Student Perceptions of Barriers to Professional Exam Success

Kathryn E. Webster
Illinois State University, kewebst@ilstu.edu

Recommended Citation

Student Perceptions of Barriers to Professional Exam Success

Abstract

Purpose: Many Allied Health education programs have shifted attention toward program outcome measures, including professional exam pass rates. The purpose of this study was to solicit the opinions of students, in order to better understand how they perceive their barriers to professional exams, what resources have proved helpful for them, and ultimately what advice programs can give to students to increase exam success. **Method:** A survey was sent to 104 alumni of the Medical Laboratory Science (MLS) program at a large Midwestern university to determine what they perceived as barriers in preparing for and taking their certification exam(s), and the resources they identified as being the most or least helpful in the process. **Results:** Forty-two individuals responded to the survey, with two self-reporting having not passed a certification exam. Successful students reported the most beneficial tools included a purchased review manual and an online exam simulator. They reported that reviewing their own notes and materials were only somewhat helpful. The respondents, who had attempted the exam, but not yet passed, reported feeling unprepared, waiting too long after graduation and high stress levels, as the reasons for not being successful. The majority of respondents indicated the need for additional resources in preparing for professional exams. **Conclusions:** Educational programs can use this information to better mentor students to utilize additional resources that are available to them, design a meaningful timeline, and deal with stress before taking any professional exam.

Author Bio(s)

Kathryn E. Webster, M.S., MT (ASCP), AHI, is an Associate Professor of Medical Laboratory Science in the Department of Health Sciences at Illinois State University, Normal, IL.

Acknowledgements

Student Perceptions of Barriers to Professional Exam Success

Kathryn E. Webster

Illinois State University

United States

ABSTRACT

Purpose: Many allied health education programs have shifted attention toward program outcome measures including professional exam pass rates. The purpose of this study was to solicit the opinions of students in order to better understand how they perceive their barriers to professional exams, what resources have proved helpful for them, and ultimately what advice programs can give to students to increase exam success. **Method:** A survey was sent to 104 alumni of the Medical Laboratory Science (MLS) program at a large midwestern university to determine what they perceived as barriers in preparing for and taking their certification exam(s) and the resources they identified as being the most or least helpful in the process. **Results:** Forty-two individuals responded to the survey, with two self-reporting having not passed a certification exam. Successful students reported the most beneficial tools included a purchased review manual and an online exam simulator. They reported that reviewing their own notes and materials were only somewhat helpful. The respondents, who had attempted the exam, but not yet passed, reported feeling unprepared, waiting too long after graduation, and high stress levels as the reasons for not being successful. The majority of respondents indicated the need for additional resources in preparing for professional exams. **Conclusions:** Educational programs can use this information to better mentor students to utilize additional resources that are available to them, design a meaningful timeline, and deal with stress before taking any professional exam.

Keywords: certification, licensure, credentialing, professional exams, Allied Health, Medical Laboratory Science, Clinical Laboratory Science, MLS.

INTRODUCTION

Many allied health educational programs have shifted to place greater attention on program outcome measures, including professional exam pass rates.[1] These exams are often taken after graduation when faculty have limited influence in advising former students. The purpose of this study is to understand current barriers to passing professional exams, how educational programs deal with unsuccessful students, and what initiatives have been successful in increasing pass rates. Little information exists specifically concerning allied health professional exam pass rates. Most existing literature concerns nursing programs, whose pass rates for the National Council Licensure Examination for Registered Nurses, or NCLEX-RN, have long been tied to program accreditation. The effort and barriers to passing an extensive comprehensive professional exam are similar, even though allied health professions can be very different, with some using licensure exams and some using certification exams. A review of how nursing and other programs have handled this similar problem can help inform all allied health programs whose students need to pass comprehensive professional exams.

Student Preparation and Support

In a study (n=19) of barriers of nursing graduates in preparing for the NCLEX-RN, passing participants reported feeling prepared, focused, and ready, while most unsuccessful participants reported feeling unprepared, not knowing what to expect, and feeling pressured by family and employers to take the exam before they felt ready. Both groups reported the use of case studies and analyzing clinical situations as the most helpful classroom activities in preparing for their exam.[2] Another study used systems theory to examine learner support in nursing education programs, and found that when provided with a comprehensive learner support system, learners were better able to succeed in their program and on the NCLEX-RN exam.[3] Similar findings were provided by a study (n=261) of medical school students, which found that regardless of prior academic performance, those with a positive perception of their learning environment performed better than those with a negative perception.[4]

Students unfamiliar with computerized exams reported using a computerized format to be an unexpected challenge causing an increase in anxiety on top of an already stressful experience.[5] Case studies of unsuccessful respondents "cited poor program preparation, inadequate study habits, lack of knowledge about how to prepare, difficulties in setting priorities, lack of confidence, inability to control anxiety, poor test-taking skills, overwhelming family responsibilities, and employment as contributing to their negative NCLEX-RN outcome."[6(p.324)] The researchers concluded that faculty need to foster trusting relationships with students, assist them in accepting personal responsibility for their own learning, and counsel them in creating and visualizing paths to success.

Timing

A recent study (n=9957) of examination data from the American Society for Clinical Pathology (ASCP) studied how exam timing affected the performance of exam-takers. Researchers found that scores for both MLS and MLT (Medical Laboratory Technician) candidates decreased significantly after the first three months following graduation, and decreased further each quartile for one year. They concluded that candidates should be mentored to take their exam(s) within three months after completing their education programs.[7]

Exit Exams

Many nursing programs are using the Health Education Systems, Inc. (HESI) exit examination, and often use it as a single predictor of NCLEX-RN failure. However, researchers reviewing the validity of the HESI exam found that it was originally validated as predicting NCLEX-RN success and concluded that the ability to predict success and failure should be evaluated separately. They also noted that the HESI exam literature does not state that the exam is free from bias toward minorities, international students, and students with disabilities.[8] Additionally, researchers examined remediation programs and found little evidence to support them. Students assume that remediation will close any gaps in their education, and ready them for re-taking their exam, yet researchers found that evidence did not support this assumption.[9] Instructors of a dental hygiene program used the HESI exam to help inform students of areas that needed more study. Students (n=29) responded that the HESI needed supplementation with additional materials to be effective at exam preparedness.[10]

Additional Barriers

Researchers studied students with grade point averages of 3.5 or higher on a 4-point scale who failed their professional nursing exams on their first try, and assessed student strengths and weaknesses on 10 scales: "stress, attitude, motivation, concentration, self-testing, time management, test-taking skills, anxiety, information processing, and study aids."[11(p.263)] The researchers found that students with low scores in four or more areas were at greater risk of failure, noting that these should become key areas to focus upon.[11] The Department of Veterans Affairs discovered three main barriers to specialty nursing certification: cost, lack of rewards, and lack of support. They also identified lack of time, fear of failure, and lack of practical relevance as additional barriers.[12]

Faculty of one MLS program discovered that on-line students (n=20) scored lower on their professional exam than on-campus students (n=60) by a statistical significance. The faculty created pre-recorded review sessions, added a new review session for each category of the exam, utilizing new software that allowed for interactive videoconferencing for answering questions and allowing faculty to draw onscreen, in order to equalize the experiences and to improve the scores of both groups. They also increased review sessions from one hour to two hours, and provided a link to an online review game. They added a self-study guide to each category, encouraged students to begin studying earlier, and then provided the students with early feedback to pinpoint problem areas. Faculty found that these changes not only closed the gaps in certification scores between online and on-campus learners, but also benefited all students.[13]

Emotional Cost of Exam Failure
Exam failure can be emotionally devastating for students. When asked about their ability to cope with exam failure, respondents in case studies reported "significant emotional effects, lowered self-confidence, increased self-doubt, changes in self-perception, and fear of not passing a repeat examination."[6(p.324)]

While these studies have attempted to pinpoint the reasons for exam failure, and some have examined ways to better support learners, few have asked exam candidates themselves what they perceive to be the barriers to their own success. The current study asked program alumni these questions, while attempting to determine what resources students felt were the most and least helpful.

MATERIALS AND METHODS
A survey was sent to 104 alumni of the Medical Laboratory Science program at a large Midwestern university, all of whom had graduated within the last five years. Participants granted informed consent after receiving a full explanation of the research purpose and process, in conjunction with all rules and regulations of the Internal Review Board of the university. See Appendix 1 for a list of the survey questions. A team of MLS faculty and graduates validated the survey questions by taking the survey, interpreting questions, and sending feedback to the author for further refining of the questions. Several questions used a Likert Scale-type ranking system, while some were open ended. The author has categorized responses by perceived reasons for passing/not passing, and by resources found to be the most/least helpful.

RESULTS
The two organizations that offer MLS and MLT certification exams are The American Society for Clinical Pathology (ASCP) and the American Medical Technologists (AMT). Each exam can be taken up to 5 times. Licensure is not required for the author's state. One hundred four surveys were sent, and 42 alumni responded, with 88% having taken the ASCP exam, and 80% of them passing. Two respondents reported having attempted the ASCP exam but being unable to pass. Of the five respondents who had not yet attempted either exam, one reported not having enough time to review, one had financial reasons, one was planning to take it soon, one was attending medical school, and one had left the field.

Close to two-thirds (61.8%) of respondents ranked a purchased review manual as a helpful resource, and around another third (29.41%) ranked it as somewhat unhelpful, with only 3% ranking it as the least helpful. Most respondents (71%) ranked an online exam simulator as being helpful, while 29% ranked it as unhelpful. A commercial review course ranked the lowest, with only 18.5% of respondents ranking it as most or somewhat helpful. Reviewing their own notes was helpful to 51% of respondents, while 33% ranked it as moderately helpful. Reviewing with others received a ranking of least helpful by 45% of respondents, and similar numbers ranking it at each level of helpfulness. When asked what resources unsuccessful candidates thought might help them to pass, most (71%) wanted to try an online exam simulator, and/or a purchased review manual (77%). Equal numbers of them (33%) believed a commercial course would be helpful as unhelpful, and 71% wanted more time to review on their own. Most respondents (71%) also reported that they would like to have had a better idea of what to expect about the testing process. See Tables 1, 2, and 3.

The faculty used results from questions concerning employment and contact methods to confirm anecdotal information and to foster networking with and among program alumni.

Table 1: Survey Responses of Reasons for not Taking and/or not Passing the Exam.

Question	Percentages of student responses					
Number of times attempted exam	One time 79.97%	Two times 13.51%	Three times 5.4%	Four times 8.11%	Five times 0%	NA
Reasons for not taking exam	Insufficient time for review 20%	Financial reasons 20%	Test Site not convenient 0%	Exam not required for employment 0%	Not needed for Graduate School 20%	Lack of knowledge about testing time/location 0%
Reasons for not passing exam	Not academically prepared 50%	Not prepared for testing process 0%	Inadequate review time 0%	Waited too long after graduation 100%	Took exam too soon after graduation 0%	Test anxiety and/or stress 100%

Note: There were no responses for the categories "I ran out of test time" and "Other.

Table 2: Survey Responses of Successful Students for Most/Least Helpful Resources in Passing the Exam.

Resource:	If you passed the exam, rank resources in order of most to least helpful in passing the exam.				
	Most helpful	Somewhat helpful	Moderately helpful	Somewhat unhelpful	Least helpful
Online exam simulator	50%	8.82%	11.76%	11.76%	17.65%
Purchased review manual	29.41%	32.35%	5.88%	29.41%	2.94%
Commercial review course	7.41%	11.11%	25.93%	18.52%	37.04%
Review of my own notes	15.15%	36.36%	33.33%	9.09%	6.06%
Review with others	17.24%	13.79%	13.79%	10.34%	44.83%

Table 3: Survey Responses for What Resources Unsuccessful Students Believed may be Most/Least Helpful in Passing an Exam.

Resource:	If you did not pass the exam, rank resources you think may help you to pass the exam from most to least helpful.				
	Most helpful	Somewhat helpful	Moderately helpful	Somewhat unhelpful	Least helpful
Test myself with an online exam simulator	71.43%	14.29%	0%	0%	14.29%
Purchasing a review manual	28.57%	28.57%	28.57%	0%	14.29%
Take a commercial review course	33.33%	0%	33.33%	0%	33.33%
Take more time to review on my own	42.86%	28.57%	0%	14.29%	14.29%

Knowing what to expect of testing process	71.43%	0%	28.57%	0%	0%

DISCUSSION

The analysis of these data indicate that most successful students found that their own notes were not enough and that a published review manual or online exam simulator could have been helpful, probably depending on learner preference. Online exam simulators are modules designed by commercial companies to mimic test questions and timing in computer environments for practice purposes. They can be a separate resource or included with printed review manuals as a link. They often use computer adaptive questions, in which questions are weighted according to difficulty. Students gain more points by correctly answering synthesis and application questions, and fewer points for memorization questions. This most closely mimics the actual exam for Medical Laboratory Science and many other certification exams. Some companies allow schools to purchase time on the simulators, so their students can utilize this resource free of charge, but also allow students to purchase their own account if desired. Commercial review courses, which can be costly, were not helpful for most students, but could be useful if students are not disciplined enough to review on their own. Study groups may pull students off task too often to be helpful but may provide support and accountability.

The two respondents who reported being unsuccessful responded with the reasons they perceived for not passing their exams. The reasons they gave were not being prepared, waiting too long after graduation, and too much stress or test anxiety. It is possible that test candidates may have put off taking the exam for a considerable period of time in order to avoid exam stress, and not feeling adequately prepared may have increased their stress.

While there are differences between nursing and other allied health programs, and certification and licensure exams, we can draw certain conclusions from studying those who have taken comprehensive professional exams. Survey respondents did not blame faculty or programs for inadequate preparation but recognized their own lack of exam preparedness. Additional review sessions, mentoring, stress management techniques, improvement of test-taking and critical thinking skills, and fostering an environment of trust with faculty where students are empowered to assume responsibility for their own learning are all areas that any program can examine for improvement. Utilizing newer technologies in both on-campus and online courses, like videoconferencing and screen projection software, could help to improve student understanding whenever asking questions. Time management and managing stress are life-skills usually acquired in adulthood, and as such, many college students do not yet have strategies for recognizing and decreasing their stress levels or efficiently managing their time. These skills would also benefit new professionals throughout their careers and personal lives. Students may wait to take their exams for extensive periods of time in order to avoid the stress involved. Students can benefit from activities that encourage them to envision what barriers they may encounter to their professional exams and pre-emptively initiate ways to overcome them.

Limitations

The focus of this select survey on graduates of only one MLS program limits the study. The survey response rate was 40%, which also limits the scope of the study. In addition, only two respondents self-identified as having been unsuccessful in passing their certification exam. This is a further limitation of the study, as small groups tend to lack randomization. Respondents may have been reluctant to tell the truth if they failed to pass their certification exam, or may not have been aware of their own shortcomings in studying for their exams. A small sample size may exacerbate these limitations.

CONCLUSION

This study reveals that most students will need resources beyond their own notes, and self-studying or within groups requires that students cultivate self-discipline and time-management skills, which they may need mentoring to acquire. Students can benefit from experience at computer exams to feel more confident as they approach their computerized professional exam. Review manuals and simulator exams can benefit students, not only for review, but also to increase their confidence in the exam experience. Using this information, allied health programs, or any programs whose graduates are required to pass a comprehensive professional exam, may be able to better mentor students on additional resources that are available to them, such as exam simulators and comprehensive review manuals, as well as designing a useful timeline of within three months after graduation to take the exam, and helping them to deal with stress before attempting a professional exam. Faculty can let current students know more of what to expect, which may help decrease their stress levels and test anxiety. Faculty should also advise students to anticipate their potential barriers and have strategies in place to deal with them.

REFERENCES

1. National Accrediting Agency for Clinical Laboratory Science. NAACLS standards compliance guide. Revised Nov.2017 p.11. https://naacls.org/
2. Eddy LL, Epeneter BJ. The NCLEX-RN experience: Qualitative interviews with graduates of a baccalaureate nursing program. *J of Nur Ed*. 2002;41(6):273-278.
3. Carrick JA. Student achievement and NCLEX-RN success: Problems that persist. *Nur Ed Perspec*. 2011; 32(2) 78-83.
4. Wayne SJ, Fortner SA, Kitzes JA, Timm C, Kalishman S. Cause or Effect? The relationship between student perception of the medical school learning environment and academic performance on the USMLE step 1. *Medical Teacher*. 2013;35:376-380.
5. March KS, Ambrose JM. Rx for NCLEX-RN success: Reflection on development of an effective preparation process for senior baccalaureate students. *Nur Ed Perspect*. 2010;31(4):230-232.
6. Griffiths MJ, Papastrat K, Czekanski K, Hagan K. The lived experience of NCLEX failure. [Research Briefs] *J Nur Ed.* 2004;43(7):322-325.
7. Brown KA, et al. Impact of time lapse on ASCP board of certification medical laboratory scientist (MLS) and medical laboratory technician (MLT) examination scores. *Clin Lab Sci*. 2015;28(3):145-150.
8. Spurlock Jr D. Do no harm: Progression policies and high-stakes testing in nursing education. *J Nur Ed.* 2006;45(8): 297-302.
9. Pennington T D, Spurlock Jr. D. A systematic review of the effectiveness of remediation interventions to improve NCLEX-RN pass rates. *J Nur Ed.* 2010;49(9):485-492.
10. Perry, KR, Jenkins, S. Students' perspectives regarding the Health Education Systems, Inc. (HESI) for dental hygiene as an effective method to prepare for the NDHBE (National Dental Hygiene Board Examination). *Journal of Dental Hygiene*. 2017;91(2):63.
11. Rollant PD. 'How can I fail the NCLEX-RN with a 3.5 GPA?': Approaches to help this unexpected high-risk group. *Annual Review of Nursing Education.* 2007;(5):259-273.
12. Seaman M, Bernstein, A. Let's get certified: An innovative national campaign. *Nur Lead*.2010;8(6):31-36.
13. Kanuth MS, St John, EC. Preparing online students for comprehensive examinations. [Summer supplement 3], *Clin Lab Sci.* 2010;23(3):59-62.

APPENDIX 1: SURVEY QUESTIONS

1. Have you taken a Medical Laboratory Science national certification exam, either ASCP or AMT, or both?
   - a. Yes, I took the ACSP exam
   - b. Yes, I took the AMT exam
   - c. Yes, I've taken both
   - d. No, I've taken neither – go to question 4

2. If you answered yes, which national certification exam did you pass?
   - a. I passed the ASCP
   - b. I passed the AMT
   - c. I passed both
   - d. I was unable to pass either one

3. How many times have you attempted either national certification exam?

   ASCP:
   - a. 0 times – go to question 4
   - b. 1 time
   - c. 2 times
   - d. 3 times
   - e. 4 times
   - f. 5 times

   AMT:
   - g. 0 times – go to question 4
   - h. 1 time
   - i. 2 times
   - j. 3 times
   - k. 4 times

   Answers b, c, d, e, and f- go to question 5

4. If you have not attempted the exam, what are your reasons?
   Choose all that apply:
   - a. Not enough time to review
   - b. Financial reasons

---

c. Testing site not convenient
d. Exam is not required by my place of employment
e. Not a condition of Graduate school
f. Lack of knowledge about testing times and locations
g. Other: _____

5. If you have attempted the exam, but not yet passed, what do think are your reasons for not being successful? (If you have passed either exam go to question 7.)   Choose all that apply:

a. I was not academically prepared; unable to answer questions correctly
b. I was not prepared for the testing process, (problems with site, room, computer, etc.)
c. I had inadequate review time
d. I waited too long after graduation
e. I took it too soon after graduation
f. I had test anxiety and/or stress
g. I ran out of test time
h. Other _____

6. What resources do you think may help you to pass either of the exams?
Rank in order of helpfulness:
a. Testing myself with an online exam simulator
b. Purchasing a review manual book
c. Taking a commercial review course
d. Take more time to review my notes on my own
e. Having a better idea of what to expect about test process
f. Other resources that you feel may be beneficial: _____
g. Which of the above, if any, did you find NOT helpful: _____
Go to question 8.

7. When you passed the exam, what resources do you feel helped you the most?
Rank in order of helpfulness:
a. Testing myself with an online exam simulator
b. Purchasing a review manual book
c. Taking a commercial review course
d. Taking time to review my notes on my own
e. Having a better idea of what to expect about test process
f. Other resources that you feel may be beneficial: _____
g. Which of the above, if any, did you find NOT helpful: _____

8. How are you currently employed?
a. Employed in a hospital lab as MLS/MT
1. Full time?   2. Part time?
b. Employed in a hospital as a MLT (Assoc. degree level)
1. Full time?   2. Part time?
c. Employed as Lab assistant/Processor/uncertified tech
1. Full time?   2. Part time?
d. Employed in research/industry at certified tech level
1. Full time?   2. Part time?
e. Employed in research/industry at uncertified tech level
1. Full time?   2. Part time?
f. Employed, but not currently in a laboratory field
g. Not currently employed
Answers f and g go to question 10.

9. If you are currently employed in a laboratory, how long after graduation did it take you to secure your position?

a. Prior to graduation   d. 6-12 months after graduation
b. Within 3 months of graduation   e. More than 12 months after graduation
c. 4-6 months after graduation

10. If you are employed or searching in a laboratory field, what resources have you used or are using to find employment? Choose all that apply.

a. Through friends/associates   d. Answering print media ads
b. Through social networking sites   e. Online job sites (like Monster.com, etc.)
c. Professional networks (Linked In)   f. Other:_____

11. The MLS faculty likes to keep in contact with our alumni and know how they are doing. What is your preferred method to keep in contact with the MLS faculty/program?

a. Alumni News Magazine   d. MLS Linked In group
b. Health Science website/links   e. Email
c. Health Science Facebook page   f. Other:_____
g. I prefer not to keep in contact with MLS faculty or program