STATE OF NORTH CAROLINA
OFFICE OF THE STATE AUDITOR
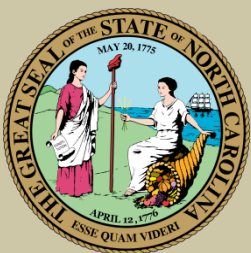## BETH A. WOOD, CPA

NORTH CAROLINA VIRTUAL PUBLIC SCHOOL

DEPARTMENT OF PUBLIC INSTRUCTION

PERFORMANCE AUDIT
JUNE 2020

NC OSA
The Taxpayers' Watchdog

EXECUTIVE SUMMARY

PURPOSE

The objectives of this audit were to determine (1) whether North Carolina Virtual Public School course content and design is compliant with applicable content and design standards for online courses and (2) whether North Carolina Virtual Public School monitors course quality in accordance with recognized standards and best practices for online courses.

BACKGROUND

North Carolina Virtual Public School (NCVPS) is administered by the North Carolina Department of Public Instruction (DPI) and was established in 2007 as a supplemental service to North Carolina Public Schools. The mission of NCVPS is to **provide high quality online courses and instruction** that allow local public schools to enhance and expand the academic programs provided to students.

State law[1] requires NCVPS to ensure that each course offered meets certain content and design standards. These include:

North Carolina Standard Course of Study (NCSCOS). Defines the appropriate content standards for each grade or proficiency level and each high school course to provide a uniform set of learning standards for every public school in North Carolina. These standards define what students are expected to know and be able to do by the end of each school year or course.

NCSCOS standards are set by DPI and approved by the North Carolina State Board of Education. These standards apply to all courses, whether traditional classroom courses or online courses.

Quality Standards. Define and provide a set of quality guidelines for **online** course content, instructional design, technology, student assessment, and course management.

Beginning in 2013, NCVPS adopted quality standards from Quality Matters (QM), a national organization that issues **online** learning standards designed "to ensure students achieve desired learning outcomes."[2]

Advanced Placement (AP) Standards. Define the detailed set of expectations about what content college-level or Advanced Placement (AP) courses should cover in order to ensure that students are ready for college-level coursework and earn college credit.

These standards are developed by the College Board, a national organization founded in 1900 that offers college readiness programs and services including the AP Program. These standards apply to all courses, whether traditional classroom courses or online courses.

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[1] North Carolina Session Law 2011-145 Section 7.22(h), or § 115C-238.81.
[2] Prior to adoption of Quality Matters (QM) standards, NCVPS used a combination of iNACOL and Southern Regional Education Board (SREB) standards as its quality standards. According to the QM website, the QM standards have, since its inception, been aligned with the iNACOL standards.

In addition, NCVPS **guarantees**[3] that all of its courses are aligned to the Revised Bloom's Taxonomy.

> **Revised Bloom's Taxonomy.** A framework used to evaluate the complexity of assignments and to increase the rigor of educational lessons. The framework categorizes educational objectives and defines the kind of knowledge and type of thinking students are expected to demonstrate to master learning concepts. See Appendix A for further discussion.
>
> This universally applied framework was developed in the 1950s by a group of educational psychologists led by Benjamin Bloom. In 2001, a revised version was published.

Since its initial launch, NCVPS has served over 175,000 middle and high school students. During the 2017-18 school year, NCVPS offered 158 sessions[4] serving 35,291 students with a total of 56,313 enrollments. Forty-one percent of the enrollments are students who reside in low wealth counties.[5] During the 2018-19 school year, NCVPS offered 208 sessions[6] serving 32,081 students with a total of 51,949 enrollments. Forty-one percent of the enrollments are students who reside in low wealth counties. State law[7] requires NCVPS to ensure that students in rural and low wealth counties have access to e-learning courses to expand available instructional opportunities.

In 2017-18 and 2018-19, NCVPS received $19 million and $18 million of state funds, respectively, transferred from local public schools and charter schools.

KEY FINDINGS

- Eight of 12 NCVPS courses audited did not meet required curriculum content standards, increasing the risk that students would not be taught all required subject matter.

- There was no assurance that 11 of 12 NCVPS courses audited met adopted standards for rigor, increasing the risk that students may not master the course material.

- NCVPS teacher evaluations were not performed consistently and in accordance with NCVPS policy.

- NCVPS course content was not properly cited to avoid copyright infringement.

KEY RECOMMENDATIONS

- NCVPS should revise the curriculum content for the eight courses reviewed so that each course meets the standards of the NCSCOS or College Board, as appropriate.

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[3] NCVPS course guarantee posted on its website as of July 2019. https://ncvps.org/wp-content/uploads/Course-Guarantee.png.

[4] There were 133 unique courses offered in both 2017-18 and 2018-19 school years. However, there were multiple sessions offered for certain courses and a few additional courses only offered in one of the two years.

[5] Counties that receive low wealth supplemental funding from Department of Public Instruction. Counties are eligible for the funding if the calculated county wealth is less than 100% of the state average wealth.

[6] There were 133 unique courses offered in both 2017-18 and 2018-19 school years. However, there were multiple sessions offered for certain courses and a few additional courses only offered in one of the two years.

[7] North Carolina Session Law 2011-145 Section 7.22(b) or § 115C-238.81.

- NCVPS management should develop and implement procedures that ensure that **all course curriculum offered** meets the applicable NCSCOS or College Board standards. Additionally, documentation of the procedures performed to ensure alignment should be retained.

- NCVPS should remove from the NCVPS curriculum all courses that it cannot demonstrate meet the curriculum content standards required by state law and policy.

- NCVPS should ensure the curriculum content for the 11 courses reviewed meets its adopted cognitive rigor framework, the Revised Bloom's Taxonomy.

- NCVPS should develop and implement formal procedures for developing courses that measure how well **all courses** meet its adopted cognitive rigor framework, the Revised Bloom's Taxonomy.

- NCVPS should remove from the NCVPS curriculum all courses that it cannot demonstrate meet the adopted rigor standards required by NCVPS policy and as advertised in NCVPS' course guarantee.

- NCVPS should develop and implement procedures to ensure that teacher evaluations are performed consistently and in accordance with NCVPS policy. Monitoring should be performed that is continual and responsive to change.

- NCVPS management should use originality detection software to ensure that all third-party material is properly cited in all NCVPS courses.

MATTERS FOR FURTHER CONSIDERATION

- NCVPS should consider developing and documenting a formal methodology to demonstrate that all of its courses meet its adopted quality standards for online courses.

- NCVPS should consider establishing procedures to adequately monitor the effectiveness of its Occupational Course of Study (OCS) courses.

The key findings and recommendations in this summary may not be inclusive of all the findings and recommendations in this report.

AUDITOR'S TRANSMITTAL

The Honorable Roy Cooper, Governor
Members of the North Carolina General Assembly
Mark Johnson, State Superintendent, Department of Public Instruction
Dr. Eliz Colbert, Executive Director, North Carolina Virtual Public School

Ladies and Gentlemen:

We are pleased to submit this performance audit report titled *North Carolina Virtual Public School*. The audit objectives were to determine (1) whether North Carolina Virtual Public School course content and design is compliant with applicable content and design standards for online courses and (2) whether North Carolina Virtual Public School monitors course quality in accordance with recognized standards and best practices for online courses.

Superintendent Johnson reviewed a draft copy of this report. His written comments are included starting on page 52.

This audit was conducted in accordance with Chapter 147, Article 5A of the *North Carolina General Statutes.*

Respectfully submitted,

Beth A. Wood

Beth A. Wood, CPA

State Auditor

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Beth A. Wood, CPA
State Auditor

Chapter 147, Article 5A of the *North Carolina General Statutes*, gives the Auditor broad powers to examine all books, records, files, papers, documents, and financial affairs of every state agency and any organization that receives public funding. The Auditor also has the power to summon people to produce records and to answer questions under oath.

BACKGROUND

North Carolina Virtual Public School (NCVPS) is administered by the North Carolina Department of Public Instruction (DPI) and was established in 2007 to provide e-learning opportunities to all students in North Carolina. As a supplemental service to North Carolina Public Schools, the mission of NCVPS is to **provide high quality online courses and instruction** that allow local public schools to enhance and expand the academic programs provided to students.

State law[8] requires NCVPS to ensure that each course offered meets certain content and design standards. These include:

North Carolina Standard Course of Study (NCSCOS). Defines the appropriate content standards for each grade or proficiency level and each high school course to provide a uniform set of learning standards for every public school in North Carolina. These standards define what students are expected to know and be able to do by the end of each school year or course.

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Beginning in 2013, NCVPS adopted quality standards from Quality Matters (QM), a national organization that issues **online** learning standards designed "to ensure students achieve desired learning outcomes."[9]

Advanced Placement (AP) Standards. Define the detailed set of expectations about what content college-level or Advanced Placement (AP) courses should cover in order to ensure that students are ready for college-level coursework and earn college credit.

These standards are developed by the College Board, a national organization founded in 1900 that offers college readiness programs and services including the AP Program. These standards apply to all courses, whether traditional classroom courses or online courses.

In addition, NCVPS **guarantees**[10] that all of its courses are aligned to the Revised Bloom's Taxonomy.

Revised Bloom's Taxonomy. A framework used to evaluate the complexity of assignments and to increase the rigor of educational lessons. The framework categorizes educational objectives and defines the kind of knowledge and type of thinking students are expected to demonstrate to master learning concepts. See Appendix A for further discussion.

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[10] NCVPS course guarantee posted on its website as of July 2019. https://ncvps.org/wp-content/uploads/Course-Guarantee.png.

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Since its initial launch, NCVPS has served over 175,000 middle and high school students. During the 2017-18 school year, NCVPS offered 158 sessions[11] serving 35,291 students with a total of 56,313 enrollments. Forty-one percent of the enrollments are students who reside in low wealth counties.[12] During the 2018-19 school year, NCVPS offered 208 sessions[13] serving 32,081 students with a total of 51,949 enrollments. Forty-one percent of the enrollments are students who reside in low wealth counties. State law requires NCVPS to ensure that students in rural and low wealth counties have access to e-learning courses to expand available instructional opportunities.

NCVPS is funded, based on course enrollments, by state appropriations transferred from local public schools and charter schools. In the 2017-18 and 2018-19 school year, NCVPS received $19 million and $18 million, respectively, to cover instructional cost of its courses.

NCVPS has a total of 27 permanent staff and relies mostly on contracted teachers to develop and deliver its courses. In 2017-18 and 2018-19, NCVPS contracted with 806 and 745 licensed teachers and conversation coaches,[14] respectively.

NCVPS' courses mainly consist of Advanced Placement (AP) courses, general, and honors high school courses, and Occupational Course of Study (OCS) courses designed for students with special needs. A break-down of course enrollments by various course types is provided below.

NCVPS Enrollment by Course Type				
Course Type	2017-18 Enrollment	% of Total Enrollments	2018-19 Enrollment	% of Total Enrollments
AP	3,783	7%	2,989	6%
Credit Recovery[15]	818	1%	358	1%
General[16]	26,595	47%	23,742	46%
Honors	7,318	13%	7,276	14%
OCS	17,799	32%	17,584	34%
Total	56,313	100%	51,949	100%

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[11] There were 133 unique courses offered in both 2017-18 and 2018-19 school years. However, there were multiple sessions offered for certain courses and a few additional courses only offered in one of the two years.

[12] Counties that receive low wealth supplemental funding from Department of Public Instruction. Counties are eligible for the funding if the calculated county wealth is less than 100% of the state average wealth.

[13] There were 133 unique courses offered in both 2017-18 and 2018-19 school years. However, there were multiple sessions offered for certain courses and a few additional courses only offered in one of the two years.

[14] For Arabic, Japanese, Mandarin Chinese, and Russian courses, NCVPS Critical Language Conversation Coaches meet with groups of 3-4 students for 90 minutes per week to practice speaking the language students are studying. Conversation Coaches are provided to students in addition to the course instructor.

[15] Courses offered for students to recover credit towards graduation but does not affect a student's grade point average.

[16] General courses are English, Math, Science, and Social studies courses that are not at Honors or Advanced Placement level. Also included are elective courses such as Arts, and Test Prep.

The auditors determined 133 courses were offered in both 2017-18 and 2018-19 school year. NCVPS started implementing a new course development and revision process in 2016-17. However, the majority of the 133 courses offered during our audit period were not revised under the new process. A breakdown of the 133 courses and course revision status is presented below.

| Course Category	Number of Courses	Percentage (%)	Revised Under New Process
Advanced Placement (AP)	**17**	13%	**10**
General and Honors[17]	**81**	61%	**26**
Credit Recovery[18]	13	10%	0
Occupational Course of Study[19]	12	9%	1
External Courses, and Test Preparation Courses	10	7%	0
Total	133	100%	37

Of the 133 courses offered by NCVPS, the 98 AP, general and honors courses shown above were the subject of this audit.

Of the 98 courses, 36 have been revised under NCVPS' new development and revision process implemented in 2016-17. This audit evaluated two courses that had been revised under the new development and revision process.

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[17] Includes core subjects (e.g., English, Math, Social Studies, Science) and electives.
[18] Courses offered for students to recover credit towards graduation but does not affect a student's grade point average.
[19] Courses are co-taught between NCVPS online instructor and the face-to-face classroom teacher to students with special needs.
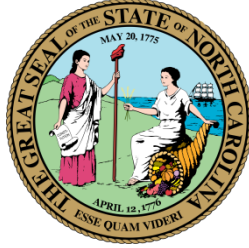
OBJECTIVES, SCOPE, AND METHODOLOGY

The audit objectives were to determine (1) whether North Carolina Virtual Public School (NCVPS) course content and design is compliant with applicable content and design standards for online courses and (2) whether North Carolina Virtual Public School monitors course quality in accordance with recognized standards and best practices for online courses.

The audit scope included courses offered by NCVPS in the 2017-18 and 2018-19 school years.

To determine whether NCVPS course content and design is compliant with applicable content and design standards for online courses, the Office of the State Auditor (OSA) contracted with a subject matter expert[20] to perform an independent review of 12 courses selected from the 133 courses offered during the 2017-18 and 2018-19 school years. The objective of the review was to determine if the courses:

- Meet curriculum content standards as required
- Contain cognitive rigor that will lead students to be engaged or to think in-depth about their learning

The subject matter expert was selected based on her qualifications, experience, credentials, and proposed methodology. She is a certified course reviewer for a national quality assurance organization in online education. She also serves on the National Standards for Online Quality Leadership Team, and recently co-led the rewrite of the national standards for quality online teaching and quality online programs. She proposed a quantitative analysis method for each course reviewed to determine if the course meets applicable curriculum content standards and NCVPS' adopted cognitive rigor framework.

The subject matter expert's methodology, assessment, and results can be found in this report's Appendix B starting on page 21.

In addition, the auditors interviewed personnel, reviewed related procedures and tested a sample of courses to identify potentially plagiarized material. NCVPS policy and quality standards for online courses require compliance with copyright laws.

To determine whether NCVPS ensured that all third-party content in its courses was appropriately cited, auditors used an originality detection software, Unicheck,[21] on a sample of 10 courses.[22] Courses with content similarity scores greater than 25%[23] were determined to contain third-party material without proper citation. Auditors then determined and reported the percentage of material (i.e., words) in the course content within each of the courses that were found to have third-party material without proper citation.

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[20] Xperience Education, LLC. provided the subject matter experts. The review team was made up of 10 subject matter experts, who all have master's degrees, with four having doctorates. All subject matter experts are certified in the specific courses they reviewed.

[21] Unicheck is a plagiarism detection software that finds similarities, citations, and references in texts. It has been used by NCVPS since the 2017-2018 school year in its course revision and development process.

[22] Includes 10 of the 12 courses tested for course content and design that were revised prior to the 2016-17 school year. This test did not include the two courses tested for course content and design that were revised under NCVPS' new development and revision process.

[23] Percentage of material within each course document that is flagged as third-party material without proper citation. A percentage above 25% similarity score is considered excessive by NCVPS.

To determine whether NCVPS monitors course quality in accordance with recognized standards and best practices for online courses, auditors interviewed personnel, observed operations, reviewed policies, and examined documentation supporting NCVPS' monitoring of instructor performance as considered necessary.

Whenever sampling was used, auditors applied a non-statistical approach. Therefore, results could not be projected to the population. This approach was determined to adequately support audit conclusions.

Because of the test nature and other inherent limitations of an audit, together with limitations of any system of internal and management controls, this audit would not necessarily disclose all performance weaknesses or lack of compliance.

As a basis for evaluating internal control, auditors applied the internal control guidance contained in professional auditing standards. However, our audit does not provide a basis for rendering an opinion on internal control, and consequently, we have not issued such an opinion.

We conducted this performance audit in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.
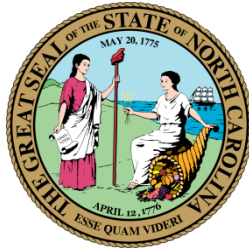
RESULTS AND CONCLUSIONS

The North Carolina Virtual Public School (NCVPS) is currently offering courses that do not meet the content and design standards established in statute and policy and as advertised in NCVPS' course guarantee.

Of the 12 NCVPS courses audited, eight courses did not meet required curriculum content standards, and 11 did not meet adopted standards of rigor. All 12 courses are currently offered by NCVPS. In addition, NCVPS did not perform teacher evaluations consistently and in accordance with its policy.

As a result, students taking these courses may not achieve planned learning objectives and be career and college ready.

Lastly, nine of 10 courses[24] tested contained third-party content without proper citation, increasing risk of copyright infringement.

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[24] Includes 10 of the 12 courses tested for course content and design that were revised prior to the 2016-17 school year. This test did not include the two courses tested for course content and design that were revised under NCVPS' new development and revision process.
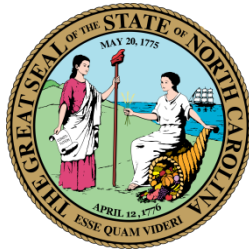
FINDINGS, RECOMMENDATIONS, AND RESPONSES

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1. EIGHT COURSES DID NOT MEET REQUIRED CURRICULUM CONTENT STANDARDS

The North Carolina Virtual Public School (NCVPS) offered eight courses during the 2017-18 and 2018-19 school years that did not meet all applicable curriculum content standards as required by state law and NCVPS policy. As a result, there was an increased risk that students would not be taught all required subject matter. The courses did not meet the curriculum content standards because NCVPS lacked sufficient alignment procedures.[25] State law and NCVPS policy require NCVPS to ensure that its courses meet curriculum content standards.

Curriculum Content Standards Not Met

Of the 12 courses evaluated in this audit and offered during the 2017-18 and 2018-19 school years, eight did not meet all applicable curriculum content standards.

State law required NCVPS honors and general courses to meet the North Carolina Standard Course of Study (NCSCOS)[26] curriculum content standard. Advanced Placement (AP) courses were required to meet the College Board curriculum content standards. Both standards define what students are expected to know and be able to do by the end of each school year or course. The standards also include content requirements for both instruction (teaching) and assessment (testing).

For 2017-18 and 2018-19, NCVPS offered 98[27] courses including AP courses, honors, and general courses that covered core subjects like English, Math, and World Languages, plus various electives. Of these 98 courses, auditors selected 10 courses at a higher risk of not meeting the applicable NCSCOS or College Board standards because the revision dates were prior to fiscal year 2017.[28] Auditors also selected two additional courses with more current revision dates of 2017 and 2018.

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[25] Standards alignment is an essential practice in curriculum design to ensure learning objectives, course activities and assessment align to the curriculum content standards and work together to support student learning. A tool that documents alignment of learning objective and instructional activities is an alignment or curriculum map.

[26] https://www.dpi.nc.gov/districts-schools/classroom-resources/k-12-standards-curriculum-and-instruction/standard-course-study.

[27] Excludes externally developed courses, courses offered to students with special needs, and courses offered to students to recover credits towards graduation.

[28] The courses were selected based on 2017-18 enrollment numbers, percentage of enrollment in low-wealth counties, and when the courses were last revised. According to NCVPS management, in 2016-17 NCVPS began implementing a new course development and revision process. So far 36 of the 98 courses have been revised since fiscal year 2017, of which two were reviewed as part of this audit (AP Environmental Science, and AP Government and Politics).

Subject matter experts[29] evaluated those 12 courses for alignment with NCSCOS and College Board standards. Eight of 12 (67%) courses evaluated did not include all required content for either (1) instruction, (2) assessment, or (3) both.[30] See Table 1 below:

Table 1 – Percentage of Required Content Included in Selected Courses

Course Title	Instruction	Assessment
Latin I	58%	83%
Spanish II	67%	75%
AP Art History	75%	92%
Advanced Functions and Modeling	75%	100%
African American Studies	78%	100%
Pre-calculus	95%	90%
Anatomy & Physiology Honors	96%	98%
AP Physics	96%	100%

Resulted in Increased Risk That Students Would Not Be Taught All Required Subject Matter

Because the curriculum content for these eight courses did not include all applicable requirements, there was an increased risk that teachers would not cover all of the necessary subject matter.

The NC State Board of Education[31] implemented the NCSCOS curriculum content standards to help ensure that:

> All students will graduate from a rigorous, relevant academic program that equips them with the knowledge, skills, and dispositions necessary to succeed in both **post-secondary education and 21st Century careers**...[*Emphasis added*]

Additionally, the College Board's goal[32] for AP courses is to provide "rigorous, college-level classes in a variety of subjects that give students the opportunity to earn college credit while in high school."

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[29] Xperience Education, LLC. provided the subject matter experts. The review team was made up of 10 subject matter experts, who all have master's degrees, with four having doctorates. All subject matter experts are certified in the specific courses they reviewed.

[30] See subject matter expert's report beginning on page 21 in Appendix B for the complete evaluation results.

[31] NC State Board of Education - Standard Course of Study (NCSCOS) - Academic Rigor Definition policy (SCOS-016) effective 5/5/2005.

[32] https://www.dpi.nc.gov/students-families/enhanced-opportunities/advanced-learning-and-gifted-education/advanced-coursework/advanced-placement.

Consequently, failure to align NCVPS courses with NCSCOS or College Board standards could adversely impact college and career preparedness for the students enrolled in these classes.

The eight courses had 4,788 enrollments for the 2017-18 school year and were still being offered as of the 2019-20 school year.

Caused by Insufficient Alignment Procedures

NCVPS lacked sufficient procedures, including documentation requirements, to ensure its courses aligned with state standards.

NCVPS management stated they always include standards alignment in the development process. And the auditors' subject matter expert noted that "an attempt to include objectives and standards, albeit not always accurate, appears to be part of the design of the NCVPS courses." However, NCVPS was unable to provide sufficient evidence/documentation of how each course's curriculum was designed to meet the NCSCOS or College Board standards.

During the audit, NCVPS was asked to demonstrate that the 12 courses being evaluated met the NCSCOS or College Board standards when accurate documentation was not available. NCVPS declined.

State Law and Policy Require NCVPS Curriculum to Meet Content Standards

State law[33] requires NCVPS to ensure that its courses meet curriculum content standards. Specifically, the law requires the Director of NCVPS to ensure that:

> All courses offered through NCVPS are aligned to the North Carolina Standard Course of Study (NCSCOS).

Additionally, NCVPS policy[34] requires alignment with the applicable NCSCOS curriculum content standards:

> All NCVPS courses will meet the curriculum content standards that are set forth by the NC Department of Public Instruction.

Lastly, the College Board issues the curricular requirements that AP courses must fulfill. The course syllabi for the AP courses reviewed stated, "NCVPS Advanced Placement (AP) courses follow the standards set by College Board." The requirements outline the required content for each course[35] that colleges and universities typically expect students to master to qualify for college credit and placement.

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[33] North Carolina Session Law 2011-145 Section 7.22(h) or § 115C-238.81.
[34] NCVPS Quality Assurance Policy posted on its website thru July 2019.
[35] Course guidance document called "Course and Exam Description" issued by College Board.

RECOMMENDATIONS

NCVPS should revise the curriculum content for the eight courses reviewed so that each course meets the standards of the NCSCOS or College Board, as appropriate.

NCVPS management should develop and implement procedures that ensure that **all course curriculum offered** meets the applicable NCSCOS or College Board standards. Additionally, documentation of the procedures performed to ensure alignment should be retained.

NCVPS should remove from the NCVPS curriculum all courses that it cannot demonstrate meet the curriculum content standards required by state law and policy.

AGENCY RESPONSE

See page 55 for the Department's response to this finding.

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2. NO ASSURANCE THAT ELEVEN COURSES MET ADOPTED STANDARDS FOR RIGOR

The North Carolina Virtual Public School (NCVPS) did not ensure that 11 of the 12 courses evaluated in this audit met standards for cognitive rigor (engaging students in higher-order thinking). As a result, there was an increased risk that students would not master the course material. NCVPS did not ensure the courses met standards for rigor because it did not establish formal methodologies, expectations, or benchmarks to do so. NCVPS policy[36] requires its courses to meet the cognitive rigor standards known as the Revised Bloom's Taxonomy.[37]

Did Not Ensure Courses Met Standards

NCVPS did not ensure that 11 of the 12 courses evaluated in this audit met its adopted standards for cognitive rigor because they did not establish methodologies to do so. These adopted standards, the Revised Bloom's Taxonomy (RBT), are designed to create courses that engage students in higher-order thinking and allow them to demonstrate mastery of the subject matter.

During the 2017-18 and 2018-19 school years, NCVPS offered 98[38] courses including Advanced Placement (AP) courses, honors, and general courses that cover core subjects like English, Math, and World Languages, plus various electives. Of these 98 courses, auditors selected 10 courses at a higher risk of not meeting the RBT standards because the revision dates were prior to fiscal year 2017.[39] Auditors also selected two additional courses with more current revision dates of 2017 and 2018.

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[36] See NCVPS course guarantee posted on its website as of July 2019 https://ncvps.org/wp-content/uploads/Course-Guarantee.png.

[37] See Appendix A for an overview of the Revised Bloom's Taxonomy standards.

[38] Excludes externally developed courses, courses offered to students with special needs, and courses offered to students to recover credits towards graduation.

[39] The courses were selected based on 2017-18 enrollment numbers, percentage of enrollment in low-wealth counties, and when the courses were last revised. According to NCVPS management, in 2017 NCVPS began implementing a new course development and revision process. So far 36 of the 98 courses have been revised since fiscal year 2017, of which two were reviewed as part of this audit (AP Environmental Science, and AP Government and Politics).

Subject matter experts[40] evaluated these 12 courses, comparing the curriculum (instruction and assessments) of each course to the RBT. RBT defines the kind of knowledge and type of thinking students are expected to demonstrate based on six levels of rigor.

According to the professional expertise of our subject matter experts, at least half of the course material for 11 of 12 (92%) courses evaluated was found to be in level 1 and 2 of RBT[41] (rigor too low). Level 1 and 2 of RBT is comprised of the least engaging type of instruction (such as lectures or notes) and the lowest level type of assessments (such as online multiple-choice quizzes). For example:

- **AP Art History** – 100% of the instruction material was low rigor, and 52% of the assessments were low rigor

- **AP Environmental Science** – 93% of the instruction material was low rigor, and 51% of the assessments were low rigor

- **AP Physics** – 85% of the instruction material was low rigor, and 29% of the assessments were low rigor

- **Latin I** - 84% of the instruction material was low rigor, and 43% of the assessments were low rigor

- **AP Government and Politics** - 82% of the instruction material was low rigor, and 85% of the assessments were low rigor

- **Physical Science** – 59% of the instruction material was low rigor, and 45% of the assessments were low rigor

NOTE: AP Environmental Science and AP Government and Politics were revised post fiscal year 2017 under the NCVPS' new course development and revision process. Even though these courses were revised under NCVPS' new process, the courses still did not meet RBT standards based on the subject matter experts' testing.

Resulted in Increased Risk That Students Would Not Master Course Material

Courses with instruction and assessments rated as low rigor are at a greater risk of being insufficiently rigorous overall and failing to require complex thinking and application of knowledge.

Consequently, students taking these courses may not have mastered the course material.

The 11 courses that have at least half of course material in level 1 and 2 of RBT (rigor too low) had 5,836 enrollments for the 2017-18 school year and are still being offered as of the 2019-20 school year.

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[40] Xperience Education, LLC. provided the subject matter experts. The review team was made up of 10 subject matter experts, who all have master's degrees, with four having doctorates. All subject matter experts are certified in the specific courses they reviewed.
[41] Level 1 and 2 – Remember and Understand.

Caused by Not Measuring Results from Course Development

NCVPS did not establish a method for measuring how well the courses met the RBT standards for rigor during the course development process.

For example, NCVPS did not establish formal methodologies, frameworks, or benchmarks to measure how well the courses were designed to engage students in higher-order thinking and demonstrate a mastery of the subject matter.

Policy Requires Courses to Meet RBT Cognitive Rigor Standards

NCVPS policy requires its courses to meet the standards of the Revised Bloom's Taxonomy.

Specifically, NCVPS' course guarantee[42] states that NCVPS will create **high quality, engaging content grounded in the Revised Bloom's Taxonomy** and integrated with real-world project-based activities.

RECOMMENDATIONS

NCVPS should ensure the curriculum content for the 11 courses reviewed meets its adopted cognitive rigor framework, the Revised Bloom's Taxonomy.

NCVPS should develop and implement formal procedures for developing courses that measure how well **all courses** meet its adopted cognitive rigor framework, the Revised Bloom's Taxonomy.

NCVPS should remove from the NCVPS curriculum all courses that it cannot demonstrate meet the adopted rigor standards required by NCVPS policy and as advertised in NCVPS' course guarantee.

AGENCY RESPONSE

See page 56 for the Department's response to this finding.

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3. NCVPS TEACHER EVALUATIONS NOT PERFORMED CONSISTENTLY AND IN ACCORDANCE WITH POLICY

North Carolina Virtual Public School (NCVPS) teacher evaluations were not performed consistently and in accordance with NCVPS policy. The inconsistent evaluations increased the risk that poor performance would not be timely identified and corrected. A lack of monitoring allowed the inconsistent evaluations to occur without correction.

Teacher Evaluations Not Performed Consistently and In Accordance with Policy

NCVPS instructional leaders did not perform teacher evaluations consistently and in accordance with NCVPS policy.

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[42] NCVPS course guarantee posted on its website as of July 2019 https://ncvps.org/wp-content/uploads/Course-Guarantee.png.

Auditors reviewed 622[43] teacher evaluations performed during the 2017-18 school year and found:

- 136 (22%) evaluations contained no evidence of review or were not timely reviewed by the Instructional Director [44]

- 120 (19%) evaluations contained no evidence that teacher performance issues were addressed

- 82 (13%) evaluations contained incorrect ratings according to the instructions on the NCVPS evaluation document[45]

- 14 (2%) evaluations were missing required information such as the teacher's response

Resulted in Increased Risk of Undetected Poor Performance

Failure to perform and document teacher evaluations consistently and in accordance with NCVPS policy increases the risk that poor performance will not be identified and corrected timely.

Consequently, there was an increased risk that NCVPS students could have received substandard instruction and assessment for an extended period.

Caused by Lack of Monitoring Procedures

NCVPS did not monitor its teacher evaluation process to ensure it was performed consistently and in accordance with its policy.

Specifically, there is no documentation that:

- Describes the procedures used for monitoring the teacher evaluation process

- Shows evidence of NCVPS management monitoring the teacher evaluation process

- Demonstrates correction of issues identified when monitoring the teacher evaluation process

NCVPS Procedures List Teacher Evaluation Requirements

The NCVPS teacher evaluation document includes instructions for completing the evaluations. Another document[46] defines the purpose and frequency of teacher evaluations.

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[43] Auditors first judgmentally selected 20 out of 98 NCVPS courses (20.4%) based on 2017-18 enrollment numbers, percentage of enrollment in low-wealth counties, and when the courses were last revised. Then auditors reviewed the 622 teacher evaluations performed for the teachers that taught those 20 courses.

[44] Evaluations are conducted at least monthly. Auditors considered Instructional Director's review delayed if the signoff was more than 30 days after the evaluation was completed.

[45] 74 evaluations contained partial ratings that are not allowed per NCVPS management. 8 evaluations contained ratings that are not properly supported by the review comments.

[46] Titled "Internal: Process for Teacher Hiring, Growth, Contract Renewal, and Dismissal".

Together, these two documents require:

- Instructional leaders to perform teacher evaluations bi-weekly, or monthly depending on the teacher's tenure.
- Teachers to respond to the evaluations and any needed coaching and action plans.
- Instructional Directors to review, provide comments, and initial the evaluations.

RECOMMENDATIONS

NCVPS should develop and implement procedures to ensure that teacher evaluations are performed consistently and in accordance with NCVPS policy. Monitoring should be performed that is continual and responsive to change.

AGENCY RESPONSE

See page 58 for the Department's response to this finding.

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4. NCVPS COURSE CONTENT NOT PROPERLY CITED TO AVOID COPYRIGHT INFRINGEMENT

North Carolina Virtual Public School (NCVPS) did not ensure that all third-party content in its courses was appropriately cited. Lack of proper citation increased the risk of copyright infringement and potential litigation from publishers and authors. The courses included uncited content because NCVPS did not perform quality assurance procedures on all currently offered courses. However, NCVPS policy requires compliance with copyright law and proper citation.

Course Content Not Properly Cited

NCVPS did not ensure that all third-party content in its courses was appropriately cited.

A citation should clearly identify source of third-party content and include at minimum "the author's last name and the year of publication for the source."[47]

During the 2017-18 and 2018-19 school years, NCVPS offered 98[48] Advanced Placement (AP), general, and honors courses that covered core subjects like English, Math, World Language, and electives.

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[47] Purdue University Online Writing Lab
https://owl.purdue.edu/owl/research_and_citation/apa_style/apa_formatting_and_style_guide/in_text_citations_the_basics.html.

[48] Excludes externally developed courses, courses offered to students with special needs, and courses offered to students to recover credits towards graduation.

Auditors selected 10[49] of the 98 (10%) courses that NCVPS offered during the 2017-18 and 2018-19 school years.[50] Auditors used originality detection software[51] and determined that nine of 10 (90%) courses contained about 1% to 15%[52] of third-party content without proper citation as shown in Table 2 below.

Table 2 – Percent of Uncited Third-Party Material by Course

Course	Percent of Uncited Third-Party Material by Course[52]
AP Physics	14.6%
American History 2 Honors	9.7%
Anatomy Honors	7.1%
African-American Studies	7.1%
Physical Science	5.3%
Latin 1	1.4%
Advanced Functions and Modeling	0.9%
Pre-Calculus Honors	0.8%
AP Art History	0.7%

Examples of uncited third-party content included:

- Questions on a Physical Science assessment found on a practice test published by a well-known educational publisher.

- A question on a Pre-Calculus assessment found in a lesson published by another educational publisher.

- The introduction to a module in the African American Studies course found in a book about African contributions to American culture.

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[49] Includes 10 of the 12 courses tested for course content and design that were revised prior to the 2016-17 school year. This test did not include the two courses tested for course content and design that were revised under NCVPS' new development and revision process.

[50] The courses were selected using a risk-based approach based on 2017-18 enrollment numbers, percentage of enrollment in low-wealth counties, and when the courses were last revised.

[51] Unicheck is a plagiarism detection software that finds similarities, citations, and references in texts. It has been used by NCVPS since the 2017-18 school year in its course revision and development process.

[52] Auditors used originality detection software, Unicheck (used by NCVPS since the 2017-18 school year), to identify content similarity scores greater than 25% (considered excessive by NCVPS). Auditors then determined and reported the percentage of material (i.e., words) in the course content identified to have content similarity scores greater than 25% for each course tested.

Resulted in Increased Risk of Copyright Infringement

Failure to ensure that third-party content was properly cited increased the risk of copyright infringement and potential litigation from publishers and authors of copyrighted work.

Caused by Lack of Quality Assurance Procedures

NCVPS courses lacked appropriate citation because NCVPS did not implement the necessary quality assurance procedures for all currently offered courses. Specifically, NCVPS did not use originality detection software on all currently delivered courses.

NCVPS began using originality detection software[53] to scan courses developed or revised during the 2017-18 school year. However, NCVPS did not perform the same quality assurance procedures on courses developed before then.

NCVPS Policy Requires Compliance with Copyright Law

NCVPS policy requires that all third-party content in its courses are appropriately cited. Specifically, the NCVPS copyright policy states:[54]

> The North Carolina Virtual Public School respects the intellectual property rights of copyright holders and complies with copyright law of the United States. All administrators, staff, instructors, and students are required to comply with copyright law and guidelines.

Additionally, NCVPS's teacher orientation[55] provides resources on APA (American Psychological Association) citations. The basic format of APA in-text citation requires "the author's last name and the year of publication for the source" to appear in the text.[56]

RECOMMENDATIONS

NCVPS management should use originality detection software to ensure that all third-party material is properly cited in all NCVPS courses.

AGENCY RESPONSE

See page 59 for the Department's response to this finding.

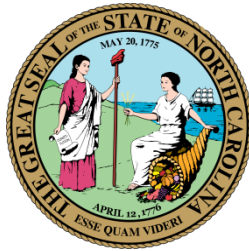---

[53] Unicheck originality detection software.
[54] NCVPS Teacher Practices and Expectations 2017-2018, Appendix A.
[55] NCVPS Teacher Handbook, Appendix B implemented fiscal year 2015-2016.
[56] Purdue University Online Writing Lab https://owl.purdue.edu/owl/research_and_citation/apa_style/apa_formatting_and_style_guide/in_text_citations_the_basics.html.

MATTERS FOR FURTHER CONSIDERATION

1. NCVPS SHOULD DEMONSTRATE THAT ITS COURSES MEET QUALITY STANDARDS FOR ONLINE COURSES

The North Carolina Virtual Public School (NCVPS) should consider developing and documenting a formal methodology to demonstrate that all of its courses meet its adopted quality standards for online courses. State law requires the NCVPS Director to ensure that "course quality standards are established and met."[57]

Beginning in 2013, NCVPS began transitioning to its currently adopted quality standards from Quality Matters (QM), a national organization that issues online learning standards designed "to ensure students achieve desired learning outcomes."[58]

NCVPS periodically submits some of its courses for QM peer review to earn QM certification. However, only 17 of 98 (17%) AP, honors, and general courses offered by NCVPS were QM certified by the end of the 2018-19 school year.

Based on NCVPS management estimates that it will only obtain QM certification for about eight courses each year, NCVPS will not have all of its 98 classes QM certified until 2027.[59] However, NCVPS stated they "did not plan" to have all classes offered by NCVPS obtain QM certification.

According to NCVPS, its new course development process does incorporate alignment to QM for courses that are revised now. However, only 36 of the 98 courses have been revised under the new process.

Additionally, NCVPS does not have a formal methodology or documentation to demonstrate that <u>all of its courses</u> meet the QM standards adopted by NCVPS.

As a result, **neither NCVPS nor the public can be certain that NCVPS courses meet the adopted quality standards as required by state law**.

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[57] North Carolina Session Law 2011-145 Section 7.22(h).

[58] Prior to adoption of Quality Matters (QM) standards, NCVPS used a combination of iNACOL and Southern Regional Education Board (SREB) standards as its quality standards. According to the QM website, the QM standards have, since its inception, been aligned with the iNACOL standards.

[59] Assuming NCVPS will submit 10 more courses in 2019-20 for QM certification, and QM permits NCVPS to have general and honors versions of the same course be included in the same submission. For example, English I and English I Honors will be certified in one submission.

2. NCVPS SHOULD MEASURE THE EFFECTIVENESS OF ITS OCCUPATIONAL COURSE OF STUDY

North Carolina Virtual Public School (NCVPS) should consider establishing procedures to adequately monitor the effectiveness of its Occupational Course of Study (OCS) courses.

The NCVPS OCS program offers courses for students with significant deficits that hinder a student's educational progress. The deficits can be in the following areas:

- Reading and math

- Language processing and communication

- Adaptative behavior skills[60]

- Attention and short-term memory

Although OCS courses accounted for 32% of all NCVPS enrollments[61] and $6.3 million in funding during the 2017-18 school year, NCVPS lacked appropriate data and procedures to measure the academic achievement of OCS students.

All OCS students should have Individual Educational Programs (IEP). IEPs are "the written statement that is developed, reviewed and revised to address the needs of a child with a disability receiving special education." However, NCVPS does not have access to the student IEPs nor does it evaluate OCS students' progress on their IEPs.

Instead, NCVPS only receives End-of-Course (EOC) test results for OCS students enrolled in NCVPS courses and compares the OCS EOC results to the results of all students across the state knowing that OCS scores will average much lower.

However, Educational standards[62] require NCVPS to determine "program success by measuring student achievement and satisfaction based on valid and reliable assessment techniques."

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[60] Age-appropriate behaviors necessary to live independently and to function safely and appropriately in daily life.
[61] 17,799 of 56,313 total enrollments during the 2017-18 school year.
[62] iNACOL National Standards for Quality Online Programs, October 2009.
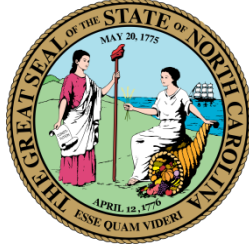
APPENDIX A

APPENDIX A

The Revised Bloom's Taxonomy categorizes educational objectives and defines the kind of knowledge and type of thinking students are expected to demonstrate to master learning concepts.

From least to most complex, Bloom's six cognitive processes are:[63]

1. **Remembering** – retrieve relevant information from long-term memory
2. **Understanding** – construct meaning from instructional messages including oral, written, and graphic messages
3. **Applying** – carry out or use a procedure in a given situation
4. **Analyzing** – break material into its constituent parts and determine how the parts relate to one another and to an overall structure or purpose
5. **Evaluating** – make judgements based on criteria and standards
6. **Creating** – put elements together to form a coherent or functional whole; reorganize elements into a new pattern or structure

The Revised Bloom's Taxonomy applies to both instruction (teaching) and assessment (testing). Educators can select instruction strategies that correspond to each of Bloom's cognitive process levels. Educators can also use lower-level or higher-level questions to assess student achievement on each of Bloom's cognitive process levels. The University of Illinois writes:[64]

Lower-level questions are typically at the remember, understand, and apply levels[65] of the taxonomy and are most appropriate for:

- evaluating students' preparation and comprehension
- diagnosing students' strengths and weaknesses
- reviewing and/or summarizing content

Higher-level questions involve the ability to analyze, evaluate, or create, and are most appropriate for:

- encouraging students to think more deeply and critically
- problem solving
- encouraging discussions
- stimulating students to seek information on their own

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[63] Lorin W. Anderson, Taxonomy for Learning, Teaching and Assessing: A Revision of Bloom's Taxonomy of Educational Objectives, Abridged Edition, 2001.

[64] https://citl.illinois.edu/citl-101/teaching-learning/resources/teaching-strategies/questioning-strategies.

[65] For the purpose of the subject matter expert's review, low rigor refers to remembering and understanding, which are level 1 and 2 of Revised Bloom's Taxonomy.

Table 3 below provides examples of instruction strategies and assessment strategies (question stems) for each of Bloom's cognitive process levels.

Table 3 – Instruction and Assessment Strategies for the Revised Bloom's Taxonomy

Cognitive Process	Instruction Strategies[66]	Assessment Strategies (Question Stems)[67]
Remembering	lectures, visuals, video, audio, examples, illustrations, analogies	What happened after…? How many…? What is…? Who was it that?
Understanding	questions, discussion, review, test, assessment, reports, learner, presentations, writing	Explain why… Write in your own words… How would you explain…? Write a brief outline…
Applying	exercises, practice, demonstrations, projects, sketches, simulations, role play, microteach	Explain another instance where… Group by characteristics such as… Which factors would you change if…? What questions would you ask of…?
Analyzing	problems, exercises, case studies, critical incidents, discussion, questions, test	How is… similar to…? Why did… changes occur? Distinguish between… What was the problem with…?
Evaluating	case studies, projects, exercises, critiques, simulations, appraisals	Judge the value of… What do you think about…? Defend your position about… How effective are…? What are the consequences…?
Creating	Projects, problems, case studies, creative exercises, develop plans, constructs, simulations	Design a… to… Devise a possible solution to… How many ways can you…? Develop a proposal which would…

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[66] https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs143_023989.pdf.
[67] Michael Pohl, Learning to Think – Thinking to Learn: Models and Strategies to Develop a Classroom Culture of Thinking, 1999.
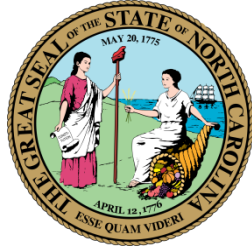
APPENDIX B

Online Course Summative Evaluation for North Carolina Office of the State Auditor
for
The North Carolina Virtual Public School Performance Audit

Prepared by: Xperience Education, LLC. 2020

February 24, 2020

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Online Course Summative Evaluation for North Carolina Office of the State Auditor
for
the North Carolina Virtual Public School Performance Audit
Executive Summary

Introduction

This report provides the results of the review services requested by North Carolina Office of the State Auditor for the North Carolina Virtual Public School Performance Audit in January of 2019.

Xperience Education provided an independent evaluation of 12 North Carolina Virtual Public School (NCVPS) online courses: AP Art History, AP Physics, Physical Science, Advanced Functions and Modeling, African American Studies, Anatomy and Physiology Honors, Pre-Calculus, Spanish II, Latin I, American History 2 Honors, AP Environmental Science, and AP Government and Politics. The courses were evaluated to determine if they were of quality, meaning do they:

1) teach state standards as required by NCGS § 115C-12(9c)
2) contain cognitive rigor that will lead students to be engaged or to think in-depth about their learning
3) meet the best practices of online courses

For the purposes of this review, subject matter experts and learning architects examined each of the 12 courses to measure both state standards taught and the depth of cognitive rigor to determine engagement within each of the courses. Their findings are provided in the Xperience Education Course Audit Matrices (CAM), which are developed to measure a course blueprint. A course blueprint can be compared to the blueprint a builder uses as the foundation to build a house. A course developer uses a course blueprint as the foundation to develop a course. Of note, the Xperience Education team did not measure the effectiveness of instructor performance or any instruction performed outside of the required course content.

Findings

Based on a review using North Carolina state standards and/or the respective College Board Advanced Placement standards, four of the twelve courses include the minimum requirement of curriculum standards that are "sequenced, clear, focused and measurable," according to NCGS § 115C-12(9c), and 11 of the 12 courses are not rigorous and relevant (SCOS-016). Because of the low-level rigor, the courses are not engaging and do not help students achieve the course and learning objectives as required by the State of North Carolina.

- Physical Science, American History 2, AP Environmental Science, and AP Government and Politics are the only courses of the twelve that *include* 100% of the required standards in both the instructional and assessment curriculum. .

- 11 out of the 12 courses do not include the appropriate level of rigor to teach all of the required standards or to prepare students for college and career.
- All of the courses demonstrate discrepancies to the NCVPS course guarantees.

NCVPS states, on their website, that they use Universal Design;[1] which requires course designers, through backwards design, to identify the big ideas for the course. In other words, what should students understand after taking the course? The next step in Universal Design is to identify measurable learning objectives, which is also a requirement of the iNACOL Online Course Readiness Checklist (2011), standards by which NCVPS also states alignment. Once learning objectives are determined, course designers determine assessment evidence that will demonstrate whether students have understood the objectives. This allows course designers to plan learning experiences and instruction. An effective and common tool for designing or creating course outcomes is Bloom's Revised Taxonomy, a framework NCVPS also states that they use on their website.

A tool that documents alignment of learning objectives, outcomes, and instructional activities is an alignment or curriculum map. This is an essential element and standard practice in curriculum design in order to ensure that objectives are measurable, all required standards are taught, and that assessments are mapped to instructional standards. By including an alignment or curriculum map, an online school can also document meeting iNACOL's National Standards for Quality Online Courses (2011) standard A:2, "The course content and assignments are aligned with the state's content standards, common core curriculum, or other accepted content standards set for Advanced Placement® courses, technology, computer science, or other courses whose content is not included in the state standards."

Since NCVPS states that they use Bloom's Revised Taxonomy on their website, it would be expected that the course alignment (objectives, instructional activities and assessment) would be rooted in Bloom's. When reviewing the online courses, however, only three of the 12 courses had an alignment or curriculum map, and only one of the alignment or curriculum maps was accurate and complete. Improvement in this area of design and/or knowledge management could significantly impact the alignment, number of standards addressed, and the rigor of the courses.

None of the twelve courses is accessible (iNACOL, 2011, Standard D:10) for diverse learners, which is a risk.

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[1]   Stated in NCVPS' course guarantee posted on their website as of July 2019

Limitations.

Online instructional strategies often require teachers to transcend the traditional models of teaching and learning. The online instructor's comfort and confidence in instructional knowledge and theories of learning also ensure a greater chance of student success in online environments. It should be noted that the Xperience Education team did not evaluate the instructional quality component of the online courses.

Xperience Education was asked by the North Carolina Office of the State Auditor to evaluate 12 NCVPS online courses for best practices and alignment to NC state standards. However, Xperience Education found that only one of 12 courses had a complete and accurate standards' map to demonstrate the alignment to NC state standards, which is an expectation or best practice in online classes. iNACOL (2011) standard A:2 states, "The course content and assignments are aligned with the state's content standards, common core curriculum, or other accepted content standards set for Advanced Placement® courses, technology, computer science, or other courses whose content is not included in the state standards." NCVPS stated that they align to iNACOL's National Standards for Quality Online Courses (2011). Specifically, the standard requires "The content and assignments for the core courses are explicitly and thoroughly aligned to the credit granting state's academic standards, curriculum frameworks and assessments."

Nine of the 12 courses did not include any alignment map; however, they did include standards or objectives at the module and/or lesson levels. The purpose of this design component in curriculum is to make students aware of the upcoming learning expectations, and it is a very important feature. However, the Xperience Education subject matter experts found that some courses, such as Spanish II, repeated the same objectives for each module throughout the entire course, and they did not necessarily correspond with what was being taught. While other courses, such as American History 2 Honors, listed some objectives at the module level that were not covered in the lessons. It should be noted; however, that although only one course includes an accurate curriculum map to demonstrate an alignment of objectives, instruction, and assessments, an attempt to include objectives and standards, albeit not always accurate, appears to be part of the design of the NCVPS courses.

Prior to the course evaluation conducted by Xperience Education, it was requested of NCVPS to document alignment for the courses being evaluated since accurate documentation did not exist for 11/12 courses, but they declined. In order to prevent suspending the evaluation process, the Xperience Education team, using their expertise and judgement, developed the standards' map component of the Course Audit Matrix (CAM) to represent the alignment or misalignment of required standards in each of the 12 courses. An excellent alignment map was provided by NCVPS for AP Government and Politics that included mapping to the AP big ideas. The Xperience Education team verified the alignment and mapped the corresponding NC state standards.

Standards.

No documentation was provided to demonstrate that NCVPS was teaching state or otherwise approved standards, such as AP standards, in 9/12 courses evaluated although this is a best practice, according to the iNACOL National Standards for Quality Online Courses (2011), standards by which NCVPS states they follow for course design[2] (Standards A:2).

In an online course, it is expected that a course has a document providing evidence of curriculum alignment to state standards. In 9/12 courses evaluated, when no alignment documentation was found, NCVPS was unable to provide it, even upon request, because NCVPS stated and later clarified that they needed additional resources to create the alignment documentation. Two of the more recently developed courses included documentation to demonstrate standards alignment. AP Government and Politics included an appropriate map while AP Environmental Science included an incomplete map. Also, the AP Environmental Science syllabus stated that the course was 100% aligned to NC state standards and AP big ideas. An incomplete alignment document was provided to the AP big ideas but not to the state standards. The Xperience Education team found that the course did align to the AP big ideas 100% but not the state standards. North Carolina requires that AP courses be aligned to one or the other sets of standards in order to meet DPI requirements. NCVPS intends to modify the AP Environmental Science syllabus to only indicate alignment to the AP big ideas.

Timelines and Standards Map

Course Name	Year Offered	Full Revision	First Gen./Mini Contract	Included Standards Map
Physical Science	2007	2012		No
Advanced Functions and Modeling	2007	2014		No
Pre-Calculus	2007	2013		No
Spanish II	2007	2012	2016	No
Latin I	2007		2017/2018	No
American History 2	2013	2012		No
Anatomy and Physiology Honors	2009	2014		No
African American Studies	2013		2018	No
AP Physics	2015			Inaccurate
AP Art History	2007	2016		No
AP Environmental Science	2007-2008	2016-2017		Incomplete

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[2] According to NCVPS, prior to adoption of Quality Matters (QM) standards, they used "a combination of iNACOL and [Southern Regional Educational Board] SREB standards." According to QM website, the QM K-12 Rubrics have, since their inception, been aligned with the iNACOL standards.

AP Government and Politics	2007	2017-2018		Yes

*In order to be considered as having a standards' map, the alignment had to be found to be accurate in any documentation provided.

**Please note that the iNACOL standard A:2 is referenced from the iNACOL National Standards for Quality Online Courses (2011), and all courses were offered or revised after 2011.

Without documentation such as standards' maps, it is unclear how NCVPS guarantees that 11/12 courses evaluated teach the required state or AP standards. According to NCGS § 115C-12(9c) academic standards that are "sequenced, clear, focused and measurable" are required for all curriculum in North Carolina. The NCVPS website[3] and interviews with NCVPS leadership indicate NCVPS courses are aligned to Universal Design for Learning (UDL) principles. The UDL framework does not require the use of all guidelines in a single learning opportunity for the framework to be implemented with fidelity; however, the first step in applying the UDL framework to practice is to define a specific, learning goal. Without an alignment document, the first step in the UDL process could not be verified.

Developing curriculum or courses with a learning goal in mind, requires backwards planning and design. In order to backwards plan correctly, developers should begin planning with a "blueprint" or alignment document to map and align the scaffolding and instruction of all standards and assessments in a course. This allows curriculum developers to determine the appropriate number of instructional and assessment activities to be provided at specific levels of BRT. However, this complete and accurate documentation was not provided for 11/12 of the evaluated courses. It should be noted that a curriculum map was provided for AP Physics; however, it was not aligned correctly. AP Environmental Science mapped only the themes being taught but not the objectives. Had more detail been provided in AP Environmental Science, and had the AP Physics curriculum map been correct, these, along with the AP Government and Politics map, would have served as documentation to demonstrate the first step in the NCVPS Universal Design for Learning alignment as well as to demonstrate that all standards are being addressed in NCVPS online courses.

After the Xperience Education team aligned the courses to state or AP standards, four out of twelve courses were found to *include* all of the required state standards for instruction and assessment: Physical Science, American History 2 Honors, AP Environmental Science, and AP Government and Politics. Eight courses did not include 100% of the required standards for instruction or assessment in the course. The level of rigor was too low in 11/12 courses to sufficiently address the minimum state requirement that courses be rigorous and relevant (SCOS-016). See Table 1.1 – Percent of Standards Taught vs. Percent of Standards Assessed, including level of rigor.

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[3]   Stated in NCVPS' course guarantee posted on their website as of July 2019

Although some of the instructional activities met the appropriate level of Bloom's Revised Taxonomy, as required by the course objectives, some standards are considered not met in the eight courses because assignment instructions do not provide a rubric that aligns to the appropriate or corresponding level of Bloom's as outlined in the activity instructions or as is required by the standard. NCVPS did acknowledge that this is an area of improvement, where they are focusing efforts.

Rigor.

Rigor is often mistaken for level of difficulty, but meaningful instruction is a more complex process than simply asking students to remember facts and understand. Rigor is defined in a variety of ways, but universally, the term indicates whether students can construct meaning for themselves by applying what they have learned in real-world authentic tasks. The online medium may require teachers to use different strategies than the traditional classroom to teach the appropriate level of rigor, but personalizing learning so that instruction is taught at the appropriate rigor is essential for knowledge transfer. The Framework for Bloom's Revised Taxonomy (BRT) is used universally to evaluate the complexity of assignments and to increase the rigor of educational lessons.

Additionally, the appropriate number of activities spent at different levels before advancing, otherwise known as scaffolding, can be determined by evaluating assessments, which are derived from standards or what you expect students to know and be able to do. This is called deconstructing standards. This is another reason a best practice is to have a standards alignment or curriculum map. One way to determine the appropriate scaffolding in a course is to examine the blueprint of an end of course exam (EOC). This allows a curriculum developer to determine the appropriate number of activities at each level of Bloom's that should be present in the course for which each student is expected to master in order to be successful on the NC end of course assessments.

According to Bloom's Revised Taxonomy, a taxonomy, to which NCVPS guarantees an alignment in their course guarantee on their website,[4] and to which some North Carolina state standards align, according to the NC Department of Public Instruction (science assessments, American History II, world language essential standards), students retain information through higher-order thinking rather than by reciting facts. In order to retain new knowledge, students should be asked to create meaning out of what they learn or to apply what they learn to a new or novel situation, such as with critical thinking. Low cognitive complexity or low rigor prevents students from being engaged in what they are learning, which negatively impacts their ability to convert learning to long-term memory. Examples of activities from Bloom's Revised Taxonomy in the two lowest levels of rigor, Remember and Understand, include but are not limited to: list, memorize, repeat, match, describe, discuss, explain, recall, identify, locate, and recognize. In contrast, digital content that is integrated with real-world, project-based activities, as indicated in the NCVPS course

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[4] Stated in NCVPS' course guarantee posted on their website as of July 2019

guarantee would be evident in levels three and four of Webb's Degrees of Knowledge and four and five of Bloom's Revised Taxonomy, which would represent high levels of rigor.

Four courses included 100% of the state or AP standards in instructional materials and in assessment materials, Physical Science, American History 2 Honors, AP Environmental Science, and AP Government and Politics. Although Physical Science taught and assessed all of the state standards, 59% of the Physical Science standards were taught at low-level rigor - Bloom's one and two, thus it did not achieve the appropriate level of rigor instructionally. Forty-five percent of the standards were assessed at low-level of rigor - Bloom's one and two, therefore, failing to achieve the appropriate level of rigor. Approximately half of the course was not engaging to students because it didn't represent real-world, project-based activities, as indicated in the NCVPS course guarantee, high-level rigor. To dissect this further, if 59% of the standards in Physical Science were taught at a level lower than required and 45% were assessed at a level lower than required, then 14% of the standards were potentially assessed in a method that was more challenging than the level the students were taught to understand or apply. Therefore, students may not have been prepared for the assessments. Although, American History 2, covers 100% of the standards in instruction and 100% of the standards in assessment, 99% of the instructional standards are at a low-level of rigor, and 81% of the assessments are at a low-level of rigor. While it is certainly recognizable that the standards were included at 100% in both instruction and assessment in 3/12 courses, a lack of alignment is just as challenging to student learning as not including the appropriate standards – AP Environmental Science, Physical Science, American History 2 Honors (see Table 1.1 – Percent of Standards Taught vs. Percent of Standards Assessed, including level of rigor).

The closest alignment between assessment and instruction is found in Pre-Calculus. 18% of the instructional materials were low-level rigor, and 30% of the assessment activities were low-level rigor. This is likely because in math classes, students are asked to "apply" what they know, which falls into level three of Bloom's Revised Taxonomy, and low-level, for the purposes of this report, included Bloom's levels one and two (Remember and Understand).

Anatomy and Physiology Honors is an exception and reports out on objectives because the standards provided by NCVPS did not align; however, the objectives provided did.

Table 1.1 represents the percent of activities and assessments that meet the required standards in each course and of all the instructional and/or assessment activities presented in the course, the percent that are represented at low-level rigor as opposed to an engaging or high-level of rigor.

Table 1.1 Percent of Standards Taught vs. Percent of Standards Assessed, including Level of Rigor for All Instruction and Assessment

Course Name	% Standards Included in the Course	% Taught at Bloom's Low-level Rigor	% of Standards Assessed	% Assessed at Bloom's Low-level Rigor
AP Art History	75%	100%	92%	52%
AP Physics	96%	85%	100%	29%
Physical Science	100%	59%	100%	45%
Adv. F&M	75%	52%	100%	14%
AA Studies	78%	93%	100%	61%
A & P Honors	96%	75%	98%	86%
Pre-calculus	95%	18%	90%	30%
Spanish II	67%	72%	75%	49%
Latin I	58%	84%	83%	43%
American History 2 Honors	100%	99%	100%	81%
AP Env. Science	100%	93%	100%	51%
AP Gov/Politics	100%	82%	100%	85%
Mean	87%	76%	95%	52%

Conclusions

Academic standards in North Carolina are required to be "sequenced, clear, focused, and measurable" NCGS § 115C-12(9c). The iNACOL National Standards for Quality Online Courses (2011) also state that "The content and assignments for the core courses are explicitly and thoroughly aligned to the credit granting state's academic standards, curriculum frameworks and assessments."

Curriculum is also required to be of the appropriate rigor (SCOS-016). No accurate documentation was provided to demonstrate alignment for 11/12 courses. After evaluation, although the courses

do include *some* of the required state standards, most are not taught at the appropriate level of rigor, which leads to Findings One and Two:

Finding One: 12/12 courses do not teach state standards, and/or what standards are taught are not taught at the appropriate level of rigor to meet requirements.

Eleven of the 12 courses did not demonstrate iNACOL standard A:3 (iNACOL National Standards for Quality Online Courses, 2011), "The course content and assignments are of sufficient rigor, depth and breadth to teach the standards being addressed." Specifically, reviewers considered, "The course components (objectives, assessments, instructional strategies, content, assignments and technology) are sufficiently broad, deep and rigorous such that successful students will have the knowledge and skills required by the standards upon completion of the course." Depth refers to the detail or level of rigor to support the mastery of learning objectives. For example, a physics course should include more complex materials than a physical science course.

Also, of concern regarding best practices is iNACOL National Standards for Quality Online Courses B:5, "The course provides opportunities for students to engage in higher-order thinking, critical reasoning activities and thinking in increasingly complex ways." Specifically, reviewers, looked for, "Assignments, activities and assessments provide opportunities for students to elevate their thinking beyond knowledge and comprehension into the realm of analyzing situations, synthesizing information or evaluating an argument. Activities should include open-ended questions and encourage students to categorize and classify information. Opportunities for group work, decision-making and finding patterns should also be included in the course activities." Given that the majority of activities and assessments are on the lower level of Bloom's, there is great opportunity for growth in order to meet or exceed this standard for best practices. The majority of assessments in all classes are multiple choice, and most activities are learner-content. There is significant opportunity for growth by including learner-learner interactivities as well as higher order thinking.

See table 2.3 for a more detailed breakdown on the alignment between and the rigor of not only instructional materials but also assessments.

Finding Two: There are discrepancies in the NCVPS course guarantees.

There are discrepancies in the NCVPS course guarantees. NCVPS, on their website,[5] commits to using Universal Design for Learning (UDL) as a course guarantee. UDL requires a high-level understanding of design specifically regarding assessment and accessibility. It is a challenging yet rewarding design model. While the Xperience Education team did find some traces of UDL in AP Environmental Science, such as activities designed for learning preference, which is to be commended, UDL was not evident in 11/12 courses. It is misleading to stakeholders to claim that

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[5]   Stated in NCVPS' course guarantee posted on their website as of July 2019

courses are developed using UDL. None of the courses included sufficient levels of accessibility, as stated in iNACOL National Standards for Quality Online Courses, Standard D:10, "Course materials and activities are designed to provide appropriate access to all students. The course, developed with universal design principles in mind, conforms to the U.S. Section 504 and Section 508 provisions for electronic and information technology as well as the W3C's Web Content Accessibility guidelines (WCAg 2.0)." Significant concerns were found regarding, not only UDL, but also the accessibility for students who are visually impaired, specifically since Articulate Storyline files are embedded within Articulate Rise files in some NCVPS courses. Articulate Rise does not support screen readers yet, which is a concern within 508 accessibility guidelines (Articulate, 2019).

This conflicts with the NCVPS course guarantee stating that NCVPS courses are accessible to all types of learners, and it is a liability for the program.

Another NCVPS course guarantee, for which Xperience Education found conflicting evidence, is the NCVPS course guarantee stating that courses are grounded in the Revised Bloom's Taxonomy, and that they include real-world project-based activities. This claim is aligned to other national standards and expectations such as the 2018 AdvancEd digital standard 2.2 that requires, "The learning culture promotes creativity, innovation, and collaborative problem-solving," and standard 2.5 which requires, "Educators implement a curriculum that is based on high expectations and prepares learners for their next levels." Xperience Education found, however, that while the NCVPS course guarantees do align to the national standards, the NCVPS courses do not engage students in higher-order thinking (iNACOL B:5) in more than 50% of 11 out of 12 courses, and in eight of those 12 courses learners are engaged in 25% or less of the course.

Across the spectrum of courses, students are primarily asked to recognize, recall, memorize, identify, practice, or calculate in the courses with little evidence of engaging activities such as analyzing, critiquing, synthesizing, designing, or creating (See table 2.3). Although a state or College Board (AP) standard may be included in course content, teaching or assessing it at a level too low for a student to construct meaning does not mean that the standard has been taught or mastered. Teaching standards at levels that are too low does not prepare them to be "career and college ready," as the NCVPS website indicates. For this reason, many of the standards were not taught sufficiently and not sampled adequately.

Consistent concerns with quality assurance reoccurred throughout the evaluation, affirming that there is opportunity for NCVPS to employ a software development lifecycle by implementing a project management philosophy such as agile, which would be better aligned to iterative curriculum development. An agile project management life cycle would also lend itself to incorporating a strong quality assurance methodology, where there appears to be a consistent need. Additional opportunities for NCVPS to improve the curriculum could be realized with a more consistent development cycle rooted in best practices for digital design.

AdvancEd digital standard 2.12, for example, states, "The institution implements a process to continuously assess its programs and organizational conditions to improve student learning." Program evaluation data should be collected annually for the program and per course to evaluate course quality and student success. When requested, it was evident that student performance data is not being applied as a metric for success or quality at the course level. Data could not be provided to indicate the success of students in each course such as average drop rate, completion rate and/or a breakdown of completion by grade or by demographic. All of these variables should be evaluated per course as indicators of quality. This is a program-level concern that involves evaluating all facets of NCVPS success. While there is a process for teachers to submit concerns regarding course curriculum, this same process is in place for teachers to report concerns regarding copyright. Two requests were made for "tickets," to the service desk where teachers may have expressed concern over standards alignment or copyright infringement in courses, but the tickets did not exist. This is an example of a gap in quality assurance in the development cycle.

The courses include multiple resources from websites that are not cited, and no permissions for use have been provided, which does not adhere to standard D:9 of the iNACOL National Standards for Quality Online Courses: "Copyright and licensing status, including permission to share where applicable, is clearly stated and easily found." More specifically, "Course developers or publishers clearly state the copyright and licensing status of all content, including permission to share where applicable. Copyright and licensing information should be readily available, understandable and standardized in terms of use."

For example, there is a commercial video embedded in Physics that includes a watermark for the source of the video. In another course, activities are linked to QUIA, a subscription-based model to which a license is required, yet NCVPS does not have one. Other activities link to sites such as Schmoop, where student data could be compromised. Given the volume of students who have participated in the courses, it is alarming that these errors have not been corrected. With a stronger model of accountability in development, these errors would not be present.

Background

North Carolina Virtual Public School (NCVPS), which was founded in 2007, provides online classes to public schools in North Carolina. Middle and high school students enroll in online courses through their local public schools, and their local schools award the credit for the classes taken from NCVPS. NCVPS provides the teacher for the course, sends the school a grade based on the student's performance in the online class, and the school records the grade on the student's transcript. NCVPS has approximately 56,000 enrollments, and they are the second largest virtual school in the United States.

In January of 2019 Xperience Education was engaged to evaluate ten courses: Advanced Functions and Modeling, African American Studies, AP Art History, AP Physics, Anatomy and Physiology Honors, Latin I, Pre-Calculus, Physical Science, Spanish II, and American History 2 Honors. Since the initial ten courses assigned for evaluation were developed using an older development methodology, two additional courses that were developed using the current development methodology, AP Environmental Science and AP Government and Politics, were added to the scope of the project in February of 2019. AP Environmental Science was developed in 2016-2017 and AP Government and Politics was developed in 2017-2018.

Specifically, Xperience Education was asked to determine if the courses were aligned to the state standards, were of quality/engaging, and met the best practices of online courses.[6] Therefore, Xperience Education investigated 12 NCVPS courses to determine if they:

1) Teach state standards as required by NCGS § 115C-12(9c)
2) Contain cognitive rigor that will lead students to be engaged or to think in-depth about learning
3) Meet the best practices of online courses

Review Team

The review team was led by Dr. Wendy Oliver, who has been a leader in online education for over 15 years. Dr. Oliver is also a certified and experienced Quality Matters K-12 course reviewer, serves on the National Standards for Online Quality Leadership Team, and she recently co-led the rewrite of the national teaching standards with Dr. Allison Powell, who also served on the review team. Dr. Oliver also helped lead the rewrite of the national standards for quality online programs, to be released September of 2019, for Quality Matters and The Virtual Learning Leadership Alliance.

The review team was made up of 10 subject matter experts, who all have master's degrees, with four having doctorates. Half of the subject matter experts have taught online and/or developed

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[6] According to NCVPS, prior to adoption of Quality Matters (QM) standards, they used "a combination of iNACOL and [Southern Regional Educational Board] SREB standards." According to QM website, the QM K-12 Rubrics have, since their inception, been aligned with the iNACOL standards.

online courses. All subject matter experts are certified in the specific courses they reviewed. Five learning architects, three of whom are certified or trained on Quality Matters standards `and hold doctoral degrees, reviewed the courses for best practices. Four of the learning architects are currently involved in revising The Quality Standards for QM and VLLA. The project manager for the team is certified in both PMI and Agile and has been managing national and international projects in e-learning for over twelve years.

Online Course Quality Review

NCVPS develops its courses internally with teams of teachers and specialists it hires and trains or has trained, as opposed to paying third-party vendors to develop its content. Course development is done primarily by part-time teachers receiving a contract or hourly wages to complete a portion of the course development process under the supervision of a full-time curriculum staff member. NCVPS, relied on the iNACOL National Standards for Quality Online Courses (2011) for best practices for design of their courses prior to adoption of Quality Matters standards. Commitment to follow Quality Matters standards, using the QM K-12 Secondary rubric as a method for continuous improvement, began in 2013 (QM Website). Currently NCVPS has 17 of 98 AP, General and Honor courses that successfully meet the QM rubric standards and carry the QM certification mark.

What defines Quality?

As with any learning environment, the quality of the learning materials and instruction is more important than the medium. Designing good instruction, regardless of the medium, begins with creating goals that align to course standards and objectives, followed by identifying scaffolded strategies that will assist the learners in reaching those goals. This information is typically found in what is referred to as a curriculum map or a blueprint. As required by iNACOL National Standards for Quality Online Courses (2011) in Standard A:2, "The course content and assignments are aligned with the state's content standards, common core curriculum, or other accepted content standards set for Advanced Placement® courses, technology, computer science, or other courses whose content is not included in the state standards;" however, Xperience Education was unable to attain an accurate alignment document for 11/12 courses from NCVPS. This documentation was not provided upon request for 11/12 courses.

High quality curriculum must contain cognitive rigor, the depth and extent students are challenged and engaged to demonstrate and communicate their knowledge and thinking, and lead students to think in-depth about learning. iNACOL National Standards for Quality Online Courses (2011), in Standard A:3 requires, "The course content and assignments are of sufficient rigor, depth and breadth to teach the standards being addressed." When providing content in a learning management system (LMS) the delivery medium should remain as transparent as possible, with the focus on learning and instruction. Placing lectures or notes and quizzes online as content for the learner to consume is not an effective way to deliver curriculum online. This is the primary method of instruction found throughout the 12 NCVPS courses evaluated. This is similar to handing students

a textbook with no other instructional supports in the face-to-face classroom. Online lessons, activities, and assignments must be designed to create a sense of engagement and motivation. iNACOL National Standards for Quality Online Courses (2011) in Standard B:3 requires, "The course instruction includes activities that engage students in active learning."

This is done by creating courses that are designed with the learner at the center, where the student constructs knowledge stemming on goals that are important to him or her based on his or her individual interests, needs, and capabilities. Specifically, course activities should be self-directed, authentic, and incorporate structured decision-making processes. A quality online course encourages or promotes five outcomes.

1. Learner autonomy
2. Active participation
3. Collaboration and community building
4. Authentic assessment
5. Acquisition of 21st century essential skills

Although the design of the online course is critical, teacher-student interaction may be the most important element for student success. Interaction, though, to include learner-learner interaction is required by iNACOL National Standards for Quality Online Courses (2011) standard B:10: "The course provides opportunities for appropriate instructor-student and student-student interaction to foster mastery and application of the material." Although not evaluated, consistent student-teacher interaction was required in the majority of the classes. There is significant room to increase active learning by having learners interact with one another. Although, the NCVPS website indicates, on its teacher recruitment page, "Instruction is structured to provide a variety of learning experiences, from individual assignments to collaborative projects and virtual field trips," each of the 12 courses has significant room for growth in collaboration and community building with learner-to-learner interaction and active participation.

Online instructional strategies often require teachers to transcend the traditional models of teaching and learning. Comfort and confidence in instructional knowledge and theories of learning also ensure a greater chance of success in online environments. A limitation of the course evaluation is that Xperience Education did not evaluate the instructional quality component of the 12 courses, so while each course demonstrated evidence of student: teacher interaction, the qualities of those interactions were not assessed.

Xperience Education Course Audit Matrix

Methods.

In order to develop a quantitative analysis for each course the Xperience Education team created a Course Audit Matrix (CAM) for each course. The CAM demonstrates the alignment or misalignment of state and or AP standards and objectives to instructional content and assessments. During this process, the level of rigor or how engaging activities and assessments are, is also evaluated. In order to complete each Course Audit Matrix (CAM), Xperience Education teams, reviewed each course-level standard, objective, and the goals to determine if they were 1) taught 2) assessed, and 3) the level of cognitive rigor. This set of data, in the CAM, provides an architecture of the level of rigor and engagement in each course.

Rigor.

Xperience Education evaluated the courses to determine if they contained cognitive rigor that would lead students to be engaged or to think in-depth about learning. Rigor is the depth to which students are challenged and engaged. As learners gain expertise, they are challenged at increasing depth (scaffolding). There is a misconception that rigor means hard, which is inaccurate. Hard could be multiple worksheets or essays. Whereas, if an activity is engaging, the student is involved in learning and loses track of time. For example, in AP Government and Politics there are over 877 assessment items. Not only are there more quiz items than necessary to assess mastery, but 745 of the 877 items are levels 1 and 2 on Bloom's Revised Taxonomy, which means they do not engage students in higher-order thinking. Learning is maximized when students participate in learning experiences that require complex-thinking and application of knowledge or, in other words, when they are engaged. Given the misalignment of the number of assessment items to the learning objectives in the majority of the classes, we suggest NCVPS consult with an assessment expert to develop course blueprints and determine appropriate item sampling.

In order to identify the level of engagement in NCVPS courses, Xperience Education measured the cognitive complexity of the NCVPS courses. This was done by implementing the instructional model developed by Karen Hess (2009) that combines two leading cognitive rigor models: Bloom's Revised Taxonomy (2001) and Norman Webb's Depth of Knowledge (2002).

The Bloom's Revised Taxonomy defines the kind of knowledge and type of thinking students are expected to demonstrate in order to master learning concepts. Complimentary, Webb's Degrees of Knowledge (DOK) framework, is used to determine how deeply students are expected to be challenged and engaged with new knowledge in order to master new learning. Karen Hess (2009) superimposed Webb's Depth-of-Knowledge Model with Bloom's Revised Taxonomy to measure the cognitive rigor of learning experiences. Bloom's Revised Taxonomy determines the cognition or thinking students are expected to demonstrate as part of a learning experience. Bloom's determines the verb that starts the educational objective or academic standard. Webb's designates the context, setting or scenario students are expected to express and share what they are learning.

By superimposing the two, one can view the depth and breadth of the resources for an evaluation of rigor as is required for iNACOL, 2011 A:3. An in-depth evaluation of the alignment of

instructional activities and assessment activities also provides insight into the cognitive complexity and therefore engagement (iNACOL, 2011 B:5) of the overall course.

Table 2.1: Bloom's Revised Taxonomy - Levels of Rigor	
1. Remember	Name, match, list,
2. Understand	Demonstrate, explain, compare
3. Apply	Apply, choose, calculate
4. Analyze	Analyze, classify, dissect
5. Evaluate	Interpret, measure, recommend
6. Create	Create, develop, plan

Table 2.2: Webb's Degrees of Knowledge -Depth of Rigor			
1.Recall & Reproduce	2.Knowledge Application	3.Strategic Thinking	4.Extended Thinking
List Tell Who, what, when, where, what	Identify patterns Make observations Cause and effect	Critique Hypothesize Compare/Contrast	Design Create Synthesize

Engaging Curriculum.

The NCVPS website had stated that it offers "a variety of courses to ensure students across North Carolina have access to high quality, engaging courses not being offered in their schools." Students are engaged when curriculum is designed with cognitive rigor. In order to be engaging, students should be solving authentic problems, as indicated by the evidence for standard B:3 of the iNACOL National Standards for Quality Online Courses (2011), "The course provides multiple opportunities for students to be actively engaged in the content that includes meaningful and authentic learning experiences such as collaborative learning groups, student-led review sessions, games, analysis or reactions to videos, discussions, concept mapping, analyzing case studies, etc."

To be commended, NCVPS recognizes the need to ground curriculum in Bloom's Revised Taxonomy and to incorporate real-world, project-based activities into their digital curriculum as part of their course guarantee. Digital content that is integrated with real-world, project-based activities, as indicated in the NCVPS course guarantee, would be evident in levels three and four of Webb's Degrees of Knowledge (DOK) and four and five of Bloom's Revised Taxonomy. However, lectures or notes were consistently placed in the learning management system with online quizzes that were primarily low-level multiple-choice response items. These activities fall

in the lowest levels of Webb's DOK and Bloom's Revised Taxonomy and are therefore unengaging. They are not rigorous but represent the primary strategy for instruction in the 12 courses evaluated. Although, it should be noted that "applying" is seen in the math courses, which is level three of Bloom's and level two of Webb's. For this reason, there may appear to be a higher number of activities or assessments rated low-level rigor in Webb's DOK than in Bloom's Revised Taxonomy. AP Environmental Science, which was developed more recently, in comparison to other courses, did have more assessments that required higher-order thinking and more evidence of authentic and real-world activities. See table 2.3 to determine the percent of each course that was spent in the least engaging types of instruction or the lowest types of rigor according to Bloom's Revised Taxonomy and Webb's Degrees of Knowledge. Xperience Education did not find that the NCVPS courses followed best practices for quality instruction based on the Bloom's Revised Taxonomy guidelines, an NCVPS course guarantee (See table 2.3).

Table 2.3 Percent of low-level rigor Webb's and Bloom's by Instruction and Assessment				
Course Name	% Instruction Webb's 1-2	% Assessment Webb's 1-2	% Instruction Bloom's 1-2	% Assessment Bloom's 1-2
AP Art History	100%	77%	100%	52%
AP Physics	99%	87%	85%	29%
Physical Science	89%	69%	59%	45%
Adv. F&M	100%	98%	52%	14%
AA Studies	97%	64%	93%	61%
A & P Honors	83%	89%	75%	86%
Pre-Calculus	99%	98%	18%	30%
Spanish II	100%	100%	72%	49%
Latin I	88%	90%	84%	43%
American History 2 Honors	99%	80%	99%	81%
AP Env. Science	96%	60%	93%	51%
AP Gov/Politics	87%	86%	82%	85%
Mean	95%	83%	76%	52%

As previously stated, NCVPS guarantees that its courses are grounded in the Bloom's Revised Taxonomy. Bloom's Revised Taxonomy was developed to give educators a common vocabulary as they strive to teach students to use higher-level or more complex thinking (rigor). To ensure that students will retain information, an educator endeavors to appropriately challenge them. When teaching about WWII, if a teacher asks students to memorize facts, level one, they will soon be forgotten. However, if educators focus on the higher levels of Bloom's by asking students to explain or analyze why the fighting began, for example, students are more likely to retain the information. Table 2.3, "Percent of low-level rigor Webb's and Bloom's by Instruction and Assessment," indicates evidence that higher-level instructional and assessment skills were not found in the majority of the curriculum. Therefore, the course guarantee that NCVPS has of being grounded in the Bloom's Revised Taxonomy is not evident in the courses.

Standards.

Standard A:2 of the iNACOL National Standards for Quality Online Courses (2011) states "The course content and assignments are aligned with the state's content standards, common core curriculum, or other accepted content standards set for Advanced Placement® courses, technology, computer science, or other courses whose content is not included in the state standards." Evidence to meet this standard is described as, "The content and assignments for the core courses are explicitly and thoroughly aligned to the credit granting state's academic standards, curriculum frameworks and assessments. Advanced Placement® courses must be approved with the College Board and other elective courses should be aligned to other nationally accepted content standards such as computer science, technology courses, etc.," and standard A:1 states, "The goals and objectives clearly state what the participants will know or be able to do at the end of the course. The goals and objectives are measurable in multiple ways."

A course alignment is fundamental and is central to a quality curriculum. There are two types of alignment that should be created during the initial development phase of any course to ensure that the curriculum is coherent: a common framework aligns curriculum, instruction, and assessment. An *external alignment* ensures the course aligns and is 1) teaching the standards and objectives required by the state. An internal alignment occurs when the 2) instructional strategies and classroom assessments reflect the language and intent of the standards, offering content of the appropriate rigor. NCVPS did not provide either a correct or complete external or an internal alignment for 11/12 courses. For AP Environmental Science a document was provided that was incorrectly titled a "Standards Map." This document demonstrated in which modules the "big ideas" or AP test reporting categories defined by The College Board were located in the course, but there was not an alignment to state standards, as was indicated in the course worksheet and the course syllabus. More importantly, the document was missing learning objectives that were in the alignment map for AP Government and Politics. For AP Physics, a detailed mapping document was provided; however, there were inaccuracies. Nine of the 12 courses did not include any mapping documents to demonstrate alignment.

Table 2.4 Percent Standards Taught and Assessed in Digital Content					
Course Name	% Standards Taught	% Standards Assessed	% Neither Taught nor Assessed	% Standards Assessed but not Taught	Number of Standards
AP Art History	75%(9)	92%(11)	0%	25% (3)	12
AP Physics	96%(26)	100%(27)	0%	4% (1)	27
Physical Science	100%(8)	100%(8)	0%	0%	8
Adv. F&M	75%(6)	100%(8)	0%	25%(2)	8
AA Studies	78%(7)	100%(9)	0%	22%(2)	9
A & P Honors[7]	96% (50)	98%(51)	0%	4% (2)	52
Pre-calculus	95%(19)	90%(18)	5%(1)	0%	20
Spanish II	67%(8)	75%(9)	0%	33%(4)	12
Latin I	58%(7)	83%(10)	8%(1)	33% (4)	12
American History 2 Honors	100%(8)	100%(8)	0%	0%	8
AP Env. Science	100%(7)	100%(7)	0%	0%	7
AP Gov/Politics	100%(20)	100%(20)	0%	0%	20
Mean Courses Score	87%	95%			

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[7] Evaluated based on learning objectives listed in the course

Methods

In order to improve the reliability and validity of results of the review, the following error-reducing measures were taken by Xperience Education:

- Experienced evaluators - Evaluators who have performed multiple reviews tend to be more consistent in the application of review criteria, increasing validity.
- Pre-evaluation training – All reviewers were trained for the specific evaluation, providing a consistent frame of reference and increasing inter-rater reliability.
- Standardized data collection instruments – Consistent criteria are used by all reviewers in order to increase reliability.
- Multiple reviewers - The larger the number of evaluators, the more statistically reliable the results.
- Quantitative data – Whenever possible, the reviewers gather quantitative data to support scoring.
- Inter-rater reliability- To reduce errors of variance, 10 standards were reviewed for inter-rater reliability.
- Reviewers worked together to summarize findings for each course.

Xperience Education, has analyzed each course based on the following types of data:

- Subject matter expert interviews (qualitative)
- Xperience Education Course Audit Matrix (quantitative data)
- NCVPS interview data
- NCVPS website
- NCVPS documentation

Findings and Results

Twelve NCVPS online courses were reviewed by a team of national experts to determine if the courses were of quality, meaning do they:

1) teach state standards as required by NCGS § 115C-12(9c)
2) contain cognitive rigor that will lead students to be engaged or to think in-depth about learning
3) meet best practices requirements of online courses

One of the 12 courses had appropriate and accurate documentation, such as an alignment map, to document the alignment of objectives with state or other approved standards in the courses. With any course being taught, regardless of the medium, this type of documentation is a best practice in order to demonstrate compliance with state standards (NCGS § 115C-12(9c). After the Xperience Education team mapped the alignment of all 12 courses they found that the majority of courses contained assignments, activities, and assessments at a low-level Bloom's and Webb's DOK's, which results in unengaging courses.

Increasing learner-learner interaction would improve the engagement of the NCVPS courses. Content-content interaction, much like distance education courses, and learner-instructor interaction were found in all courses. Depending on the course, some instructors offer live lessons. This is specifically the case for foreign language courses, such as Spanish II, where students are required to participate in live classes in order to address all of the state standards. We were unable to evaluate any live lessons for evidence of compliance to state standards and/or quality because there is no documentation of course curriculum for teachers to follow during the live lessons.

All instructors are required to have virtual office hours posted. However, learner-learner interaction was only found when students were asked to respond to a classmate in the discussion forum. The level of interaction did not increase in the courses developed more recently: AP Government and Politics and AP Environmental Science. Learner-learner interaction will vary among courses, but across the 12 courses, there was very little interaction among students (iNACOL, 2011 B:10). This is confirmed by the low-levels of engagement or cognitive rigor, for higher levels of engagement would include collaborative projects or other types of student interaction (iNACOL, 2011 B:5).

In American History 2 Honors, for example, 74% of the assessment items are categorized in Bloom's level one. Eighty percent of the instruction is represented at level two of Bloom's. Not only is there 1) a misalignment because students are being assessed at a lower level than they are being taught, but for an honor's course, 2) the level of cognitive complexity is too low to be engaging since the majority of the class is taught at level 2 or below. Additionally, 3) as an honors class and a level two social studies course, the level or rigor does not appropriately address the standards. For a course breakdown see corresponding Course Audit Matrix (CAM).

World language standards are broader than core area standards, and typically, it is more common to see lower levels of rigor since the primary focus is initial acquisition of language. Although, some standards are taught in Latin I, the course does not include some best practices for instruction and is unengaging to students. For example, students are asked to memorize and recall vocabulary terms, but they are not given enough practice activities in the curriculum to help them learn the vocabulary (iNACOL, 2011 B:1). The lack of instructional practice in the curriculum coupled with the lack of documented speaking and listening prevent students from achieving the learning outcomes in Latin I (B:2). Students are asked to take the same type of assessment in every module, with no variations throughout the course (C:5). For these reasons, Latin I is lacking in best practices of online quality course design. There aren't enough practice instructional activities with breadth or depth (rigor), and there are not multiple methods of assessment strategies, which result in a lack of engagement (B:3) or diversified opportunities for students to prove their knowledge.

According to 2011 iNACOL National Standards for Quality Online Courses (A:1), a course should contain course-level learning objectives. Learning objectives should be written in a way that is measurable and in such a way that describes what a student can expect to learn as a result of completing a course. The purpose of this is so that students know what they should be learning.

Not only should they be measurable, but module-level learning objectives should be rolled up into the course-level learning objectives. One of the 12 courses met this standard/best practice for curriculum design, AP Government and Politics. In Spanish II, for example, the same 60 North Carolina Essential/Common Core Standards are copied and pasted at the beginning of each unit. This does not inform students of their learning, which is essential to online course design. According to the course syllabus, Spanish II is aligned to the North Carolina World Language Essential Standards. African American Studies, like Spanish II, has its essential standards and clarifying objectives listed at the beginning of each module throughout the course repeatedly.

One of the NCVPS course guarantees states that the NCVPS courses are accessible to all types of learners. It is alarming that none of the courses were found to be accessible, as described by iNACOL 2011 National Standards for Quality Online Courses standard D:10, "Course materials and activities are designed to provide appropriate access to all students. The course, developed with universal design principles in mind, conforms to the U.S. Section 504 and Section 508 provisions for electronic and information technology as well as the W3C's Web Content Accessibility guidelines (WCAG 2.0)."

Throughout the evaluation process, there were multiple situations where students were asked to access 3rd party links or sites outside of the secure learning environment provided by NCVPS. Many of the sites were open educational resources (OER), while some sites such as in AP Art History required students to create a user ID and password in order to track points. Students under the age of 18 should not be asked to create identities to third party platforms without parental permission. In other situations, it appeared that teachers had created accounts with third party providers for classroom accounts when a site license for NCVPS should have been purchased but had not been. A stronger quality assurance process would prevent these errors and eliminate risks as outlined in standard D:11 of the 2011 iNACOL National Standards for Quality Online Courses.

NCVPS declared that the initial 10 courses assigned for review were designed in alignment to the 2011 iNACOL National Standards for Quality Online Courses design standards. As a result, we specifically requested NCVPS provide us with two courses that were designed in alignment with the 2016 K-12 Secondary Rubric for Course Design by Quality Matters, and they gave us access to AP Environmental Science and AP Government and Politics. In comparison to the original ten courses, the latter two courses have noticeable improvements. However, there are similar areas for growth that the more recent courses also have in common. Although the latter two courses are designed better, there are also design discrepancies between them that lead to questions about processes and quality assurance.

AP Environmental Science appears as if a teacher developed it without the support of an internal quality assurance team or specific development guidelines. Whereas, AP Government and Politics indicates that a designer produced some of the materials. For example, AP Government and Politics has detailed rubrics, but AP Environmental Science doesn't consistently provide specific and descriptive criteria for the evaluation of students' work. AP Government and Politics also

includes an alignment document, which is a requirement of both sets of standards. One major concern with AP Government and Politics is that the Storyline files are embedded within the Rise files. Rise is not accessible yet (Articulate, 2019). This defeats the purpose of using the Articulate software for accessibility for diverse learners, which what Storyline is often used for. There is no navigational functionality from the keyboard since Storyline is embedded in Rise. In AP Environmental Science, Softchalk files are included, like in the initial ten courses, when the content isn't built into Canvas, and navigation throughout the course isn't consistent. Also, while the reading level of AP Environmental Science is accurate for the target students, the reading level of AP Government and Politics has resources included that are written at the post graduate level. While there are improvements in the AP Environmental Science and AP Government and Politics, neither course meets the required level of rigor for an AP course, a theme that is consistent across most of the courses evaluated. Each example outlined above aligns to standards that correlate to both iNACOL (2011) and the Quality Matters (2016) standards. It is problematic that neither the older or the newer courses meet or exceed the standards to which they were developed, according to NCVPS. This is essential and still remains in the newly revised NSQ (2019) standards, which may be found on the new NSQ website, along with a crosswalk that represents the QM standards from 2016: https://www.nsqol.org/the-standards/ .

Conclusions and Recommendations

The courses provide a foundation or backbone of content that, with focused improvement, can meet required state standards and best practices for online instruction. By improving the alignment and increasing the progression of difficulty, or scaffolding of the courses, students will become more engaged and master outcomes to prepare them for college and career.

In order to do this, though, NCVPS course developers will need to develop a roadmap and iterate in shorter timeboxed development cycles, allowing continuous improvement during the revision process, which does not fit the current course development model. Currently, NCVPS meets once annually to select 8-10 courses for revision or new development, as part of their annual plan. This model does not allow for scoping or estimating the amount of work required to update courses regularly, given that NCVPS has over 150 active courses. This brings to attention the potential of a systemic funding problem with quality vs. quantity, for NCVPS. Since the program is funded based on student enrollments, if NCVPS removes a course from being offered, in order to update it, then it potentially loses funding. The more courses it offers, then the more funding they receive. To remove 10 courses in order to update them, could mean potentially losing funding.

Since, the NCVPS development model didn't change until 2016-2017, numerous examples have been provided in this report using the iNACOL National Standards for Quality Online Courses, to which NCVPS subscribed prior to 2016-2017, that demonstrate areas for growth in order to meet best practices in alignment with the 2011 standards. Technical tools have become less expensive and more interactive since 2007, when the majority of the courses were originally offered. As a result of increased access and decreased cost to available and accessible technical tools since 2007, expectations for learner engagement have increased in online learning since the original courses

were developed. The recent revisions or updates to five of the courses should have included higher expectations and more opportunities for learner-engagement. The addition of a standards map should have been the first step before any additional work should have taken place on the content. Otherwise, there is no accountability for the content or any future work. Having students currently enrolled in courses that need additional learner-learner interactivity with few quality assurance procedures, and do not provide documentation for alignment to state standards or objectives, much less meet or exceed the state standards, is potentially a leadership or systemic problem.

Although there is obvious standardization across the courses, significant errors that should have been identified during the development and quality assurance processes re-occurred throughout the evaluation, not only in the initial 10 courses but also in the two courses that were developed using Quality Matters standards. This affirms that there is a necessity for NCVPS to introduce a new model for product development. Developing and implementing online curriculum is no different than developing and implementing software; each course should follow a product development life-cycle with regular releases and revisions. There is a significant difference in the approach to planning and implementing digital product development and releases than an educational per classroom approach. Therefore, a software development life cycle such as the model offered by the agile methodology, would be better aligned to meet the needs of NCVPS. Additionally, given the number of NCVPS students, teachers, and existing courses, using an agile project management methodology would enable NCVPS to develop a more accurate roadmap with products or courses that are updated regularly. An agile project management life cycle would also lend itself to incorporating a stronger quality assurance methodology.

The low levels of engagement that were found in the evaluated courses suggest that students are not successfully transferring or maintaining information they are learning, which is in direct contrast to the Revised Bloom's Taxonomy in NCVPS' course guarantee, and the course guarantee that states the courses are "integrated with real-world project-based activities." Scaffolding instruction and aligning content and assessment to Bloom's Revised Taxonomy is a foundational understanding of curriculum development that is not present throughout the majority of the courses evaluated. For these reasons additional concerns are drawn to the curriculum development process. After investigation, we did not find that anyone with an expertise in the alignment of curriculum, instruction, and assessment was involved in the curriculum development process. Therefore, we recommend an assessment expert be involved in the curriculum development process. This will support the NCVPS expressed goal in grounding their courses in the Revised Bloom's Taxonomy and will help elevate the cognitive levels within the course as well as ensure alignment of the instructional and assessment strategies currently missing in the majority of classes.

Consistently the courses have linear navigation and standardized syllabi with templates to ensure teachers include required information in course introduction material, regardless of the original year of development. Therefore, it is evident that attention from NCVPS has been given to communicate effectively with students regarding their expectations, including the academic integrity policy. In order for instructors to model the NCVPS academic integrity policy, more focus

should be given throughout the courses to appropriately cite resources and images, which is an expectation outlined for students. There are multiple instances of concerns regarding copyright and occurrences in the courses where third-party content providers are used without appropriate licensing. For example, copyrighted worksheets from Serway's Physics textbooks are included within the AP Physics course without permission. In other courses, students are required to log into Quia, which requires a license by NCVPS; however, NCVPS confirmed that they do not have a license. Immediate attention should be given to these concerns.

An admirable goal and course guarantee, NCVPS intends to align to the Universal Design for Learning (UDL) framework. By definition, UDL "is an approach to teaching aimed at meeting the needs of every student in a classroom." This goal aligns with another course guarantee NCVPS has, which is to be "Accessible to all types of learners." Both are excellent goals, yet they are ambitious guarantees because of how challenging it is to meet the needs of "every" or "all" types of learners. After evaluating the 12 NCVPS courses, Xperience Education could not find evidence to support these two course guarantees. While each course syllabus includes excellent language and administrative resources to support students in need of modifications, as a result of Special Education/Individual Education Plans, none of the courses was found to provide equally effective alternative formats of course materials. Given that the majority of the instructional materials is limited to reading text from the screen and listening to instructional videos, followed by multiple choice quizzes, a successful course experience is limited to a narrow band of learner types, which excludes a significant segment of the student population. Moreover, of the 12 courses evaluated, none of them is fully accessible.

The NCVPS processes and procedures are inadequate for a program that was founded in 2007, nor for a program with the volume of enrollments that NCVPS has experienced. For example, when data were requested from the support and services team, specific to the courses reviewed, there were no historical records of data that could be provided. Throughout the evaluation, there were instances where documents repeatedly didn't exist or couldn't be recovered. Without the ability to analyze or reflect on data submitted by students and teachers, it is difficult to establish trends and opportunities for iterative improvement. Given the longevity of the program and large number of enrollments, it would be expected that NCVPS has received a significant amount of feedback related to their courses. This feedback should provide valuable input into an iterative lifecycle resulting in improvement over time.

Smith, T. (2012, July 2). Writing measurable learning objectives. Retrieved January 25, 2019 from https://teachonline.asu.edu/2012/07/writing-measurable-learning-objectives/

International Association for K-12 Online Learning. (2011). *National standards for quality online teaching*. Vienna VA., iNACOL, Retrieved October 28, 2019 from https://www.inacol.org/wp-content/uploads/2015/02/national-standards-for-quality-online-courses-v2.pdf

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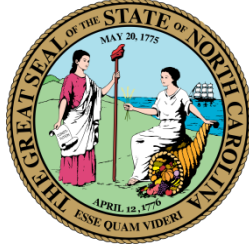
STATE AUDITOR'S RESPONSE

The Office of the State Auditor (OSA) is required to provide additional explanation when an agency's response could potentially cloud an issue, mislead the reader, or inappropriately minimize the importance of the auditor findings.

Generally Accepted Government Auditing Standards state,

> When the audited entity's comments are inconsistent or in conflict with the findings, conclusions, or recommendations in the draft report, or when planned corrective actions do not adequately address the auditor's recommendations, the auditors should evaluate the validity of the audited entity's comments. If the auditors disagree with the comments, they should explain in the report their reasons for disagreement.

In its response to this audit, the Department of Public Instruction (Department) made numerous inaccurate and potentially misleading statements. To ensure the availability of complete and accurate information, and in accordance with *Generally Accepted Government Auditing Standards*, OSA offers the following clarifications for the **most significant inaccuracies**.

Department's Response

Within its response the Department made several inaccurate and potentially misleading statements:

1. Throughout the course of this audit, NCVPS [North Carolina Virtual Public School] raised multiple concerns related to audit methodology used.

2. This audit did not include the most important part of any classroom (digital or physical): the teacher. This audit did not include classroom instruction or student feedback.

3. This audit did not include the objective standardized assessment results of NCVPS students.

4. The RBT [Revised Bloom's Taxonomy] is not a recognized industry standard of rigor.

5. OSA's subject matter expert used materials from Quality Matters to review NCVPS course content and design.

6. High quality instruction by a well-trained teacher is more important than course materials and textbooks.

FIRST, the Department stated "Throughout the course of this audit, NCVPS raised multiple concerns related to audit methodology used." **This is not true**.

Before the Department saw the audit findings, the only concerns it raised were:

1) Courses that had been revised under NCVPS' more recent course development and revision process (post 2017) were not included in the initial audit sample**. OSA responded by adding two such courses (AP Environmental Science and AP Government and Politics) to the audit sample.**

2) Classroom instruction was not included in planned procedures. **Classroom instruction "would not" be included in planned procedures because classroom instruction was not included in the objectives of this audit.**

Further, both of these "concerns" were related to the audit scope **not** audit methodology. **Audit scope** defines what is or is not included in an audit, while **audit methodology** defines the procedures to gather and analyze evidence for items included in the audit scope.

Audit methodologies and scope were presented, discussed, and explained with NCVPS throughout the course of the audit including the entrance conference (meeting to discuss objectives, scope and methodology), the kick-off meeting with the subject matter expert, multiple audit update and check-in meetings, and several meetings in which preliminary audit conclusions were discussed, etc.

In accordance with *Government Auditing Standards*, audit methodologies were designed to obtain sufficient and appropriate evidence to **address** the **audit's objectives**.

Although NCVPS said that they expressed concerns, according to their response, **they made numerous changes as recommended** in the audit report.

SECOND, the Department stated "This audit did not include the most important part of any classroom (digital or physical): the teacher." And "This audit did not include classroom instruction or student feedback."

The Department's assertion attempts to **minimize** the **importance** of **course design**. Course design is fundamental to ensuring all content required by state law is included in every class taken by NC students. Additionally, adequate course design reduces the burden and responsibility on teachers to ensure all required content is contained in each course they teach. It also helps ensure that **all students** taking the **same course** across the State are taught the **minimum required content**.

Neither OSA nor the audit findings dispute the role that teachers play in student education. However, the teacher's role was not the focus of this audit. This audit report **clearly states** that the **audit objectives** were to determine whether North Carolina Virtual Public School (NCVPS):

1) **Course content and design** is compliant with applicable content and design standards for online courses

2) **Monitors course quality** in accordance with recognized standards and best practices for online courses

THIRD, the Department stated that "the audit did not include the objective standardized assessment results of NCVPS students." **This is misleading**.

Standardized assessments are exams administered at the conclusion of certain courses and are designed to measure how well a student mastered the content of a course. The standardized assessment that the Department references in its response to this audit's finding on course rigor[68] is the Advanced Placement (AP) exam administered by the College Board.

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[68] A framework used to evaluate the "complexity of assignments" and to increase the "academic and intellectual challenge of educational lessons."

OSA considered the use of AP exam scores of NCVPS students in our initial planning of the audit but soon determined that it would not be an effective basis to conclude on course rigor for several reasons:

- Only 17 of 98 (17%) courses subject to this audit were AP courses that included an AP exam.

- Only 4 of 12 (33%) courses audited were AP courses and included an AP exam.

- Not every student enrolled in a NCVPS AP course took an AP exam when one was administered.

Therefore, using AP exam scores to conclude on whether NCVPS courses met the adopted standards for rigor would not be valid because it would not have been representative and applicable to all courses. Consequently, the decision was made not to use AP exam scores as a means to evaluate course rigor in this audit.

However, given the information above, the Department still attempted to use student AP exam pass rates as evidence that **all** the NCVPS courses met the adopted rigor[69] standards in its response to the audit findings.

The Department's argument is misleading because it:

- Chose two AP courses (out of the 4 that were evaluated in this audit) to make its case

- Inaccurately stated that the NCVPS 2019 AP exam pass rate of 51.3% was "significantly higher than the state (21.4%) and national (23.9%)" pass rates. The actual pass rates for the state was 56.4% and the national pass rate was 59.1%.[70]

Additionally, the Department chose to present the pass rates of two courses (US Government & Politics and Physics) for only 2019. The scope of this audit was for 2018 **AND** 2019. The percentage of NCVPS AP exam pass rates for those same two courses trailed those of state and/or national pass rates for 2018 as shown in the table below.

Table – NCVPS AP Exam Pass Rate (3 or higher)

Course	2018		
	NCVPS (%)	State (%)	National (%)
AP Art History	39.3	51.0	64.6
AP Environmental Science	38.4	49.6	47.7
AP US Government & Politics	55.5	56.1	53.0
AP Physics 1	37.0	42.4	40.6

Source: NCVPS management and the College Board

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[69] A framework used to evaluate the "complexity of assignments" and to increase the "academic and intellectual challenge of educational lessons."

[70] The state and national AP exam pass rates are readily available on the College Board website.

Lastly, the Department's argument that auditors should use AP exam scores as evidence of Department performance **directly contradicts** the Department's own stated practice. NCVPS stated that it:

- **Does not use AP exam scores to compare NCVPS student proficiency with state and national proficiency**

- **Does not use standardized assessment results to evaluate teacher performance**

- **Uses the scores for course development prioritization in an "informal way"**

FOURTH, the Department stated that "the RBT [Revised Bloom's Taxonomy] is not a recognized industry standard of rigor."[71] **This is not true.**

RBT is one of the most universally applied cognitive rigor frameworks and is the recognized and adopted standard of rigor for NCVPS. At the time the audit was conducted, NCVPS **guaranteed** that each of its courses were "grounded in Revised Bloom's Taxonomy."

After NCVPS was informed of the audit findings, it removed the course guarantee from its website (viewed by OSA on NCVPS website, July 2019).

FIFTH, the Department inaccurately asserts that OSA's subject matter expert used materials from Quality Matters (QM) to report on NCVPS course content and design. The Department states,

> Attached to this response is a letter from Quality Matters, the organization that developed the materials used by the third-party vendor hired by the Office of the State Auditor to review the content. We will only note here for the record that Quality Matters has serious concerns with how the third-party vendor used Quality Matters materials to conduct the review and that Quality Matters does not view such use as legal or appropriate.

The Department's statement distracts the reader from the issues and findings in this audit report. At the very least, the statement is meant to discredit the work of the subject matter expert that OSA hired for this audit.

Several facts are presented below to provide additional explanation due to **inaccurate** and **misleading** statements made by the **Department**:

- The Department was aware of the use of the OSA subject matter expert, her credentials and her methodology prior to work being performed.

- QM is an organization that has developed a rubric[72] of course design standards and created a replicable peer-review process for institutions to establish a quality assurance system for their courses that is sustainable.

- QM uses certified reviewers to perform the review of courses and provide feedback for revision and certification.

- The Department started using QM to certify "some" of their courses.

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[71] A framework used to evaluate the "complexity of assignments" and to increase the "academic and intellectual challenge of educational lessons."

[72] A set of standards with annotations that explain the application of the Standards and the relationship among them and a scoring system to evaluate the design of online courses.

- The subject matter expert used by OSA is a **certified reviewer with QM.**

- Additionally, the subject matter expert serves in leadership for the National Standards for Quality (NSQ) Organization, an organization made up of QM and the Virtual Learning Leaders Alliance (VLLA),[73] to update the national standards for quality online teaching, quality online curriculum, and quality online programs.

- The review planned and partially performed by OSA's subject matter expert was performed using QM standards, but completely independent of QM protocols and processes. QM's protocol is more iterative than a one-time assessment.

- The **Department objected** to the subject matter expert's use of QM standards in the review **"only"** **after** the Department **was made aware** of **the initial findings**.

- The fact that the **subject matter expert is a contractor with QM**, the very organization that the Department has begun to use to certify their courses to ensure the quality of its courses, **is an attestation to her capabilities and proficiencies** to perform the work she did for OSA.

SIXTH, the Department stated that "High quality instruction by a well-trained teacher is more important than course materials and textbooks." The Department evidenced its **well-trained teachers** by providing a chart illustrating the experience and credentials of its 700 teachers in the NCVPS program.

However, the Department **could not** provide evidence of **high-quality instruction** because NCVPS instructional leaders did not perform teacher evaluations consistently or in accordance with NCVPS policy. Auditors reviewed **622** teacher evaluations and found:

- **136** of 622 (22%) of teacher evaluation contained no evidence of review or were not timely reviewed

- **120** (19%) evaluations contained no evidence that teacher performance issues were addressed

- **82** (13%) evaluations contained incorrect ratings according to the instructions on the NCVPS evaluation document

- **14** (2%) evaluations were missing required information such as the teacher's response

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[73] An association of the chiefs of virtual programs that provides collegial support and collaborative opportunities to the individual members and member organizations to share resources, services, and expertise.
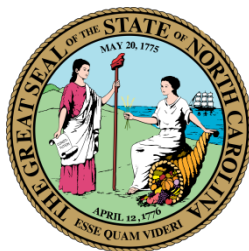
RESPONSE FROM THE DEPARTMENT OF PUBLIC INSTRUCTION

PUBLIC SCHOOLS OF NORTH CAROLINA

DEPARTMENT OF PUBLIC INSTRUCTION | Mark Johnson, *Superintendent of Public Instruction*

WWW.DPI.NC.GOV

May 26, 2020

The Honorable Beth A. Wood, State Auditor
Office of the State Auditor
2 South Salisbury Street
20601 Mail Service Center
Raleigh, North Carolina 27699-0601

Dear State Auditor Wood,

Below, please find the North Carolina Department of Public Instruction's (DPI) response to your findings in connection with the performance audit of the North Carolina Virtual Public School (NCVPS). Thank you for granting an extension of the deadline. We appreciate the additional time to prepare this response given the unprecedented challenges we have faced over the last several weeks and continue to face.

NCVPS and DPI are committed to excellence and are always looking for opportunities to continue improving. While we appreciate constructive criticism from the Office of the State Auditor, there are objective facts within this particular audit that justify attention.

Throughout the course of this audit, NCVPS raised multiple concerns related to audit methodology used.

- This audit did not include the most important part of any classroom (digital or physical): the teacher.
- This audit did not include classroom instruction or student feedback.
- This audit did not include the objective standardized assessment results of NCVPS students.
- Attached to this response is a letter from Quality Matters, the organization that developed the materials used by the third-party vendor hired by the Office of the State Auditor to review the content. We will only note here for the record that Quality Matters has serious concerns with how the third-party vendor used Quality Matters materials to conduct the review and that Quality Matters does not view such use as legal or appropriate. We will not use this response as an opportunity to stress the points made in that letter.

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<u>Evaluating Courses Should include Teachers, Students, and other Factors</u>

When school leaders want to evaluate the effectiveness of a course, they observe a class and watch the teacher and the students. They also review the teacher's lesson plans, ask questions of the students to check for understanding, and review standardized assessment results. The methodology of this audit judged courses and developed conclusions without regard to the teacher, classroom instruction, student feedback, or standardized assessment results.

NCVPS recognizes the importance of course content; however, the audit findings suggest that course content alone defines the totality of student mastery of content. A fulsome review of a course requires more than just reviewing the content. For example, one could not judge a course based solely on the textbook used since a textbook alone does not determine a student's success in a course. Such is the same as judging a course based solely on the content used.

NCVPS teachers are trained to make purposeful choices to increase instructor presence and student engagement in a course. High quality instruction by a well-trained teacher is more important than course materials and textbooks. The chart below provides a glimpse of NCVPS teacher credentials.

NCVPS Teacher Credentials (700 teachers)	
Average Number of Years of Teaching	16
Average Number of Years of Online Teaching	7
Percentage with a Master's Degree or Higher	67%
Percentage with National Board Certification	69%
Percentage with College Board Advanced Placement Certification	41%

North Carolina's students are fortunate to have these amazing teachers. NCVPS has been championed by education leaders as well as elected leaders from all points in the political spectrum. Further, the recent COVID-19 crisis has shined a bright light on the challenges and struggles that all students, teachers, and parents now face due to North Carolina's switch to 100% remote learning. NCVPS has successfully provided 100% remote learning for years and has recently expanded to help more students during this pandemic, which is another testament to the strength of the program.

Of the 2,306 NCVPS students who took an AP exam in 2019, 51.3% received a score of 3 or higher. This is significantly higher than the state (21.4%) and the national (23.9%) percentages

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of the Class of 2019 scoring a 3 or higher on AP exams. The third-party vendor identified two of these AP courses as having high percentages of low rigor instruction material; however, the level of student achievement for NCVPS students in those courses greatly exceeds both state and global averages.

Use of Quality Matters Materials

NCVPS has a license from Quality Matters, which creates practices and materials to help adopt a full quality assurance process that builds upon the concept of continuous improvement. NCVPS thoroughly measures and addresses course quality as well as implements a comprehensive method for the development of new courses and revision of existing courses. NCVPS plans to review each of its 150 courses at least once every five years. Due to its diverse, statewide student population and its remote instructional delivery methods, NCVPS goes above and beyond the review standards employed in many traditional classrooms.

NCVPS implements multiple protocols throughout the development and revision process to ensure high-quality courses that are aligned with state and national standards. In addition, courses that are in the development phase undergo a progressive course of action including multiple layers of examination in order to maintain the highest caliber of integrity. This trajectory includes the utilization of subject matter experts to write and review the content and oversight provided by Instructional Leaders and Instructional Technology Specialists to ensure all processes are followed in maintaining the rectitude of the course.

Once the content has been developed, it is reviewed by full-time NCVPS Curriculum Coordinators and Instructional Designers then turned over to the Curriculum Director for final inspection. Once the development process is complete, the course undergoes a full, external review through Quality Matters as determined by budgetary allocations.

To maintain the quality of courses not currently under development, instructors teaching the course follow specific guidelines to alert the NCVPS Curriculum staff to any content or design changes. A Curriculum Specialist works with the instructors and the Curriculum Coordinator to review and make necessary changes to the course. In addition, full-time NCVPS staff members review courses in order to ensure courses are either reviewed or revised within a five-year period. More on NCVPS' use of Quality Matters is detailed later in this response.

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Finding 1: Eight Courses Did Not Meet Required Curriculum Content Standards

DPI disagrees with the finding that eight out of the twelve courses audited did not meet required curriculum content standards. Determination related to content alone meeting a standard is a subjective test, with varying results from one person to another, including the third-party vendor. The role of the teacher and related instruction were not evaluated as part of the audit.

DPI does agree that all standards should be taught and assessed in each course. NCVPS employs highly qualified, sought-after instructors to write course content as well as to teach and personalize the content according to the standards and the needs of their assigned students. Since each teacher plans and implements their individual live classrooms, they are responsible for teaching all content standards. An audit cannot determine whether all content standards were covered in a course without reviewing these key pieces of the full course.

NCVPS strives for continuous improvement and refinement in all areas, with a specific emphasis on standards alignment. NCVPS is a licensed user of materials from Quality Matters and continually improves standards utilizing Quality Matters. NCVPS includes standards alignment as part of the course development and revision processes. The third-party vendor stated in the report that "some standards are considered not met in the eight courses because assignment instructions do not provide a rubric". In the Quality Matters standards, however, a rubric is only one of four examples of acceptable evidence of grading criteria. Further, while Quality Matters has always required alignment to the appropriate curriculum standards, documentation of alignment (which can be a course map, correlation document, or numbering system) only became a requirement in the most recent revision of Quality Matters standards released in September 2019. All courses reviewed in this audit had already been through NCVPS development when this type of documentation became a Quality Matters standard.

Put another way, NCVPS has properly utilized Quality Matters to design and review courses. Quality Matters added a new requirement late last year after NCVPS's design and review that occurred before September 2019. However, even that new requirement cited by the third-party vendor is only one of four examples of acceptable criteria that could be used. Under Quality Matters standards, NCVPS can properly choose from a variety of documentation formats.

NCVPS also administers an annual course evaluation survey to teachers. In the survey, teachers are asked to rate the level of alignment to course standards. Based on the data received from teachers, NCVPS adjusts the course as necessary.

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In order to align with the newly released Quality Matters rubric, which requires a standards alignment document, NCVPS has implemented a requirement for standards maps in all newly developed courses. NCVPS also plans to develop course standards maps for all courses in its catalog. NCVPS is unable to project a total cost and will likely have to implement the project over several fiscal years due to both fiscal and human capacity limitations. NCVPS has taken or will be taking the following actions related to course content cited by the third-party vendor:

- AP Government went through the Quality Matters external review and was certified.
- The AP Art History course was already identified as a course to monitor based on objective data from standardized assessments (AP scores) and other evaluation factors. AP Art History is currently being revised and will not be offered in the 2020-21 school year.
- Advanced Functions and Modeling will only be offered to students who need to repeat the course. NC Math IV is currently being developed and will replace Advanced Functions and Modeling in the 2020-21 school year.
- The African American Studies course will utilize eDynamicLearning course content beginning 2020-21. The content will be aligned to the state standards and a standards map will be available.
- New state standards have been approved by the State Board of Education for PreCalculus, and the new course is currently under revision. The newly revised course will be offered in 2020-21.
- NCVPS will conduct a standards alignment for Spanish II, Latin I, Anatomy and Physiology Honors, and AP Physics to check for needed adjustments. As part of the alignment project, NCVPS will indicate goals and objectives for the live class sessions.

Finding 2: No Assurance That Eleven Courses Met Adopted Standards for Rigor

NCDPI disagrees with the finding that 11 of 12 NCVPS courses audited do not meet adopted standards for rigor, increasing the risk that students may not master course material and the subsequent recommendations.

The Revised Bloom's Taxonomy (RBT) framework can be and is used by NCVPS to promote alignment between objectives, instructional activities, and assessments (Anderson et al., 2001), but the RBT framework is not a recognized industry standard of rigor.

The course review conducted by the Office of the State Auditor did not include the instructional role of the teacher. The third-party vendor's classification of objectives, instructional activities, and assessments to determine instructional alignment failed to include the necessary components

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including "observations of classrooms" and "discussions with or among teachers" as described by the editors of RBT (Anderson et al, 2001, p. 34). The third-party vendor did not review instruction as part of the review and did not talk with NCVPS teachers. As a result, the review excluded several of the key components identified by RBT editors for valid, defensible classification of objectives, which is the basis for determining instructional alignment. NCVPS courses are taught by professional educators who make instructional decisions daily based on the needs of students, which aligns with and is grounded in the philosophy of RBT. Part of the NCVPS Curriculum team's approach to course development is to create a multitude of instructional resources at various levels of RBT that allow for scaffolded instruction to take place under the direction of a licensed teacher. There is no expectation that NCVPS teachers will assign or use every single instructional and/or assessment resource available in a course. It is the critical decisions of the NCVPS teachers based on the level of each student that determines the appropriate level of cognitive rigor for each learner and directly impacts the potential for students to achieve stated learning outcomes.

The National Standards for Quality Online Programs addresses course rigor in *standard H2: The NCVPS program meets or exceeds industry standards related to course rigor and diploma-completion requirements. One of the specific examples listed in this standard is NCAA approval.*

Of the NCVPS courses reviewed, 11 of the 12 courses were approved by the NCAA. The only course not approved by the NCAA was AP Art History, and as a non-core content course, it is not eligible for NCAA approval. The College Board (the entity that provides the AP test program), however, approved AP Art History through the required annual course audit process. The College Board posts the following on its website for institutions of higher education *"The AP Course Audit process means that admissions officers and college faculty can be assured of the rigor of the courses that carry the AP label on student transcripts."*

Four of the eleven courses audited include standardized assessments (AP exams). Of the 2,306 NCVPS students taking an AP exam in 2019, 51.3% received a score of 3 or higher. This is significantly higher than the state (21.4%) and the national (23.9%) percentage of the Class of 2019 who scored a score of 3 or higher on an AP exam. Even though two of these AP courses (US Government and Politics and Physics) were identified by the third-party vendor as having high percentages of low rigor instructional materials, the level of student achievement for NCVPS students in these courses exceeds the state and global averages. Student achievement data related to the performance of NCVPS students, NC students, and students across the globe in the audited AP courses are provided below:

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AP Course	2019 NCVPS Pass Rate	2019 NC Pass Rate	2019 Global Pass Rate	% Growth from 2018
US Government & Politics	61.5%	57.7%	55.1%	7.61%
Physics	55%	43.9%	44.4%	40.2%
Environmental Science	47.6%	51.7%	49.2%	18.34%
Art History	36.5%	51.4%	57.9%	-25.43%

NCVPS continuously monitors student achievement data. Prior to this audit, Instruction and Curriculum staff identified AP Art History as an area of concern after reviewing 2018 AP exam data and provided targeted support to teachers during the 2018-19 year to improve student achievement. Upon the release of the most recent scores during the fall of 2019, NCVPS made the decision to not offer the AP Art History course for the 2020-21 year.

Finding 3: NCVPS Teacher Evaluations Not Performed Consistently and In Accordance with Policy

DPI agrees with the finding that NCVPS teacher evaluations were not performed consistently. A previous DPI internal audit delivered to OSA identified the same finding, and DPI has already taken steps to resolve this finding.

An issue related to documentation of contractor evaluations was identified by a DPI internal audit prior to initiation of this external audit, and improvements to evaluation processes were already underway. NCVPS staff develop and revise processes, procedures, and guidelines for teacher evaluations, based on applicable State Board of Education policies and relevant data. During the 2018-19 year, NCVPS revised the NCVPS Teacher Expectations based on multiple data sources. As a result of that work, a new NCVPS teacher observation tool was developed that incorporates many of the recommendations. A multi-year approach to phasing in the new instrument is being implemented.

OSA noted an issue with timely sign-off of teacher evaluations by Instructional Directors. At the time the Spot Check process did not set specific expectations for a timeframe for when Instructional Directors were to review/sign-off on the teacher's evaluation instrument. The Instructional Director's sign-off is a second-level review completed after the initial review/sign-off by Instructional Leaders. OSA determined that Instructional Director reviews were delayed if

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the signoff was later than 30 days from the observation. It is important to note that Instructional Directors and Instructional Leaders formally meet at least once a month throughout the semester to discuss teacher performance concerns and the continued monitoring of teachers with performance concerns. Informal conversations also occur as needed between Instructional Directors, Instructional Leaders, and/or teachers to discuss teacher performance concerns. The 2019-20 observation tool includes a space for the Instructional Director to document his/her review. NCVPS staff are currently discussing an appropriate timeframe for completing this second-level review.

The 2017-18 NCVPS Spot Check process did not require Instructional Directors, Instructional Leaders, and/or teachers to formally document how performance concerns were resolved on the original observation. NCVPS contends that all performance concerns were addressed although not formally documented. The frequency at which spot checks were completed on NCVPS teachers (*monthly for veteran teachers and every two weeks for new teachers*) exceeded the minimum number of required observations for other NC teachers and provided continual monitoring to ensure performance concerns were addressed in a timely manner. The high frequency of spot checks and informal conversations about performance helps to mitigate against any risk of undetected poor performance and any risk that students could have received substandard instruction and assessment for an extended period.

NCVPS added a section for documenting the resolution of performance issues on the new 2019-20 observation tool. If a teacher has a performance concern documented on the observation tool, corrective action(s), and a subsequent observation check by the Instructional Leader and/or Instructional Director must occur within two weeks of the original observation.

NCVPS agrees that some evaluations included incorrect ratings in which teachers were given half-point ratings rather than whole point ratings and/or were missing required components such as teacher responses. The new observation tool uses descriptive rating categories, not numerical ratings. This shift eliminates the possibility of partial half-point ratings.

Finding 4: NCVPS Course Content Not Properly Cited to Avoid Copyright Infringement

DPI agrees with the finding that some course content was not properly cited. A previous DPI internal audit delivered to OSA identified the same finding, and DPI has already taken steps to resolve this finding.

This issue was identified by a DPI internal audit prior to initiation of this external audit. NCVPS respects the intellectual property rights of copyright holders and strives to cite and/or utilize

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properly vetted materials in all courses. Upon receiving feedback from DPI internal audit, NCVPS subscribed to an originality detection software to implement in the course revision and development process. As NCVPS has refined the process used in course development, this similarity detection process was also implemented into smaller revisions requested by instructors (for courses not under full revision). NCVPS began implementing a web resources review process in which all external links are reviewed for copyright, terms of use, and appropriateness in July 2018. This web resource review takes place for newly developed courses as well as instructor requests for existing courses.

As a result of the questions and findings of this audit, NCVPS is implementing the originality scan process into the review of the courses not under revision according to the five-year review and revision cycle. Also, as continued reviews of the courses occur (by staff, instructors, and contractors) any instances of copyright infringement found will be corrected.

Matters for Further Consideration: NCVPS Should Demonstrate That Its Courses Meet Quality Standards for Online Courses

DPI supports the consideration that NCVPS should demonstrate that its courses meet quality standards for online courses as this is reflective of current practices and procedures. NCVPS has a course review process and timeline that is continuously refined and improved for quality and effectiveness. As courses are reviewed, results are summarized and action plans for courses are identified. An action plan may include adding the course to the next development year, contracting subject matter experts to revise certain aspects of the course, updating older technology in the course, or removing the course from the course catalog.

NCVPS began exploring Quality Matters in 2013 and subsequently sent a staff member for training in 2014 and more staff in 2015. The organization sent its first set of courses through the review process in 2016 to better inform, refine, and augment the existing course development process. As stated in the yearly annual report, "NCVPS works in partnership with the Quality Matters program…to ensure our courses are aligned with research-based high-quality standards". In 2016, NCVPS revamped its course development and revision process based on knowledge gained from both staff members being trained in the Quality Matters process and feedback from the Quality Matters course review.

The goal of Quality Matters is not to certify every course; however, the process is intended to increase the quality of an organization's online courses moving forward. NCVPS has demonstrated commitment to ensuring the quality of online courses through investing in the training of staff. Nineteen staff members have been fully trained in the use of the Quality

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Matters Standards for Course Design Rubric. Eight staff members are fully trained and certified Quality Matters Reviewers who have served on multiple review teams and worked alongside some of the most authoritative voices in online learning nationwide. One member of staff is fully certified as a Quality Matters Master Reviewer, one of only three in the state of North Carolina. Quality Matters encourages and authorizes trained staff members to utilize Quality Matters Rubrics in completing internal reviews of courses within the organization. This internal review process is the quality control and assurance methodology to ensure that the NCVPS course development process is meeting research-based quality standards for online learning, which results in optimal student outcomes.

Since the course development and revision process was revised in 2016, all 22 courses that have been submitted for Quality Matters Reviews have been certified by Quality Matters. This includes the recent Quality Matters certification of AP Government and Politics.

Out of 13 K-12 educational institutions across the nation who have courses that have been certified through Quality Matters, NCVPS ranks second on that list and has close to triple the number of Virtual Arkansas which is ranked third on the list with 8 certified courses. NCVPS leads the way with the highest number of Quality Matters Certified courses out of all educational institutions (public, private, K-12, colleges, and universities) in North Carolina with 9 more Certified courses than the next closest institution in the rankings. Some of the public and private colleges and universities in North Carolina which have had courses certified in Quality Matters include: Gardner-Webb University (13 Certified courses), North Carolina Central University (13 Certified courses), Blue Ridge Community College and Technical College (6 Certified courses), Appalachian State University (6 Certified courses), Rowan-Cabarrus Community College (5 Certified courses), Cleveland Community College (5 Certified Courses).

NCVPS is a member of the Virtual Learning Leaders Alliance (VLLA), an association of the chiefs of virtual programs that provides collegial support and collaborative opportunities to the individual members and member organizations to share resources, services, and expertise. Within the 18 state-led virtual schools across the country who are members of VLLA, NCVPS has the second most Quality Matters certified courses when compared to peers. No school within the alliance has every course certified. They, like NCVPS, use Quality Matters to continuously improve their development process and train their staff in the standards for quality online programming.

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Matters for Further Consideration: NCVPS Should Measure the Effectiveness of Its
Occupational Course of Study

DPI supports the consideration that NCVPS should measure the effectiveness of its Occupational Course of Study (OCS) programs as this is reflective of current practices and procedures. The school, face-to-face teacher, Individualized Education Plan (IEP) team along with the NCVPS online teacher work in concert to monitor students and support achievement within the courses. NCVPS also currently monitors the effectiveness of the Occupational Course of Study courses based on the external assessment data available to the organization. This external assessment data is the same as the ones utilized by all districts and charters in the state.

NCVPS has measures built in to ensure this relationship is conducive to student success and is continuously working to improve the partnership as teachers work to break down the content for students with severe and pervasive learning challenges. One specific measure that NCVPS has implemented to address student and teacher success in the OCS courses has been to send multiple full-time staff members from both the Instruction and the Curriculum Teams into the actual face-to-face courses in the school buildings to meet with the Co-Teachers and students. Through these meetings, NCVPS identified a few design issues that needed to be addressed in all its OCS courses to increase student success. Two of those design changes include standardizing the naming of documents that are included in the courses and reducing the number of versions of some documents that are available. More importantly, the division has learned first-hand that there is no one size fits all solution for this specific group of students. Throughout the course of each individual academic semester, NCVPS is working ahead of students to provide additional audio recordings of text-based materials and audio descriptions to videos for students who are visually impaired along with other alternative forms of instruction and assessment. Given the changing dynamic of the students who enroll in OCS courses with NCVPS and their individual academic and personal needs, standardized measures of assessment do not accurately reflect the academic performance of a non-standardized group of students.

The foundation of the OCS program is the partnership between the face-to-face classroom and the NCVPS online teacher. The face-to-face teacher provides the Exceptional Children's expertise, and the NCVPS teacher provides the content expertise to the partnership. Together, these two teachers work as a team to meet the academic needs of each student in the course. In the partnership relationship, the face-to-face teacher drives which standards and content the students are exposed to and assessed on during the course. NCVPS does not receive End-of-Course (EOC) test results directly for any student enrolled in its program as these results are owned by the enrolling school. Results are obtained from the DPI Accountability Division in September of each year once the State Board of Education approves the release of the data. NCVPS then conducts a matching process for all students enrolled in tested courses

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through NCVPS. NCVPS matches the state proficiency vs. NCVPS proficiency for each group
of courses.

Please feel free to contact Jeani Rousseau or me if you have any questions about our response.
As always, we appreciate the effort and professionalism of your staff in conducting audits of the
Department of Public Instruction.

Sincerely,

Mark Johnson

c: Eric Davis, State Board of Education Chairman
    Alan Duncan, SBE Audit Committee Chair
    Todd Chasteen, Audit Committee Member
    Beverly Emory, Deputy Superintendent of District Support
    Elizabeth Colbert, NCVPS Executive Director
    Jeani Rousseau, Director of Internal Audit

QUALITY MATTERS
QM

October 18, 2019

North Carolina Office of the State Auditor
Attn: Geoffrey Andersen, Assistant State Auditor
       Anthea Wu, Performance Audit Supervisor

Dear Mr. Andersen and Ms. Wu:

In an effort to provide transparency to all interested parties on the use of the Quality Matters (QM) Standards in the recent North Carolina Virtual Public School audit, we are providing this document as an official statement of Quality Matters' position on this matter.

Quality Matters has developed and validated its standards as part of an integrated quality assurance process. The use of the QM Rubric as a checklist of standards is not the intended use. Discouraging such use is, in fact, the primary reason why the QM Rubric and Standards are protected by copyright with a use license available through a subscription membership. The use of the QM Rubric as the standard in a course review is intended to be one piece of a process that provides timely collegial feedback for the continuous improvement of courses. QM is not about an evaluation of standards compliance at a single point in time - it's about the use of the data/feedback from these reviews to improve all the processes and protocols at an institution that influence the learning experience for students.

Although QM can't control how member institutions decide to use its tools and processes, all of our resources and communications convey that adoption of QM as an industry standard means adoption of the full quality assurance process that builds upon the concept of continuous improvement. It is a process that takes time and requires a long-term commitment to the quality assurance process – which includes a significant amount of instructor and/or course developer training and ongoing analysis of results of the feedback from both internal and official reviews. Most QM institutions use both types of reviews as they build capacity for a robust quality assurance process. That process is depicted in the image below.

From Idea to Impact: A Quality Assurance Model for Moving Digital Innovation to Standard Operating Procedure

We have serious concerns with the way in which QM was used to conduct the aforementioned audit. Our overarching concern is that the use of the QM Standards in this audit undermines the integrity of the QM process and the validity of our entire approach to quality assurance. We fear that QM, and the institutions that adopt QM, will be judged by the outcomes of a non-validated and non-supported use of the QM Rubric. Contributing to this issue are several specific use violations. First, the North Carolina Office of the State Auditors did not have, or were not covered by, a license to use the QM Rubric. Both the QM Rubric and the QM Standards are under copyright and permission to use these materials was not granted by QM. Second, the North Carolina Office of the State Auditors worked with a third-party (Xperience Education) which also did not have a license for permission to use. Lastly, the team that reviewed the NCVPS was not qualified, by virtue of appropriate training or review team composition, to conduct the review using the QM Standards. The third-party organization managing the review is not qualified to assert that it followed or was modeled after the Quality Matters official review process.

QM is a non-profit organization whose only source of funding is fee-for-service – membership, professional development, and course review services. We provide a peer review service – but we do NOT evaluate or review the courses. All reviewers are trained and certified external contractors that receive a small stipend/honorarium for their work. QM has approximately 3500 currently certified reviewers in our database with most reviewers conducting a very small number of reviews in any year. This is our "firewall" – to ensure unbiased reviews on member (subscriber) courses. Because of this, all reviews that are conducted by certified reviewers using QM's automated tool are fully independent of QM control of review results. QM simply ensures that the proper, validated protocol is followed.

We understand that, in the interest of transparency, the NC Office of the State Auditors would want to identify both the evaluation tool and the evaluators. However, this was an unauthorized use of our intellectual property which undermined the fidelity of the process- a process we need to protect and support. The intellectual property at issue, the QM Standards and Rubric, are provided to us under an exclusive license that obligates us to protect the copyright. Our concern is that publishing a report that suggests that a legitimate path to conducting QM course reviews is to hire a third-party organization would undermine both our business model and our ability to protect the copyright against further unauthorized use.

If the NC Office of the State Auditors chooses to move forward with publishing a report based on this audit, it can only reference QM Standards and link to where they sit on our website. They are visible there for transparency only, in the same way a book is available in a public library. It is not provided for commercial use or for another organization to offer a paid service. These Standards can be referenced but no permission to reprint is provided. In any published report, we ask that you remove all other references to QM, QM reviews and protocols, etc. as it relates to the work of the third-party evaluator.

QM has no authority over what the State Auditors might say about NCVPS' planned use of QM because QM has no official knowledge of NCVPS plans. What we know is that NCVPS is, in fact, a QM member and that they have been active in the QM process. QM is unable to share those NCVPS activities and achievements we track without permission from NCVPS. Since quality assurance activities may go beyond what QM tracks, our recommendation is that the NCVPS is the best source for this information. What we can share is that scaling the QM model and applying it to the relevant aspects of online learning is not something that happens overnight. It's also not something that can be judged by a snap-shot application of a checklist of QM Standards. Members usually progress through stages of using QM before they attain an effective implementation within their organization. Each stage can manifest differently depending on the type of organization and its goals.

In summary, the use of QM within this audit was conducted without QM's knowledge, permission or willing participation. It was neither a legal nor appropriate use of QM. We will not, and cannot, be associated with or held accountable for the accuracy or validity of the review findings or the review recommendations. We urge all concerned to consider the benefits to all students of evaluating commitment to and progress towards a robust quality assurance process rather than evaluating quality of the student experience in a snapshot course review, inappropriately applied.

Sincerely,

Deborah Adair, Ph.D.
Executive Director
QM Quality Matters

CC: Eliz Colbert, Executive Director, NCVPS
        Cynthia Hamblin, Virtual Learning Leadership Alliance

qualitymatters.org ■ ■ ■ 1997 Annapolis Exchange Parkway, Suite 300Annapolis, MD 21401

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For additional information, contact the
North Carolina Office of the State Auditor at 919-807-7666.

This audit required 5,859 hours of auditor effort at an approximate cost of $606,000. The cost of the specialist's effort was $151,075. As a result, the total cost of this audit was $757,075.