

THE LEARNING PROFILES OF HOSTOS COMMUNITY COLLEGE STUDENTS

Christine Mangino

Many people and administrators assume that if a student just tries hard enough, he or she can do well academically. Often an educator will state that students are not trying hard enough or did not study long enough because they failed a test or did not do well on a paper. Although potential college students are motivated enough to persist through the necessary and sometimes difficult steps to become enrolled in classes, almost 40% of these determined students do not return to class after the midterm exam.

Less than 63% of community college freshmen return for a second year.¹ To support underachieving students, administrators, faculty and counselors have instituted a wide variety of programs that range from tutoring centers, study skill preparation classes, learning communities, cooperative learning, workshops, and academic probation. According to Biggs, Derry and Murphy, and Ford, these approaches have been ineffective for large numbers of students.²

Under a PSC CUNY grant, an investigation was conducted regarding students' learning styles. I met with half of the SSD 1000 College Orientation classes at Hostos Community College during the fall 2005 semester. Half of those classes were given a presentation on the Dunn and Dunn Learning-Style Model, as well as information on how they could accommodate each of the elements discussed. The students in the second half of the classes with whom I met were provided the same presentation, but also were given the Productivity Environmental Preference Survey (PEPS) to determine their individual learning style preferences.³ Two weeks later, I gave the students who took the PEPS, a Homework Prescription that provided them with detailed information on how to study based on the analysis of their learning styles. There was a 60% retention rate for the spring 2006 semester for the orientation classes with whom I did not meet, but a 70% retention rate for those students who received the learning styles presentation. There was a 73% retention rate for those students

who received the learning styles presentation and the homework prescription. This increase was significant at the $p < .009$ level.

One hundred sixty-six students took the PEPS and were included in the analyses of learning styles preferences⁴. The following is a description of the Dunn and Dunn Model and our students' learning styles. This information is important for educators to understand how their students learn and to think about how they can present material in a more effective way. It also is important for administrators, who can use this information for appropriate planning. Finally, it is essential for students to understand how they learn to help them succeed in college.

THE DUNN AND DUNN LEARNING STYLE MODEL

Learning style is the way students begin to concentrate on, process, internalize, and remember new and difficult information.⁵ Individual preferences differ significantly, and the stronger the preference, the more important it is to provide compatible instructional strategies.⁶ The Dunn and Dunn Learning-Style Model includes 21 elements, but each person is usually impacted by between 6 and 14 of the elements needed to master new and difficult information.⁷

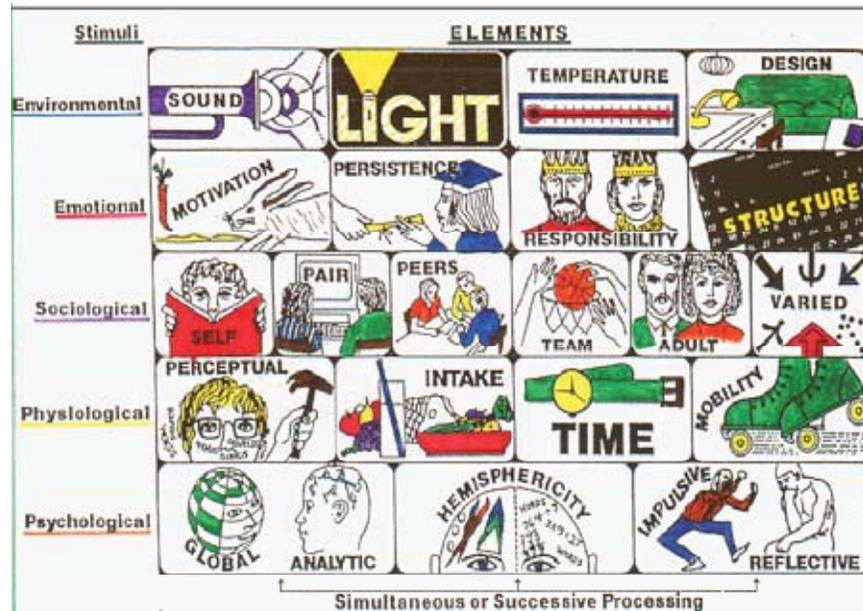


Figure 1. The Dunn and Dunn Learning-Style Model

ENVIRONMENTAL ELEMENTS

The Dunn and Dunn learning-style model is divided into five strands called *stimuli*. The first stimulus strand consists of biologically-imposed environmental elements.⁸ These include preferences to learn with: sound or silence; dim or bright light; warm or cool temperatures; and formal or informal seating. The combination of light and seating design affect approximately 70 % of adults.⁹ Usually the percentage of

learners who are affected by temperature is 7%, but for Hostos students, 21% prefer warm temperatures. Twenty-five percent of Hostos students prefer dim light while they concentrate, 12% of students require bright lights to concentrate and the remainder of students are not affected by this environmental stimuli. When it comes to sound, 18.6% required sound when learning, 14.4 % needed silence, while the balance was not affected. Only 6.6% of our students learn best while sitting in a straight back chair at a desk. For most of our students, it depends on how interested they are in the topic, but for 27.6% students, they learn best when sitting informally, such as on a couch or lying on the floor.

EMOTIONAL ELEMENTS

The model's second stimulus strand includes the emotional elements of motivation, persistence, responsibility, and structure. Although the element of persistence is innate, the others are developmental.¹⁰ Persistence refers to the desire either to complete a task before taking a break or to take many short breaks while working on an activity. Motivation is whether or not a person is internally or externally motivated, whereas responsibility is denoted by whether a person is conforming or nonconforming. Finally, structure involves an individual's desire for internal versus external direction. More than 40% of the students tested were non-conforming, meaning that they do not want to do what is asked strictly because someone asked them to do it. One semester, my education students revealed that 72% of them were non-conforming.

With regard to structure, almost 70% of our students require structure when learning. Educators must inform students, preferably in writing, what is expected, how we are grading them, what must be included, etc. Providing students with rubrics is a way of providing this structure, as is a detailed syllabus.

For persistence, some people start working on something and do not get up until they are done, yet most people take frequent breaks.¹¹ They may work really hard for 10-15 minutes, but then they get up and may get something to eat, check their email, or make a phone call. They then return to their work and work really hard for another 10-15 minutes. Only 7.8% of our students revealed a low persistence rate.

SOCIOLOGICAL AND PHYSIOLOGICAL ELEMENTS

The third stimulus consists of sociological elements that specify whether a person wants to work alone, in pairs, with peers, in a team, or with an adult who is either authoritative or collegial. This stimulus also indicates if a student learns best by working in a variety of ways or with a set routine.¹² Although a significant number of our students preferred working with peers (31.7%), 18.1 % preferred to work alone. Only 1 % of Hostos students preferred variety in class, while 39.2% preferred having a routine in the class and knowing what to expect each day. Most importantly, 40.2% preferred having an authority figure present when learning new and difficult information to provide feedback, guidance and structure.

The physiological strand includes perceptual preferences, intake, time of day, and mobility. The four perceptual strengths are: (a) auditory, which refers to remembering what is heard with auditory learners remembering $\frac{3}{4}$ of what is heard in a 45-50 minute period of time; (b) visual, which is the ability to recall what is read or seen with visual learners recalling $\frac{3}{4}$ of what is seen or read in a 45-50 minute period of time; (c) tactual, the capability to recollect what is written or manipulated with tactual

students remembering $\frac{3}{4}$ of what was touched or manipulated in that same period of time; and (d) kinesthetic, which is learning what is physically experienced. The next element of the physiological strand is time of day, which specifies at what time an individual learns best. The last two elements are intake, which indicates whether a person needs to snack while learning, and mobility, which identifies a learner's need to be pacing, rocking, or changing seating positions at frequent intervals while learning. It should be noted that perceptual strengths and time of day preferences each impact approximately 70 % of all people.

Eating in class is always a controversial topic, yet almost 28% of our students require intake while concentrating on new and difficult information. Almost a quarter of our students require mobility when learning, and allowing students to stand or move around the classroom is one way to help these learners.

Everyone has at least one time of the day where they can work at their optimal. For our students, only 3% claim to be "morning people" and 51% declared afternoon to be their most optimal time, while 37.3% chose evening. Obviously, students can not always accommodate this because they have to fit their schedules around their lives, jobs, families, etc., but what I did tell the freshmen is that if they are struggling with a specific course or topic, they should take that course at their most optimal time. Ideally, faculty would teach at their best time of day also. For students who require early morning or late evening, on-line courses are ideal for them.

With regard to perceptual strength, please refer to the chart below. Many of our students claim to be auditory learners, but still 57.2% of students walk out of class unable to recall 75% of what was said during class. In a classroom of 30 students, that is 17 students.

| TACTUAL | KINESTHETIC | VISUAL | AUDITORY |
|------------------|----------------------|------------------|-------------------|
| 7.8% NOT tactual | 4.2% NOT kinesthetic | 15.7% NOT visual | 6.6% NOT auditory |
| 15.1% tactual | 11.4% kinesthetic | 10.2 % visual | 42.8% auditory |

Table 1. Perceptual Strengths of Hostos Student Sample

Notice how 20.5% of the student sample does not have one perceptual strength. These students can not retain information through any of these modalities and actually require a combination of strategies before they can remember the material. A future research question would be whether or not these students actually continue through to graduation or do they drop out because they are not successful. Historically, students placed in special education classes, when tested for their learning style, tend to be tactual and/or kinesthetic learners.

PSYCHOLOGICAL ELEMENTS

The fifth stimulus strand incorporates the psychological elements of (a) global versus analytic processing, (b) hemisphericity, and (c) impulsive versus reflective behaviors.

Although the PEPS does not reveal strengths for the impulsive/reflective element,¹³ the Building Excellence does evaluate this preference.¹⁴ I used this assessment with our education students and it revealed that 82% of our students were reflective

thinkers.¹⁵ Impulsive students are those students who shout out answers to questions prior to our completing the full question. The reflective thinkers just stare at us (or so we think) when we ask them a question. What they are doing mentally is repeating the question to themselves, formulating an answer, determining if their answer actually answers our question, but unfortunately, by the time they are ready to answer us, we have moved on to another student. These students rarely contribute to class discussion because they do not have the opportunity to think through their contributions because the discussions move too quickly.

The elements of hemisphericity and global/analytic processing essentially appear to be parallel.¹⁶ Both refer to a preference for either simultaneous or sequential mental processing. This suggests that global pupils learn most readily when they understand the concept being taught first and then concentrate on details, whereas analytic learners prefer to start with details, so they learn step-by-step in a sequential manner that gradually builds toward a broad conceptual understanding.¹⁷ Global students want to see the big picture and understand how this relates to their lives. Globals enjoy class discussion and listening to others' opinions and ideas. Analytics do not care for the class discussion, as they are more worried about what they need to know for the class and if it will be on the test.

Although the PEPS does not determine analytic and global, research has shown that 50-60 % of the general adult population tend to be global processors, while 25-30% are analytic, the rest are integrated and can shift from one style to another depending on the situation and their level of motivation. Ironically, teachers tend to be analytic learners at a rate of 65% and teachers tend to teach the way they learn or were taught.

CONCLUSIONS

Many guides to homework strategies suggest that students must sit quietly at a desk with bright light. As you can see from our students' profiles, this is not necessarily the best advice. It depends on the individual's learning style. Some of our students actually need background noise, natural light, a comfortable chair or couch, and even a snack in order to concentrate on new and difficult material. Retention rates increased by 13% when students had a Homework Prescription that provided suggestions specific to the elements they require to learn compared with students who did not know about learning styles. We can only imagine the increases for these students if they are taught the way they learn. Some educators argue that we should force students to change their learning styles to conform to the real world, but even in the real world, people use their learning style to comprehend difficult information. We can all learn or do something that is not very challenging or that we are highly motivated to do in any manner necessary, but when we truly need to focus and concentrate, there are certain strategies we rely on to succeed. Our students were helped when they knew what those strategies were for them.

Christine Mangino
Education Department

ENDNOTES

- 1 The National Center for Public Policy and Higher Education. *Measuring up: The National Report Card on Higher Education*. Washington, DC: The National Center for Public Policy and Higher Education, 2006. Retrieved July 17, 2005, from <http://measuringup.highereducation.org>
- 2 See: Biggs, J. "Individual And Group Differences In Study Process." *British Journal of Educational Psychology* 48 (1978): 262-279; Derry, J., and D. Murphy. "Designing Systems That Train Learning Ability: From Theory To Practice." *Review of Educational Research* 56 (1986): 1-39; and Ford, N. "Approaches To The Study And Teaching Of Effective Learning In Higher Education." *Review of Educational Research* 51 (1981): 345-377.
- 3 Dunn, R., K. Dunn, K., and G.E. Price. *Productivity Environmental Preference Survey*. Lawrence, KS: Price Systems, 1979, 1980, 1990, 1996.
- 4 Dunn, Dunn and Price.
- 5 Dunn, R., and K. Dunn. *Teaching Secondary Students Through Their Individual Learning Styles: Practical Approaches For Grades 7-12*. Boston, MA: Allyn & Bacon, 1993.
- 6 Braio, A., R. Dunn, M.T. Beasley, P. Quinn, and K. Buchanan. "Incremental Implementation Of Learning-Styles Strategies On Urban Low-Achievers' Structural Analysis And Attitude Test Scores." *Journal of Educational Research* 91.1 (1997): 15-25.
- 7 Dunn, R. "The Dunn And Dunn Learning-Style Model And Its Theoretical Cornerstone." In *Synthesis Of The Dunn And Dunn Learning-Style Model Research Who, What, When, Where, And So What?* Eds. Rita Dunn and Shirley A. Griggs. NY: St. John's University's Center for the Study of Learning and Teaching Styles, 2003.
- 8 See: Thies, A.P. "A Brain-Behavior Analysis Of Learning Styles." In *Student Learning Styles: Diagnosing And Prescribing Programs*. Reston, VA: National Association of Secondary School Principals, 1979; Thies, A.P. "The Neuropsychology Of Learning Styles." *National Forum of Applied Educational Research Journal* 13.1(1999-2000): 50-62.
- 9 Dunn, R., & Dunn, K. (1998). *Practical Approaches To Individualizing Staff Development For Adults*. Westport, CT: Praeger.
- 10 Thies, "A Brain-Behavior Analysis," and Thies, "The Neuropsychology of Learning Styles."
- 11 Dunn and Dunn, *Teaching Secondary Students*.
- 12 Thies, "A Brain-Behavior Analysis," and Thies, "The Neuropsychology of Learning Styles."
- 13 Dunn, R., K. Dunn, and G.E. Price. *Productivity Environmental Preference Survey*. Lawrence, KS: Price Systems, 1979, 1980, 1990, 1996.
- 14 Rundle, S., and R. Dunn. *Building Excellence*. Pittsford, NY: Performance Concepts, Inc., 1996-2000.
- 15 Rochford, R. and C. Mangino. "Are You Teaching the Way Your Students Learn?" *Radical Pedagogy* 8.1 (Spring 2006): 60 paras. 2 May 2008 <http://radicalpedagogy.icaap.org/content/issue8_1/rochford.html>.
- 16 Dunn, R., J. Bruno, R. Sklar, and J.S. Beaudry. "The Effects Of Matching And Mismatching Minority Developmental College Students' Hemispheric Preferences On Mathematics Test Scores." *Journal of Educational Research* 83.5 (1990): 283-288.
- 17 Dunn, R., D. Cavanaugh, B. Eberle, and R. Zenhausern. "Hemispheric Preference: The Newest Element Of Learning Style." *The American Biology Teacher* 44 (1982): 291-294.