

Factors for Success:
Characteristics of graduates in an online program

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Introduction

Our institution has graduated over 120 students in a Master of Arts in Learning and Technology degree program since the program began matriculating students in the fall of 1999. For most of these last four years, we have been in a program building mode, setting up a framework of learning resources, developing a learning community, and smoothing out many of the wrinkles that new programs invariably encounter. Now that a number of graduates have completed the program we are able to conduct institutional research and examine ways to make the whole process more efficient and refined for students. The goal is to help our students be successful online learners.

We realize there may be many variables that contribute to success in online learning. For this study we have posed the following research questions:

1. What are significant predictors of successful online graduates? If we can define the characteristics that make people successful in our programs we can leverage that knowledge in helping our existing and future students.
2. What are factors that facilitate time to completion? Our students are all working adults. They want relevant and practical skills and knowledge related to their careers, and they want to complete their degrees in a timely manner. If we can identify what works best to keep students progressing, they are more likely to graduate expeditiously.
3. What are some appropriate strategies for working with different group profiles, and how do we develop an approach of what to do for specific individuals? Much of this will be based on learning orientation theory (Martinez, 2004) and also our own experience working with students.

Methods

Subjects and Setting

A total of 60 graduates are represented in this research study. All are graduates in the Master of Arts in Learning and Technology degree, an online master's degree program. The vast majority of these participants are K-12 teachers, working full time and fitting their studies into late nights and weekends. Although there are over 120 graduates from this master's program, data were collected only for those that matriculated since January 2002. We chose to do this because of insufficient data for students prior to 2002. Students at our university average 40 years in age but ages for this specific sample were not determined. Sixty percent of the participants in this group are female. Students' addresses in this sample were not collected but the majority of graduates are from the western states. The University has students in all 50 states and nine foreign countries.

Procedures

After considering many possible data points, we selected six factors to examine that may contribute to student success. Much of the data resides in our student information system. We collected the remainder of the data from our graduates in the form of an email or telephone survey. The factors we examined include the following:

1. *Time spent studying per week.* Students approximated the number of hours per week spent studying. This data was collected solely through email and telephone survey.
2. *Learning resources.* We examined the number of instructor-led courses used

by students to complete their programs. Students use a variety of learning resources to gain the skills and knowledge required to pass the our competency-based assessments including courses, self-paced modules, textbooks, web resources, job aides and study guides.

3. *Pre-assessment scores.* Before beginning the program, students complete an objective multiple-choice assessment, called the PALT, which measures pre-existing knowledge of the required competencies. We collected these scores and added them to our data set.
4. *Months to completion.* Our own internal research has indicated that a relationship exists between the number of months spent in our programs and student satisfaction levels. We decided to compare the months to completion with other variables to determine if other correlations exist and perhaps help predict months to completion.
5. *Number of emails.* Each student's email communications are stored as part of the student record. These folders contain correspondence between student and mentor as well as university staff communications with the student. Email is the primary form of communication at our institution. We added the total of all correspondence in each student folder to get an overall picture of activity levels.
6. *Learning Orientation Questionnaire (LOQ) scores.* LOQ scores are a measure of students' general approach to learning. The LOQ identifies motivational and conative issues related to learning and categorizes students into one of four groups: transforming, performing, conforming, and resistant learners. The

questionnaire produces three subscale scores on the following constructs: self-motivation, self-directed strategic planning, and learning autonomy. We collected these scores to include in the analysis. See the Discussion section of this report for definitions of the three constructs.

Most of the data were collected from the university's student information system. Time spent studying was the only subjective measure and was estimated by the student. Emails were initially sent out to all graduates asking them to estimate the number of hours they spent on average per week devoted to schoolwork. The response rate was fairly good and after a day or two we began calling graduates by telephone to follow up with those who didn't respond by email. During the data collection process, it became evident that many students had not taken the LOQ so a follow up email was sent to those who had not taken the survey with instructions on how to take it online. We also encouraged students to take the LOQ during our phone calls if needed.

After data collection was complete, we analyzed the data using Pearson r to compute correlation coefficients. We examined each variable to see if meaningful relationships existed between them. We were particularly interested in seeing if there was a correlation between months to completion and the other measures in the study. We also examined mean scores for each measure to help build profiles of what current graduates have done to complete the program in terms of pre-assessment scores, hours spent, months to completion, email interaction, and courses taken. We knew this type of information would be helpful to prospective students. Lastly, we performed a regression analysis for the variables that exhibited meaningful relationships. In a future study, we

hope to compare the successful group profiles with those of students who drop out or who do not finish in a timely manner.

Results

In the following paragraphs we will discuss the results of the data analysis. First we present the descriptive statistics, followed by a correlation matrix, and finally we provide a regression equation to help predict performance.

Descriptive Analysis

The analysis yielded some surprising results. First we performed a descriptive statistical analysis across all variables using SPSS. The results are summarized in Table 1 below.

Table 1

Descriptive Statistics

	N	Range	Minimum	Maximum	Mean	Std. Deviation	Variance
COURSES	59	7.00	1.00	8.00	4.1695	1.65209	2.729
EMAIL	59	481.00	68.00	549.00	258.5593	115.06074	13238.975
HOURS	47	29.00	4.00	33.00	14.5532	6.21817	38.666
LOQTOTAL	25	6.68	11.84	18.52	16.1104	1.76833	3.127
MONTHS	59	23.00	7.00	30.00	22.1864	5.39628	29.120
PALT	59	45.00	28.00	73.00	58.2881	7.38603	54.553
Valid N (listwise)	21						

One of the more interesting finds was the range in number of hours spent studying each week as estimated by the students. This number ranges from 4 to 33 with an average of 14.5 hours each week. We tell our students they should expect to spend about 15-20 hours studying each week so this is right in line with our expectations given the standard deviation. A surprising result was that at least one student reported spending only 4 hours

per week studying, however, we found a moderate inverse relationship between the number of hours studying per week and number of months to completion.

Another data point of interest was months to completion, which ranged from 7 to 30 months. As stated earlier, we only examined graduates who matriculated since January 2002. We have had students graduate in more than 30 months but they were not included in this study. These earlier students had no access to the LOQ and the pre-test was different than post 2002.

Finally, at the time of data collection, only 25 graduates had LOQ scores. Forty-four percent of the sample was identified as transforming learners. Forty-eight percent were performing learners and the remaining eight percent were conforming. The percentage of transforming learners was a little higher than other studies (Martinez & Milner, 2004; Jones & Martinez, 2001) wherein about 28-31 percent of learners were transforming, and 55-62 percent were performing learners. According to Martinez, graduate students tend to have higher scores than undergraduates of their prior educational experience at the college level.

In summary, the average student who has graduated in the past two years from our program has taken 4 instructor-led courses, posted 258 email correspondences, spent 14.5 hours per week studying, is a high performing learner, has a pre-assessment score of 58 percent, and completed the program in about 22 months. A bar chart is provided below in Figure 1 to illustrate months to completion.

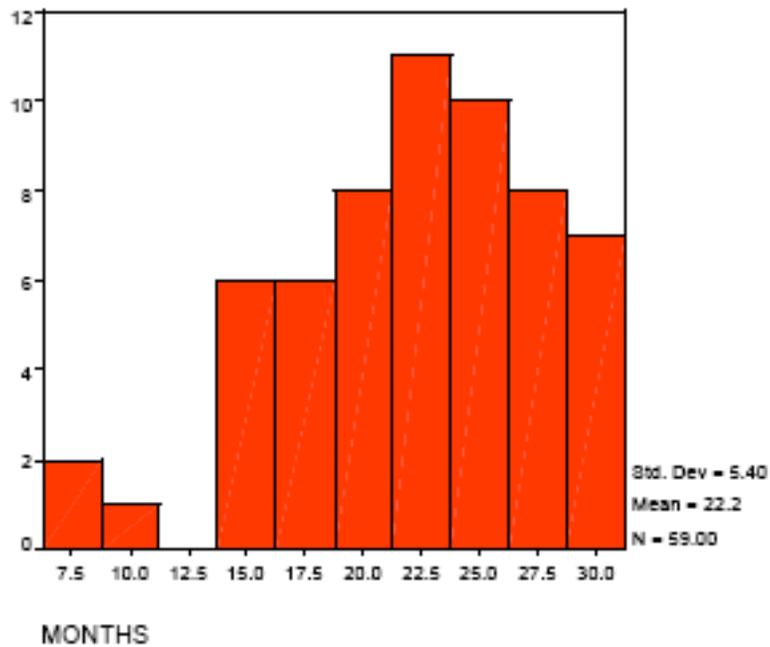


Figure 1. Bar chart depicting months to completion with standard deviation and mean (n = 59).

Correlational Analysis

Next we wanted to determine the strength of relationships between each variable in the study. We utilized the Pearson product moment correlation using SPSS for this test. The results are summarized in Table 2 below.

Table 2

Correlation Matrix for Variables on Months, Courses, Hours Spent per Week, Email, and LOQ Total Score

		MONTHS	COURSES	HOURS	PALT	EMAIL	LOQTOTAL
MONTHS	Pearson Correlation	1	.120	-.413**	.096	.003	-.582**
	Sig. (2-tailed)	.	.365	.004	.470	.981	.002
	N	59	59	47	59	59	25
COURSES	Pearson Correlation	.120	1	.145	-.076	-.167	-.025
	Sig. (2-tailed)	.365	.	.331	.567	.206	.907
	N	59	59	47	59	59	25
HOURS	Pearson Correlation	-.413**	.145	1	-.081	.039	.418
	Sig. (2-tailed)	.004	.331	.	.587	.797	.059
	N	47	47	47	47	47	21
PALT	Pearson Correlation	.096	-.076	-.081	1	-.157	.092
	Sig. (2-tailed)	.470	.567	.587	.	.235	.663
	N	59	59	47	59	59	25
EMAIL	Pearson Correlation	.003	-.167	.039	-.157	1	.018
	Sig. (2-tailed)	.981	.206	.797	.235	.	.931
	N	59	59	47	59	59	25
LOQTOTAL	Pearson Correlation	-.582**	-.025	.418	.092	.018	1
	Sig. (2-tailed)	.002	.907	.059	.663	.931	.
	N	25	25	21	25	25	25

Note: **Correlation is significant

As shown in Table 2, two variables correlated significantly with number of months to completion: hours of study per week and total LOQ scores. There was a moderate but significant, ($r=-0.413$, $p < .01$) inverse relationship between the amount of time students spent studying per week and the number of months to completion. The more time students studied, the less time it took them to complete the degree. LOQ scores also proved to have a moderate but significant inverse relationship to months to completion ($r=-0.582$, $p < .01$). The higher the combined LOQ sub-scores, the less time it took to complete the degree. Number of courses, pre-assessment scores, and email communications were not correlated with the number of months to completion.

Regression Analysis

Once we determined which variables demonstrated correlation with the number of months to completion, we ran a regression analysis to help predict the number of months to completion based on these correlates. The results of the analysis are shown in Table 3 below.

Table 3

Regression Analysis for Months to Completion as the Independent Variable

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	46.522	9.288		5.009	.000
	HOURS	-.151	.174	-.181	-.865	.398
	LOQTOTAL	-1.469	.623	-.493	-2.357	.030

Note: Dependent variable is months.

The resulting equation follows:

$$\text{Months} = 46.50 - 0.15 (\text{hours}) - 1.47(\text{loqtotal})$$

This formula may be misleading because if the student studies 0 hours per week, the student will not complete the program in 46.5 or any other number of months, no matter what the total LOQ score. Despite the fact that number of hours studying per week is correlated with the number of months to completion, number of hours is *not* a significant predictor of the number of months needed to complete the program. Rather, LOQ is a better predictor of the average time it will take to complete the program. For example, consider a hypothetical student who studies 1.0 hour per week with an average LOQ of 16.11. It would be expected that student would graduate in about 23 months.

Now, consider a student who invests the mean number of hours per week (14.6) and has an average LOQ (16.11). We would expect this student to graduate in

approximately 20 months. For that reason and given the data available, the best predictor equation of graduation would become:

$$\text{Months} = 46.50 - 1.47(\text{loqtotal})$$

The scatter plot provided below in Figure 2 demonstrates the moderate but significant inverse relationship between months to completion and total LOQ score. Students who scored higher on the LOQ tended to take fewer months to complete the program.

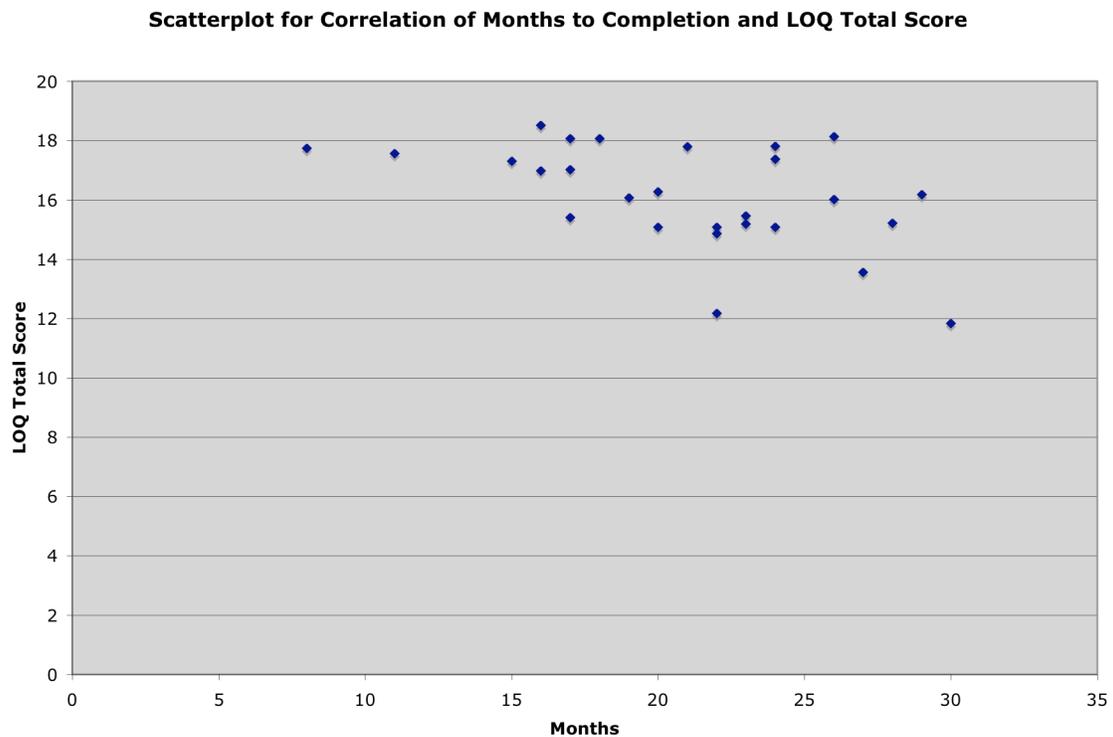


Figure 2. Scatter plot for the correlation of months to completion and LOQ total score.

Discussion

The finding that months to completion is related at modest but significant levels to time spent studying per week and LOQ scores suggests that (a) students will complete

online degrees sooner if they set aside sufficient time each week to pursue their studies and (b) students who are high performing and transforming have a better chance of succeeding in an online degree. The first conclusion may seem overly obvious. Students who perform at higher levels are more successful. This has been supported by the literature. Research studies have provided a number of characteristics of those most likely to complete distance learning coursework and programs. Completers are more likely to (a) have an internal locus of control, (b) possess advanced degrees and higher grade point averages, (c) study at least 10 hours per week, and (d) have already successfully completed a distance learning course (Bernt & Bugbee, 1993; Dille & Mezak, 1991; Laube, 1992).

The second conclusion warrants further discussion. As stated earlier, the LOQ score is derived from three separate sub-scale scores. The following explanation of the LOQ subscales is from the author of the LOQ, Margaret Martinez (2004). The first construct is self-motivation. This estimates the learner's general feelings and attitudes about learning. At the heart of this construct is the force that drives students to learn, the passion or *raison d'être* of learning. Content, people, environments, resources, and instructional presentation influence self-motivation. Some learners will naturally be more motivated in some subjects or environments.

The second construct is strategic planning. This construct measures the degree that learners plan and commit deliberate, strategic effort to accomplish learning (Martinez, 2004). Students who are able to set goals for themselves and then see them to fruition score high in this construct. It is important to note that this was the single construct that showed significant statistical difference when the three construct scores

were analyzed separately. This suggests that in this sample, a student's ability to plan and set goals was the single most significant predictor of months to completion. Being able to predict months to completion according to students' strategic planning sub-score in the LOQ could have tremendous impact in the institution's own strategic planning in terms of forecasting graduation dates and coordinating resources.

In order to capitalize on this important finding, we should investigate strategies related to long-term strategic planning, big picture thinking, self-assessment, and complex problem solving. In the past we have used textual and graphic advance organizers to help students begin with the end in mind and we will continue to develop these types of resources for students to increase the chance of success and decrease months to completion.

The third and final construct is autonomy. This estimates the learner's desire and ability to "take responsibility, make choices, and control or manage their own learning (i.e., make choices independent of the instructor) in the attainment of learning and personal goals" (Martinez, 2004). Much of this construct is related to locus of control. Research has shown that students are at greatest risk of being non-completers in a distance education degree program when they have an external locus of control and do not take responsibility in managing the learning process (Dille & Mezak, 1991). It is theorized that given more time and a larger sample, we will begin to see relationships between autonomy, motivation and months to completion. More studies will follow.

The finding that there were no relationships between pre-assessment scores, courses, email interaction and months to completion warrants further investigation. Perhaps pre-assessment scores should be evaluated in relationship to completers versus

non-completers. We think that students who enter our programs with higher level skill and competencies should perform better than those who do not. This may be the focus of future studies. The variable of instructor-led courses should be evaluated in light of other learning resources in the program such as self-paced instructional modules, textbooks, study guides, job aids, library reference materials, and other resources. We expected a relationship between number of courses and LOQ scores. Generally speaking, students who are conforming and low-performing learners prefer the structure of an instructor-led course. We think that a larger sample might provide more significant results in that area. Finally, we think a larger sample would also yield significant results with email interactions. We feel that email interaction is of utmost importance for our specific model as it is our primary means of communication with students. One variable we did not measure was telephone calls. These are also used heavily in mentor/student communication. In our experience, students who have frequent and regular communication with the mentor are more successful than those who do not. For this reason we have established a communications protocol detailing types of communication and frequency of contact throughout the student's program.

Proposed Strategies According to Learner Profiles

Table 4 suggests possible strategies and guidelines according to learner-difference profiles for transforming, performing, and conforming learners. Based on learning orientation theory (Martinez, 2004) and our own experience, these suggestions may be helpful in determining levels of mentor/mentee interactivity and learner autonomy, as

well as goal setting, capturing interests, designing learning environments, providing feedback, helping learners monitor progress, and evaluating performance.

Table 4
Strategies and Guidelines According to Learner Profile

Mentoring Issues	TRANSFORMING LEARNER	PERFORMING LEARNER	CONFORMING LEARNER
General Environment	Prefer loosely structured, mentoring environments that promote challenging goals, discovery, and self-managed learning.	Prefer semi-complex, semi-structured, coaching environments that stimulate personal value and provide creative interaction.	Prefer simple, safe, structured environments that help learners avoid mistakes and achieve easy learning goals in a linear fashion.
Goal-Setting and Standards	Set and accomplish personal short-and long-term challenging goals that may not align with goals set by others; maximize effort to reach personal goals.	Set and achieve short-term, task-oriented goals that meet average-to-high standards; situationally minimize efforts and standards to reach assigned or negotiated standards.	Follow and try to accomplish simple, task-oriented goals assigned by others; try to please and conform; maximize efforts in supportive environments with safe standards.
Learner Autonomy and Responsibility	Self-motivated to assume learning responsibility and self-direct goals, learning, progress, and outcomes. Experience frustration if restricted or given little learning autonomy.	Situationally self-motivated to assume learning responsibility in areas of interest. May willingly give up control and extend less effort for topics of less interest or in restrictive environments.	Cautiously motivated to assume little responsibility. Will self-direct learning as little as possible, and likely to be more compliant
Interaction	Prefer occasional mentoring and interaction for achieving goals (MENTORING).	Prefer continual coaching and interaction for achieving goals (COACHING)	Prefer continual guidance and reinforcement for achieving short-term goals (GUIDING)
Feedback Preferences	Prefer inferential feedback.	Prefer concise feedback.	Prefer explicit feedback.
Peer Interaction	High, belief that everyone can commit and contribute valuable, holistic insights	Moderate, easily frustrated by time required for peer interaction and theory	Minimal, values group consensus and commitment, wants answers from the instructor
Questioning Habits	Asks probing, in-depth questions about content	Asks questions to complete assignments, too busy taking notes	Asks mechanistic questions about assignments
Problem Solving	Prefer case studies and complex, whole-to-part, problem-solving opportunities.	Prefer competitive part-to-whole problem solving.	Prefer scaffolded support for simple problem solving.
Learning Opportunities	Minimal coursework and maximum independent learning resources.	Moderate mix of coursework and independent learning resources.	Maximum coursework and minimum independent learning resources.

The purpose of this study was to evaluate the characteristics of successful online learners. A successful learner was defined as a student who completes program requirements and graduates in a timely manner. The results of our research will help distance-learning institutions focus on the most important aspects online learning in producing graduates. We hope the knowledge we have gained from this study will enable us to design online learning environments that help students to succeed. It is easy for students to become frustrated if they do not have the support they need. Finally, we hope to use the results of this study to evaluate the probability of student success during the admissions process. Online learning is not for everyone and determining a good fit during the admissions process ensures a win-win situation for both the university and the student.

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