Understanding business majors' learning styles

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Recently, business education programs have experienced a decline in enrollment and an increase in attrition. To understand these issues and recommend solutions, the learning styles of 503 first-year business majors at an urban community college were examined. The results demonstrated that: (a) 94% of the participants were analytic learners; (b) age correlated positively with grade point average; (c) significant gender differences were exhibited for the elements of visual/text, temperature, evening preference, and conformity; and (d) significant geographic origin differences emerged for the learning-style elements of visual/picture, verbal/kinesthetic, tactual/kinesthetic, analytic/global, structure, sound, small group, and late morning/early afternoon.

Introduction

In 2000, 42% of all undergraduate college students were enrolled in public two-year community colleges, which typically service low income, academically under-prepared learners, many of whom have limited English language skills (National Center for Educational Statistics, 2003). Although admittance into most community colleges is easy, research has demonstrated that a significant number of students who enter these institutions do not complete their desired goals or credentials (Berkner, Horn, & Clune, 2000). In fact, Tinto (1993) has asserted that more students drop out of community colleges than graduate. More specifically, recent research has revealed a consistent decline in enrollment in business programs, especially in the field of accounting where students cite the rigorous, tedious nature of the discipline as a reason for not choosing it (Barsky, Catanach, & Kozlowski, 2003).

Thus, to address the issues of decreased enrollment and increased attrition in community college business programs, the researchers examined the learning styles of 503 first-year business majors at an urban community college. The goal of the study was to determine the best way for these students to learn new and difficult information so that business educators can modify their instructional methods to improve achievement and increase retention.

What are learning styles?

According to Dunn and Dunn (1993), learning style is the way students begin to concentrate on, process, internalize, and remember new and difficult information. Individual preferences differ significantly, and the stronger the preference, the more important it is to provide compatible instructional strategies (Braio, Dunn, Beasley, Quinn, & Buchanan, 1997). Most college professors do not realize that less than one-third of their students can remember three-fourths of what they hear or see (Dunn, 2003). However, many of these same pupils remember well when they learn tactually by using their hands or kinesthetically through whole body movement. Nonetheless, many tactual and kinesthetic students cannot succeed because they are expected to sit passively and listen when they, instead, crave active engagement to learn effectively.

The Dunn and Dunn Learning-Style Model specifies 21 elements that influence how people learn new and difficult academic material (Dunn & Dunn, 1992, 1993; Dunn, Dunn, & Perrin, 1994). These 21 elements are divided into five stimuli (a) environmental, (b) emotional, (c) sociological, (d) physiological, and (e) psychological. If learners' styles are met by addressing their preferences for these elements, significant improvement in college students' achievement can be obtained (Ingham, 2003; Lenehan, Dunn, Ingham, Murray, & Signer, 1994; Nelson, Dunn, Griggs, Primavera, Fitzpatrick, Bacillious, & Miller, 1993; Rochford, 2003, 2004a, 2004b, 2004c). An instructor needs to carefully consider these stimuli when introducing new and complex concepts.

The *environmental* stimulus emphasizes that some students prefer to learn (a) with or without sound, (b) in bright or dim light, (c) in a warm or cool room, and (d) in a room with either a formal or informal design. The *emotional* stimuli include four elements that specify a person's (a) motivation, (b) persistence, (c) need for more or less structure, and (d) responsibility, which actually refers to whether a person is conforming or non-conforming.

The most important element of the *physiological* stimulus deals with perceptual preferences, which specify whether a person is auditory, visual, tactual, or kinesthetic. For instance, when some learners encounter new and difficult mate-

rial, they benefit from listening to a lecture or an audiotape when the material is first introduced. Such a person would be described as an *auditory* learner. However, someone who prefers to learn by reading new information or seeing a video would be a *visual* learner. A third type of student might benefit from taking notes by hand or on a computer, or by manipulating materials. That person would be categorized as a *tactual, hands-on* learner. Finally, other students who favor activities that require whole body movement such as studying while on an exercise bike or walking are referred to as *kinesthetic* learners. When community college students are taught new and difficult material through their strongest perceptual preferences, they recall significantly more than when they are taught through their least preferred modality (Mickler & Zippert, 1987; Dunn, Bruno, Sklar, & Beaudry, 1990; Cook, 1991; Nelson et al., 1993; Williams, 1994-1995; Rochford, 2003, 2004a, 2004b, 2004c). Other elements of the physiological stimulus specify (a) if a person requires intake such as food or drink while learning, (b) the best time-of-day to learn or study most efficiently, and (c) if mobility is needed while learning.

Finally, the *psychological* stimulus describes whether a person is a global or analytic learner. 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 (Dunn, Cavanaugh, Eberle, & Zenhausern, 1982). Global and analytic learners also have different environmental needs (Dunn, Bruno et al., 1990). Many analytics are *task persistent* and prefer to learn steadily and consistently without any breaks or intake, in a traditional classroom setting that is quiet, well-illuminated, and formal.

Conversely, global pupils prefer to work with sound, such as music or background conversation, dim lighting, informal seating arrangements, some form of intake or food, and frequent breaks. Many globals also wish to learn with peers rather than alone or with teachers. Both analytic and global learners can master the same material, if they are taught with an instructional method that complements their learning style (Dunn, Bruno et al., 1990). These preferences can be determined for college students by administering the *Building Excellence* (BE) survey (Rundle & Dunn, 2000) or the *Productivity Environmental Preference Survey* (PEPS) (Dunn, Dunn, & Price, 1996).

Learning styles and business education

According to Berkner, Horn, and Clune (2000), many business students, especially accounting and finance majors, may have traditionally been attracted to these fields because of their analytical appetites for structure, mathemati-

cal theory, and rules. In fact, in a meta-analytic examination of Kolb's learning-style preferences among business majors, Loo (2002) revealed that a high proportion of college business students are assimilators or analytic learners who crave structure. In contrast, he discovered a lower proportion are global thinkers or accommodators than would have been anticipated if the learning styles were distributed equally. However, because of recent curriculum revisions that incorporate more global learning activities such as group work and simulations, many highly analytical business students may have been lured into other fields of study such as computer programming because these majors permit learners to address their need for structure (Loo, 2002).

The research

Stimulated by the concerns of business educators and the research on the learning styles of business students, the authors conducted a study at an urban community college to examine the following hypotheses.

Research hypotheses

H1: There will be significantly more analytic than global learners enrolled as first-year business majors (Loo, 2002).

H2: There will be significant differences in the learning styles of first–year business students based on their achievement levels (Dunn, Griggs, Olson, Beasley & Gorman, 1995).

H3: There will be significant differences in the learning styles of first-year business students based on their age (Bovel & Ansalone, 2001; Price, 1980; Van Wynen, 2001).

H4: There will be significant differences among the learning styles of first-year business students based on their gender (Greb, 1999; Mitchell, Dunn, Klavas, Lynch, Montgomery, & Murray, 2003).

H01: There will be no significant differences in the learning styles of first-year business students based on their geographic origins.

Participants

The population for the study consisted of full-time, first-year business students at LaGuardia Community College, City University of New York (CUNY). The population totaled approximately 800 students. From that population, a cluster sample of 503 students was selected at random, based on a list of all courses offered by the college's Accounting and Managerial Studies (AMS) Department during the spring and fall semesters of 2004. The majority of students in the sample were majoring in accounting, management, finance, business administration, and para-legal studies.

Cluster sampling was employed because *natural* groupings were evident in the population (Fraenkel & Wallen, 2002). Because elements within a cluster had to be as heterogeneous as possible and homogeneity had to exist between clusters (Fraenkel & Wallen, 2002), a random sample of AMS classes

was selected, using the *Statistical Package for Social Science* (SPSS), Version 11.0 to determine which classes would be included in the study so that each class comprised a sampling cluster.

Instrumentation

To determine the subjects' learning styles, a globally formatted 114-item online identification assessment survey called the BE (Rundle & Dunn, 2000) was administered to all the participants. The BE (Rundle & Dunn, 2000) analyzes each student's style for *strengths* and converts this data into an 18-20 page report entitled, *Learning and Productivity Style Profile*, which contains each individual's *Personal Development Plan*. The report includes an individual's learning-style profile and preferences that indicates how to improve performance by capitalizing on one's strengths (Dunn & Griggs, 2003). Working in tandem, the two resources are designed to help adults learn more efficiently so that they increase their motivation while they improve their achievement and their attitudes.

The BE (Rundle & Dunn, 2000) survey identifies and measures 21 elements that either hinder or stimulate learning, and academic performance. It focuses on learning and performance practices using a system that aligns individual common purpose while simultaneously demonstrating how to maximize abilities. It provides individuals with self-reflective analyses that ex-

plain how they learn new, complex information to perform tasks and improve performance. When students learn to use the recommended approaches, they gradually become adept at strategies which enhance their communication, concentration, and team interactions. The ultimate goal is for individuals to develop confidence in their ability to teach themselves regardless of their learning and working environments (Rundle & Dunn, 2002). In 2002, when Rundle, Honigsfeld, and Dunn measured the BE survey's reliability, results indicated that the reliability ranged from 0.68 to 0.87 with *Cronbach alpha* using SPSS Reliability Analyses.

Data analysis and discussion

This investigation revealed important findings regarding the learning-styles of community college first-year business students by demonstrating significant learning-style differences based on a person's processing style, achievement, age, gender, and geographic origin.

Analytic or global processors

First, a profile of all the participants revealed that more than 94% of the business students in this study were analytic processors, which corroborates the findings of Loo (2002) who asserted most business students are assimilators or analytic learners. Moreover, none were identified as strong global preferred students. Although

the majority were analytic processors, it should be noted that only three of the five defining analytic elements—for sound, bright light, and persistence—were preferred by most students. Most of the subjects did not reveal analytical preferences for formal seating design and intake. Overall, 72% of the individuals were responsive to a quiet work environment. In contrast, 18% preferred sound. Bright light was strongly favored by more than 75% of the sample as opposed to 14% of the students who desired low or dim light. Finally, 70% of the learners indicated they were task persistent and preferred to work steadily on one single task at a time, as opposed to 15% who enjoyed working on multiple tasks. It should be noted that participants who demonstrated no specific preference for sound, light or persistence are among the percentage points that were not included in these statistics.

The results suggest that learners in community college business programs tend to be analytics who crave structure and sequential learning, a finding that supports the hypothesis H1. To address the unique needs of this population, professors should prepare lessons that employ step-by-step learning. For instance, instructors can design exercises and assign textbooks that present concepts in a sequential, detailed manner that appeals to analytics. In addition, it would be beneficial to complete each topic or task before progressing to the next and to set well-defined course requirements, goals, and deadlines because these methods promote greater learning among analytics. Furthermore, instructors should clarify precise directions with models or samples of projects and assignments. The implementation of these techniques will improve motivation while simultaneously assisting students in absorbing more information so they can maximize their learning (Dunn, Bruno et al., 1990; Clark-Thayer, 1987; Dunn, Deckinger, Withers, & Katzenstein, 1990; Lenehan et al., 1994; Rochford, 2004a, 2004c).

Although most students in the study are analytic processors, these business majors also revealed a strong need for informal seating and intake, such as snacks and beverages. Since these two preferences are typically associated with global learning, the results imply that business students require more than a traditional classroom environment and lecture to learn effectively. Professors can accommodate these needs in their classes by permitting students to snack and move around the classroom, as long as others are not disturbed. In addition, when planning lessons and assignments, instructors can offer alternative tactual and/or kinesthetic activities such as creating video-tapes, performing role plays or simulations, or completing tasks on a computer. In addition, highly analytic students might be encouraged to enroll in classes with instructors who employ traditional, structured, sequential teaching methods, while learners with glob-

al preferences would benefit from teachers who provide flexibility and more choices. A conventional teaching approach is favorable for analytics, yet it can be detrimental if students have global preferences (Terregrossa & Englander, 2000).

Achievement levels and students' learning styles

After preliminary analyses through the use of a normal probability *QQ plot* exhibited the presence of non-normal distributions in the data, the *Kolmogorov-Smirnov* and *Shapiro-Wilk* tests were conducted, and they also demonstrated the presence of some non-normal distributions. Thus, the nonparametic *Kruskal-Wallis One-Way Analysis of Variance* (KWANOVA) was performed (see Table 1).

Where significant differences appeared, post-hoc tests were conducted using the *Tukey's HSD* procedure. The results indicate that five of the BE (Rundle & Dunn, 2000) learning-style elements for

temperature, sound, intake, late-afternoon, and team work exhibit significant differences depending upon the business students' level of achievement, which was defined as (a) low for grade-point-averages (GPAs) below 2.5, (b) medium for GPAs between 2.5 and 3.6, and (c) high for GPAs greater than 3.6. These results confirm hypothesis H2 (see Table 2).

First, low achievers prefer significantly warmer temperatures than medium-level achievers. It should be noted, however, that since the BE (Rundle & Dunn, 2000) element for temperature did not quantify temperature ranges for warm or cool, individual students' interpretations of these conditions may vary based on their background and culture. In fact, prior research has revealed that temperature preferences may be influenced by age (Giordano & Deckinger, 2004). For instance, although the elderly might wear a perennial jacket or sweater, they have indicated a preference for cool environments

Table 1. KWANOVA for temperature, sound, intake, late afternoon and team for low, medium and high achievers

BE (*Building Excellence*) Elements	df	H Value	Significance
Temperature (warm or cool)	2	8.364	*.015
Sound (quiet or sound)	2	14.00	**.001
Intake (less or more)	2	7.215	*.027
Late afternoon preference	2	14.046	**.001
Team	2	6.897	*.032

*p<.05
**p<.001

Table 2. Results from Tukey HSD test

BE Elements	Level of Achievement	Significance
Temperature (warm or cool)	Low achievers required more warmth than medium achievers.	*.016
Sound (quiet or sound)	High achievers required significantly less sound than low achievers.	**.000
Sound (quiet or sound)	High achievers required significantly less sound than medium achievers.	*.014
Intake (less or more)	Low achievers required significantly more intake than medium achievers.	*.023
Late afternoon preference	High achievers had a significantly lower preference for late afternoon learning than medium and low achievers.	**.005 / **.003
Team	High achievers exhibited significantly less desire to learn in a team than low and medium achievers.	*.049 / *.034

* p<.05
** p<.01

(Giordano & Deckinger, 2004). To address the student need for a particular temperature, professors can encourage students who require warmth to wear layers of clothing or to sit near a heating vent or radiator while students who desire a cool environment should wear lighter clothing and sit near an open window or air conditioner.

This study also reveals that low achievers prefer more sound, in contrast to middle-level achievers who require less. However, high achievers exhibit a need for quiet study environments (see Table 2). To accommodate the need for sound, when students study, they can wear a headset and listen to music without lyrics, whereas students who require silence should select study areas such as the reading room of their local library or an empty bedroom where they will be uninterrupted. Most important is that each student should be encouraged to study in an environment congruent with his/her individual need for sound.

The research also demonstrates that low achievers require significantly more intake or food when working than medium achievers (see Table 2). Once again, this need can be addressed by permitting students to snack neatly and quietly during class or while they study in private.

The survey scores for the time-of-day and team learning preferences demonstrate that low achievers prefer to learn in the late afternoon

and in small groups, while medium and high achievers do not desire late afternoon classes or team-learning activities (see Table 2). Therefore, students should have the option to work alone or in a group. In addition, students who favor a specific time-of-day should be advised to register for their more challenging courses at those times and ought to be discouraged from enrolling in classes at times when they are not alert and ready to learn.

Achievement levels and student age

A *Spearman Rho* correlational analysis based on age demonstrated significant differences between participants' age and the five learning-style elements for conformity, intake, time-of-day, seating, and sound (see Table 3). These results confirm hypothesis H3. In the analysis, age correlates positively with achievement so that as student age increases, so do their GPAs and their need for (a) conformity, (b) less intake, (c) early morning learning, (d) formal seating design, and (e) quiet. It should be noted these elements are consistent with analytic learning-style characteristics, and these results corroborate the findings of Dunn and Griggs (1995), who asserted that as students matured, they developed increased analytic preferences. Therefore, business faculty should be cognizant of the increasingly analytic characteristics among their more mature students, in contrast to their younger learners who may tend to maintain global traits.

Learning styles and gender

To examine the learning styles of first-year business students based on gender, the authors performed a *Levene's Test for Equality of Variances*. After the BE (Rundle & Dunn, 2000) elements for seating design and small groups demonstrated significantly unequal variances between male and female students, an *Equal Variances Not Assumed t-Test* was performed for the elements that reveal unequal variances.

Table 3. *Spearman Rho Test* for age

BE Elements	Correlation Coefficient	Significance
Seating (informal or formal)	.241	**.000
Sound (quiet or sound)	-.130	**.004
Intake (less or more)	-.217	**.000
Early morning	.147	**.001
Late afternoon preference	-.096	*.033
Conformity (less or more)	.099	*.028

* $p<.05$
** $p<.01$

Significant gender differences emerge for the learning-style elements of: (a) visual text, (b) temperature, (c) evening preference, and (d) conformity, confirming hypothesis H4 (see Table 4). In the analysis of the effects of gender differences for visual text, females display a significantly greater need for visual text than males, which implies that the women in this investigation prefer to read course material when first learning new and complex topics (see Table 5). These findings, however, contrast with previous research, which demonstrated that females had stronger auditory preferences (Dunn & Griggs, 2000; Pizzo, Dunn, & Dunn, 1990).

Table 4. Equal Variances Not Assumed t-Tests

Equal variances not assumed	t	df	Significance	Mean Difference
Visual text	2.332	471.659	*.020	3.22
Temperature (warm or cool)	-4.000	495.948	**.000	-5.27
Evening preference	-2.319	488.598	*.021	-2.44
Conformity (less or more)	2.145	490.532	*.032	2.50

* p<.05
**p<.01

When considering the learning styles preferences of business majors, instructors should be cognizant of their female learners who have a strong preference for visual text because an auditory approach alone may hinder their learning. To assist these students, instructors can provide reading assignments prior to the presentation of each topic. The reading will assist visual-text learners in developing the schema required to comprehend classroom lectures efficiently so that they can actively participate in class discussions and take clear, useful notes.

Female participants also demonstrated a significantly greater preference for warmer temperatures than males (see Table 5). These findings concur with Honigsfeld (2001) who reported that female high school students in five different countries preferred more warmth.

This investigation determined that males favor learning in the evening and are less conforming in the ways they completed assignments (see Table 5). That outcome suggests that teachers should permit students to have choices in assignments, topics, and presentations so that non-conformists have sufficient options to maximize their learning and complete their course requirements.

Table 5. Statistics by gender

BE Elements	Gender	*n*	Mean	Standard Deviation	Standard Error Mean
Visual text (less or more)	Females	266	20.04	14.334	.879
	Males	237	16.81	16.419	1.067
Temperature (warm or cool)	Females	266	-2.29	14.858	.911
	Males	237	2.97	14.639	.951
Evening preference	Females	266	11.11	11.484	.704
	Males	237	13.54	11.998	.779
Conformity (less or more)	Females	266	-18.52	12.825	.786
	Males	237	-21.01	13.222	.859

Clearly, some of the divergent findings regarding gender suggest that community college business majors may be a unique subset of learners with distinctive learning-style preferences. To explore further, it is recommended that these findings be replicated with a larger population of community college business students while comparing them to students majoring in other fields such as nursing, education, science, etc.

Geographic origin and learning styles

In addition to assessing the participants' learning styles, the BE (Rundle & Dunn, 2000) survey requested information regarding the participants' geographic origin by specifying Hispanic, European, African-American, Asian or other. The relationship between geographic origin and learning style is of special interest inasmuch as previous correlational studies have revealed significant differences among five national groups within the United States (Dunn & Griggs, 1995). Those groups consist of African Americans, Asian Americans, Hispanic Americans, European Americans, and Native Americans. Although some cultural differences may have influenced student learning-style environmental and sociological preferences, these investigations indicate that more diversity exists *within* each group than between groups (Dunn & Griggs, 1995). Therefore, the present study of business majors also examines the differences in participants' learning styles in relationship to their geographic origin.

Before discussing the analysis, it should be noted that each geographic origin in this investigation consisted of a broad set of subgroups. For instance, Asians include immigrant groups from China, Taiwan, Korea, Japan, Thailand, Laos, Vietnam, the Philippines, India, Pakistan, and Ban-

gladesh, although each of these nations differs in history, culture, religion, and language (Griggs, 2003). Consequently, the current study examines distinctions in learning styles among broad ethnic groups, ones that encompass a wide range of cultures, religions, and people.

To explore the relationship between the learning styles of business majors and their geographic origins, an ANOVA was performed, and the results indicate significant differences for the BE elements of visual/picture ($p < .05$), verbal/kinesthetic ($p < .05$), tactile/kinesthetic ($p < .05$), analytic/global ($p < .01$), structure ($p < .01$), sound ($p < .05$), small group ($p < .05$), team ($p < .01$), and late morning/early afternoon ($p < .001$). To establish which geographic origins are significantly different within each of these BE ele-

Table 6 Results from Tukey HSD for significant mean differences based on geographic origins

BE Elements	Less preference	More preference	Significance
Visual/picture	Hispanics	Asians	*.05
Verbal/ kinesthetic	Europeans	African-Americans	*.05
	Europeans	Others	*.05
Tactile and/or kinesthetic	Europeans	Others	*.05
Analytic/global	African Americans	Asians	**.001
Structure	African Americans	Asians	*.05
Sound	Europeans	African-Americans	*.05
Small group	Others	Europeans	*.05
Team	Others	Europeans	**.001
	Asians	Europeans	**.001
	African Americans	Europeans	*.05
	Hispanics	Europeans	*.05
Late morning/ early afternoon	Others	Asians	**.001
	Others	Europeans	*.05

* p<.05
**p<.001

ments (Rundle & Dunn, 2000), a *Tukey HSD* post hoc procedure was performed. Table 6 details each BE (Rundle & Dunn, 2000) element and the geographical origin of the group that demonstrates significantly more or less preference for a specific element.

The analysis shows Asians exhibit a need for analytical, structured, visual/picture learning, in contrast to African Americans who are more global and hindered by structure. African-Americans also demonstrate different learning-styles preferences from Europeans by revealing a desire for sound and verbal/kinesthetic learning tasks. In addition, both Europeans and Asians display a time-of-day preference for the late morning or early afternoon. Finally, Europeans also prefer team or group work, but not tactile and/or kinesthetic activities. Therefore, in light of significant mean differences between the geographic groups, the null hypothesis H01 is rejected.

Since the categories for geographic origin are quite broad and group together religiously, culturally, and geographically diverse business students, it is suggested the analysis be replicated with more specific ethnic categories to amplify and verify the results from the research.

Despite the broad definition of ethnic groups, the findings from the analysis continue to support the importance of learning styles, asserting that pedagogical techniques which result in successful learning for one person or group of people may deter learning for others (Clark-Thayer, 1987; Mickler & Zippert, 1987; Dunn, Bruno et al., 1990; Dunn, Deckinger et al., 1990; Cook, 1991; Nelson et al., 1993; Lenehan et al., 1994; Rochford, 2003, 2004a, 2004b, 2004c). Business educators need to be mindful of the various, complex ways in which their students learn. Although such awareness will require business professors to modify their pedagogical approaches to classroom instruction, testing, and assignments, it will transform their classes into flexible learning environments where all business majors, regardless of their origin or learning style, can learn and complete their business education goals successfully.

Conclusion
Summary of findings

The present investigation reveals critical findings regarding the learning styles of business majors in an urban community college by demonstrating the following.

1. Most are analytical learners, who exhibit a strong preference for bright light, a quiet learning environment, and single-task persistence. However, these students also display a strong preference for the two global elements of informal seating and intake.

2. Business majors' learning styles differ based on their level of achievement. High achievers are more analytic, whereas low achievers are more global.

3. Student age correlates positively with achievement. That is, as student age increases, so do GPAs and preference for (a) conformity, (b) less intake, (c) early morning learning, (d) formal seating design, and (e) quiet.

4. Female business majors desire more visual text and warmth than males; moreover, male students are less conforming and prefer evening learning.

5. Learning style elements for visual/picture, verbal/kinesthetic, tactile/kinesthetic, analytic/global, structure, sound, small group, team, and late morning/early afternoon vary depending on the geographic origin of the business majors.

Implementing learning styles in community college business education programs

Although LaGuardia Community College has experienced an increase in enrollment in its AMS department at present (*LaGuardia Community College, CUNY, 2004)*, many other community college business programs have encountered a decline in registration and an increase in attrition. The present study offers valuable insight into the ways in which business students learn. If administrators and faculty in college business programs carefully consider these findings and adapt their instruction, assignments, and classrooms accordingly, research has proven that these modifications will result in higher achievement (Mickler & Zippert, 1987; Dunn, Bruno et al.,

1990; Cook, 1991; Nelson et al., 1993; Williams, 1994-1995; Rochford, 2003, 2004a, 2004b, 2004c) and increased retention (Nelson et al., 1993; Rochford, 2004c) because students will become engaged in effective, gratifying learning, which will result in academic success.

Before implementing a learning-style program, the results of the research should be shared with the instructors in business education programs, so that they fully understand the impact of learning styles on achievement and retention. Next, each professor should have his/her learning style assessed in order to grasp fully the concept. Self-knowledge is an essential part of developing flexible, varied approaches to learning that transform the classroom into a style-diverse community (Oxford, 1989, 1993). Teaching strictly in a style that is compatible with the instructor's preferences can hinder student learning (Galloway & Labarca, 1991; Oxford & Lavine, 1992; Terregrossa & Englander, 2000).

When business majors are accepted into a community college business program, they should be tested for individual learning style. Then, at a business department orientation program or in entry-level business courses, students can receive an explanation of their individual learning styles, how to accommodate their preferences to learn, and how to study more efficiently and successfully. In addition, faculty or academic counselors can provide students with additional support by encouraging

them to register for classes at times that match their time-of-day preference, and, perhaps, classes with professors whose teaching styles are congruent with their learning styles.

Initially, when instructors modify their teaching strategies in response to student learning styles, they may need to design new materials for lessons and presentations. However, after students develop an increased motivation and interest in their business courses, the professors can enlist students to craft materials for assignments or presentations, which can be used in subsequent classes. By involving the students in the design of instructional resources, the instructor accomplishes two goals. First, the amount of work required to create learning-style responsive lessons is reduced, especially when tactually-oriented students fashion artistic materials for classroom use. Second, by designing the materials to be used for learning, these business majors will be participating in a form of independent self-teaching, a critical skill needed to survive in college and business, and one that is reinforced by decades of adult learning research.

The combination of both the students' awareness of their learning styles and the adjustments made by instructors will permit all the business majors, regardless of their learning style, gender, level of prior achievement or ethnic background, to learn in ways compatible with their needs. As a result, they can succeed in their courses and achieve their educational goals, instead of dropping out of college or opting for other majors that can address their learning styles better.

The purpose of a community college business program is not only to obtain an associate degree, but also to prepare individuals to succeed in four-year baccalaureate programs as well as the business world. These goals, however, demand that students develop self-motivation and self-direction while they learn the required business curriculum. Learning styles can supply business majors with the tools needed to succeed, by transforming marginal, under-prepared community college students into autonomous mature learners who negotiate new and difficult situations confidently in academic or professional environments for the remainder of their lives.

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