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# THE LEARNING ASSISTANCE REVIEW

*Journal of the National College Learning Center Association*



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## ***About The Learning Assistance Review***

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*The Learning Assistance Review* is an official publication of the National College Learning Center Association (NCLCA). NCLCA serves faculty, staff, and graduate students in the field of learning assistance at two- and four-year colleges, vocational and technical schools, and universities. All material published by *The Learning Assistance Review* is copyrighted by NCLCA and can be used only upon expressed written permission.

### **Editor**

**CHRISTINE REICHERT, M.A.**

**Lourdes College**

**6832 Convent Blvd.**

**Sylvania, Ohio 43560**

**tlareditor@lourdes.edu**

### **Managing Editor**

**SUSAN SHELANGOSKIE, PH.D.**

**Lourdes College**

**6832 Convent Blvd.**

**Sylvania, Ohio 43560**

**tlareditor@lourdes.edu**

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## Letter from the Editors

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Whether one thinks, considers, mulls over, ponders, reflects, cogitates, or chews on something, the desired end result is a better understanding of the object of all that thinking, pondering, and chewing. This issue provides a forum for cogitating on how students think about school, how tutors reflect on their performance, how academic support centers can think about their service in new light, and how to incorporate thinking into all aspects of the tutoring session, from the method of providing service to promoting student metacognition.

Our first article in the “Join the Conversation” section—“Are Students’ Behaviors in College Classes Conditioned by their Experiences in High School?”—further explores the impact of how students think about class attendance and what the implications of that thought are on their success.

The article “Improving the Peer Mentoring Experience through Evaluation” helps peer mentors think about their role in student success; the evaluations, in turn, improve student success.

“The Business of Academic Support” offers a business lens as an innovative way to think outside the academic box in terms of promoting and structuring academic support.

Finally, the mother of all thinking *metacognition* is central to “Using the Scientific Method to Improve Mentoring,” which helps students understand how they need to transfer thinking skills from class to class and assignment to assignment.

Our book review evaluates *Access, Opportunity, and Success: Keeping the Promise of Higher Education* as a fresh way of thinking about offering under prepared incoming freshmen the academic support they need to succeed.

Our sincere hope is that this issue, which presents a “thinking” theme, will provide some new insight for all those professionals seeking to provide academic services for student success.

**Christine Reichert**  
Editor

**Susan Shelangoskie**  
Managing Editor





# Improving the Peer Mentoring Experience through Evaluation

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RALPH HALL  
THE UNIVERSITY OF NEW SOUTH WALES

## Abstract

*Peer mentoring programs are designed to address problems experienced by new students to assist them in making the transition to university study. The University of New South Wales offers such a program to new undergraduate students. Feedback on the program is obtained from participants through questionnaires and is used to identify problems and to elicit suggestions for program improvement. The study examines the effectiveness of improvements to the program as a result of evaluation feedback. Findings show that improvements to program content and delivery result in better outcomes for mentees but that administrative problems still need to be addressed.*

Peer mentoring programs are now widely used in universities and colleges to assist beginning students to make a successful transition into their courses of study. They are conducted at both the undergraduate (Hall, 2004; Hedges & Mania-Farnell, 2002; Muldoon & Godwin, 2003; Rodger & Tremblay, 2002; Stevens & Crase, 2003) and graduate levels (Fugate, Jaramillo & Preuhs, 2001, Grant-Vallone & Ensher, 2000; Waldeck et. al., 1997) as well as for special categories of students, such as those from ethnic minority backgrounds (Pope, 2002).

Many of these programs involve using senior students as mentors. The use of peers as mentors rather than faculty or counselling staff aims to provide a more supportive environment for addressing transitional problems, such as dealing with stress (Jacobi, 1991); accessing services and resources on campus; understanding requirements (Rodger & Tremblay, 2002); making social contacts (Pope & Van Dyke, 2004); and identifying with the institution (Evans & Peel, 1999; Hall, 2004).

Evidence of the effectiveness of these programs has been documented (e.g. Drew et. al., 2000, Hall, 2004), but few studies have sought to identify

implementation problems and strategies for improving delivery. In view of the widespread use of peer mentoring programs, research is needed on the features that make them successful. The purpose of this paper is to identify, through evaluation feedback, those components of the program that are successful and to ascertain where deficiencies exist so that new components can be devised to address these deficiencies. Through this process an exemplary peer-mentoring program can be developed that addresses the needs of students new to university study and helps reduce the high attrition levels among this group.

## **Background**

The program at the University of New South Wales has been in operation since 2002 and comprises a set of separate faculty or school-based sub-programs coordinated by the University Counselling Service. New first year undergraduates in selected courses are invited to join a peer-mentoring program for the first two to eight weeks (depending on the particular school/faculty) of their first semester at university. Those who accept the invitation are assigned to a small group of from four to eight mentees under the guidance of a mentor recruited from senior students within the same school or faculty. The mentors complete a one-day training course conducted by Counsellors from the University Counselling Service.

Each sub-program is coordinated by a course or school coordinator. In 2004, there were 27 separate sub-programs across the university; in 2005, there were 24 such programs. Further details of the program are described in Glaser, Hall and Halperin (2006) and Hall (2004).

The main aim of this study is to ascertain the extent to which addressing problems identified by participants results in improvements in subsequent deliveries of the program as perceived by the mentees.

Gaining feedback from participants on the problems they have experienced and on their suggestions for improvement is an integral part of formative evaluation (Patton, 1997; Weiss, 1998). This feedback identifies those areas of program delivery perceived by the participants to be hindering success, and it provides program administrators with a valuable source of information from which ideas for program improvement can be generated.

The source for the problems with the program and recommendations for improvement is the feedback obtained from previous years (Hall, 2004). This information was gathered in three ways: from questionnaires completed in 2004 by mentors and mentees, from interviews with a selection of mentees, and through meetings with groups of mentors. Problems identified were classified into those relating to program organization and administration, those relating to content of the program, and those relating to the personal qualities of the mentors.

Organizational and administrative problems included scheduling of meetings with mentors, size of mentoring groups, and communication with mentees. Areas where improvements had been suggested concerning the

content of the program included a greater focus on helping mentees adjust to teaching styles, helping them to understand the requirements of the university, and including more social functions involving the whole cohort of mentees. Problems with the personal qualities of the mentors included their lack of knowledge about the university generally; their lack of knowledge of the degree programs undertaken by mentees; and, in some cases, a lack of friendliness.

Because the program coordinators have the responsibility for offering the program to students within their school or degree course, it is necessary to work closely with these coordinators to achieve program improvements. There is, however, a large turnover of these coordinators because the role is allocated by the school or faculty and is not recognized as any particular staff member's responsibility. It is usually allocated to a member of the administrative staff rather than the teaching staff. So although feedback on evaluation findings is provided to all coordinators, there appears to be little attempt at implementing improvements in most of the programs. A survey of all coordinators on changes to their mentoring programs in 2005 identified only minor changes in all except the Arts and Social Science program.

The strategy adopted, then, was to work closely with the coordinator of the largest peer-mentoring program, namely the Arts and Social Sciences program. Through her cooperation, most of the recommendations from the 2004 evaluation were implemented in the 2005 program. These included improved scheduling arrangements for meetings with mentees, briefing of mentors about the problems reported by mentees in previous years, preparation of additional resource kits to provide mentors with strategies for conducting meetings with their mentees, and providing more opportunities for mentors to combine with other mentors to organize joint activities and social occasions.

Implementing changes in one program enabled comparison with those programs where little or no change had been made. These programs formed a de facto control group to determine the effectiveness of the improvements made in the Arts and Social Sciences program. This study reports the findings from the 2005 Arts and Social Sciences peer-mentoring program in comparison with other programs in 2005 and in 2004.

## **Method**

Questionnaires were distributed to mentees and mentors in as many of the programs as was practicable. Because not all coordinators distributed the questionnaires, data was obtained from 12 programs in 2004 and 15 in 2005.

The actual method of administration varied from program to program, depending on the coordinator. In some programs, emails were sent to both mentees and mentors, while in others, random samples of mentees were telephoned. The questionnaires were administered in the week following completion of the program.

The mentee questionnaire in 2004 was completed by 438 mentees across 12 of the 27 programs offered that year; in 2005, it was completed by 359 mentees across 15 of the 24 program offerings. Response rate varied from program to program and averaged 66%. The questionnaire sought information from mentees in the following areas:

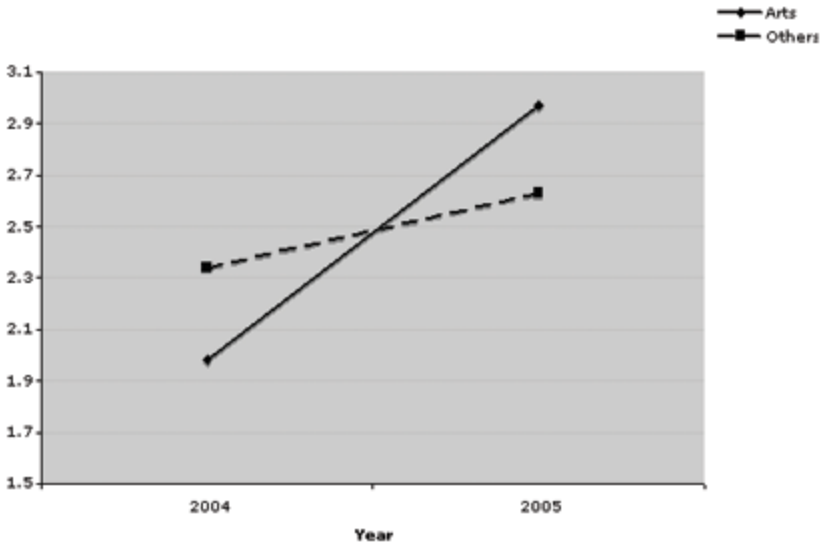
1. Whether discontinuation or deferment was being considered and, if so, what impact the mentoring program had on their decision to stay.
2. Use made of the mentoring program.
3. Helpfulness of the mentoring program and the mentor.
4. Problems encountered with the mentoring program.
5. Suggestions for improving the program.

The questionnaire was developed from earlier versions in which open-ended questions were included on problems experienced and areas in which the program had been helpful (Hall, 2004). Detailed coding of responses to these questions identified recurring themes and led to them being rewritten as closed questions in the present questionnaire.

## **Results**

The focus of the analysis will be on comparison of the Arts and Social Sciences Program with the other programs because it is in this program that the most extensive modifications were made based on feedback from the 2004 evaluation.

Mentees rated the extent to which they made use of the mentoring program on a 5-point scale reflecting increasing levels of use. As a first test of the effect of improvements to the Arts and Social Sciences program, mean ratings for 2005 were compared with those for 2004 in both the Arts and Social Science program and in all other programs combined. If program improvements in the Arts and Social Sciences program are effective, then this should show up in improvements in program use. That is, mentees who believe that the program is providing them with the assistance they need should make greater use of it than those who do not. Figure 1 shows the mean rating of program use by mentees in 2004 and 2005. Mentees rated their use of the program on a five-point scale from little or no use (1) to extensive use (5).



*Figure 1: Mean ratings of use of peer mentoring program for 2004 and 2005. Ratings were on a five-point scale from 1 (little or no use) to 5 (extensive use).*

A two-way analysis of variance with program (Arts vs. others) and Year (2004 vs. 2005) as the main effects found that use of the Arts and Social Science program by mentees showed a much greater increase than that of all other programs combined ( $F_{1,738} = 9.59$ ,  $p = .002$  for the interaction term). Overall use increased from 2004 to 2005 ( $F_{1,738} = 31.93$ ,  $p = .000$ ) while overall program main effects showed no significant differences.

Mentees also rated helpfulness of the program overall and in the main areas covered by the program, as well as helpfulness of their mentor. The ratings were made on a five-point scale reflecting increasing levels of helpfulness.

The percentage of mentees rating the program helpful for each of these areas is shown in Table 1 together with results of the significance tests for the overall change from 2004 to 2005 and the change for the arts program and other programs separately.

Table 1 shows that for every measure of helpfulness, there is an improvement from 2004 to 2005 for the arts program, and in every case, this improvement is greater than that for the other programs. The improvement for the arts program is statistically significant at the .05 level in four of the eight areas and in none of them for the other programs. These areas are as follows: help navigating around the university, help with teaching style, help with social contacts, and overall help from the mentoring program.

Table 1

*Percentage of mentees rating the mentoring program helpful overall and in each of the various areas addressed by the program.*

Area of Helpfulness	Program				Significance of Effects <sup>a</sup>		
	Arts		Other		Year	Arts	Other
	2004	2005	2004	2005			
Overall ratings of helpfulness:							
Helpfulness of the mentoring program overall	38.9	62.7	45.5	47.7	.070	.013	.664
Helpfulness of the mentor	54.3	70.5	55.3	60.4	.115	.213	.523
Ratings of helpfulness in specific areas:							
Finding my way around the university	38.9	48.5	26.4	30.7	.003	.017	.281
Help with teaching style	54.3	26.9	12.3	18.1	.015	.010	.487
Help with social contacts	21.6	42.0	31.4	30.9	.340	.047	.834
Help access university services	29.7	43.3	18.7	29.9	.000	.317	.050
Help feel part of university community	32.4	42.1	30.3	30.2	.629	.165	.915
Help in understanding university requirements	35.1	47.5	30.0	35.7	.106	.095	.663

<sup>a</sup>Significance levels for chi-square tests of the relationship between rated helpfulness and year overall (first column), for Arts mentees (second column) and other mentees (third column).

Mentees were also asked to identify the problems they experienced with the program by responding to questions about the problems most often encountered, such as communications with mentor, scheduling clashes, and issues being neglected. Table 2 shows the percentage of mentees reporting which of these problems they had experienced with the mentoring program along with the results of the chi-square significance tests of the change in these responses overall and in the arts and other programs separately.

Table 2 shows that mentees reported a reduction in three of the four problem areas in the arts program and all four in the other programs, although this reduction was significant in only two of the areas. Only one of these areas—frequency of communications with mentor—was the reduction significant for the arts program and not for the other programs.

Another measure of overall effectiveness of the mentoring program is provided by the responses to the question concerning the impact of the program on the decision by students considering discontinuing or deferring their study at the university. Table 3 shows the percentage of students rating this impact as considerable (4 or 5 on a five-point scale) for arts and other mentees for each of the years 2004 and 2005. Also shown are the

significance levels for chi-square tests of the relationships between year and ratings separately for arts and other programs and the contingency coefficient as a measure of the strength of the relationship.

Table 2

*Percentage of mentees responding yes to questions concerning problems they experienced with the mentoring program.*

Area of Helpfulness	Program				Significance of Effects <sup>a</sup>		
	Arts		Other		Year	Arts	Other
	2004	2005	2004	2005			
Finding my way around the university	41.9	31.3	22.4	14.1	.062	.212	.021
Help in understanding university requirements	25.8	10.7	21.9	17.0	.011	.017	.196
Help feel part of	27.4	8.0	15.2	8.3	.001	.001	.023
Help in understanding university requirements	12.9	15.2	20.8	17.0	.283	.854	.317

<sup>a</sup>Significance levels for tests of difference between proportion of mentees endorsing each statement in 2004 compared to 2005 overall (first column), for Arts mentees (second column), and other mentees (third column).

Table 3

*Percentage of mentees reporting that the mentoring program made a great deal of impact on their decision to stay at university.*

Program				Significance of Effects <sup>a</sup>			Contingency Coefficient <sup>b</sup>	
Arts		Other		Year	Arts	Other	Arts	Other
2004	2005	2004	2005					
4.5	11.1	3.3	2.9	.002	.016	.056	.445	.261

<sup>a</sup>Significance level for chi-square test of the relationship between ratings of impact and year for all mentees and separately for arts and others.

<sup>b</sup>Measure of the strength of the relationship between rated impact and year.

Although the percentages in Table 3 show that the mentoring program had a great deal of impact on mentees' decision to stay at university, the

increase in this percentage for the arts program is quite large and significant. The program need only be responsible for one student deciding to continue at university for it to pay for itself many times over.

Analysis of the mentee's responses in 2005 to the open-ended question soliciting comments and suggestions on the program revealed ongoing administrative problems with scheduling, attendance at meetings, and communication with mentors in both the arts and other programs. Few comments were made on the actual content of the programs. Those that were made focused on the need to prepare students for various styles of teaching at university. This was the lowest rated area of helpfulness of the program (see Table 1). One Arts and Social Science mentee commented, "I think preparing students to handle the workload and university styles of learning should be a major focus of the mentoring program." However, the overwhelming majority of comments were favourable about the program, the mentor, or both. For instance, the following arts mentee comment represents the majority of comments: *"I thought the program was truly amazing! I loved my mentor. He became a good friend of the group and helped us in a time of need. I definitely feel peer-mentoring needs to be continued for many years to come."*

## Discussion

The focus of this study was on the impact of improvements to the delivery of peer mentoring programs for first year undergraduate students. Feedback from evaluation of the 2004 programs was provided to coordinators of the 2005 programs, but substantial changes were implemented in only one of those programs, namely the Arts and Social Science program.

These changes focused on both administrative and content areas of the program. The key administrative problems were scheduling of meetings and communications with mentors. Mentees had commented that meetings with their mentor(s) often clashed with their classes and that in some instances mentors had not contacted them about the program. These problems were addressed by (a) providing all mentees details of meeting times of mentoring groups and giving them the opportunity to change to an alternative group at a more convenient meeting time, and (b) providing mentors with an office phone to enable them to contact their mentees.

Content problems that had been identified from previous studies included lack of attention to university requirements and teaching styles as well as insufficient opportunities to meet other students in a social context. These problems were addressed by providing additional training sessions for mentors in the Arts and Social Science program. These sessions explored strategies for helping mentees adjust to university study, including some strategies on how to help mentees cope with differences between university and high school. There were also suggestions for mentors on possible ways to organize social occasions in combination with other mentoring groups to provide greater opportunities for social contacts with mentees.

These training sessions were in addition to those that had already been undertaken by mentors in all programs. This university-wide training program, provided by the University Counselling Service, focused on



responsibilities of the mentor that included ethical issues but dealt minimally with program content. No other program coordinators provided additional training sessions for their mentors.

### *Implications*

The findings from this study show that adding the extra training for mentors in the Arts and Social Science program and improving administrative arrangements result in better ratings of the program by mentees in comparison with mentees in other programs. Arts and Social Science mentees also reported experiencing fewer problems with the program and were more likely to report that the program helped them in their decision to continue at university rather than to discontinue or defer.

While administrative arrangements such as communication, scheduling and meeting facilities are important preconditions for the success of a peer-mentoring program, it is the program content that will be the determining factor in program success. A well-organized program that does not meet the needs of mentees is not going to produce helpful outcomes for them.

### *Further Research*

The present study has sought to identify some of these needs and devise strategies in the mentoring program for addressing them. The strategies that have contributed most to the improved outcomes (as shown in Table 1) include helping mentees find their way around the university campus, adjust to teaching styles, and make social contacts. These content areas seem to be important ingredients in a successful peer-mentoring program. There is, however, further room for improvements as helpfulness ratings in most areas are still below 50%.

Above all, having a sympathetic and friendly mentor appears to be a crucial ingredient in the success of the program, as many mentees have commented as is evidenced by the high rating of helpfulness of the mentor shown in Table 1.

Although program revisions have addressed many of the problem areas, there still remain problems of clashes of mentoring meetings with classes and communication with mentees as shown in Table 2. Further improvements will need to address these problems as well as the need to find more innovative ways to deliver the program content. One strategy being considered is to set up a web site for the mentoring program to enable mentors and mentees to communicate on-line. This will enable mentees not able to attend meetings to post their questions and have them answered by their mentors on-line.

## **Conclusion**

If peer-mentoring programs are to be expanded in universities and colleges, detailed studies need to be conducted to determine the effectiveness of these programs and to identify those features contributing to their success. This study has made a start in this process by showing that including guidance on approaching university study, help on locating campus resources and facilitating social contacts with other students, and

improvement of the mentoring experience of first year students. Further research should focus on identifying further areas helpful to mentees and on the personal qualities of mentors that contribute to a successful mentoring outcome.

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# The Business of Academic Support

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DONNA R. POTACCO  
WILLIAM PATERSON UNIVERSITY

SANDRA DE YOUNG  
WILLIAM PATERSON UNIVERSITY

## Abstract

***Academia has traditionally avoided adopting the fast-paced, profit-oriented operational style that accompanies corporate culture. However, a business model can be successfully adapted to the unique needs of an academic institution, discipline, faculty, and students through the selective adoption of business principles. A classic marketing mix theory was used with other basic marketing principles to promote an academic support area that struggled to convince students to voluntarily use their services. An adaptation of this model is presented along with the methodology that was used to develop it.***

Science tutoring at our institution operated in two separate areas of our campus 15 years ago. One operation was at an "Academic Support Center," which was responsible for all tutoring at the university; it was located in the middle of the campus and reported to the administrative division. The other area was a grant-funded Anatomy and Physiology tutoring program, which was focused on serving minority-based constituents; it was located in a science laboratory and directed by a faculty member who reported to the academic division. Concerns relating to relatively low numbers of science students seeking support, relatively high failure rates of all students in science courses (grades D and below), and funding prompted an administrative decision to restructure academic support for the sciences. Structurally, we focused on the results of two reports: Richard Light's Harvard Assessment Reports (1990, 1992) that extensively discussed the benefits of Study Groups, and the recommendations of the American Society for the Advancement of Science (Matyas & Malcolm, 1991) that issued a call for more research in the use of study groups in science and mathematics. Once these study groups were established as our academic foundation, we focused our efforts on the more corporate-centered goal of convincing as many students as possible to

utilize our program — or increasing sales.

The methodology we chose to use for restructuring was based on a Marketing Mix model also known as the 4Ps: Product, Promotion, Place and Price (McCarthy, 1960). This model, which is used by businesses to influence demand and satisfy consumers, involves the methodical selection and control of numerous Marketing Mix variables. For example, "Promotion" decisions include the selection of advertising and sales strategies that will best appeal to the consumer. In academia, this might be flyers, manuals, brochures, displays, etc. The adaptation of these business principles to the unique needs of our institution resulted in the development of a highly successful science learning assistance center.

## **Academic Methodology based on the Marketing Process**

### *Segmentation*

Segmentation is the separation of customers into homogenous groups with similar needs. Once these groups are identified, the product mix can be adapted to meet their unique needs. Definition of segments can be based on age, sex, social class, lifestyle, motives, personality, etc. (Hisrich & Peters, 1991).

We initially segmented our groups demographically based on "The 1990 Science Report Card" issued by the National Center of Educational Statistics (Jones, L.R. Mullis-Ina, V. S., Raizen, S. A., Weiss, I.R., Weston, E.A, 1992) which states that minorities and females showed significant weakness in the sciences by grade 8 and the American Society for the Advancement of Science which indicated that "A coherent, coordinated, articulated structural approach to enabling students from under-represented groups to succeed in science, mathematics, and engineering programs has yet to be achieved by the (higher education) institutions" (Matyas & Malcolm, 1991, p.9). As we continued to closely work with students in science courses, however, it became apparent that freshmen, transfer students, students in high-risk courses, new science students, and possibly other populations were also high-risk groups, raising the possibility that by "targeting" special groups like women and minorities, we were alienating other "high-risk" segments. Accordingly, we also began to "target" segments based on psychological and product-related variables. In academic settings, examples of psychological variables include life style, motives, and personality. Part time versus full time, athlete versus scholarship, and dorm versus commuter students have different needs and can be motivated differently. Similarly, student motives can range from the abstract (companionship, understanding) to the more concrete (grades). Product-related benefits may include brand loyalty, end-use (book, test), and motives (homework assignments, exam preparation). As a result of our ability to identify these unique needs, we were able to design a product mix that appealed to specialized segments and still propagate an open learning community which was inviting to all students studying a science. The strategy of using academic assistance due to the objectives and content of the course rather than because of students' deficiencies was also noted by Keimig (as cited by Martin & Arendale, 1992) and was similar to Martin and Arendale's (1990, 1992, 1994) Supplemental

Instruction (SI) program in that the focus of our Study Groups was learning rather than remediation. "SI does not identify high-risk students, but rather identifies high-risk classes. SI thus avoids the remedial stigma often attached to traditional academic assistance programs" (Martin & Arendale, 1992, p. 3).

### *Product*

In our original academic support center, tutoring was our primary product. In contrast, using the marketing model, market segmentation provided us with information that we used to develop a mix of products and services (product mix) capable of meeting student academic needs and resulting in academic success.

We had no supply budget the first few years for the academic materials we needed for our students, but we did have strong faculty support. Once they realized we were attempting to supplement their efforts, they donated all material resources and continue to contribute to the present day. Books, tests, models, multimedia equipment, and study guides were contributed on an ongoing basis for their students' use. The use of media in instruction to achieve different learning outcomes or educational goals has been discussed extensively (Gagne, 1987; Gagne & Medsker, 1995; Gagne, Wager, Golas, & Keller, 2004; Reiser & Gagne, 1983). From a marketing standpoint, supplying our students with products that satisfied their academic needs resulted in market penetration as demonstrated by increased student contact.

The advent of technology presented us with an additional opportunity to expand our product mix in the form of software and multimedia assistance for the science projects of both students and faculty. This merging of tutoring and computer assistance was also seen at DeVry where Eichler indicated that students "loved" computer-assisted instruction if it was backed up with tutor interaction and help (Casazza & Silverman, 1996). Faculty were included in software and hardware purchasing. As a result, these software programs contained content germane to our courses; professors sent their students to access the programs, and students were provided with alternative methods of learning. Assisting faculty in their efforts to use technology for their research and classroom activities also had pleasant ramifications in that faculty presence at an academic center could be compared to the use of celebrities in commercial advertising, or "celebrity testimonials." These academic role models, essentially, were non-verbally communicating to students an image of the Center as the "educational workplace" of serious professionals.

Along with this product mix, we focused on other variables involved in product decisions such as branding, versatility, quality, reliability, features, and service. As an example, service in the form of convenience was provided to the science segment through the program's structure: hours of operation, duration of each tutoring session, and staffing were established based on students' science lecture and laboratory schedules, enabling students to conveniently schedule their tutoring sessions along with their classes.

The design of our Study Group Procedure is a demonstration of how a combination of service, versatility, and reliability can produce planned results. Groups were formed on a first-come, first-served basis with the understanding that students would lose their group if they missed one

session. This potential loss of a preferential time slot provided the incentive for students to use the Study Group during low, as well as high, periods of demand, more fully utilizing our tutors and ensuring more consistent student attendance. As an additional motivation for students to commit to a Study Group, they were promised that they would be guaranteed service and no waiting lines throughout the semester in exchange for their continual participation in the Group. All groups were posted by course and teacher as well as time to provide students with the flexibility to participate in multiple groups. The end result was our ability to convince students to maintain consistent contact with our Center throughout the semester, rather than sporadically before assessments or as a result of poor grades.

### *Branding.*

Branding is the process of attaching a symbol or name to a product that generates an image that will be associated with the product, service, and/or company. It helps the consumer to identify the product or service. It can also assist a manufacturer or service to plan a marketing mix through the development of attributes that will differentiate the brand to the segmented group in a meaningful and compelling manner.

Ideally, the brand name will become a center of the promotion and advertising strategy and, if associated with a quality product, will facilitate the adoption of new ideas spun off from this brand. The name can inspire acceptance, preference, and/or loyalty among consumers and facilitate the adoption of alternate products or services. The name should fit the product and convey an image that consumers will identify with the product (Hisrich & Peters, 1991). The brand name "Academic Support" was not adopted since these words could portray a remedial stigma. The actual name adopted for our program was created by a faculty member and used for the meaning these words implied: "Science" accurately identified the community we served. "Enrichment" was our purpose. "Center" was what we intended our location to become to the science community. The name was simple and conveyed an image we could use in our market strategy. It was eventually abbreviated to SEC suggesting forethought in using a name with a suitable acronym. These easy to remember, brief letters were used as part of our logo, website address, and university publications. Our logo enhanced our identity to students signifying stability and professionalism at the same time that it provided memorability and visibility.

### *Place.*

Place decisions are concerned with getting the product to the target customers and include decisions relating to locations, logistics, dealers, distributors, sales forces, and distribution (Hisrich & Peters, 1991). Under the former system, we were located in a space mid-campus central to our student body. Unfortunately, our science students were reluctant to travel across campus for science assistance. When given the choice of location for the re-structured program, we used the marketing principles of filling the needs of your target segment and chose to relocate to the science building. Since there was no space for us, our group chose to share space



with laboratory classes our first year, necessitating our migration from laboratory to laboratory in synchrony with the laboratories' schedules. Growing numbers and laboratory security issues resulted in our relocation to a more stable base of operation by the second year. Subsequently, still increasing numbers prompted our university to offer us a large space in a more remote location. Remembering the three principles of real estate, "location, location, location," we chose, instead, to remain in a small storage room with big windows in proximity to faculty, students, and classroom activity. As a result, it was very convenient for faculty to visit their students, answer questions, and/or show their students that they recognized they were making an effort to do well by using the Center. Although this space was too small to accommodate all of our groups, it served as a home base where group leaders met with their Study Groups before bringing them to surrounding empty rooms to work. Ultimately, our program's design and its usage of space was more important than size in helping us to reach the goals (student attendance and retention) that were necessary to earn more space. As our student base and effectiveness was established, our administration continued to allocate more space for our program; as a result, administration has approved architectural plans to significantly increase our size in the science building renovation project. The placement of support services in geographic contiguity to academic departments was also noted as being important by Supplemental Instruction developers at the University of Missouri, Kansas City (Martin & Arendale, 1992) and Loyola University (Casazza and Silverman, 1996).

### *Virtual Distribution.*

In an effort to expand the student base we were reaching through physical space, we established additional channels of distribution through the Internet. Online tutoring was established as a means of providing more convenient tutoring and additional quality resources at no cost to several new segments, including working students, distance education students, the handicapped, and caregivers. To accommodate students who did not have the time to invest in an online tutoring session but had questions, asynchronous tutoring was also created through the use of a message board. Online resources to support these options were supplied with an online virtual academic resource site named the Virtual Science Enrichment Center (VSEC). It was decided to use a "family or blanket" branding strategy in the creation of the VSEC's name because consumer adoption of a new product is generally facilitated by using the same or a similar name as the parent product.

### *Distributors.*

Using the marketing model, it was recognized that our distributors, sales force, and tutors were in actuality the same. Tutors had the first and longest contact with our "consumers" (students) and, therefore, were crucial in the program's ability both to retain our current "clientele" and to attract new students. Since they were also the intermediaries between faculty and students, it was equally important that they demonstrate the competence and expertise that would earn them the acceptance of both entities.

Consequently, tutor recruitment was based on those criteria most likely to satisfy both factions: academic excellence, familiarity with our courses, personality, communication skills, and the ability to lead. Faculty were asked to collaborate with the Center on an ongoing basis by “hand-picking” potential students that fit these criteria and, as a result, they were more comfortable referring their students to these tutors. Analogously, students were more willing to go to a tutor who was familiar with their professor(s) and their courses’ needs.

### *Promotion.*

Traditionally, our campus support programs had been promoted through flyers and email announcements as well as appeals to faculty to refer students. However, we saw the need for more active and aggressive promotional methods. Promotion decisions in marketing are related to how a business educates and communicates with its target segments. It includes advertising, demonstrations, coupons, samples, publicity, and other sales aids (Hisrich & Peters, 1991). A good promotional campaign can strongly influence sales and should not be underestimated. As noted by Shenson (1990),

Available means, objectives, the market segment, the distribution network and customer needs are important considerations during the promotion of a product . . . . [B]illions of dollars are expended annually in both open-to-the-public (open enrollment) seminars and workshops (p.1).

Where our program was in its “growth cycle” influenced our promotion decisions. In the initial stages of product development or when exposing freshmen to support services, it was necessary to educate the population on what the product was and how it would satisfy their needs. Personal selling, samples, coupons, and demonstrations are generally most effective during this “introduction” stage. As the program entered the “growth” stage, benefits were stressed, and our image further developed to facilitate student acceptance of new products and expansion of our program to new market segments/students. Continual awareness of environmental conditions was fundamental to these promotion efforts. Specifically, student receptivity to our efforts and our selection of promotional tools was dependent on the student’s perspective (course and professor), seasonality (fall, spring, or summer semester), and market conditions (timing within the semester’s learning cycle). For example, printed materials were hand delivered at the beginning of the semester to generate publicity; exam reviews were offered before exams when students were most receptive to studying; flyer content was periodically changed throughout the semester based on student needs; online tutoring was more popular toward the middle of the semester as student desperation increased and on-site tutoring slots diminished; and coupons were more popular when students’ exam grades did not meet their expectations.

### *Coupons.*

Historically, one of the most frustrating challenges we experienced in academic support was convincing students to seek our academic assistance

before they were in academic jeopardy. Using marketing, we found a solution to this dilemma through the initiation of a coupon program. The coupon model has proven itself to be an effective marketing tool which generated "...a \$96 billion business in the United States with a distribution of nearly 300 billion coupons in 1993" (Spethmann, 1994). It is also known for developing a clientele as noted by Fortin (2000): "Traditionally, coupons have been used...to attract new users into a product category" (p. 517).

We created a modified coupon program in our attempt to replicate this industry model. In this program, students received a coupon point in exchange for each Study Group session they attended. If the coupon was validated by our support center's administrators, professors participating in the program would accept these coupon points in exchange for credit. The value of this credit varied based on the policy of the professor. "Program adoption" began slowly since only professors who were "early adopters" initially experimented with the program. However, as more professors began to experiment with the concept, it was soon apparent through study group membership and coupon issuance that students were seeking academic assistance earlier in the semester, reducing their chance of encountering academic jeopardy on their first exam. Students liked receiving immediate gratification in the form of a coupon as a reward for their efforts. Professors liked the program because they established the value and terms of their students' coupons, security was stringent, and their students were taking a more proactive approach to learning.

### *Samples.*

"Samples" provide prospective buyers with the opportunity to learn about a concept that interests them and the presenter with the opportunity to persuade potential consumers to buy the product. In our marketing oriented academic environment, it was recognized that workshops, seminars and exam reviews were actually providing a "sample" of our product to our students. New workshops were constantly developed based on faculty and student input in order to provide students with skills that could help them succeed in their courses. Although we knew that we were limited in our ability to significantly increase the grades of a student in academic jeopardy through only exam reviews, we encouraged them to participate knowing that participation in our groups increased the chance that student would utilize our services in the future.

### *Indoor signs.*

Although our Center was in close proximity to our students, the onus of "getting them in the door" still remained. Traditionally, we had always posted informational flyers throughout the high traffic areas of our building to announce our services and events. Using a marketing-centered methodology, however, we made these flyers attention-grabbing and posted them at eye level. As Levinson (1998) noted,

Worded and designed successfully, indoor signs capitalize on the momentum generated by your other means of marketing . . . Indoor signs . . . generate impulse reactions exactly where they ought to - at the place of purchase, where about 76% of purchase decisions are made according

to a 1996 study (p. 59).

In addition, a bulletin board and a white board were situated in visible locations outside the Center. Restaurant-style, the white board was used for the purpose of informing students of our daily events, "specials of the day." The bulletin board's content interspersed our program's schedules, information, and events with scholarship opportunities, job positions, and other information likely to attract our students' attention.

### *Personal Selling.*

In sales, one of the most successful techniques in establishing a productive relationship between a salesperson and a prospective consumer is personal contact. Despite the somewhat chaotic atmosphere of the beginning of the semester in academia, the coordinator or tutors personally made the extra effort to visit high-risk classrooms to provide students with program information verbally and in the form of brochures, a form of "direct mail."

Entertainment provided during a Study Group session was another form of personal selling which was as effective in educating and capturing the attention of students as it is in marketing. The benefits, strategies, and research of incorporating entertainment media in student learning has been discussed by Forney and Cawthon (2004) and McKinney (1988). Our most popular tutors kept their groups fun and entertaining while students learned, justifying the "opportunity cost" of spending time participating in a Study Group.

### *Web Marketing Tools.*

As technology evolved, its usefulness to us as a marketing tool became limitless, providing us with a method of reaching more students with limited funds. As noted by Levinson (1998), "Technology now gives small-business owners a blatantly unfair advantage. It allows them to produce first-rate marketing materials that used to require big budgets but now require only a big imagination" (p. 2). Our Center's attempt with virtual marketing was the SEC WebPages site, which was created to inform and motivate students to become involved in our program. Subsequently, we also used this program as a virtual door through which students were directed to our other virtual sites, which included the Virtual Science Enrichment Center (VSEC) and SEC Blackboard™. Growth of our virtual site usage was exponential. As evidence of the potential of these sites, online hits increased 1,831% by the end of the third year, and 3,633% the fourth year. At the end of the sixth year, there were 306,831 hits and 63,521 visitors to our virtual sites.

### *Word of Mouth.*

Good marketing may help convince a consumer or student to use a product initially, but the long term value of customer referral is invaluable. As Levinson and Godin (1994) note,

Word of mouth advertising is the ultimate result of years of careful planning, media spending, and quality service. . . . In order to generate a referral or a testimonial from a loyal customer, you've got to take the time to set the stage. You can do a hundred little things that make your business attractive to a customer. . . (p. 352).

Our unwavering responsiveness and effectiveness ultimately helped us to develop an image and brand name that established acceptance, preference, and/or loyalty by our professors and students. As we soon discovered, this effort paid dividends in terms of the contacts that resulted from student and faculty referral.

### *Price*

Price decisions in marketing basically involve setting a price that serves the customer well and maximizes profits to the company. Unless a Center is subsidized by a grant, learning support is a hidden cost to the institution that will ultimately affect tuition. Since this connection is indirect, students are not aware of tutoring cost. Even administrators may not realize the true cost of tutoring programs. A learning center has the ability to help the academic institution control this cost for itself and its students through efficient resource management. A relatively low cost in the initial stages of a project can be critical in facilitating its continuance. Our understanding of that marketing concept was essential to our ability to continue development of our new Center. Consequently, analysis and feedback was frequent and ongoing to facilitate strategic fine tuning of the program early in the product's life cycle and to update the administration concerning their investment.

Our initial program costs were kept low by faculty donations and by using a part-time staff of students and one professional. Costs were further reduced by the "economies of scale" that resulted from the use of Study Groups, which gave us the ability to help more students with less manpower and fewer resources, versus one-on-one tutoring. As a side benefit, Study Groups enabled us to prevent the long waiting times and short sessions students had to endure in the former system, which was walk-in based, and reduced the number of repetitions a tutor needed to repeat an explanation. Through efficient scheduling, we were able to accommodate over 11,000 students with 23 tutors at a cost that ranged from approximately \$4.00 to \$6.00 per contact.

Since compensation for our tutors was modest, particularly in the early stages of the program, creative financing was implemented. That is, a "modified commission" structure was established in which the pay rate and hours provided to tutors was directly related to their ability to attract and keep students in their Study Groups. Additionally, non-monetary incentives were generously provided to tutors in the form of portfolio development, mentorship, letters of recommendation, and networking to help them develop personally and professionally.

## Assessment

Hisrich and Peters (1991) aptly describe the importance of assessment in the development stages of a product or program:

For new products in the critical introduction state, performance should be monitored in short intervals (monthly or quarterly). As the product moves on to another stage of the life cycle, performance standards should change. If the new product is not meeting its standards, the problems must be diagnosed so that the necessary modifications can be made at an early point in the life cycle (p. 453).

In order to monitor our activities and determine whether we were meeting our goals and objectives, assessment of our learning center was accomplished using a marketing model. This control process includes the identification of which marketing variables to measure, establishment of performance standards, comparison of actual results against planned results, modification of the program based on results, and revision of performance standards as appropriate (Hisrich & Peters, 1991). Some well-known important variables that we monitor at our academic center include student involvement (sales), effectiveness (profit), and cost (expenses). This kind of valuable information can be produced with relatively minimal effort as long as a carefully planned database is maintained.

Contacts were a relatively easy parameter to measure and were used in a multitude of ways, including the success of new programs. For example, after we initiated our on-site resource program, student contacts increased by 58%. An additional 6% increase in contacts was demonstrated a year later with the expansion of our on-site multimedia center, and a 49% increase has been seen since the start of the coupon program. In total, we were able to show that on-site contacts increased by 569% since the start of the Science Enrichment Center. Contacts were also used in conjunction with other variables to calculate approximate cost per student contact hour (cost/unit), which was a descriptive as well as quantitative method of measuring the relative cost of our program. When correlated with more detailed information, such as segment, time, service, etc., contacts were further used to obtain information that could help us more accurately project staff needs and obtain student cycle information that could be used to help us make future marketing decisions.

### *Program Effectiveness*

Program effectiveness can be difficult to measure in a learning center and may require ingenuity. In academic support, there is always the possibility that students in study groups perform better academically because they are a more motivated cohort. Alternatively, there is the possibility that the high numbers of desperate low academic achievers who join a Study Group at the last moment to avoid failure reduces the positive effect in performance demonstrated by successful Study Group participants. During the first two years of operation when our student numbers were more manageable, we eliminated these variables by comparing the grades of all tutored students before and after joining a Study Group. We found that students who attended a Study Group five or more times prior to an examination increased their

score by an average of 12 points on the next exam. As our student numbers grew in subsequent years, we only compared exam grades of students in selected high-risk courses before and after our program's intervention. In Spring, 2007, we found that in one high-risk course, the incidence of "D" and "F" grades decreased 53% when the percentage of students joining a SEC Study Group five or more times increased from 8% to 70%.

## **Discussion**

When developing a marketing plan, it is important to remember that the external and internal environment must be used as the framework for decision making. The economy, culture, technology, demand, and politics are external factors that will affect the internal environment of the academic institution which includes financial, capital, and intellectual resources, as well as the institution's mission, goals, and objects (Hisrich & Peters, 1991). As this environment changes, the learning center must be willing to adapt and evolve with these changing needs.

### *Further Study*

Technology is an example of one area that continues to grow at tremendous rates and has the capacity to continually impact learning centers. Some of our previous technological adaptations are discussed in this paper. Data management systems is an area with great potential to help learning centers create effective reports. Last year, after our institution changed to a more user-friendly computer interface, we worked with our technology experts to modify an existing data system to retrieve more detailed information. We also developed a tutoring attendance reporting system for our professors that can be accessed at their convenience throughout the semester.

As our world becomes more global, there is also the need for more virtual resources, such as virtual tutorials. Although many programs are on the market and freely available on the Internet, our center has teamed with our faculty to develop tutorials specific to our curriculum and students. In addition, we are presently in the process of adding audiovisual capacity to our on-line tutoring.

## **Conclusion**

The challenge to the success of an academic support program is encouraging student adoption and establishing institutional support. This paper demonstrated how the classic Marketing Mix (4Ps) theory developed by Jerome McCarthy in 1960 was used in conjunction with other basic marketing principles to accomplish these objectives at minimal cost. This theory has been modified by many businesses based on their needs and can also be modified by support centers. The marketing applications that were successful in our center may be helpful to other learning center administrators. These principles can be used to develop program(s) or to maximize the efficacy of their current techniques. The theory behind this methodology can be used ad infinitum in a multitude of areas in varying degrees. All that is required is the willingness to constantly adapt to changing student and environmental needs and an investment of time, energy, and creativity.

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# Using the Scientific Method to Improve Mentoring

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SAUNDRA YANCY MCGUIRE  
LOUISIANA STATE UNIVERSITY

## Abstract

***Many students who enter colleges and universities seem to be focused on memorizing and regurgitating information rather than on developing critical thinking and problem solving skills. Mentoring is crucial to help these students transition from the current approach to one that will be successful in college. Successful mentoring requires a structured approach. The scientific method can serve as the model for such an approach. An important component of successful mentoring involves teaching students about the learning process and teaching them effective learning strategies. Specific characteristics of mentors and protégés determine whether the mentoring is effective or not.***

**M**entoring is a well-established practice for helping individuals successfully negotiate new or unfamiliar territory. There are numerous mentoring programs operating in academic, corporate, and social settings. The role of the mentor is to help the protégé (student seeking assistance) develop habits and attitudes that will allow him or her to attain a much higher level of success than would have been the case without the mentoring. I have witnessed the significant impact of mentoring throughout the course of my 35-year career as a chemical educator and learning center administrator. In most cases, I have seen mentors make a significant and positive impact on student performance. However, in some cases the impact has been negative and has caused protégés to abandon their career goals. When the mentoring is done in a structured manner, based on specific principles and guidelines, the prognosis for a positive outcome is excellent. When the scientific method is used as a framework for structured mentoring, the results are very likely to be positive for both the protégé and the mentor.

## The Scientific Method

The scientific method provides a standard protocol for asking questions and conducting experiments to find answers to the questions. A schematic of

the scientific process, as shown below from the website [www.sciencebuddies.org](http://www.sciencebuddies.org):

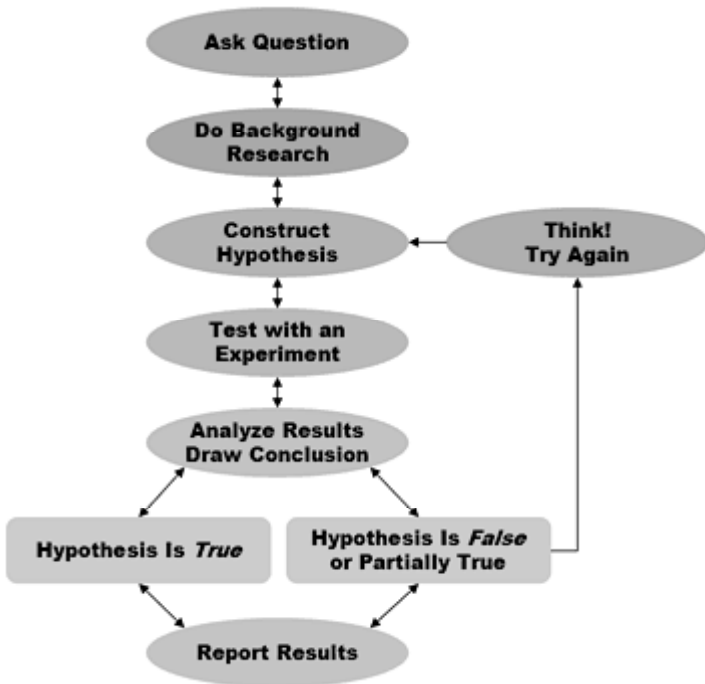


Figure 1. Steps of the scientific method

From “Steps of the Scientific Method,” by M. Glass, 2007, from Sciencebuddies.org website, [http://www.sciencebuddies.org/mentoring/project\\_scientific\\_method.shtml](http://www.sciencebuddies.org/mentoring/project_scientific_method.shtml). Copyright 2007 by the Kenneth Lafferty Hess Family Charitable Foundation. Used with permission of the author.

## Applying the Scientific Method to Mentoring

### Asking the Question

The fundamental question that must be answered when entering a mentoring relationship is “How can I be the most effective mentor for this particular protégé?” The emphasis is on the particular protégé because all students are different. They come from different academic backgrounds, different cultures, different family situations, different past experiences with mentors, and many other different situations. Mentors can be effective only if they know as much about the protégé as possible without delving into areas that the protégé might consider too personal.

### Do Background Research

Background research will yield information about the protégé’s characteristics that will be very valuable in the mentoring sessions. Some of

the characteristics that will be helpful to the mentor are listed below:

- A. Preferred learning style: verbal, auditory, read/write, or kinesthetic
- B. Personality style: Myers-Briggs personality profile characteristics
- C. Cerebral Hemisphericity: Preference for right-brain or left-brain activities
- D. Career Interests: research, teaching, health career, etc.
- E. Cultural Background: minority or majority, urban or rural, socioeconomic status, etc.

In most cases, the protégé will not know his or her learning style, personality style, or cerebral hemisphericity preference, but this can easily be determined by having the protégé take a learning style diagnostic test that is available at a number of websites. The mentor should also take the diagnostic tests so that s/he will better understand how the mentor and protégé are alike or different in styles and preferences.

In addition to knowing the characteristics of the protégé, the mentor must determine the protégé's expectations of the mentoring experience. For example, a protégé who expects to be told what to do by a mentor will want a different kind of mentoring experience from the protégé who expects the mentor to help the protégé brainstorm several options that the protégé has constructed on his or her own. The mentor will need to gently move all students toward a position of self-sufficiency, but the initial encounter will be different based on the student's initial expectations. The mentoring philosophy at the Center for Academic Success is that protégés are adults who are capable of making sound decisions about their behaviors and activities when provided with strategies to develop choices. Mentors should guide students in developing a menu of choices and help them select the best alternative for a specific situation.

### *Construct Hypothesis*

If the protégé is having difficulty in school, which is often the case when a protégé contacts a mentor, there are several possible causes, resulting in a number of hypotheses that can be considered. Although several factors might be responsible for the academic difficulty the protégé is experiencing, each one should be explored separately.

- A. The protégé needs more effective learning and study strategies
- B. The protégé needs strategies to deal with personal problems such as financial problems, relationship issues, etc.
- C. The protégé needs a confidence boosting session to be assured that s/he can successfully negotiate the task at hand
- D. The protégé needs organization and time management strategies

Based on varied experiences with proteges, by far the number one cause of academic difficulty is hypothesis A (above); the protégé needs more effective learning and study strategies. Therefore, this one is the focus of the experiment to be performed.

### *Test with an Experiment*

In order to test whether a lack of learning and study strategies is really the problem, the experiment to be performed involves providing information on the learning process and on very specific strategies that can be used to improve learning. Information is also provided on how to access other campus resources such as tutorial centers, instructor's office hours, the Office of Career Services, and the campus Health Center. During subsequent visits, the protégé and mentor examine which actions produced positive results. If the student's performance improves as a result of this information, the hypothesis is supported. If the student's performance does not improve, the mentor tests another hypothesis.

## **Learning and Study Strategies Information**

### *Teaching Students the Difference between Studying and Learning*

Because many students enter college without knowing how to learn or how to study, the Center for Academic Success conducts workshops with groups of entering first-year students to help them begin shifting their primary focus from grades to learning. When these students are asked to explain the difference between studying and learning, the most common response is that studying involves forcing themselves to memorize uninteresting information, whereas learning involves gaining insight into material of interest to them. They all agree that learning is fun, but studying is tedious. They further indicate that learning could and often does happen in the absence of studying, and studying does not necessarily result in learning. It was evident during the discussion that these students had not previously reflected on the difference between studying and learning, but that after the discussion they clearly understood the difference. One student who clearly understood the difference explained it as follows. He stated that studying involves focusing on the "what," whereas learning involves focusing on the "why," the "how," and the "what if." He found that if he focused only on the "what," he easily forgot the information. But if he focused on the "why," "how," and "what if," he could retain and apply the information. This understanding of the difference between studying and learning was the first step in helping students to turn unwelcome and tedious study sessions into engaging and interesting learning sessions. And they began to understand why a greater investment of time devoted to their academics was necessary.

Teaching students about metacognition and metacognitive strategies has proven to be very effective at helping students understand why their behavior should be changed if they want to succeed academically, especially in the sciences. Metacognition involves thinking about thinking. It involves the ability to be aware of one's self as a problem solver, to monitor and control one's mental processing, to recognize when one is simply memorizing facts and formulas and not understanding the application of the information, and to know that knowledge and understanding are not handed out by an

instructor, but must be constructed by the learner.<sup>1</sup>

The examples of four students provide the evidence that when students are taught how to learn, their performance usually takes an immediate and dramatic turn for the better. The performance of four students that contrasts their performance before and after (underlined) being taught metacognitive strategies is shown below:

- ◆ Student A: junior psychology student  
Test scores: 47, 52, 82, 86
- ◆ Student B: freshman chemistry student  
Test scores: 42, 100, 100, 100
- ◆ Student C: junior organic chemistry student  
Test scores: 54, 82, 76, 78
- ◆ Student D: freshman calculus student  
Test scores: 37.5, 83, 93

When interviewed, each of these students indicated that understanding the difference between the way they had been studying before being taught metacognitive skills and the way they studied after they were taught metacognitive skills was the reason for their immediate and drastic improvement in their performance.

### *Teaching Students That Learning and Memorizing are Different*

Cognitive psychologists make a distinction between rote learning and meaningful learning (Ausubel, Novak, and Hanesian, 1978). Rote learning is verbatim memorization and is not necessarily accompanied by any understanding of the terms. Students are unable to explain information that is learned by rote, and they are not able to paraphrase the information in their own words. Meaningful learning, on the other hand, is learning that is tied to previous knowledge, and it is understood well enough to be manipulated, paraphrased, and applied to novel situations. For example, rote learning about Charles' Gas Law involves the simple memorization that the volume of a gas is directly proportional to the temperature when the pressure is held constant. Meaningful learning, on the other hand, involves relating this law to the advice to motorists to reduce the pressure in their tires when embarking on a long trip on a hot summer day. Most learning is neither completely rote nor entirely meaningful, and it can be placed on a rote-meaningful learning continuum (Ausubel et al.).

Although most students enter college not knowing the difference between rote learning and meaningful learning, when they are taught this distinction, they are able to implement strategies that promote meaningful learning. When they fully understand the difference between memorizing facts and formulas for a test and working to understand the course concepts and how the concepts relate to each other, students' greater conceptual

<sup>1</sup>For a brief overview of metacognition, see the J.A. Livingston (1997) article, "Metacognition: An overview," for information on constructivist learning theory, see the M. Ryder (2007) website.

understanding and their success on problem solving tasks and examinations increases substantially.

One particularly effective way to present the different types of learning is through a discussion of the hierarchy of learning levels, shown below, similar to Bloom’s taxonomy (Bloom, 1956). The difference between the representation below and Bloom’s taxonomy is that the “knowledge” and “comprehension” levels have been subdivided into three levels: “recall,” “translation,” and “interpretation.”

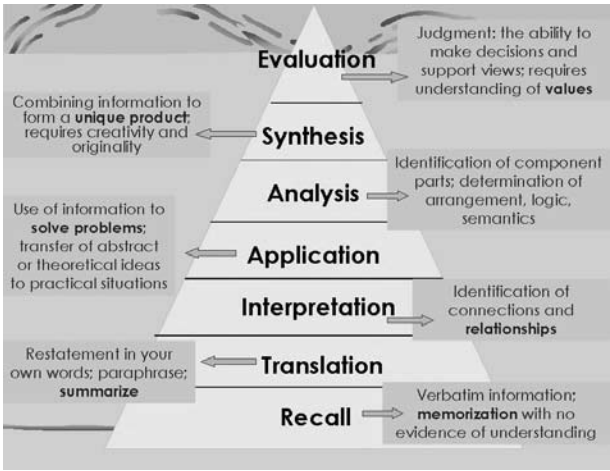


Figure 2. Hierarchy of learning levels

Although mentors generally assume that students know that memorizing information is not the same as learning, this assumption is unwarranted. Formally introducing them to differences in the levels of learning is crucial to developing the understanding of this distinction in today’s students.

*Teaching Specific Learning Strategies*

The Center for Academic Success has had great success teaching students to use The Study Cycle with Intense Study Sessions. The four-step process is described below.

**The Study Cycle**

The four steps in the Study Cycle are adapted from methods that are commonly discussed in study skills textbooks and from a method proposed by Frank Christ (Personal Interview January 4, 2006).



Step 1: Preview or pre-read the information that will be covered in class before class.

Spending 10 – 15 minutes reviewing chapter material (concentrating on the bold-face print, italicized writing, figures, graphs, diagrams, etc.) prepares the mind to receive and comprehend the material that will be discussed in lecture. The previewing provides background knowledge for what will be covered in the lecture. Cognitive scientists have empirically demonstrated the importance of background knowledge to understanding and acquiring new information (Bransford, Brown, and Cocking, 2000).

Step 2: Go to class, and actively participate in lecture.

This step needs to be explicitly stated because absenteeism in large introductory science classes is often extremely high, approaching 50% after mid-semester.

Step 3: Review and process class notes as soon after class as possible.

Spending 10 – 15 minutes previewing and reworking lecture notes shortly after the lecture provides the mechanism for the information to be transferred from short-term to long-term memory, significantly improving retention.

Step 4: Use Intense Study Sessions.

Intense Study Sessions are concentrated study sessions of approximately 60 minutes duration. However, they can be as short as 20 minutes or as long as 75 minutes, depending on the individual student's need for a break. During this short, but focused, study time, a considerable amount of learning can be accomplished. The Intense Study Session consists of four segments, each of which is important for the session to have the maximum effect on learning.

- a. 2 – 5 minutes: Set goals for the next 40 minutes
- b. 35 – 38 minutes: Work to accomplish the goals that were set.
- c. 10 minutes: Review what was studied
- d. 10 minutes: Take a break

For example, a goal for an Intense Study Session in biology might be to master photosynthesis by learning the terms and the processes involved.

Most students find that the Intense Study Sessions are real “procrastination busters” – providing a means for targeted study sessions that are efficient and “doable.” Short, focused sessions are more effective than three-to-four hour study marathons during which there is little meaningful learning accomplished.

## Getting the Most Out of Homework

Many students who do well on the homework do poorly on the tests and question why they ace the homework assignments but fail the tests. The answer to this question lies in *how* these students do their homework assignments. The first question to ask a student in this situation is, “When you do your homework, do you read the problem, flip back through the pages to find an example similar to the problem, and then do the problem based on the example?” Invariably, these students read the homework problem *before* reviewing the information related to the problem, look for an example, and then “work” the homework problem using the example as the model. This one behavior is the reason that a large number of students think they have “done the homework problems,” but that instead the examples in the book have done the homework problems. Students, however, usually see nothing wrong with this method of doing the homework problems, especially because this is the way they always did their homework in high school, and they did well in their courses there. A simple strategy that has proven quite effective in extinguishing this habit is found in the following bit of advice that mentors can give to protégés:

- ◆ When starting homework, study the information relevant to the problems as if they will be part of a quiz. Treat the examples in the text and in the notes as homework problems.
- ◆ Read the problem statement in the example, but do not look at the answer. Work the example problem by using information learned from studying the concepts.
- ◆ When an answer is first determined, compare that answer to the answer that is provided in the example. If the answers are the same, it is a good chance the problem was done correctly.
- ◆ Next look at how the problem was solved in the example to see if the attempted method of solving the problem was identical to the method used in the example. If it is not, and it easier to work the problem using the attempted way, continue to use that method to solve problems of that type. If the method used in the example is preferred, begin to use that method in the future. However, if the attempted method produces a different answer than the answer that appears in the example, study the concept to find the source of the error(s), and correct them.
- ◆ Continue to work on the example until the problems can be completed without making errors.
- ◆ After having worked the examples this way, solve the homework problems without looking at any examples. In fact, it is quite useful to pretend that these problems are for a test or a quiz.
- ◆ When finished with all of the problems that will be completed at that time, check all of the answers.

This advice is particularly helpful to students who may not be aware that the answers for many assigned homework problems are provided in an Appendix in the back of the textbook. Any problems that were not solved

correctly should be noted and returned to at a later date, after reviewing the relevant material. Mentors are urged to tell students to “be sure to reread the text and your class notes on this topic; do not look only at example problems.” Some problems may require several attempts before they can be done correctly without consulting any examples.

The process described should be repeated until all problems have been solved correctly without looking back at any examples in the text or in the class notes. When and only when all problems can be solved in this way can students be confident that they can solve any problem that is given. With an appropriate explanation students easily understand the difference in the skill being tested on an exam and the skill they are developing by using the examples to solve the homework problems. The skill being tested is not solving a problem by using an example, but rather solving the problem using only the protégé’s effort. However, when they do problems only by consulting examples, the skill they are perfecting is the skill of solving a problem by using an example as a guide. The knowledge of the difference results in students changing the way they approach their homework assignments, and they see fairly immediate increases in their understanding of concepts, problem solving skills, and test performance. Whereas it would never occur to most students on their own that looking at an example to do their homework is counterproductive to performing well in the course, they are quite receptive to trying this new way of doing the homework because they understand why it works.

After all of the strategies have been provided to the protégé, the mentor can proceed to the next step in the scientific method.

### *Analyze Results, Draw Conclusion*

If the result of providing protégés with learning and study strategies information yields an improvement in academic performance, the mentor can conclude that the hypothesis was true. If the performance does not improve, the mentor can conclude that the hypothesis may be false. Although it is possible that even with the information, the protégé did not change his or her behavior. In this case, the hypothesis would be true even though the performance did not change. Motivational strategies would then need to be used. If the hypothesis is not true, the next step in the scientific method must be implemented.

### *Think! Try Again*

If the hypothesis proved to be false, the mentor can then propose an alternate hypothesis. For example, time management and organizational skills may be the problem. The protégé can then be directed to use time management tools such as weekly calendars, semester calendars, “to do” lists, etc. Whether the hypothesis was true or false, the mentor must report the results so that other mentors will have effective strategies to use with their own protégés. Mentors should not shy away from future use of strategies that proved ineffective with one protégé. The strategy that was ineffective with protégés with one set of personal characteristics may be very effective with a group of protégés with different characteristics.

### *Report Results*

The results should be reported to a wide variety of audiences in a number of different forums. For example, results can be reported to the other faculty members in the department, to other faculty at the institution, at national conferences, and in newsletters and journals. When mentors have specific strategies to use with protégés, the likelihood of a successful mentoring experience is greatly enhanced.

### **Behaviors of Successful Mentors and Proteges**

Mentors should always be cognizant that the protégé has different characteristics, skills, interests, and goals than the mentor. Mentors should be prepared to listen more than talk and be willing to brainstorm ideas with the protégé. Additionally, mentors should always communicate high expectations while always being prepared to help protégés deal with setbacks. And most importantly, the mentor should know when and whom to call if the situation requires outside intervention. For example, if a protégé exhibits signs of physical or psychological illness, the mentor should direct the student to a health professional on campus. Protégés should recognize that the mentor has experience and knowledge that will be beneficial and should approach each mentoring session with an eager and open mind. Protégés should also be willing to challenge the mentor on advice with which the protégé respectfully disagrees.

Several mentor and protégé behaviors have been linked with successful mentoring. Murray and Owen (1991) identify the behaviors linked with success mentoring as follows:

#### *Behaviors of Successful Mentors*

- A. Act as a source of information on the culture, norms, and expected behaviors
- B. Tutor specific skills, provide effective strategies
- C. Give feedback and provide coaching
- D. Serve as a confidante in personal crises and problems, where appropriate
- E. Demonstrate confidence in protégé's ability
- F. Assist protégé in plotting a career path
- G. Let protégés make their own decisions
- H. Maintain the integrity of the relationship between the protégé and the protégé's natural supervisor

There are also a number of behaviors that are associated with unsuccessful mentors, which are delineated below.

### *Behaviors of Unsuccessful Mentors*

- A. Controlling and manipulative
- B. Self-centered
- C. Legend in their own mind
- D. Lack respect for protégé's intelligence and ability
- E. Use personal information to undermine protégé
- F. Take credit for protégé's work
- G. Unwilling to remain on a professional level with protégé

While certain behaviors can be attributed to successful and unsuccessful mentors, there are also protégé behaviors that impact the success of the mentoring experience. These are listed below.

### *Behaviors of Successful Protégés*

- A. Interested in receiving advice
- B. Receptive to constructive criticism
- C. Spend time preparing for mentoring session
- D. Unafraid of asking probing questions

### *Behaviors of Unsuccessful Protégés*

- A. Regularly miss appointments
- B. Fail to heed advice
- C. Refuse to take responsibility for their actions
- D. Generally have an unenthusiastic and negative attitude
- E. Rarely, if ever, express appreciation
- F. Fail to give credit to the mentor for his/her assistance

## **Broader Implications**

The application of the scientific method to mentoring activities is applicable to all academic areas – not just the sciences. Although my mentoring activities primarily involve students in the areas of science, technology, engineering, and mathematics, other faculty members at the Center for Academic Success mentor protégés in a wide variety of disciplines. The steps involved in applying the scientific method to mentoring are generally applicable to any mentoring experience. Learning about the characteristics of the protégé, developing hypotheses about the problem to be addressed,

jointly developing a menu of strategies, implementing the strategies, analyzing the success, developing conclusions about the efficacy of specific strategies, and subsequently modifying strategies based on the results will make the mentoring experience an enjoyable and satisfying one for both the protégé and the mentor. The broad applicability of these methods suggests that they can be used for students in all types of institutions and at all levels. The specifics of the mentoring experience will change, but the basic framework is sufficiently robust so that, when applied according to the scientific method, it will yield positive results in any mentoring situation.

A number of additional references are quite useful for gaining additional information about cognitive science applications for improving learning. These references provide an excellent overview of the area as well as strategies that can be immediately implemented with students at all levels (Fisher, K.M., Wandersee, J.H., & Moody, D.E. 2000; Halpern, D.F & Hakel, M.D. 2002; Nilson, L. 2004; Peddy, S. 2001; Taylor, S. 1999; & Zull, James 2004).

## Conclusion

The steps in the scientific method provide an excellent framework for successful mentoring activities. Increasing the numbers of students who are interested in pursuing careers in the sciences, technology, engineering, and mathematics will require improved mentoring to keep more students in the pipeline. The principles and strategies outlined above should prove useful for everyone who wants to significantly improve the impact of their mentoring activities on students.

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# JOIN THE CONVERSATION: *Are Students' Behaviors in College Classes Conditioned by their Experiences in High School?*

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RANDY MOORE  
UNIVERSITY OF MINNESOTA

PHILIP A. JENSEN  
UNIVERSITY OF MINNESOTA

*This research follows a previous study published in The Learning Assistance Review, Moore (2006a), that reported developmental education students are exceedingly confident of their academic abilities, despite the fact that most of them will not graduate from college.*

## Abstract

***Students in an introductory college biology course who believed that attending class had been important for their academic success in high school were 1) most likely to attend their college biology class, 2) most likely to earn high grades in their college biology class, 3) most likely to report that their high school classes had been challenging, and 4) were least likely to base their attendance on whether they received points for attending class in college. College science teachers can use assessments of students' first-day-of-class attitudes about class attendance to identify and design interventions for students most likely to earn low grades.***

College science teachers have a variety of attitudes and policies about class attendance. As Druger (2003) has noted, "Some instructors don't care if students attend class at all . . . [whereas] other instructors feel strongly about the importance of class attendance. Some instructors check attendance at every class; others don't check it at all" (p. 350). Regardless of their policies, college science teachers know that attendance is important because it is the most obvious and important indicator of students' levels of academic engagement. Indeed, class attendance in introductory science courses is strongly correlated with grades (Launius, 1997; Moore, 2003a;

Wiley, 1992). As Thomas and Higbee (2000) have noted, "The best . . . teacher, no matter how intellectually stimulating, no matter how clear in providing explanations and examples, may not be able to reach the high-risk freshman who has no real interest in learning ... and will certainly not be successful with the student who fails to show up for class" (p. 231).

Many students understand that class attendance is associated with good grades (Moore, 2003a). Nevertheless, and despite teachers' warnings (e.g., "It's important for you to prepare for and attend class"), many students skip lectures, labs, help-sessions, and other course-related opportunities (Moore, 2006b). Not surprisingly, and regardless of their high school grades and ACT scores, students who skip class and ignore course-related opportunities are much more likely to earn lower grades in introductory college science courses than are students who attend class and participate in course-related activities (Moore, 2004). As Thomas and Higbee (2000) have noted, "Nothing replaces being present in class" (p. 229).

Although college students are responsible for their behaviors, we wondered to what extent, if any, students' academic behaviors in college science classes are conditioned by their experiences in high school. Many reports have lamented the poor study-habits of high school students (Honan, 1998; Marklein, 2006; Young, 2002), and absenteeism is especially high (e.g., 25% to 50%) in introductory college science courses, even in those taught by award-winning instructors (Friedman, Rodriguez, & McComb, 2002; McGuire, 2003; Thompson, 2002). Romer (1993), who notes that absenteeism in introductory college courses is "rampant," describes the situation this way: "A generation ago, both in principle and in practice, attendance at class was not optional. Today, often in principle and almost always in practice, it is" (p. 174). Given the close association of class attendance and academic outcomes, it is not surprising that grades in introductory science courses are also especially low (Congas, Langsam, & Schoeps, 1997). Why don't more college students attend their introductory science classes? When students enroll in college science courses, do they believe that coming to class is important?

In a previous study published in *The Learning Assistance Review*, Moore (2006a) reported that developmental education students are exceedingly confident of their academic abilities, despite the fact that most of them will not graduate from the college. In the research reported here, we have extended these earlier studies by addressing several additional questions. For example, do students believe that going to class was important for their success in high school? Do students base their attitudes about the importance of class attendance in college on their attitudes about the importance of class attendance in high school? If so, how do those attitudes about class attendance translate into students' actual patterns of attendance? How do students' views of the importance of class attendance in college relate to their grades and rates of attendance in college science courses?

## Methods

### *Site of the study and its students*

This study included 1,837 students enrolled in a traditional introductory "mixed majors" biology course offered at a large research university in the Midwest. We used short in-class writing assignments to record attendance at every class, and on the first day of class (as well as in the course syllabus) students were shown data emphasizing the correlation of attendance and grades in the course (Moore, 2006a, 2006b). However, students received no points for attending class.

The course was taught by professors using similar grading criteria and the same syllabus, textbook, classroom, and pedagogical styles. Students in the study had an average ACT composite score of 20 (for comparison, the national average is 21), an average high school rank of 57%, an average age of 20, and a gender-distribution of 49% female and 51% male. These students' ethnic diversity was as follows: 17% African American, 2% American Indian, 16% Asian American, 4% Chicano/Latina, 58% Caucasian, and 3% Other. Students came from a diverse array of high schools, most of which were in the Midwest. We excluded 23 students who failed the courses because of academic misconduct (cheating and plagiarism).

### *Students' interests, GPAs and graduation rates*

We used institutional records to obtain students' grades in high school biology. We calculated GPAs by awarding four points for an A, three points for a B, two points for a C, one point for a D, and no points for an F.

### *Students' attitudes and expectations*

At the beginning of the first day of class in college, we distributed a survey asking students to respond to the questions listed in Tables 1 and 2. At the final exam, we distributed another survey asking students this question: "If I could repeat this course, I would attend class (a) more often, (b) less often, or (c) about the same amount." Students' responses were tallied after final grades were submitted, at which time students' responses were grouped according to students' grades in the introductory biology course.

## Results

Students' responses to questions about their grades and attitudes regarding class attendance in high school are presented in Table 1. Students' responses to questions about their grades and attitudes regarding class attendance in their college introductory biology class are presented in Table 2. Numbers in the tables are percentages of students who agreed with each statement. Students' grades in their high school biology courses were as follows: A = 33%, B = 58%, C = 9%, D = 0%, and F = 0%.

Table 1

*How students' attitudes about attendance and grades in high school are associated with their grades in an introductory biology course in college. Numbers in the table are percentages of students who agreed with each statement.*

	Grade in Biology Course				
	A	B	C	D	F
In high school, it was important to attend class.	82	71	72	59	56
In high school, I got points for attending class.	59	54	58	59	57
High school challenged me; I had to work hard.	59	42	41	44	44
In high school I attended					
90-100% of my classes	85	85	86	92	89
80-90% of my classes	9	11	8	5	8
70-80% of my classes	6	4	6	3	3
High school prepared me well for college	80	80	77	76	77

$N = 1837$

Table 2

*How students' attitudes about attendance and their grades in high school are associated with their grades in an introductory biology course. Numbers in the table are percentages of students who agreed with each statement.*

	Grade in Biology Course				
	A	B	C	D	F
I'll come to class more often if I get points for attendance	59	76	74	84	83
If I could repeat this course, I would attend class					
More often	9	18	30	68	50
Less often	1	2	2	3	8
About the same	90	80	68	29	42

On the first day of class, more than half (i.e., 51%) of students predicted that they would earn an A in the introductory college biology course, 44% predicted that they would earn a B, and 5% predicted that they would earn a C. No students predicted they would earn a D or F.

Students' grades in the introductory biology course were as follows: A = 10%, B = 27%, C = 31%, and D/F = 32%. The average attendance rates of students who earned various grades in the college biology course were as follows: A = 92%, B = 79%, C = 70%, D = 61%, and F = 34%.

## Discussion

In this study, students' grades in introductory biology were not influenced by students' attitudes about their preparation for college. Indeed, and regardless of their grade in the introductory biology course, large majorities (i.e., 76-80%) of students believed that high school had prepared them well for the academic challenges of college (Table 1). Students had good reason to believe this; after all, more than 90% of the students in this study had earned an A or B in their high school biology course, and none of the 1,837 students in this study— despite the fact that they were “at risk” students unlikely to graduate from college (Moore, 2007)—had earned a D or F in their high school biology class. These results are consistent with the claim that students enter our introductory courses confident that they will earn high grades (Moore, 2003a), and indicate that differences in students' grades and behaviors in the introductory biology course in this study were not due to students' differing views of their academic preparation from high school.

Most students reported that they had received points for attending class in high school (Table 1). This percentage was similar (i.e., near 60%) regardless of the grades students earned in the college biology course. These results indicate that the differing attendance rates of students who earned different grades in the introductory biology course were not attributable to the conditioning that could have resulted from differential rates of receiving points for attending class in high school.

On the first day of class, large majorities of students believed that the most important factor for their success in the college biology course was their effort, not luck, their aptitude, or the difficulty of the course (Moore, 2006a, 2006b). These majorities were similar regardless of students' final grades in the college biology course. These results indicate that, regardless of their eventual grade in the course, students believe from the outset of classes that their effort is the most important determinant of their success (Table 1). This belief is well founded; students' effort is strongly correlated with their success or failure in introductory college biology courses (Moore, 2006a, 2006b, 2007). These results are also consistent with the finding that students who predict that they will earn high grades in introductory biology courses attend more classes than students who predict they'll earn low grades (Moore, 2003a).

As has been noted by Launius (1997), many students' rates of class attendance are based on whether they receive points for attending class (Table 2). On the first day of classes, these students acknowledge that they will attend class more if they receive points for coming to class and will attend class less often if they do not receive points for attendance. In this study (i.e., in which students received no points for coming to class), students followed through on their first-day-of-class claims; on average, students who attended the fewest classes were those who claimed that their rates of class attendance would be based on whether they received points for coming to class (Table 2). Similarly, the highest rates of class attendance characterized students who claimed that they were not influenced by

whether they received points for coming to class. These results indicate that in courses in which students get no points for attending class, students' linkage of class attendance with receiving points is an accurate predictor of students' actual rates of class attendance. This is important because most introductory science courses do not award points for merely coming to class (Davis, 1993).

Students' linkage of class attendance with points-for-attendance is also associated with students' grades. For example, students whose rates of class attendance were not influenced by whether they got points for attendance earned disproportionately higher percentages of the highest grades in the course, and students whose attendance was predicated on receiving points for showing up earned disproportionately higher percentages of the lowest grades in the course (Table 2). These results indicate that students' first-day-of-class attitudes about class attendance can be used to predict students' rates of class attendance as well as their grades in introductory biology courses. Science instructors should consider using assessments of students' attitudes about class attendance as a basis for identifying (and designing interventions for) students whose academic behaviors are most likely to produce academic problems. For example, emphasizing the relationship of class attendance and course grades improves the attendance and grades of some students (Moore, 2003a). However, this emphasis must be done repeatedly and be based on quantitative data; truism such as "it's important for you to attend class" presented only on the first day of class have little impact (Moore, 2003a).

So what determines students' attitudes about the importance of attending class? In high school, class attendance is often important; students who earn the lowest grades skip or are tardy for many more classes than students who earn the highest grades (Peterson & Colangelo, 1996). In the study reported here, students most likely to recognize the importance of attending class in high school were also most likely to claim that they had worked hard in high school. For example, students who earned an A in the introductory biology course were 1.3-times more likely to claim that they had worked hard in high school than were students who earned an F in the college biology course (Table 1). Students most likely to claim that it was important to attend class in high school were also more likely to attend class in college and make an A in the introductory biology course. For example, students who earned an A in the biology course were 1.45-times more likely to believe that coming to class is important than were students who earned an F in the biology course. These results support the claim that students who graduate from high schools having high standards have a decided advantage in college (Cohen, 2006; Rumberger, 2001), for the rigor and "academic intensity" of high school courses are the most important pre-college factors associated with collegiate success (Hoover, 2006, p. A37). Similarly, schools having low standards that do not challenge students – Belfanz and Legters (2006) refer to them as "dropout factories" (p. 41) – put their students at a distinct disadvantage in college (Bridgeland, Dilulio, & Morison, 2006; Olson, 2006a, 2006b).

### *Further Study*

Although some at-risk students have academic behaviors that predestine them to academic failure (Moore, 2007), the research presented here raises

several questions for future research that could minimize this problem. For example, would students' rates of class attendance improve if they were periodically sent reports documenting their grades and attendance rates? Would attendance improve if students were forced to explicitly acknowledge their absences (e.g., by writing a short essay about their grades and attendance rates)? These and related questions may help instructors and learning assistance professionals better understand one of our most vexing problems—namely, why students most needing academic help are often so unwilling to engage themselves in their educations. (Moore, 2006b).

## Conclusion

At the end of the semester, students who earned the lowest grades in the college biology course were much more likely to wish that they had attended class more often than were students who earned high grades in the course. For example, students who earned Ds and Fs were approximately seven-times more likely to wish that they had attended class more often than were students who earned an A in the course. These results 1) are consistent with the fact that students understand that their effort (and not factors such as luck or aptitude) is the most important determinant of their grades in college science courses (Moore, 2006a, 2006b, 2007), and 2) support the finding that course engagement — and specifically, class attendance —is critical to students' success in introductory biology courses (Moore, 2003a, 2003b). As Thompson (2002) has noted, "If a student ever complains about a grade or how tough the course is, one of the first things I look at is class attendance. That usually says it all" (p. B5).

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## BOOK REVIEW:

# ***Access, Opportunity, and Success: Keeping the Promise of Higher Education***

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Casazza, M. & Bauer L. (2006). *Access, opportunity, and success: Keeping the promise of higher education*. West Port, CT: Praeger.

**REVIEWED BY BETH VANRHEENEN, LOURDES COLLEGE**

*Access, Opportunity, and Success: Keeping the Promise of Higher Education* by Martha E. Casazza and Laura Bauer begins with a startling claim: "More students than ever before are entering college today without a sufficient academic foundation, and many of them are succeeding" (p. vii). After an eye-opening historical overview of who had access to higher education before the 20th century, the authors present oral histories regarding "underprepared" students from the students themselves as well as from the faculty and administrators who have championed a broader interpretation of what constitutes "college material." The authors' viewpoint is that underprepared students can achieve success when four conditions converge: they are empowered by people who believe in them; they are given access to success; they have effective support systems; and their presence and the programs that support them are given a broad range of institutional commitment. The book is thus addressed to everyone who interacts with underprepared students and is designed to encourage efforts to enhance these students' opportunities for success in college and beyond.

Chapter 1 surveys college admission standards since the early 18th century and clarifies that tensions over access to higher education are centuries old. Concerns about students who were not adequately prepared characterized Harvard's earliest days, and by 1879, 50% of Harvard's applicants were failing the entrance exam and being admitted "on condition." In a scenario eerily similar to today, the committee that studied the situation linked the lack of writing skills to poor critical thinking and pointed the finger of blame at lower levels of education. As early as 1849, some colleges attempted to meet the needs of underprepared students by establishing preparatory departments. This step, however, often aroused faculty complaints and concerns. Therefore, another strategy evolved at the turn of the century: the creation of junior colleges.

Seventy-six junior colleges were operating by 1917, and by 1930, their numbers had doubled. With the passing of the "G.I. Bill" after World War II, the trend toward growth and diversity of academic support systems received

renewed impetus. Higher education had taken a new turn, culminating in what was described in the 1960s as “universal access.” But the positive sweep of this historical overview abruptly ends when Casazza and Bauer note that “the doors that were gradually becoming more and more open often turned into revolving doors as students began to regularly drop out or stop out, the practice of enrolling in non-sequential terms” (p. 8). The challenge now for higher education is, therefore, how to combine access with excellence, which is the major focus of Casazza and Bauer’s book.

Chapter 2 introduces the first set of oral histories that, according to the authors, “describe in different ways the tremendous impact of believing in someone and of having a set of expectations for achievement” (p. 13). From the educators’ perspectives, several major points arise: those who made a difference in the lives of underprepared students had often been underprepared students themselves; the educators believed that they had gained as much from the students as they had given to them; the educators were involved in their students’ lives outside the classroom; and the educators purposefully created climates where students felt safe. The authors conclude the chapter by stating that such positive responses toward underprepared students appear to be happening only on the micro level through individual professors, not systemically through the formal channels of education.

Chapters 3, 4, and 5 continue the oral history format, presenting narratives organized around three themes: making access successful, establishing institutional commitment, and creating effective support systems. Chapter 3 deals extensively with the challenge of helping underprepared students while maintaining standards and the importance of having a broad base of faculty support for programs for the underprepared. Chapter 4 presents illuminating testimonies about the effects of having—or not having—administrative support for learning assistance programs, and it provides insight into how the directors of some successful programs carry on unremitting public relations efforts among administrators and board members to ensure that their programs are seen as integral parts of the institution. Chapter 5 contains insightful remarks from students who availed themselves of support services, emphasizing how the help they received improved their self-esteem, which, in turn, increased their confidence and set them on a cycle of success. The book ends with a chapter that delineates the authors’ five major recommendations, along with 16 action steps, for enhancing successful access to higher education.

One of the book’s strengths is that its authors have substantial expertise in the field of student support. Dr. Laura Bauer is a developmental educator and the director of the Undergraduate Developmental Studies Program as well as the director of the Blended Program in the Department of Adult and Continuing Literacy Education at National-Louis University in Chicago. Dr. Martha Casazza is Dean of the College of Arts and Sciences at the same university and is the co-author of *Learning Assistance and Developmental Education: A Guide for Effective Practice* (1966) and *Learning and Development* (2000). Together, Bauer and Casazza bring a wide range of first-hand experience to the discussion, along with extensive primary and secondary research among leaders in developmental education and students who have experienced it.

Although, in some chapters, the oral history approach brings immediacy and obvious passion to the discussion, in other chapters the format is less effective. Chapter 3, "Access: The Myth and Reality of the Revolving Door," is a case in point: the 21 narratives have no discernable organization while commenting on a variety of aspects of the "revolving door." The first narrative, for example, posits that the current emphasis on retention in higher education is primarily driven by economics, while the next two accounts comment on the role of community colleges; the fourth targets high schools as a major cause of students' lack of preparation. Despite this fragmentation, the authors, through the interviews, cover an impressive array of topics related to access and student support, and some meritorious points repeatedly arise.

These recurring points become dominant themes of the work, and since they emerge despite the loose structure of the book, their merit and importance appear incontestable; in fact, they become an outstanding feature of the book. One such theme is the need for institutional commitment to developmental programs, which the educators interviewed say is clearly lacking when the programs rely on grants. Instead, development programs need to be supported by "hard money" (p. 95), just as the majority of an institution's other programs are.

Furthermore, administrators must be as respectful to developmental educators as they are to faculty who teach upper-division courses in order to illustrate the importance of creating a strong basis on which everyone in the institution builds. No one should be allowed to believe that developmental education is "second class" (p. 115). Rather, it is foundational. One narrative describes how the integrated approach created by the developmental faculty to teach communication—developing simultaneously the students' ability to read, interpret, analyze, and respond—was later implemented for advanced communication classes and eventually became the model that "informed changes that were made in the college as a whole" (p. 137). In turn, what was done for communication was done for math and others areas. The educator concludes by saying, "It's interesting to think that the department that works with developmental students has had a profound impact on what has gone on in the rest of the college" (p. 137). Such success stories should encourage and inspire everyone involved in developmental education.

Another recurrent theme is that student support is related to value systems. Casazza and Bauer state that the "moral fiber of the school" (p. 121) determines the institution's philosophy about helping students succeed. The most successful support programs, therefore, believe that their mission is tied directly to their institution's mission as well as to core societal values, namely, the importance of all students/citizens realizing their potential. Another outstanding feature is the book's clarity in emphasizing the importance of a holistic approach: support systems must become fully integrated into the culture of each institution. Having developmental programs for new students is not enough; instead, support services continue into the advanced curriculum, providing workshops and seminars to assist students with professional testing requirements for nursing and education and even preparing students to enter graduate schools. Remarkably, such patterns of thought emerge clearly even though the authors undoubtedly did not set out to establish consensus among those they interviewed.

For this reader, a particularly useful aspect of the book is its discussion of the emotional valances apparently common in the fields of developmental education and learning assistance programs. At the negative end of the spectrum are the demeaning remarks made by faculty and administrators to many of the interviewees that they are “no more than glorified high school teachers” (p. 86). But the students’ remarks at the other end of the affective spectrum are nothing short of inspiring: repeatedly, they speak of the “relationships,” the “bonding,” the “caring,” and even the “love” that they found from the professionals involved in student support. In fact, the major benefit of reading this highly recommended book might be having one’s faith restored regarding the importance of open access and holistic support systems to ensure success for all students.

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## Pertinent Publishing Parameters

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*The Learning Assistance Review (TLAR)*, the national peer reviewed official publication of the National College Learning Center Association (NCLCA), publishes scholarly articles and reviews that address issues of interest to learning center professionals (including administrators, teaching staff, faculty and tutors) who are interested in improving the learning skills of postsecondary students. Primary consideration will be given to articles about program design and evaluation, classroom-based research, the application of theory and research to practice, innovative teaching and tutoring strategies, student assessment, and other topics that bridge gaps within our diverse profession.

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**Susan Shelangoskie, Ph.D.**

**Managing Editor: *The Learning Assistance Review (TLAR)***

**Publication of National College Learning Center Association (NCLCA)**

**Assistant Professor of Languages and Literature**

**Carmel Hall 263**

**Lourdes College**

**6832 Convent Blvd**

**Sylvania, Ohio 43560**

**Phone: (419) 517-8904**

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The National College Learning Center Association (NCLCA) is an organization of professionals dedicated to promoting excellence among learning center personnel. The organization began in 1985 as the Midwest College Learning Center Association (MCLCA) and “went national” in 1999, changing the name to the National College Learning Center Association (NCLCA), to better represent its nationwide and Canadian membership. NCLCA welcomes any individual interested in assisting college and university students along the road to academic success.

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**[tpratt@ou.edu](mailto:tpratt@ou.edu)**









Christine Reichert  
TLAR Journal Editor  
Lourdes College  
6832 Convent Blvd.  
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