COURSE SUCCESS

LIPPINCOTT FOR LIFE

Case Study

Higher Mastery Predicting Course Outcomes

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SUMMARY OF FINDINGS

- **Usage of prepU leads to demonstrated ability to correctly answer more difficult questions; mastery of the content improves.**
- **prepU Mastery Level was significantly, positively correlated with the number of questions answered in prepU, as well as with final course points.**
- **prepU Mastery Level could be used to predict the total number of points in the course.**

Course

Nursing of Adults and Children III (Nursing 253) is a 10-hour credit course that includes classroom, clinical and lab components. During the fall 2011 semester, there were 65 students in the course. The course covers concepts such as mother, neonate, and family along with the body's response to interferences with oxygenation of tissues related to respiratory, hematological, and cardiac systems.

Course Grading Policies and Assessment

Course grades were made up of:
- Six tests, one quiz, one sim quiz, bibliography cards, prepU, and a final exam

All tests and the final make up 92% of course grade and all other evaluations are the remainder 8%.

Students need to get at least 78% points out of a total of 430 points to pass the course.

Motivation for Using prepU

prepU satisfies the following teaching and learning goals in this course:

- Assessment of student understanding
- Student remediation of topics not understood after lecture

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Health

- Increase in student knowledge of course materia
- Formative assessment for student
- Preparation of students for formalized testing
- Allowing students to practice test-taking skills
- Helps develop student confidence in decision making
- Helps students recognize need for extra help
- Helps students determine if they have understood certain concepts

prepU Implementation

Students had access to prepU and 15 course points were available to them if they used it. Assignments were created by the instructor.

Results

Usage data from the 65 students is shown in Table 1. Of the 65 students enrolled in the course, 100% of them took quizzes in prepU, with an average of 51.5 quizzes and 46,818 total questions answered. The average class mastery level was 4.7.

Table 1: prepU Usage and Mastery Data

Number of students:	65
Students who've taken a quiz:	64
Quizzes taken:	3,298
Average number of quizzes (among those who've taken quizzes):	51.5
Questions answered:	46,818
Average number of questions (among those who've taken quizzes)	732
Average Overall Mastery Level	4.7

End of Course prepU Usage

Two students dropped the course and data were analyzed for the remaining 63 students. The summary of prepU usage for this group of students is shown in Table 2. The average number of quizzes was 52.11 ranging from 13 to 156. The average number of questions answered was 738.87 ranging from 287 to 2,928.

Table 2: Overall prepU Usage

	N	Min	Max	M	SD
Overall Number of Quizzes	63	13	156	52.11	33.11
Overall Number of Questions	63	287	2928	738.87	458.94
Overall Mastery Level	63	3	8	4.71	1.30

An analysis of the average overall number of questions answered by students ($N = 63$) and their final prepU mastery level revealed a significant, positive correlation between number of questions and final mastery level, $r(63) = .45$, $p < .001$. (see Table 3).

Table 3: Within prepU Correlations

		Quizzes	Questions	Mastery Level
Quizzes	Pearson Correlation	1	.740**	.664**
	Sig. (2-tailed)		.000	.000
	N		63	63
Questions	Pearson Correlation		1	.451**
	Sig. (2-tailed)			.000
	N			63
Mastery Level	Pearson Correlation			1
	Sig. (2-tailed)			
	N			

**. Correlation is significant at the 0.01 level (2-tailed).

Overall ML was also significantly, positively correlated with total number of points in the course, $r(63) = .304$, $p < .05$, but not the final exam when considered alone (see Table 4).

Table 4: Correlation between ML and Course Outcomes

		ML	Total Points	FINAL
ML	Pearson Correlation	1	.304*	.068
	Sig. (2-tailed)		.016	.594
	N		63	63
Total Points	Pearson Correlation		1	.741**
	Sig. (2-tailed)			.000
	N			63
Final Exam	Pearson Correlation			1
	Sig. (2-tailed)			
	N			

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

A linear regression analysis established that overall quizzing ML could statistically significantly predict the number of course points attained by the students, $F(1, 61) = 6.197$, $p < .05$, and ML accounted for 7.7% of the explained variability in final course points. The regression equation was: predicted course points = 329.712 + (3.127 x ML).

Conclusions and Future Use

This was the second semester of prepU use for this course. Students used prepU throughout the course and answered an average of 738.87 questions, with an overall average ML of 4.71. The current study found that prepU Mastery Level was significantly, positively correlated with the number of questions answered in prepU, along with final course points. Thus, as students answer more questions in prepU, their content mastery improves as they answer more difficult questions correctly.

A linear regression analysis established that prepU Mastery Level could be used to predict the final number of points in the course.

There are, of course, many unknowns in a study such as this one. Individual differences between students play a large role in student performance and there is no pretest data against which to measure growth or change. However, we have found similar patterns relating to student usage of prepU and course outcomes in many other courses from which we have analyzed data. Research on learning suggests that actively practicing and studying can be beneficial for students. And prepU provides continuing, ongoing measures of student learning and progress as well as opportunities for students to get practice answering questions, increase their mastery, and continue learning.