

# Predicting early nursing school performance in a PN program: How do the ATI TEAS Version 7 preparedness levels predict PN CMS Fundamentals performance?

*ATI's Test of Essential Academic Skills (TEAS) Version 7 is an assessment used to measure students' academic preparedness to enter a nursing program. It is used by nursing schools as one of the admissions criteria to select students for entrance into a nursing program. Many programs choose to adopt one of several performance level descriptors, known as academic preparedness categories, associated with the ATI TEAS Version 7 as a minimum score for admission. This analysis examines the relationship between the ATI TEAS Version 7 scores, specifically the academic preparedness categories, and early academic performance in a PN nursing program as measured by ATI's PN Content Mastery Series (CMS) Fundamentals of Nursing 2020 assessments.*

## Introduction

The admissions decision process is important for both nursing faculty and aspiring students. For nursing faculty, the ability to evaluate prospective students' potential to succeed in nursing school is of paramount concern. Programs use a variety of admissions criteria to gain as much information as possible about applicants for use in the decision-making process. One common criterion is the ATI TEAS Version 7 assessment, published by Assessment Technologies Institute, LLC (ATI). The ATI TEAS Version 7 assesses students' skills in the areas of reading, math, science, and English and language usage. Examinees taking the ATI TEAS Version 7 will receive separate scores for each of the content areas assessed, as well as an overall composite score that represents their performance across the ATI TEAS Version 7 subsections.

As an aid in interpreting and making meaningful decisions based on the ATI TEAS Version 7 scores, ATI has developed criterion referenced scoring standards called the academic preparedness categories that correspond to ranges of student performance on the ATI TEAS Version 7. The academic preparedness categories were developed through a standard setting process conducted with 20 nurse educators representing ADN, BSN, diploma, PN, and accelerated BSN program types from institutions of various sizes and types from across the U.S. For more detailed information about the standard setting process and the academic preparedness categories, the reader is directed to the ATI TEAS Academic Preparedness Level Summary (ATI, 2020).

Because the purpose of the ATI TEAS Version 7 is to help nursing schools identify students who are prepared to be successful in a nursing program, the early nursing school performance of admitted students is a key piece of evidence supporting its use. For this paper's analyses, the PN CMS Fundamentals 2020 assessments, part of ATI's PN CMS, were chosen as measures of early academic performance in a nursing program. This criterion was selected because it provides a standardized point of comparison, as compared to first-semester GPA, which may be highly variable across programs.

Additionally, the PN CMS Fundamentals assessment has associated proficiency levels, which are commonly used to provide a convenient and interpretable measure of achievement. Like the ATI TEAS Version 7 preparedness levels, the PN CMS 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 PN Content Mastery Series 2020 Proficiency Levels Summary (ATI, 2020).

The following research questions are explored in this paper:

- What is the relationship between the ATI TEAS Version 7 scores and the PN CMS Fundamentals scores?
- What is the pattern of the PN CMS Fundamentals proficiency level achievement for students of differing ATI Version 7 levels?

## Methodology

For these analyses, the first-attempt scores for individuals taking a PN CMS Fundamentals 2020 exam in a PN program between June 3, 2022 and May 31, 2023 were matched with first-attempt ATI TEAS Version 7 scores. Only those assessments marked as 80% complete or more and at least 30% correct, and with all four subsections of the ATI TEAS Version 7 completed, were included in the dataset. These selection criteria returned a final sample size of 3,470 student records comprising 355 nursing programs for the analyses.

Eighty percent complete and thirty percent correct are standard ATI filtering criteria that is used with the reasoning that an examinee making a genuine effort would be able to complete 80% of the assessment with at least 30% of the test items answered correctly.

## Results

### Relationship Between the ATI TEAS Version 7 and the PN CMS Fundamentals Scores

In order to examine the relationship between the ATI TEAS Version 7 and the PN CMS Fundamentals assessment, Pearson correlations were run for the four ATI TEAS Version 7 subsections as well as the composite score with the PN CMS Fundamentals score. All correlations are reported in Table 1.

**Table 1.** Correlation of the ATI TEAS Version 7 subscores and composite score with the Fundamentals score (n=3,470)

	Reading	Math	Science	English and Language Usage	Composite score
Fundamentals	<b>.440</b>	<b>.384</b>	<b>.374</b>	<b>.395</b>	<b>.519</b>

All correlations significant at  $p < .001$ .

### ATI TEAS Version 7 Preparedness Levels and the PN CMS Fundamentals Proficiency Levels

In order to evaluate the relationship between the ATI TEAS Version 7 preparedness levels and individuals' later proficiency level achievement on the PN CMS Fundamentals, a crosstab analysis was run to examine the distribution of scores in each ATI TEAS Version 7 preparedness category by the PN CMS Fundamentals proficiency level. Table 2 displays the results of this analysis as the percentage of individuals within each ATI TEAS Version 7 preparedness level scoring at each PN CMS Fundamentals proficiency level. Shading on Table 2 indicates the highest percentage of PN CMS Fundamentals proficiency within each ATI TEAS Version 7 level for ease of visualization.

**Table 2.** Crosstabs of ATI TEAS Version 7 academic preparedness category by Fundamentals proficiency level (n=3,470)

ATI TEAS Version 7 Academic Preparedness Levels		PN CMS Fundamentals Proficiency Levels			
		0	1	2	3
Developmental	% within category	44.8%	49.0%	6.3%	0.0%
	n	43	47	6	0
Basic	% within category	17.1%	63.9%	18.9%	0.0%
	n	236	881	261	0
Proficient	% within category	6.2%	42.8%	47.4%	3.7%
	n	116	804	890	69
Advanced	% within category	0.0%	0.0%	75.2%	24.8%
	n	0	0	85	28
Exemplary	% within category	0.0%	0.0%	100%	0.0%
	n	0	0	4	0

An examination of Table 2 reveals that, as examinees score in successively higher ATI TEAS Version 7 preparedness categories, the percentage scoring at higher proficiency levels on the PN CMS Fundamentals assessment correspondingly increases.

Proficiency level 2 on the PN CMS Fundamentals assessment is a commonly used 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 ATI TEAS Version 7 is associated with a majority of students achieving “success” on the PN CMS Fundamentals assessment. Table 2 shows that approximately 51% of individuals scoring at Proficient or above on the ATI TEAS Version 7 go on to achieve at Proficiency Level 2 or better on the PN CMS Fundamentals assessment.

In order to more clearly illustrate this interpretation, scores on the ATI TEAS Version 7 were dichotomized into “below Proficient” and “Proficient and above”. Similarly, scores on the PN CMS Fundamentals assessment were dichotomized into “below level 2” and “level 2 or above”. Table 3 shows the percentage of individuals at each ATI TEAS Version 7 level (below Proficient; Proficient and above) achieving proficiency on the PN CMS Fundamentals assessment.

**Table 3.** Crosstabs of Dichotomized ATI TEAS Version 7 levels (Proficient and above) by Dichotomized PN CMS Fundamentals levels (n=3,470)

ATI TEAS Version 7 Preparedness		PN CMS Fundamentals Proficiency Levels	
		Below Level 2	Level 2 and above
Below Proficient	% within category	81.9%	18.1%
	n	1,207	267
Proficient and above	% within category	46.1%	53.9%
	n	920	1,076

Because of the larger percentage of students scoring at the Advanced level and above who also achieve level 2 or higher on the PN CMS Fundamentals, the ATI TEAS Version 7 scores were also dichotomized into two levels on this basis (below Advanced; Advanced and above), and an additional crosstabs analysis of dichotomized ATI TEAS Version 7 and PN CMS Fundamentals scores was performed. Table 4 displays these results.

**Table 4.** Crosstabs of Dichotomized ATI TEAS Version 7 levels (Advanced and above) by Dichotomized PN CMS Fundamentals levels (n=3,470)

ATI TEAS Version 7 Preparedness		PN CMS Fundamentals Proficiency Levels	
		Below Level 2	Level 2 and above
Below Advanced	% within category	63.4%	36.6%
	n	2,127	1,226
Advanced and above	% within category	0%	100%
	n	0	117

A comparison of Tables 3 and 4 might make the use of the Advanced level as a PN standard for the ATI TEAS Version 7 attractive. However, it is also important to consider that a large percentage of students with ATI TEAS Version 7 scores in the Proficient level do, in fact, go on to achieve level 2 or above on the PN CMS Fundamentals assessment. In light of these data, it seems especially important for programs to consider their applicant pool and admitted cohorts in terms of their expectations for incoming students and the support that the program provides to students in the ATI TEAS Version 7 Proficient category. Additionally, programs may benefit from considering the data here in conjunction with their own program-specific analysis of admitted students' ATI TEAS Version 7 scores and subsequent performance.

## Conclusion

The magnitude of the correlation between the ATI TEAS Version 7 and the PN CMS Fundamentals scores demonstrates the usefulness of the ATI TEAS Version 7 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 ATI TEAS Version 7, the correlations presented here support the use of the ATI TEAS Version 7 scores as a selection criterion in combination with other variables.

Additionally, the ATI TEAS Version 7 preparedness level data are a powerful complement to the preparedness level descriptors and provide an enhanced picture of how students at various ability levels are likely to perform early in a nursing program. For programs choosing a preparedness level standard for use with the ATI TEAS Version 7, it is particularly important to consider expectations for early program academic performance, such as the PN CMS 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. (2020). ATI TEAS Academic Preparedness Level Summary. Author: Leawood, KS.
- Assessment Technologies Institute, LLC. (2020). PN Content Mastery Series 2020 Proficiency Levels Summary (ATI, 2020). Author: Leawood, KS.