

**Assessing Mastery Learning Nursing and Pharmacy Students' Preferences for
e-Book and Print Books: A Case Study**

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Abstract

This case study aims to discover nursing and pharmacy student preferences for print books or e-books in an accelerated block mastery learning program. We share descriptive survey statistics and qualitative data collected from focus group responses in this paper. A new finding not seen in the literature is nursing student preference for e-books when participating in assessment challenges. This e-book preference may be relevant for institutions providing instruction in block mastery learning programs.

Roseman University of Health Sciences (Roseman) is a small private university offering four-degree programs and a residency program. Degrees offered are Masters of Business Administration (MBA), a Doctor of Pharmacy (PharmD), a Bachelor of Science in Nursing (BSN), a Doctor of Dental Medicine (DMD). The residency program is for dentists who specialize in orthodontics, Advanced Education in Orthodontics and Dentofacial Orthopedics (AEODO). There are two campuses: one in Henderson, Nevada and another in South Jordan, Utah. Both are commuter campuses with no student housing at either location. The site for this study was the Henderson, Nevada campus.

A unique curricular feature at Roseman is instruction using a block system (1). Students enter into their programs as a cohort and take one class at a time. Depending on the program, a block can last one to five weeks. A single block is a relatively short amount of time when compared to quarter or semester courses that are 10 to 16 weeks. To demonstrate mastery of a topic, students must take an assessment at the end of each class. Every two to three weeks, students take assessments. Students who score 90 percent or above receive a pass for that block, while those who do not pass can remediate. They return to receive an in-class review and then re-take a new exam soon after the initial assessment exam. Nursing students enter the program with prerequisites completed and can graduate with a Bachelor of Science in Nursing (BSN) degree in 18 months. Pharmacy students come to the program with an undergraduate degree or with completed prerequisites. Pharmacy students graduate with a Doctor of Pharmacy degree (PharmD) in three years in this accelerated block program.

Mastery learning as a pedagogical construct undergirds this system of education.

Students receive a set of learning outcomes and through, “a system of assessment and remediation, student have time to master content and achieve at their highest level” (University of Southern Nevada, 2008). At Roseman, in this active learning environment students apply the concepts they learn in class to clinical settings. Pharmacy students participate in introductory pharmacy practice (IPPE) from their first year in pharmacy school. Students move to their advanced pharmacy practice in the second year and to clinical rotations in their third year. Nursing students apply their skills in the nursing skills lab and at their clinical practice sites throughout their eighteen-month program. All students pay a fee and receive a laptop computer as a part of their technology fee. Given this laptop requirement, it was the expectation of this study that students would most likely use laptops for reading.

Library Environment

Roseman’s block curriculum has a definite impact on library resources given the different program requirements. Many times throughout the year, individual books are in high demand, depending on the instruction block. The library experiences times when most students enrolled in the current block request one title. Faculty have the option to put books on reserve with students being able to use a book in the library for two hours at a time. This necessitates the purchase of multiple copies, which is one way the library manages requests for high demand titles. However, reserves as a solution might not work for all block classes. For example, pharmacy students enrolled in their first-year block are assigned pharmaceutical calculations problem sets from one book. Library staff encounter the situation where over one hundred students will need the same textbook at the same time. The collection development policy supports purchasing multiple copies of

books, but it is fiscally unsound to buy a single textbook for each student enrolled in the course. Other factors such as staff time, processing, supplies, edition updates, and the limits of physical library space also prohibit the purchase of multiple copies of print titles. Therefore, in these cases, options such as purchasing an electronic version of the book may be more effective in meeting student access needs, and indeed, this was the course of action taken with *Pharmaceutical Calculations*, an electronic textbook. However, a lack of knowledge of student preference about print or electronic formats provided a crucial need to undertake a study assessing these preferences in the library and university environment.

The University Library collection development policy does support buying textbooks. The reference and instruction librarian works with faculty members to obtain a list of textbooks, fundamental reference, and other recommended texts for use in both the pharmacy and nursing programs. We buy books catalog and check them out to students. Additionally, library staff collaborates with each college or program's Education Resource Committees (ERC). These ERCs are composed of faculty members who act in an advisory role to assist the library in deciding what items to purchase for the collection. ERC committees will sometimes request that the university library purchase e-books. The library does recommend purchasing e-books for those items that are increasingly popular. We emphasize that pharmacy students are not required to buy books for their program, creating unique collection issues for the library, while nursing students are required to use and purchase textbooks. In practice, many of the nursing students look to library collections to support their needs without buying the required textbooks, and this practice raises additional customer service and access issues at the university library.

Methods

This research study used two ways. First, we distributed a survey to current nursing and pharmacy students at the Henderson campus. Second, we convened a focus group to gather qualitative data about student preferences for print or e-books. The study was deemed exempt by the IRB.

Survey Collection and Data Analysis

We used SurveyMonkey to design and distribute the survey. The introductory text informed participants that the study was voluntary. Descriptive statistics were gathered and analyzed from the survey instrument. We included demographic questions in addition to a combination of Likert scale and open-ended questions. We asked student age, year in their respective program, and program enrolled in pharmacy or nursing. The research team created some questions, and other questions were adapted from previous surveys (McKiel, 2011).

We received a total response rate of $n=57$ (10.57%); however, the response rates for each question varied. Students had to answer questions about the following topics: preference for print or e-books, print preference only, and e-book preference only. Each of these three themed areas included questions related to the technology of e-books (Appleton 2004, Reville et al. 2012). The block system program for nursing requires nursing students to purchase textbooks in any format, while pharmacy students are not required to buy textbooks. This survey addressed these curricular differences between the programs.

Pharmacy students answered that they preferred print books at 48.57%, while

80% of the nursing students indicated a preference for print. One nursing student selected the option, “I don’t like to read.” The survey further probed student format preferences in textbooks. Both pharmacy and nursing students indicated a strong preference for print textbooks at 67.5%. As for e-book preferences, 29.73% of the pharmacy respondents stated that they preferred an e-book; no nursing students indicated a preference for an e-book. At the time of the survey, the researchers were unaware of a prohibition in the School of Nursing that disallows the use of e-books or e-textbooks during nursing assessments. This factor may have influenced the nursing students who responded about their preference for print textbooks.

Further, the research team notes, that study materials pharmacy students receive are PowerPoint slides, in-class handouts, and assigned pharmaceutical calculations problems sets from the Howard Ansel, *Pharmaceutical Calculations*, textbook. Pharmacy student responses align with the fact that pharmacy education at Roseman does not rely on textbooks. Many pharmacy students appear to prefer to print the class materials they receive that support their learning. These factors may account for the high print preference numbers among the pharmacy students.

Focus Group Data Collection and Analysis

In this study focus groups were recruited using flyers, email blasts, and during library instruction sessions. These were the incentives for students: two donated gift cards, a \$25 Amazon card and a \$25 iTunes card, USB drives, water bottles, and a pizza dinner with soda. Because Roseman students are in class until 3 p.m. each day, focus group sessions were offered on two different days during the evening to allow for maximum participation. Four total sessions were available, two, for two hours in August

and September of 2012 and two in February 2013. One session garnered participation. Focus groups are defined as groups of “people who possess certain characteristics and who provide qualitative data in a focused discussion to help understand the topic” (Krueger & Casey, 2009, p. 10). A focus group can range from five to ten people, but the size is variable and can be as few as four, to as many as 12 (Krueger & Casey, 2009). The September 2012 focus group session had four participants; three nursing students and one pharmacy student (n=4). The attended focus group session met in a library conference room. The Reference and Instruction Librarian and Electronic Resources Systems Librarian conducted sessions. One researcher acted as a recorder and took notes. The other researcher read the purpose of the study, asked for verbal consent of focus group participants, and reminded participants of confidentiality standards.

The focus group questions were: 1) Which format do you prefer? 2) How do you decide which format to use? 3) What factors go into making that decision? Focus group participants’ answers to questions included concerns about cost, functionality, and e-book navigation issues, including printing, searching, and using charts and diagrams.

In our study, students expressed how they felt about using e-books. Some of their feelings included: lack of comfort with learning a new technology and ergonomic concerns, like, eyestrain associated with reading from a laptop (Tracy, 2018). The issue of eyestrain is well reported in the literature, and e-book creators have attempted to address this (McKiel, 2011; Smyth & Carlin, 2012; Tracy, 2018). Students mentioned eyestrain as a drawback to trying to read e-books. This statement aligns with findings in Smyth and Carlin (2012), who noted that students in their study preferred reading from print. Students found print easier on their eyes and reported difficulty with sitting at a

computer screen to read for long periods. The researchers came to understand that comfort might play a significant role for students in determining their preference to use e-books.

Students also expressed anxiety with learning new technology. Nursing respondent two explained that online classes were a new language for her. The process was stressful. She leaned on family members to walk her through using an e-book. These student expressions of concern provide opportunities for library instruction interventions. A workshop on the use of e-books could help to alleviate student anxiety about using e-books.

Cost was also a factor for buying e-books for the focus group participants. Because courses in the block curriculum range from one to five weeks in duration, students found selling their used texts in such a short timeframe was not economically viable. In this case, nursing students may decide to use print books that are held in reserve at the University Library or e-books if available rather than purchase a book. On the other hand, to buy a print book that may serve as a fundamental reference text throughout the duration of their program is an economically viable choice for some students. Sometimes preference for print or e-books was entirely an economic concern.

More detailed questions about preference for studying from print or e-books were not asked in the focus group. However, students reported mixed views on their choice for print versus e-book when studying. Nursing student respondent 1 said she preferred to use e-books for study because “You don’t have to carry all of your stuff when you go to someone’s house to study or go to a coffee shop.” E-books also afford the student the convenience of not having to carry a heavy load, which could result in ergonomic

concerns such as shoulder or back strain from carrying a heavy backpack. Student respondent 4 said, "...to have physical textbooks in front of her is overwhelming" she would instead open multiple screens. Nursing student respondent 2 disagreed about the convenience of using e-books for study stating, "You can't have all the books open online at the same time because you can't see them all at the same time." These kind of contradictory statements are similar to that of a midwifery student in Appleton's 2004 study, who liked the ability to "spread materials out" (Appleton, 2004; Smyth & Carlin, 2012).

The one pharmacy student in the focus group relied on notes and class materials that were produced and available electronically. The pharmacy student stressed the importance of handouts as study materials and admitted that "a lot of times we [pharmacy students] don't read other stuff." This comment is present in the literature where mentions of non-textbook based material in pharmacy education is favored (Ingram et al. 2007).

Focus group participants expressed further conflicting preferences for print or e-books when discussing functionality. In terms of e-book searching functionality, two of the nursing students liked e-books: "E-books are good for research," and the "search functionality of e-books is easier." Throughout the focus group process, the participants even asked questions of one another. This interaction among focus group participants was valuable for everyone because nursing and pharmacy students are often not in dialogue with one another. All students seemed to agree that having e-books would decrease the amount one had to carry around for study sessions.

Lack of knowledge about how to engage with e-book technology seemed to

prohibit the effective use of technology. One nursing student respondent, unaware of a download option provided by some digital textbook vendors, disliked e-books because of the misperception that users need internet access to read. This comment highlighted the need for training about the capabilities and options for the use of e-books. Librarians are uninvolved in the selection of e-book vendors, yet vendors have direct access to students. Vendors visit campus to explain textbook package options to students, yet it is unknown if these vendors offer e-book training to students. A coordinated approach of training with librarians and vendors as partners might help to improve student use of e-book technology.

Discussion

At the focus group session, nursing students offered some surprising comments and concerns around using e-books during assessment challenges. It became clear that assessment challenges influenced student use and preference of format type. In the block system, nursing and pharmacy students can re-take exams they do not pass. Students can also challenge questions after taking an assessment. Nursing students revealed that they are not allowed to use e-book material in their challenge process while pharmacy students can use any material during challenges. This factor appears to be a significant reason for the difference in format preferences among pharmacy and nursing students. Pharmacy education at Roseman as mentioned is based mainly on materials students receive in class: PowerPoint slides, handouts, and sometimes outside textbook material in the form of problem sets for pharmaceutical calculations. Not using books is a fundamental difference in approach to curriculum between the nursing and pharmacy programs. The decision to select print or e-book because of the assessment process was a surprising

result and seemed to influence nursing students' pragmatic preference for print or e-books.

The ability to use e-books may be generalizable to other universities whose students are in programs where a team-based learning approach allows the use of all types of materials during an assessment challenge (Samuel et al. 2013). Roseman nursing students found that being unable to use e-books during assessment challenges was a barrier. These students expressed a clear preference for using e-books during challenges because of the perceived ease of searching an e-book to find information needed to support their assessment challenge case.

Conclusions

This study began because of library staff encounters with students at the University Library Service Desk. This research team sought to discover print and e-book format preferences of undergraduate nursing students and doctoral pharmacy students in an accelerated block mastery learning program due to the unique constraints of the learning environment. Survey results for both nursing and pharmacy students highlighted factors that influence nursing and pharmacy preferences for print or e-books. Survey and focus groups results for print preference were similar. Nursing students preferred print as a medium that makes study easier, with appealing layouts for diagrams, charts, and ease of highlighting text.

Additionally, nursing students reported the use of print as a primary reference tool to discover concepts that can be later researched online as another distinct reason for their preference of print. More significant numbers of pharmacy students responded to the print survey, and one pharmacy student participated in the focus group session.

Pharmacy students at Roseman similar to other pharmacy students rely less on textbook-based materials. Pharmacy students reported more favorable e-book preference open-ended comments while nursing students provided none. Both groups of students preferred print textbooks instead of e-textbooks. Pharmacy and nursing students indicated a preference for print textbooks because they can highlight and bookmark print books. Nursing and pharmacy students also remarked that they liked the look and feel of print and that print text is easier on the eyes. Even though both the survey and focus group participant numbers were low, this initial work opens the door for more questions and future work to delve further into format preference choices among pharmacy and nursing students in accelerated block programs.

Limitations of the Research

The survey was not pilot tested before disseminating it to the intended audience. Survey question #4, *Why do you prefer a print textbook over an e-textbook* did not include an open-ended option to allow students to provide open text responses for why they prefer a print textbook or an e-textbook. Open-ended response data might have given the researchers more in-depth reasons as to why students might prefer a print textbook instead of an e-textbook; this gap represents a loss of data for this research project.

An additional challenge documented in the literature is low survey response rate (Porter, 2008, 233, Gordon, 2004). Porter suggests that the “complexity of the email survey process is a likely cause of the low survey response rates reported by researchers.” Although there was a 10.57% response for some questions, fewer students responded to all survey questions. A final point is a low enrollment in the programs at Roseman

University during the time of the study. Pharmacy student enrollment was 422 while nursing enrollment was 117.

This research cannot draw any firm generalizable conclusions about the format preference commonalities or differences among nursing and pharmacy students. The narrowness of our research focus yielded no existing literature on these two particular cohorts and their attitudes about textbook formats. The block system learning environment appears to offer a uniqueness that might influence nursing student preference for print or e-books. The evidence given in the focus group by nursing students as it relates to the block curricular environment is a potential area for future research in other block curriculum programs.

Conclusions

The research team expected findings from this case study to influence collection development and budget decisions. Instead, results from this study did not have any impact on book buying budget decisions; the Director of Library Services did decide to purchase more e-books in the 2012-2013 fiscal year. This trend continued into the 2013-14 fiscal year with the purchase of Elsevier's Clinical Key. One strategic direction of the library is to continue to grow access to e-books and decrease print collections, especially with serial publications. Our case study was unique as we examined, via a focus group, the textbook format preferences of nursing and pharmacy students enrolled in one university's mastery block system. The authors hope this case study might encourage other mastery block systems to open dialogues between the libraries and other stakeholders about collection development practices and student preference for print or e-books.

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