

Research Brief

Predicting early nursing school performance in a BSN program: How do TEAS V preparedness levels predict Fundamentals performance?



ATI's TEAS V is an assessment of academic preparedness to enter a nursing program. As such, it is often used by schools of nursing as one of the criteria to select students for entrance into the program. Some programs choose to adopt one of several performance level descriptors, known as academic preparedness categories, associated with the TEAS V as a minimum score for admission. This analysis examines the relationship between TEAS V scores, specifically the academic preparedness categories, and early academic performance in a BSN nursing program as measured by ATI's RN Fundamentals 2010.

Introduction

For nursing faculty and aspiring students alike, the admissions decision process holds great import. For nursing faculty, the ability to evaluate prospective students' potential to succeed in nursing school is of paramount concern. In an effort to gain as much information as possible about applicants for use in the decision-making process, programs employ a variety of admissions criteria. One of these admissions criteria is the TEAS V assessment, published by Assessment Technologies Institute, LLC (ATI). The TEAS V assesses students' skills in the areas of reading, math, science, and English and language usage. Students taking the TEAS V receive separate scores for each of the content areas assessed, as well as an overall composite score that represents their performance across the TEAS V subsections.

To aid in interpreting and making meaningful decisions based on TEAS V scores, ATI developed academic preparedness categories that correspond to ranges of student performance on the TEAS V. The TEAS V academic preparedness categories were developed through a standard setting process conducted with 17 nurse educators representing PN, ADN, diploma, BSN, and accelerated BSN program types from institutions of various sizes and types from across the United States.

For more detailed information about the cut score-setting process and the academic preparedness categories, the reader is directed to the TEAS V Cut Score Executive Summary (ATI, 2010).

ATI's RN Content Mastery Series 2010, was chosen as a measure of early academic performance in a nursing program. This choice of criterion was made because it provides a standard point of comparison, as compared with first-semester GPA, which is highly variable across programs.

Additionally, the RN Fundamentals 2010 assessment has associated proficiency levels which are frequently used by programs and provide a convenient and interpretable measure of achievement. Similar to the TEAS V preparedness levels, RN Content Mastery Series 2010 proficiency level cut scores were established by a panel of nurse educators. For more information on the details of the standard-setting process, please see the RN CMS Cut Score Study Executive Summary. (ATI, 2010b)

The following research questions are explored in this paper:

- *What is the relationship between TEAS V scores and RN Fundamentals 2010 scores?*
- *What is the pattern of Fundamentals proficiency level achievement for students of differing TEAS V preparedness levels?*

Methodology

For these analyses, the first-attempt scores for individuals taking an RN Fundamentals 2010 exam in a BSN program between November 18, 2010 and December 17, 2013 were matched with first-attempt TEAS V scores already in the system. Only those assessments marked as 80% complete and 30% correct, and with all 4 subsections of the TEAS V completed, were included in the dataset. These selection criteria returned a final sample size of 35,201 student records spanning 392 nursing programs for analysis.

Eighty percent complete and thirty percent correct are standard filtering criteria that ATI applies, reasoning that an examinee making a genuine effort would be able to complete 80% of the assessment with at least 30% of test items correct. Because all items are 4-option multiple choice, an individual could be expected to answer 25% of the items correct based on guessing alone. For more information on the TEAS V speededness analyses, the reader is referred to the TEAS V Technical report. (ATI, 2010)

Table 1. Correlation of the TEAS sub scores and composite score with Fundamentals score (n=35,201)

	Reading	Math	Science	English and Language Usage	Composite score
Fundamentals 2010	.344	.248	.336	.273	.379

All correlations significant at $p < .001$.

Results

Relationship between TEAS V and Fundamentals scores

In order to examine the relationship between the TEAS V and Fundamentals assessment, Pearson correlations were run for the four TEAS V sub scores and composite score with Fundamentals score. All correlations are reported in Table 1.

Evaluation of the correlations in Table 1 suggests that the TEAS V is a significant predictor of achievement early in a nursing program, as measured by the Fundamentals assessment. Further, the TEAS V total score has a stronger relationship with Fundamentals scores than do the individual sub scores. Accordingly, the following analysis explores the established national preparedness levels for the TEAS V composite score in predicting Fundamentals proficiency levels.

TEAS V preparedness levels and RN Fundamentals proficiency level

In order to evaluate the relationship between TEAS V preparedness levels and individuals' later proficiency level achievement on the RN Fundamentals 2010, a crosstabs analysis was run to examine the distribution of scores in each TEAS V preparedness category by Fundamentals proficiency level.

Table 2. Crosstabs of TEAS V academic preparedness category by Fundamentals proficiency level (n=35,201)

TEAS V Academic Preparedness		Fundamentals Proficiency Level			
		0	1	2	3
Developmental	% within category	48.0%	30.7%	14.0%	7.3%
	n	86	55	25	13
Basic	% within category	25.2%	39.1%	31.7%	3.9%
	n	826	1280	1038	129
Proficient	% within category	9.3%	33.4%	49.8%	7.5%
	n	1763	6357	9468	1430
Advanced	% within category	3.2%	20.4%	59.5%	16.9%
	n	366	2327	6803	1929
Exemplary	% within category	0.6%	10.4%	57.1%	31.9%
	n	8	136	746	416

Table 2 displays the results of this analysis as the percentage of individuals within each TEAS V preparedness level scoring at each Fundamentals proficiency level. An examination of the Table 2 reveals that, as individuals score in successively higher TEAS V preparedness categories, the percentage scoring at higher proficiency levels on the Fundamentals assessment increases. Shading on Table 2 indicates the highest percentage of Fundamentals proficiency within each TEAS V level for ease of visualization.

Proficiency level 2 on the Fundamentals assessment is a common benchmark among nursing programs. Using this proficiency level as a standard for “success,” it appears that achievement of the Proficient preparedness level or better on the TEAS V is associated with a majority of students achieving “success” on the Fundamentals assessment.

In order to more clearly illustrate this interpretation, scores on the TEAS V were dichotomized into “below Proficient” and “Proficient and above.” Similarly, scores on the Fundamentals assessment were dichotomized into “below level 2” and “level 2 or above.” The heavy lines on Table 2 show these points of dichotomization and provide an aid in comparison of Tables 2 and 3. Table 3 shows the percentage of individuals at each TEAS V level achieving proficiency on the Fundamentals assessment for the dichotomized variables.

Table 3. Crosstabs of Dichotomized TEAS V level by Dichotomized Fundamentals level (n=35,201)

TEAS V Preparedness		Fundamentals Proficiency Level	
		Below Level 2	Level 2 and above
Below Proficient	% within category	65.1%	34.9%
	n	2247	1205
Proficient and above	% within category	34.5%	65.5%
	n	10957	20792

Conclusion

The magnitude of the correlation between TEAS V and Fundamentals scores indicates the usefulness of TEAS V as an indicator of preparedness for early academic success in a nursing program. Although it is ATI's position that selection into a nursing program should never be based on a single criterion such as the TEAS V, the correlations presented here support the use of TEAS V scores as a selection criterion in combination with other variables.

Additionally, the TEAS V preparedness level data are a powerful complement to the preparedness level descriptors and provide an enhanced picture of how students at various levels are likely to perform early in a nursing program. For programs choosing a preparedness level standard for use with the TEAS V, it is particularly important to consider expectations for early program academic performance, such as Fundamentals proficiency level achievement, and the support mechanisms that the program has available, in conjunction with the data presented here.

References

- Assessment Technologies Institute, LLC. (2010). *TEAS V National Standard Setting Study Executive Summary*. Author: Leawood, KS.
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If you have any questions regarding this paper or its findings, please do not hesitate to contact us at: aticommunications@atitesting.com

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