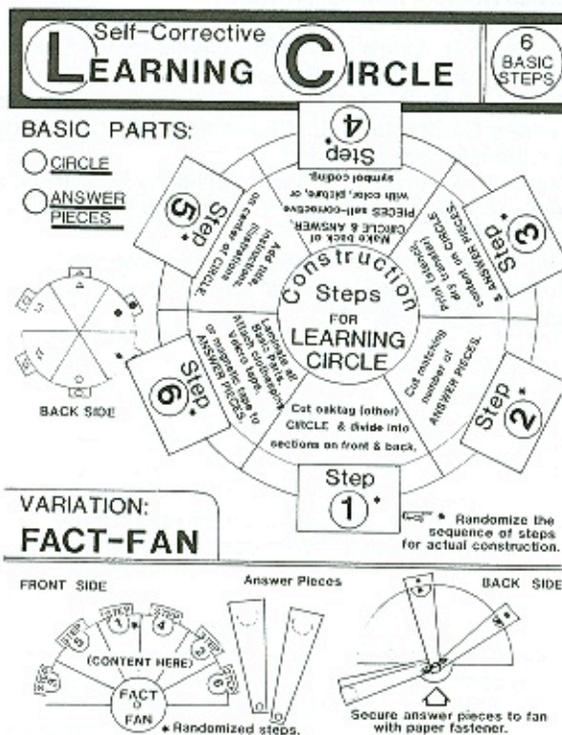


Figure 3. Directions for Learning Circle