

## Key Elements Towards Academic Success for Nontraditional Students in a Pharmacy School

<sup>1</sup>Reza Karimi and <sup>2</sup>Seher Khan

<sup>1</sup>Pacific University School of Pharmacy, 222 SE 8th Avenue, HPC-Ste 451, Hillsboro, OR 97123

<sup>2</sup>Department of Pharmaceutical Sciences, Lake Erie College of Osteopathic Medicine, School of Pharmacy Erie, Pennsylvania 16509, USA

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**Abstract:** This report is aimed to identify the key elements in academic success of nontraditional pharmacy students and to utilize the information obtained to advise future students in the Doctor of Pharmacy (Pharm.D.) programs. A 30-question survey was used in the study. Thirty-five nontraditional students from three consecutive classes participated in the study. Our findings indicate that self-motivation played a significant impact on academic success for the participants. Additional factors include life experiences, previous undergraduate degrees, good test taking skills and a strong background in the sciences.

**Key words:** Nontraditional students, Pharm.D. Program, Academic success

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### INTRODUCTION

With the emergence and growth of pharmacy schools along with the acute shortage of qualified pharmacists nationwide<sup>[1]</sup>, many “re-entry students” have been attracted to pursue a Doctor of Pharmacy (Pharm. D.) degree in order to change their career paths. While these “re-entry students” have been identified as “nontraditional students”, there is not a consensus description of this category of students in the literature<sup>[2]</sup>. The number of nontraditional students has increased significantly for the majority of colleges including many pharmacy schools. Most of the definitions in the literature refer a nontraditional student to be either a student who is at least 24 years old or has been out of the educational system for quite sometimes. In addition to the academic challenges that nontraditional students face following their enrollment in professional schools, there are other multi-faceted factors that need to be taken into consideration. These include family obligations, age, financial investment on education, time commitment, motivation and unemployment. Financial constraints and family commitment are critical issues that must be addressed before a nontraditional student begins his/her program of study.

In contrast to nontraditional students, the majority of students who enter professional programs in pharmacy are younger students who complete prerequisite requirements through full or part-time

enrollment in a community college or a university immediately after completing high school. While the majority of students in the pharmacy schools belong to the traditional group, one can find numbers of nontraditional students too. As mentioned earlier, the favorable pharmacy job market has attracted many of the nontraditional students back to school. In Lake Erie College of Osteopathic Medicine (LECOM) School of Pharmacy, a good number of nontraditional students are enrolled in the accelerated Pharm.D. program.

Several studies have shown that nontraditional students often achieve a higher academic score than traditional students<sup>[3-4]</sup>. In a research study conducted by Honzik & McFarlan, it was suggested that intelligence, measured by IQ tests, increases with age<sup>[5]</sup>. In the present paper, we report our assessment of the factors responsible for the academic success of the nontraditional students at LECOM School of Pharmacy. Our study was based on a 30-question survey, covering different aspects of a student’s life. The goal of this research was to identify the factors and to explore possibilities of utilizing the information from this study to advise future students at pharmacy schools.

### MATERIALS AND METHODS

Thirty-five nontraditional students from three classes, namely, class of 2005, 2006 and 2007, of our Pharm.D. program with year-round curriculum participated in the 30-question survey. The survey was

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**Corresponding Author:** Reza Karimi, Ph.D., Pacific University School of Pharmacy, 222 SE 8th Avenue, HPC-Ste 451, Hillsboro, OR 97123 USA  
Office: 503-352-7276 Fax: 503-352-7270  
E-mail: karimir@pacificu.edu

divided into three major categories: 1) personal information, 2) educational background and employment history and 3) current information of the nontraditional students which included test taking skills, time management, study time and learning styles. The students' science skills, from their previous degree, were self-reported according to a scale of 1-poor, 2-not adequate, 3-satisfactory, 4-very good and 5-excellent. The data from all respondents has been used in this study (n=35). These participants represent more than 90% of the nontraditional students which corresponds to 15% of their respective class. In this study, 60% of all the respondents were female, while the rest were male students. A consent form was sent along with the survey to the nontraditional students to ensure the confidentiality of the participants. Students provided informed consent prior to completion of the survey. All data was tabulated using the Microsoft Excel program.

### RESULTS AND DISCUSSIONS

All selected students participated in the survey and completed the questionnaire. Majority of the students (81% of females and 55% of males) were in the age range of 24-39 years and the rest were above 39 years. Three students did not identify their age. Three students did not identify their age. Among the 35 students, 95% female and 100% male students completed undergraduate degree prior to enrollment in the pharmacy program. One female student held associate degree. In addition, three students from each gender have also completed their Masters degree. Table 1 reports previous background in general science courses such as biology, chemistry, physics and mathematics. While most of them considered having good backgrounds in biology, chemistry and mathematics (average scores of 4), there was a consistent pattern in having a relatively lower score in physics (average score of 3). When asked about previous employment, 45% female and 40% male students reported that they were introduced to drug-related topics or have worked at a retail pharmacy prior to their enrollment at LECOM School of Pharmacy.

According to our data, daily study time of approximately 3-4 hours seems to be sufficient to perform well in the program (data not shown).

Test taking skills have been one of the keys in successful performances on examinations<sup>[6]</sup>. The majority of the students (95% female and 93% males students) indicated that they have good test taking skills. Suggestions to perform well in the exam include: 1) reading the questions carefully, 2) first attempting multiple-choice questions without looking at the answers, 3) to maintain mental calmness; and 4) attempting the easy questions first and 5) eliminating the wrong answers from choices. Our nontraditional

**Table 1:** Average score ± standard deviation of educational background in sciences for three subsequent classes.

Gender	Biology	Chemistry	Mathematics	Physics
Female	4.0±1.1	4.2±0.67	3.9±0.62	3.3±0.75
Male	4.1±0.99	3.9±0.70	3.6±0.61	3.1±0.35

A score of 1-poor, 2-not adequate, 3-satisfactory, 4-very good and 5-excellent were used to identify strength in the sciences.

students were found to manage their time by proper planning, prioritizing, keeping up with study loads and being organized. We received various responses on regularity of the students. These responses include: making school the top priority, repetition, setting-up goals and working hard at them, consistency, motivation, paying attention in classes and self-discipline.

Figure 1 shows the learning styles female and male nontraditional students have at our program. While a few female students perceive information verbally, no male students used this technique. Understanding information visually and sequentially was popular among students of both genders (67% female and 79% males). Except one student, all others are self-learner (data not shown).

**Discussion:** The data presented of this initial study observed a significant determination and self-discipline among the nontraditional students at LECOM School of Pharmacy. Such attributes are key factors in becoming successful in an academic program. It has been suggested that self-motivation is one of the major factors in being in good academic standing<sup>[7]</sup>. We believe our result will motivate both traditional and nontraditional students in LECOM and other Pharmacy Schools nationwide. It is possible that having at least an undergraduate degree might have prepared them to take heavy course loads in the Pharm.D. program with year-round curriculum. These data indicate that having a bachelor degree, provides a solid educational background to manage the study load in an accelerated pharmacy program. We believe it is important to consider the impact of prior academic accomplishments on the preparedness of the nontraditional students.

We observed that the students who participated in this study have a strong background in biology, chemistry and mathematics. These courses prepare students for basic pharmaceutical science courses such as pharmaceutics, calculations, medicinal chemistry, biochemistry and microbiology.

Our data indicate that the nontraditional students have 1) good test-taking skills, 2) time-management skills and 3) prioritization. These are important determinants in admission process and students advising. If students are directed to these factors, the likelihood of success will increase markedly. Most probably, some of the aforementioned skills were

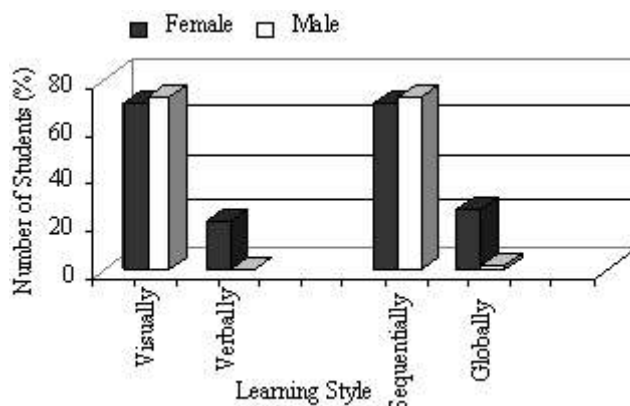


Fig. 1: Learning styles for three subsequent classes for female and male nontraditional students.

developed from life-experiences, previous job and maturity.

Examinations and quizzes is one of the direct measures of student learning<sup>[8]</sup>. Often tests tell the educators how to strengthen courses or change teaching techniques. A successful student not only studies hard but also is a good test taker. Regardless of being a traditional or nontraditional student, a sense of confidence and knowledge are keys in accurately answering questions. While knowledge is acquired prior to the exam, confidence is the skill that the student develops during the examination. In developing confidence, a majority of the respondents in our survey pointed to answering the easier questions first, identifying the wrong answer and reading the questions carefully. Therefore, it is crucial for the pharmacy schools to train their students in test taking skills by giving lectures on how to develop this important skill.

Interestingly, approximately 50% of the nontraditional students did not have any experience with pharmaceuticals or therapeutic agents. Although important, prior pharmacy experience did not appear to play a significant role in the success of nontraditional students. This suggests that the students through their dedication grasped the materials on medications as they progressed in the courses.

Four categories of learning styles, namely: visual, verbal, sequential and global were assessed in this study. The majority of the students, in both genders, perceive information visually (see figure 1). Whether this pattern is the same for all students (nontraditional and traditional) remains to be seen. Our data also clearly shows that the majority of the students (95% for both genders, data not shown) are self-learners. We tried to see whether a lack of interaction with traditional students has forced our nontraditional students to become self-learners. Our survey indicated that all of the nontraditional students communicate well with their traditional or nontraditional classmates

(data not shown). It is important to identify our students' learning preferences that will direct the curriculum for changes to meet the students' needs. The result of the conducted survey will assist pharmacy schools to enhance students learning goals because it is known that teaching students through their learning-style improves and maximizes the students' learning<sup>[9]</sup>. Simply put, the more we identify our students learning preferences, the more successful we are at providing the best possible learning strategies to our students.

This study shows the positive traits of nontraditional students in their academic success. The information obtained is interesting but follow-up studies need to be undertaken to evaluate them as pharmacists. A significant difference, if any, may also emerge when future studies of nontraditional students will be compared with the traditional students in the same program.

The present study was based only on professional and academic performances of nontraditional students at LECOM prior to graduation. Performances of these students in North American Pharmacist Licensure Examination (NAPLEX) and in pharmacies/residencies are beyond the scope of this study. In future, we would attempt to follow-up on these areas.

**Conclusions:** We report herein our findings on the potential keys to success of the nontraditional students in our Pharm.D. program. Despite different daily challenges, nontraditional students have been identified as good test takers, talented and motivated learners, possess at least bachelor degrees with strong educational background in sciences. In addition, these students are interested in becoming qualified pharmacists. Though, as one expects, the overall skill and aspiration of all successful students (traditional and nontraditional) are similar in many ways, our results indicate that life-experience and motivation combined with a bachelor degree are important factors that

significantly contributed to nontraditional student's success at our accelerated program. While the life-experience factor cannot be provided by pharmacy schools, the requirement of possessing a bachelor degree and the faculty's attempt for motivating students to make sure that they become involved in learning can help pharmacy schools to maximize students' success. Finally, our results show that by no means will age be a barrier to be successful at pharmacy schools. Therefore, the result of the conducted survey will assist pharmacy schools to consider nontraditional student as potential candidates for their PharmD programs.

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