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Comparing Northwest Evaluation Association's Benchmark Assessment Scores to College Board's ACCUPLACER Scores: Is There A Correlation?

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Abstract
The research examined the relationship between the Northwest Evaluation Association's (NWEA) benchmark assessment (Measure of Academic Progress [MAP]) scores and the score a student receives on the College Board's ACCUPLACER Reading and Quantitative Reasoning, Algebra, and Statistics test and differences between test scores. The correlation between the two scores could help predict which of their students would score as college-ready on the ACCUPLACER test by their NWEA scores. The school started administering the ACCUPLACER tests to classify students as college ready in 2022-2023. Students previously at Maine Virtual Academy had NWEA scores, and the question addressed is how the NWEA scores correlated to ACCUPLACER scores. This is important when considering what interventions are necessary to prepare students for their postsecondary goals, whether their plans include college or a career. The data analysis of 99 high school students in grades 11 and 12 revealed a significant statistical correlation between the NWEA scores and the ACCUPLACER scores in both Reading and Math. The NWEA scores of a student can be used to predict their college readiness.
Keywords: NWEA, ACCUPLACER, college-readiness
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1. Introduction

The purpose of this research is to determine if there is a correlation between the Northwest Evaluation Association's (NWEA) benchmark assessment (Measure of Academic Progress [MAP]) scores and the score a student receives on the College Board's ACCUPLACER Reading and Quantitative Reasoning, Algebra, and Statistics test referred to as the "math" test throughout this report, and differences between test scores. Maine Virtual Academy (MEVA) has administered the ACCUPLACER test to all graduating students during the 2022-2023 school year. MEVA administers the NWEA to all students in grades 7-11 three times a year, fall, winter, and spring. A student's NWEA score and ACCUPLACER score correlate strongly. MEVA uses the following cut scores to determine college readiness on the ACCUPLACER test, 239 or above in Reading and 226 or above in math. The Maine Charter School Commission (MCSC) set the cut scores in the 2022 Performance Framework for Maine Virtual Academy (MCSC, 2022).

The NWEA is a nationally normed benchmark assessment that analyzes a student's growth over each testing administration (Northwest Evaluation Association, 2022). NWEA uses responses from over 11 million anonymous student assessment data to create the national norms for comparing schools and student pools (Northwest Evaluation Association, 2022). The assessment provides an RIT score, allowing teachers to compare their students' progress to other students in the nation. The assessment adapts to how the student responds to each question (Northwest Evaluation Association, 2022). The adaptability allows for a more accurate analysis of the student's current skills in mathematics, Reading, and language usage.

The College Board's ACCUPLACER test is used as a placement test in postsecondary education. Colleges use the scores to determine which level of mathematics or English classes to place students in. The "ACCUPLACER is a series of tests that evaluate students' skills in reading, writing, and math to help college administrators place them in courses that match their skills" (College Board, 2023a). Maine Virtual Academy administers the Reading and Math tests to all graduating students. Each test is comprised of 20 questions. The ACCUPLACER tests are computer adaptive. The questions that students answer are based on their answers to the previous question (College Board, 2023a).

The data analysis aimed to explore the correlation between a student's NWEA score and their ACCUPLACER score. The general research thesis is "Does a student's NWEA score correlate to their ACCUPLACER score?" This is important for educators as they plan intervention strategies for students preparing for their postsecondary goals, whether those goals include college or a career.

2. Methods

The research was conducted via the design of a quantitative method. The goal was to explore the relationship between the Northwest Evaluation Association's (NWEA) benchmark assessment (Measure of Academic Progress

[MAP]) and the College Board's ACCUPLACER scores. The study's NWEA variables were the NWEA Reading Percentile, NWEA Reading Score, NWEA Lexile Level, NWEA Math Percentile, NWEA Math Score, and NWEA Quantile Level. The study's ACCUPLACER variables were the ACCUPLACER Reading and ACCUPLACER Math scores.

2.1 Participants

Maine Virtual Academy (MEVA) has administered the ACCUPLACER test to 128 graduating students during the 2022-2023 school year. Of the 128 students, 93 had a recent NWEA score, October 2022 for graduating juniors and May 2022 for graduating seniors. Students who did not have an ACCUPLACER score or who did not have a recent NWEA score were eliminated from the analysis (n = 35).

2.2 Instrumentation

For this study, I compared the ACCUPLACER Reading Score with the Northwest Evaluation Association's (NWEA) benchmark assessment (Measure of Academic Progress [MAP]) score. I also compared the ACCUPLACER Math Score with the NWEA Math Score. I used the IBM Statistical Package for Social Sciences (SPSS) software to evaluate each data set. The analyses were conducted with the ACCUPLACER Score and the NWEA data as the "test variable" and then again as the "group variable." The results remained consistent with both analyses.

2.3 The Northwest Evaluation Association's Benchmark Assessment

The Northwest Evaluation Association's (NWEA) benchmark assessment (Measure of Academic Progress [MAP]) scores from the spring 2021-2022 administration for graduating seniors and the fall 2022-2023 administration for graduating juniors were used for the data analysis. NWEA benchmark assessment MAP is administered three times per year (fall, winter, and spring) at MEVA. This nationally normed benchmark assessment provides teachers with evidence to inform their instructional decisions. The normed data help teachers and administrators identify if students progress at an expected pace. The assessment analyzes growth, not proficiency (Northwest Evaluation Association, 2022). NWEA implements responses from over 11 million anonymous student assessment data to create the national norms for comparing schools and student pools (Northwest Evaluation Association, 2022). The MAP benchmark assessment provides an RIT score that measures equal intervals of a student's performance over time. The MAP growth mathematics and reading tests comprise 40-43 questions to determine the normed RIT score for each student. The RIT score places a student in one of four percentile bands 0-20th percentile (Low), 21-40th percentile (LoAvg), 41-60th percentile (Average), 61-80th percentile (HiAvg), and 81-99th percentile (High). NWEA MAP growth tests have been shown to have statistically significant reliability. The reliability coefficient is different based on the grade level of the students. The reliability for grade 9 is 0.978, 0.980 for grade 10, and 0.981 for grade 11 (NWEA, 2019).

2.4 College Board's ACCUPLACER

The College Board's ACCUPLACER scores from the fall 2022-2023 administration for graduating students were used for the data analysis. The ACCUPLACER is administered to all graduating students at MEVA. This placement assessment determines college readiness and placement for postsecondary institutions. The scores for the ACCUPLACER are broken down into five score bands that correspond to what a student is likely to know and be able to do (College Board, 2023b). According to Mathew & Kashyap (2019), "although the College Board reports the results that support the placement validity of ACCUPLACER scores as a measure for deciding the appropriate college course enrollment for students, they acknowledge that highly reliable tests may not be valid for a particular purpose" (p. 1). Although the ACCUPLACER test is valid for placing students, it may only be for some courses. Each institution needs to analyze to determine its courses' validity. The reliability coefficient for the Accuplacer Reading Comprehension test is 0.89, and for the Math test is 0.93 (College Board, 2015).

3. Data Collection and Analysis

3.1 The Northwest Evaluation Association's Benchmark Assessment Administration

Proctors at the research site administered the Northwest Evaluation Association's (NWEA) benchmark assessment (Measure of Academic Progress [MAP]) during the spring semester in May 2022 and during the fall semester in October 2022. Students complete the test virtually from their homes. Students are provided with the website to access the test, the test session name, and the passcode. Each testing session has a unique session name and passcode. Students in grades nine through 11 were tested in 16 groups to allow for a small group testing of fewer than 25 students per group. Students were tested in mathematics on the first three days of testing and in reading on the second day, with students who missed the original test day(s) making up the test in the afternoon or on a subsequent test day. 97% of the students in grades 9-11 completed the tests.

3.2 College Board's ACCUPLACER

Proctors at the research site administered the College Board's ACCUPLACER Reading and Math tests during the 2022-2023 fall semester. Students complete the tests virtually from their homes. Students are provided with the website to access the test and their unique voucher number. Each student has a unique voucher code that allows them to take the Reading, Math, or both tests. Graduating students in grades 11 and 12 were tested with at most four students per proctor. Students completed the reading test and then the math test. Proctors completed the online proctor certification process before being allowed to proctor the test. Proctors verified each student's identification before the student completed the testing. The identification was verified by the student appearing on a webcam and showing either a driver's license, state ID, or by completing the CLEP form from the College Board website.

3.3 Data Analysis

The quantitative methods design required an independent samples *t*-test analysis to analyze the potential statistical significance of the data and a Pearson coefficient analysis to analyze the relationship between the data. The IBM Statistical Package for Social Science (SPSS) software was used to analyze the data. According to Laerd Statistics (2013, p. 1), an independent-sample *t*-test "will let you determine whether the difference between two groups is statistically significant." This test allowed me to determine if there was a statistical significance between a student's NWEA score and their ACCUPLACER score. The Pearson product-moment correlation was "used to determine the strength and direction of a linear relationship between two continuous variables" (Laerd Statistics, 2013). The value for a Pearson coefficient "ranges from -1 for a perfect negative linear relationship to +1 for a perfect positive linear relationship" (Laerd Statistics, 2013). The closer to 1 a Pearson coefficient (*r*) is, the stronger the relationship.

4. Results

4.1 T-Test Analysis

Of the 128 graduating students who completed the ACCUPLACER testing for Maine Virtual Academy during the fall of 2022-2023, 93 (73%) had a recent NWEA score. The 35 students without an ACCUPLACER or NWEA score were newly enrolled seniors at Maine Virtual Academy, and the NWEA is only administered to students in grades 7-11.

An independent-sample *t*-test was used to "determine if a difference exists between the means of two independent groups" (Laerd Statistics, 2013, p. 1). The data indicated statistically significant relationships between scores on the NWEA in both math and reading and students' scores on the ACCUPLACER tests (see Table 1). An independent-sample *t*-test compared ACCUPLACER Reading scores with NWEA scores and had a p of <.001 for both reading and math (see Table 2 & Table 4).

4.2 Correlations

Of the 128 graduating students who completed the ACCUPLACER testing for Maine Virtual Academy during the fall of 2022-2023, 93 (73%) had a recent NWEA score. The 35 students without an ACCUPLACER or NWEA score were newly enrolled seniors at Maine Virtual Academy, and the NWEA is only administered to students in grades 7-11.

The data indicated statistically significant relationships between scores on the NWEA in both math and reading and students' scores on the ACCUPLACER tests (see Table 1). A correlation analysis showed a Pearson coefficient of .668 for reading (see Table 3) and a Pearson coefficient of .764 (see Table 5) for math.

5. Discussion

The results of this study reveal significant correlations between the ACCUPLACER scores and NWEA scores for both the reading and math tests. One interpretation of the findings may be on the accuracy of the cutoff scores for ACCUPLACER. The Maine Charter School Commission (MCSC) set the cutoff scores. Compared to other postsecondary institutions that use the ACCUPLACER for placement, the scores are lower by 3 points on average for Reading and 10 points on average for math. The difference in the cut scores set by the Maine Charter School Commission is significant. Students classified as college-ready by the MCSC's standards will readily be accepted and placed in college-level courses within the Community College System in Maine. However, they would not be afforded that exact placement in other colleges within and outside Maine.

Trends in the data were observed. Students with an NWEA reading score of 226 or higher were college-ready (ACCUPLACER score of 239 or higher) 100% of the time (n = 51). Students with an NWEA math score of 226 or higher were college-ready (ACCUPLACER score of 226 or higher) 98% of the time (58 out of 59 students). Students with a Lexile Level of 1156 (9th grade) or higher were college-ready 100% of the time (n = 52), and students with a Quantile Level of 766 (6th grade) or higher were college-ready 96% of the time (79 out of 82 students). Students in the 41st percentile or higher in Reading were college-ready 95% of the time (58 out of 61 students), whereas 93% of students (71 out of 76) were college-ready in math in the 21st percentile or higher. This discrepancy indicates that the ACCUPLACER cutoff score for math may be a slightly lower grade level than in

Reading.

6. What it Means

The data shows that students who score above a sixth-grade level on the NWEA Math are more likely to be classified as college-ready using the scale set forth by the Maine Charter School Commission compared to students who score above a ninth-grade level on the NWEA Reading. The data indicates that to be labeled as college-ready, students need to have a Quantile level of 766 or higher and a Lexile level of 1156 or higher. A recommendation is to look at the college-ready scores and determine if they are an appropriate measure of college readiness. The data suggests that the college-ready score indicates a sixth-grade proficiency level for math and a ninth-grade proficiency level for reading. Teachers and school administrators should consider the rigor of the ACCUPLACER test when determining a student's college readiness.

Students' NWEA scores offer an important indicator of students' college-readiness scores on the ACCUPLACER tests. The predictive nature of the NWEA scores is vital for providing interventions for students to prepare them to score college-ready on the ACCUPLACER, and implementing interventions that support students attaining a level of college readiness before graduation is essential. Students who are college-ready when graduating high school are more likely to have positive future outcomes. The sooner that students are identified as needing intervention to be college-ready, the easier it is to ensure that students are provided the intervention needed for successful high school graduation and college enrollment.

7. Limitations

The limitations of this study are the nature of standardized tests. Students may or may perform below their optimal level in a testing environment. Students may experience test anxiety which causes them to rush through the test, not give it their full attention, and exhibit their full ability. Another limitation is that the test indicates where the student was at one point and did not follow the student's progress longitudinally.

8. Future Research

Future research should include a larger pool of scores for comparison. The research should compare subgroups within the data to evaluate the trends for the subsets of students, such as socioeconomic status, race, disability, and other groupings. This research would allow for a better understanding of the correlation between NWEA scores and ACCUPLACER scores for various students.

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Correlations

		Reading Score	NWEA Reading Score	NWEA Reading Percentile	NWEA Lexile Level Mean (150 Range, Add 75)
Reading Score	Pearson Correlation	1	.668**	.672**	.666**
	Sig. (2-tailed)		<.001	<.001	<.001
	N	93	93	93	93
NWEA Reading Score	Pearson Correlation	.668**	1	.972**	.999**
	Sig. (2-tailed)	<.001		<.001	<.001
	N	93	93	93	93
NWEA Reading Percentile	Pearson Correlation	.672**	.972**	1	.974**
	Sig. (2-tailed)	<.001	<.001		<.001
	N	93	93	93	93
NWEA Lexile Level Mean (150 Range, Add 75)	Pearson Correlation	.666**	.999**	.974**	1
	Sig. (2-tailed)	<.001	<.001	<.001	
	N	93	93	93	93

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

Correlations

		Math Score	NWEA Math Score	NWEA Math Percentile	NWEA Quartile Level Mean (100 Range, Add 50)
Math Score	Pearson Correlation	1	.764**	.742**	.761**
	Sig. (2-tailed)		<.001	<.001	<.001
	N	93	93	93	93
NWEA Math Score	Pearson Correlation	.764**	1	.974**	.989**
	Sig. (2-tailed)	<.001		<.001	<.001
	N	93	93	93	93
NWEA Math Percentile	Pearson Correlation	.742**	.974**	1	.990**
	Sig. (2-tailed)	<.001	<.001		<.001
	N	93	93	93	93
NWEA Quartile Level Mean (100 Range, Add 50)	Pearson Correlation	.761**	.989**	.990**	1
	Sig. (2-tailed)	<.001	<.001	<.001	
	N	93	93	93	93

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

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means							
						Significance		Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
		F	Sig.	t	df	One-Sided p	Two-Sided p			Lower	Upper
NWEA Reading Score	Equal variances assumed	.090	.765	5.761	91	<.001	<.001	25.913	4.498	16.978	34.849
	Equal variances not assumed			5.802	16.240	<.001	<.001	25.913	4.466	16.457	35.370
NWEA Reading Percentile	Equal variances assumed	3.006	.086	5.850	91	<.001	<.001	41.063	7.019	27.121	55.006
	Equal variances not assumed			7.608	21.183	<.001	<.001	41.063	5.398	29.844	52.283
NWEA Lexile Level Mean (150 Range, Add 75)	Equal variances assumed	.114	.736	5.817	91	<.001	<.001	496.639	85.380	327.042	666.237
	Equal variances not assumed			5.787	16.091	<.001	<.001	496.639	85.814	314.805	678.474

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means							
						Significance		Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
		F	Sig.	t	df	One-Sided p	Two-Sided p			Lower	Upper
NWEA Math Score	Equal variances assumed	2.328	.131	4.108	91	<.001	<.001	25.555	6.222	13.197	37.914
	Equal variances not assumed			5.350	13.691	<.001	<.001	25.555	4.777	15.288	35.823
NWEA Math Percentile	Equal variances assumed	5.617	.020	4.161	91	<.001	<.001	36.188	8.697	18.913	53.463
	Equal variances not assumed			5.322	13.455	<.001	<.001	36.188	6.800	21.549	50.827
NWEA Quartile Level Mean (100 Range, Add 50)	Equal variances assumed	2.305	.132	4.314	91	<.001	<.001	426.596	98.877	230.189	623.004
	Equal variances not assumed			5.260	12.894	<.001	<.001	426.596	81.102	251.238	601.955

Table 1. Correlation data between ACCUPLACER Reading and NWEA Reading Scores, Percentile, and Lexile Levels. Correlation data between ACCUPLACER Math and NWEA Math Scores, Percentile, and Quantile Levels. Independent Samples Test data between ACCUPLACER Reading and NWEA Reading Scores, Percentile, and Lexile Levels. Independent Samples Test data between ACCUPLACER Math and NWEA Math Scores, Percentile, and Quantile *Levels.*

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means							
						Significance				95% Confidence Interval of the Difference	
		F	Sig.	t	df	One-Sided p	Two-Sided p	Mean Difference	Std. Error Difference	Lower	Upper
Reading Score	Equal variances assumed	.605	.439	4.998	91	<.001	<.001	19.051	3.812	11.479	26.622
	Equal variances not assumed			4.713	42.953	<.001	<.001	19.051	4.042	10.899	27.202

Table 2. Independent Samples Test data between ACCUPLACER Reading and NWEA Reading Score.

Correlations

		Reading Score	NWEA Reading Score
Reading Score	Pearson Correlation	1	.668**
	Sig. (2-tailed)		<.001
	N	93	93
NWEA Reading Score	Pearson Correlation	.668**	1
	Sig. (2-tailed)	<.001	
	N	93	93

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

Table 3. Correlation data between ACCUPLACER Reading and NWEA Reading Score.

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means							
						Significance				95% Confidence Interval of the Difference	
		F	Sig.	t	df	One-Sided p	Two-Sided p	Mean Difference	Std. Error Difference	Lower	Upper
Math Score	Equal variances assumed	.247	.621	4.848	91	<.001	<.001	27.698	5.713	16.349	39.046
	Equal variances not assumed			4.832	14.426	<.001	<.001	27.698	5.732	15.438	39.957

Table 4. Independent Samples Test data between ACCUPLACER Math and NWEA Math Score.

Correlations

		Math Score	NWEA Math Score
Math Score	Pearson Correlation	1	.764**
	Sig. (2-tailed)		<.001
	N	93	93
NWEA Math Score	Pearson Correlation	.764**	1
	Sig. (2-tailed)	<.001	
	N	93	93

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

Table 5. Correlation data between ACCUPLACER Math and NWEA Math Score.