

No School Left Behind: Applying Technology to Achieve and Sustain Adequate Yearly Progress (AYP)



Executive Summary

Four years since the passage of the *No Child Left Behind* Act, schools across the country are struggling to meet AYP requirements. Just as all students are entitled to the resources and support needed to progress in their learning, schools are entitled to the tools and support needed to measure and document yearly progress by creating and delivering assessments using a flexible, efficient, and convenient platform. As technology marches forward, web based platforms, such as Scantron's Achievement SeriesSM, provide assessment solutions that help ensure that no school is left behind.

In preparing students to meet the high-stakes learning outcomes, as measured by state and national assessments, teachers and administrators face daunting requirements to ensure and report that their students have achieved Adequate Yearly Progress (AYP) under the *No Child Left Behind* (NCLB) Act. The trend towards data-driven instruction and an increased availability of internet technology in schools has led to new ways that educators can develop, deliver, and decipher assessments. Achievement SeriesSM functions as a web based assessment platform, and is designed in a way that improves the flexibility, efficiency, and convenience of district, school, and classroom assessments. This white paper discusses the history, challenges, and solutions related to the demands of being accountable for student achievement in every school so that no school -- whether urban, suburban, rural; public or private; large or small -- is left behind in the efforts to both achieve and sustain growth.

Understanding the History of Achievement and Accountability

Assessment has long been an instrument of educational reform. Test-based reforms in the U.S. can be traced back to the 19th century when the Massachusetts state superintendent of instruction used written exams to hold public schools accountable. In the early 1900s, educator Joseph Rice administered a spelling and math tests to nearly 40,000 schoolchildren nationwide, as a part of a series of studies to evaluate the effective use of instructional time. Following World War I, with the creation of a new "multiple-choice" question format, the use of assessment in schools increased substantially. The original *Elementary and Secondary Education Act* (ESEA) of 1965, demanded accountability and assessment as a condition for receiving Title I funds through the Title I Evaluation and Reporting System (TIERS). Minimum Competency Testing arose in the 1970s and 1980s, with more than half of the states in the U.S. administering some sort of statewide competency test. When the National Commission on Excellence in Education published *A Nation At Risk: The Imperative for Educational Reform* in 1983, all states created some sort of statewide competency assessment (Linn, 2004). More recently, the Standards-Based Reform movement has led to high stakes accountability and has culminated in the passage of *No Child Left Behind* (NCLB), a reauthorization of ESEA, and the first federally mandated legislation for assessment and accountability for all U.S. public schools.

Under NCLB, every state is required to set standards for grade-level achievement and develop a system to measure the progress of all students and subgroups of students in meeting those state-determined, grade-level standards. When signing the act into law, President Bush stated, "Accountability is an exercise in hope. When we raise academic standards, children raise their academic sights. When children are regularly tested, teachers know where and how to improve. When scores are known to parents, parents are empowered to push for change. When accountability for our schools is real, the results for our children is real." States also must develop annual adequate yearly progress (AYP) objectives that are disaggregated by student groups based on poverty, race and ethnicity, disability, and limited English proficiency, with a federal target that all students achieve proficiency in reading and math within 12 years. Biennial State participation in the state-level version of the National Assessment of Educational Progress (NAEP) is mandated to provide benchmarks for ensuring the rigor of state standards and assessments.

While accountability and assessment have been long a part of the history of educational reform, a new Information Age has created a push for more complex information and data in schools. The level of specificity and the demand for increasingly complex monitoring and reporting of student achievement and progress is a major challenge for many schools and districts. Traditional paper-and-pencil data analysis and reporting no longer meet the requirements for immediate, secure, and detailed data management required under NCLB. Many states are responding to the demands for increased accountability by implementing computer-based state tests. As of the 2004-2005 school year, fifteen states offer computer-based assessments delivered via the Internet, and another five have piloted computer-based state assessments. Of those fifteen states, six use computer adaptive tests, and one is piloting computer adaptive tests (Education Week, 2005).

Identifying the Challenges of Assessment

For years, the assessment demands of the classroom have gone well beyond readily available tools. While teachers often use published or other external instructional tools, the bulk of the formative assessment information they use for decision-making comes from approaches that they create and implement. The traditional processes for the development of benchmark and classroom assessments have been plagued by inflexible item creation, inefficient test delivery, indistinct and delayed reporting, and inconvenient access to assessment data.

Educators are caught in an assessment paradox. They are expected to change instructional methods based on individual and aggregated data, specifically correlate instructional objectives with assessments, and modify assessments, as needed, for students who are entitled under special education legislation to have testing accommodations. However, they are often stuck using static, inflexible assessments that can neither be modified nor supplemented with individualized, original test items.

One of the biggest complaints about assessment is that it takes away from instructional time. This is due, in large part, to the inefficiency of current practices in test delivery. The truth is that when assessment is highly correlated to instructional objectives, the data from those assessments can be used to impact instruction so that instructional time is not wasted on teaching objectives that students have already mastered.

Only data that is immediate, however, can be reliably used to impact instruction. Traditionally, assessment data isn't available to the decision makers until months, or even years, after the assessment was delivered, which often makes the data outdated. If a teacher must hand score hundreds of classroom tests, or if schools must send assessments out to be scored and returned in a few months, the data will neither be immediately relevant, nor will it allow educators to view data in ways that answer the most critical questions, beyond "What is each student's individual score?". The data must also be able to answer:

- "How has each student and class performed, by state standard/indicator?"
- "How has each student performed, compared with the rest of the class, school, and district?"
- "Which items have students struggled with the most, and which distractors are chosen most often on missed items?"
- "How does student achievement on classroom and benchmark assessments compare with student scores on the state assessments?"

Applying Technology to Meet the Challenges

In response to the challenges of creating and administering assessments, educational technology promises to ease the burden that is often associated with accountability. While high-stakes testing has become more prevalent in the past decade, U.S. public schools have also seen the level of educational technology in their schools and classrooms rapidly increase. From 1994 to 2002, the percentage of public schools with access to the Internet increased from 35 to 99 percent (NCES 2005-083). The concurrent increase in the focus on data-driven instruction and the increasing availability of web access in schools across the country makes a web based assessment platform a logical solution to the challenges of district, school, and classroom testing. With the recent availability of web-based testing platforms, like Scantron's Achievement SeriesSM, the tools educators need to efficiently create, deliver, and view data for valid and reliable placement, formative, and summative assessments are now available.

Providing products and services to the data collection market for over 30 years, Scantron has a history of creating innovative solutions that help educators work smarter, not harder, to create, deliver, and score assessments that provide an immediate, accurate, and reliable capture of the complex student performance data necessary to impact instruction, inform leadership, and document progress towards meeting AYP goals. Achievement SeriesSM, one of Scantron's newest solutions, is a web based fixed form assessment platform with a content-neutral structure and multiple delivery capabilities. It is a tool that allows educators to apply technology to create flexible item banks, efficiently create, manage, and administer tests, and immediately access distinct assessment data results and item analysis.

The Flexibility of Achievement SeriesSM Item Banks

Most types of assessment are directly linked to specific content, such as the assessments that accompany published textbooks, and allow neither editing of the items nor the integration of new items. However, in order to deliver assessments that are highly correlated to instruction, teachers must have the ability to use and edit assessment items from a variety of published and original sources, and they must be able to align their original items to state standards. Rather than restricting schools to use only certain published materials or assessment items, Achievement SeriesSM is content neutral, providing educators the flexibility to import and/or create items in customized Item Banks that can be reviewed, edited, duplicated, shared, and aligned to standards before and after they have been administered on tests. Educators can name and create Item Banks, organizing them by subject area, standard, grade level, or any combination of organizational conventions. In addition, Scantron also offers its own standards-based content, through *Skills Connection* Item Banks, for Language Arts, Reading, Mathematics, and Science. Over 18,000 items aligned to state standards documents from across the U.S., which were developed by a team of trained experts, are independently reviewed by credentialed teachers and professors from around the U.S. and Canada. The items have all passed this careful independent review of the item content, the response choice construction, age appropriateness, interest level, bias, sentence structure, vocabulary, clarity, and grammar/spelling.

Because testing accommodations for students with disabilities are legal requirements for instructional assessments, flexibility in test item creation is imperative. Achievement SeriesSM offers a variety of item choices including *Multiple Choice*, *Multiple Response*, and *True/False* Items. Each item can be assigned an *Output* (paper and/or online), *Subject Area*, *Grade Range*, *Language*, *Bloom's Level* of taxonomy, *Scoring Type* (normal scoring, pilot scoring, auto credit, partial credit) and *Layout* (one to four column or exhibit/passage layout). This flexibility of item creation allows for both *content alignment*, or the alignment between the test content and the curriculum content, and *context (or format) alignment*, which aligns the format of test items to the format of the information as it is taught in the curriculum. (English, 2000).

Items can be entered into the Item Banks by manual entry and/or cutting and pasting text from existing files. Items can also be imported from content available from other vendors via XML files. The items can be created with rich text features including colors, font sizes, font styles, and symbols such as math symbols, Latin text, Greek text, and superscript/subscript. An item can be created with simply a question and answer choices, and each time the item is used on a test, Achievement SeriesSM automatically generates information on the item statistics and item usage of the item. The item statistics are aggregated from every exposure of the item on any assessment, and include the sample size, the P-value (Probability value), and the choice statistics of the item. Each time an item is edited, it is assigned it a new version, so that changes to the item and the item statistics, by version, can be noted. The item exposure on tests can also be viewed, to ensure that certain items are not over exposed. The ability to edit items allows educators to correct any substantive inaccuracies in assessment items immediately.

More advanced item entry options are also available, such as attaching standards to each item, which allows for standards reporting. Flexible features in advanced item entry also include connecting *Passages/Exhibits* to an item, giving an *Explanation* of how to correctly solve/answer an item (which can be shown to students during online testing as an instructional feedback tool), a *Reference* (which can be

used to cite the source of the item, and can be used as a tool for open book/open notes tests) and *Hints* (which can be used to accommodate special learners). *Graphics* can be inserted into each question, any answer, and the reading passage/exhibits, allowing for items that give visual cues and require higher level thinking skills.

Once items have been entered into Item Banks in Achievement SeriesSM, the Item Banks may be shared within locations, for reviewing/editing purposes, or to allow access for using items on a test. This flexibility allows for a unique online collaboration between educators who can “divide and conquer” the task of creating highly correlated test items, while increasing the validity of tests by allowing peer review for bias or other concerns with the items. *Sharing Options* allow for access to be granted by assigning specific user access, default access can be assigned based upon position at a location, or access can be locked to secure the items. Any person who has been given assigned or default *Reviewer* access can review an item to check for any bias, and can write comments (with an option for anonymity) to the creator of the item. A person given *Author* access can actually edit items. Coordinating time for a large group of teachers to meet can be a real challenge, but because the Achievement SeriesSM items are stored online, collaboration can be virtual, and teachers can create/review/edit items at any time. The flexibility for peer review aligns with the National Council on Measurement in Education *Code of Professional Responsibilities in Educational Measurement* (1995), which requires that test items “are as free as possible from bias due to characteristics irrelevant to the construct being measured, such as gender, ethnicity, race, socioeconomic status, disability, religion, age, or national origin.”

Remote Sharing and *Remote Copying* are additional collaborative options that allow schools and/or districts to share or copy non-copyrighted Item Banks from one location to another. Once users certify that the content being shared/copied is original, they can build a comprehensive library of item banks built from a variety of fellow Achievement Series users and locations. Access control is provided by allowing either *Reviewer* (*no editing rights*) or *Collaborator* (*editing rights*) access. In addition to enhancing the collaborative process of Item Bank development, the *Remote Sharing* features also allow for articulation of assessments between schools that teach the same grade levels, and/or vertically from one grade to the next. For those who prefer to review and evaluate printed details, customized *Item Bank Details Reports* are automatically generated and can be printed to show any combination of the following: the *Question Contents*, *Correct Answers*, *Scoring Information*, *Item Properties* (name of item, type of item, etc.), an *Explanation*, *Reference*, *Hints*, *Standards*, *Item Statistics*, *Item Usage*, *Item Versions*, *Bias Review*, and/or *Comments*.

The Efficiency of Achievement SeriesSM Tests

According to a national study by the Boston College Center for the Study of Testing, Evaluation, and Educational Policy, 4th grade teachers spend, on average, 2.2 hours a week preparing student tests or exams. 8th grade teachers spend an average 2.7 hours per week preparing student tests or exams. With the ability to collaborate on the development of and store digital, editable test items, teachers will be able to reduce the amount of time spent preparing student tests by streamlining the test creation/delivery process. In traditional test delivery, a test is only administered as a single form pencil-and-paper test. If a teacher wants to create multiple versions of a test, either to randomize questions/answers to reduce cheating, or to modify questions for students with special needs, he/she must do so manually, which is tedious and inefficient enough to discourage most teachers from doing so at all.

By using an online test management system like Achievement SeriesSM, those time consuming and inefficient tasks become automated and efficient. Once item banks have been collaboratively created, reviewed, and edited, tests can be created from one item bank, or items may be pulled from multiple item banks. Either *District Tests*, which are any district, school, or course test that is typically created collaboratively and delivered to a large student group, or *Classroom Tests*, which are any test or quiz that is created by a single teacher to be delivered to one or more of his/her classes, can be created. *District Test Drafts*, which are editable, may be created at the district or school, and may be shared for collaborative review. Test item questions and/or answer choices may be automatically randomized, to

reduce the chances of students cheating on the assessment. Once *District Tests* are finalized and published, sessions may be scheduled for test delivery an unlimited number of times over the course of any length of time. *Classroom Tests* may be created and activated for delivery to any class, and may be automatically duplicated for subsequent administrations of the same test.

Achievement SeriesSM allows teachers and administrators to choose the test delivery method that works best for their individual needs. *District Test Sessions* and *Classroom Tests* may be administered online, on paper to be scanned using an Optical Mark Reader (OMR) scanner, or on paper to be scanned using an “off the shelf” plain paper scanner. Any one test can be administered in any combination of ways, allowing for optimal efficiency in the test delivery, and accommodating any level of availability of technology resources.

Options for online tests include delivery as a practice test, timed tests, test retakes, student and/or school passwords to take the test, technical restarts, resolution/color depth/formatting options, test pausing, forward only or forward/backward navigation, and immediate results display (the ability to review all or incorrect questions at the end of the test). To maximize the use of the time spent at the computer, and to allow for individual pacing during an online test, students can also be redirected to an instructional website at the end of each test.

Paper tests are scanned using Scantron’s *ScanStation* software, which can be downloaded from the Achievement SeriesSM website onto any computer. Through *ScanStation*, school personnel can print generic forms that can be copied on plain paper, or custom test forms that have the student ID, test ID, and class information pre-printed on each form for every student. Scanned test options include delivery as a practice test, test retakes, checks for multiple and/or omitted marks, and manual entry or editing of responses or student IDs during scanning.

Schools that have implemented Achievement SeriesSM have used this delivery flexibility to:

- analyze the affect of different delivery methods on student scores by administering the same test to students online and on paper
- deliver scanned tests to all students except students with special needs, who receive an online version of the test
- administer the first session of testing on paper, and subsequent retake sessions online
- allow for students in alternative settings, including students who are home-bound, attending in-school suspension programs, to take tests online
- give students the opportunity to take practice tests online before taking the paper tests
- create test delivery sessions that model the form and function of statewide assessments

For those schools that want to gradually migrate from traditional testing to flexible testing, *Answer Key Only* tests may also be created with standards alignment for each item, so that answer forms can be created for existing tests that have not yet been entered into the Achievement Series database. *Answer Key Only* paper test forms can be scanned for immediate scoring and generation of reports. By offering this option, Achievement SeriesSM extends the efficiency of test delivery to users who want to deploy the various options of the test management system at their own pace.

The Distinction of Achievement SeriesSM Reports

As the emphasis on assessment has increased over the years, the time it requires of educators has multiplied by an even greater degree. While most educators have the best intentions when it comes to making data-driven instructional decisions, few teachers have the time to manually disaggregate all of the student data into subgroups across classrooms and grade levels, conduct in-depth item analysis, or

score student tests based on a mastery of standards, in addition to the raw score. So, in spite of spending inordinate amounts of time manually creating and scoring tests, the data is indistinct and often delayed, and does not offer the full range of information that could be gathered by a more sophisticated scoring system. An "intentional teacher" must constantly reflect on his or her practices and make instructional decisions based on a clear conception of how these practices affect students (Slavin, 2002). The best intentions, however, lie in wait without the best tools. If teachers are going to truly be able to make data-driven instructional decisions, it is imperative that schools empower educators by implementing "Teacher First" reporting methods of all assessments. The design of Achievement SeriesSM reports allows for teachers to access student data immediately, at the same time that the data is available to administrators, rather than expecting teachers to wait for administrators to share that data in the traditional "trickle down" method.

With hundreds of report formats built into Achievement SeriesSM, both norm-referenced interpretations and criterion referenced interpretations of the results of each assessment can be made. The reports provides immediate results to aid interpretation and articulation. *Score Reports* and *Item Analysis Reports* at the State/District/School level can be viewed by *Grade Levels*, *Staff Members*, *Student Groups*, *Courses*, *Classes*, *Students*, or *Standards*. Each report can be sorted by a user-defined time frame, to review a snapshot of data for a particular time period, or to analyze longitudinal data over a longer period time. The data in each report can also be filtered, or disaggregated, by demographic categories, or by flexible, user defined sub groups. Disaggregating the assessment data helps teacher and administrators interpret complex assessment results in light of students' linguistic/cultural backgrounds and other out-of-school factors. It is also useful in studying the efficacy of programs or services, providing data for grant reports, and for complying with federal reporting requirements. Many schools are using the state standards aligned reports of benchmark and classroom tests to help identify students who are at risk for not making progress on their state assessments, so that they provide intervention and strive towards meeting their AYP goals *before* annual state assessments are administered. That kind of intervention is simply not possible if a teacher or administrator must wait months to receive assessment data and reports.

At the Classroom Level, *Test Scores*, *Standards* reports, *Item Analysis*, and actual student *Responses* can be sorted and viewed for each class in a graph or table format. Results can be viewed by test session, or all of the results for a particular published test, regardless of how/when it was administered, can be analyzed. Once data is disaggregated for the purpose of isolating areas of weakness, the data can be reconnected to the curriculum so that the formative assessment data can be used to inform adjustments to the curriculum scope and sequence and/or the instructional methods in the classroom. The distinct data and reports allow for schools to use assessment as a part of their instructional action research, and can help schools incorporate assessment data and goals into their School Improvement Plans. Being able to plan instructional programs based on academic outcome data allows teachers to become "change agents" who believe that their students can really achieve at a higher level, while enabling teachers to move from a "do your own thing" curriculum to a more systematic, analytical approach to instruction (Comer, 2004).

The Convenience of Achievement SeriesSM Administration

The structure of Achievement SeriesSM can be customized for a user of any size or organization, from a statewide implementation to an independent charter school. Whether the organization's philosophy is site-based administration or centralized control, Achievement SeriesSM can accommodate almost any organizational structure and assigns unique site identifiers to each physical/virtual location with up to five sub levels beneath a "top level" site. Each level has access to view the information at and below that site, allowing for a customized administrative site structure and controlled access.

It is crucial that data tools, including assessment management systems, be able to communicate with one another (Bernhardt, 2005). While users may manually enter student, staff, class enrollment, and other administrative data into Achievement SeriesSM, users in large scale deployments may import

administrative data from other data tools such as student information systems and educational data warehouses. These records can be easily imported into Achievement SeriesSM through simple .csv (comma delimited) spreadsheets, and can be updated daily, if desired.

Traditionally, there is little collaboration in sharing assessment data between colleagues who teach the same group of students. The time that is required for that collaboration makes it nearly impossible, especially in secondary school settings, in which the average teacher has 167 students on his/her roll (NCES 2005025). Access to assessment data from an English class, for example, which might be useful for a social studies teacher who assigns a great deal of “heavy reading,” would be useful to both the English and the social studies teacher, but the logistics in the traditional delivery of assessments makes this sharing of information inconvenient, and as a result, unlikely. In addition to single teacher/class assignments, Achievement SeriesSM provides for an unlimited number of teachers to be given access to class data as “assigned staff”, so that any number of teachers can collaborate and review student data. This special access is especially useful for school cluster models, team teaching scenarios, and special education instruction. To evaluate the benefits of this collaborative feature, Administrators can view the *Usage Statistics* of other staff members on the site, to measure how/when the system is being utilized.

While incorporating collaborative features into the access of data, security is also maintained. In accordance with the *Family Educational Rights and Privacy Act (FERPA)*, security measures within Achievement SeriesSM protect the privacy of student assessment records. All of Scantron’s networks employ multiple security measures including secure passwords, address restrictions, firewalls, and physical security. All administrative tasks, including viewing scores and managing student information, use 128-bit SSL encryption techniques. Schools can also configure on-site security settings to limit access to only certain computers, certain times of day, or certain days of the week, regardless of access codes.

Implementing Assessment as a Series

Plans for assessment should be made during the planning for instruction to be fully integrated with instruction. From the beginning of instruction to the end, planned assessment procedures can improve the effectiveness of instructional decisions by providing more objective information. To truly gauge student achievement and progress over time and to obtain longitudinal data that can be used as an ongoing directive for instruction, assessments should be delivered as a series. In the beginning of instruction, *Readiness Pretests*, a form of placement assessment, can be delivered to gain information about the extent to which students have skills and abilities that are needed to begin instruction. *Placement Pretests*, another form of placement assessment, can be administered to determine the degree to which students may have already achieved the learning outcomes of the planned instruction (Gronlund, 2002). The series of assessment continues during instruction, in the form of formative assessments. Formal formative assessments, also known as *Benchmark Assessments* or *Classroom Tests*, give information about the extent to which a student has mastered a particular set of learning objectives or standards. To measure overall mastery, and often to assign a grade/score at the end of instruction, a series of assessments ends with a summative, or comprehensive assessment at the end of instruction. The newly mandated state assessments are summative assessments, and are at the center of the increasing push for high stakes accountability.

Conclusion

Applying computer-based testing technology, such as Scantron’s Achievement SeriesSM test platform, better equips educators to meet the challenges of assessing students and ensuring that they both achieve and sustain Adequate Yearly Progress. By providing flexible test item creation, efficient test delivery, distinct, immediate, advanced scoring and reporting, and convenient access, every school; every classroom; every teacher can have the tools and information they need to make data-driven instructional decisions. Once reliable and valid assessment data is readily accessible, the impact on both large scale and individualized curriculum and instruction programs is limitless.

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