

White Paper

# Galileo K-12 Online Educational Management System

Arizona, 2006



**Assessment  
Technology  
Incorporated**

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# Introduction

The standards-based approach to education, which has swept the nation in recent years, offers new opportunities and carries new responsibilities for educational agencies as they work to attain unique local goals as well as shared goals articulated in state standards. In response to the challenge of preparing the young to succeed in the twenty-first century, educators across the nation are exploring new ways to increase the overall capabilities of today's students. Advances in the management of education lie at the heart of these explorations. The Galileo Educational Management System was developed by Assessment Technology, Incorporated (ATI) to assist educational agencies in using data on student learning to guide instruction in ways that will lead to mastery of performance objectives linked to educational standards.

ATI's significant technology and education experience, our focus on standards-based educational management, and our ongoing track record of serving K-12 school districts ranging in size from several hundred to sixty-one thousand students enable us to provide the following advantages to Arizona school districts:

- **Quality Assessments Articulated to Your District:** Using our proprietary online *Benchmark Planner*, ATI creates benchmark assessments reflecting your district's specifications of content standards to be assessed.
- **Easy-to-Build Formative Assessments:** Formative assessment items are searchable online; editable online; saved and shared online; aligned with Arizona State Academic Standards and Performance Objectives and updated when standards and/or District needs change.
- **Rapid Access to Useful Reports:** Districts can integrate information on state content standards, student demographics, standardized test performance (e.g., AIMS) and benchmark assessments. Data from tests administered online and offline can be combined for rapid access by users at all levels. Districts can produce reports that filter on NCLB variables.
- **Overall Adaptability and Flexibility:** Districts can tailor assessment, report card, and curriculum tools to district needs and share them across the entire district using online technology.

The following document summarizes ATI's qualifications and outlines how the Galileo K-12 Online Educational Management System provides each of the district stakeholders and decision-makers with a data-driven, standards-based system for enhancing student achievement.

## A. Description of Assessment Technology, Incorporated (ATI)

ATI is an educational technology company established in 1986, based in Tucson Arizona and serving pre-school and K-12 clients nationally. ATI's mission is to create, distribute, and support the use of technology to promote learning. This mission is achieved by a complete system of online applications designed to help teachers and administrators improve student performance via rapid and flexible access to assessment and instructional tools and reports. ATI technology assists educators in meeting the challenges of NCLB legislation and state accountability requirements by documenting student progress according to state content standards and performance objectives and linking assessment to instructional planning. ATI technology continues to evolve based on client needs, published educational research, government accountability requirements and advances in technology.

ATI research is recognized in the scientific and professional community and has been broadly disseminated to the public. For example, ATI research findings on student learning have been presented at the National Press Club in Washington D. C. and discussed on PBS's News Hour with Jim Lehrer. Over the past 20 years, the ATI management team has written books, chapters, research articles, and technical reports on a variety of topics related to technology and education. ATI staff members have received widespread professional recognition through awards and citations by professional organizations and educational institutions.

### • Experience in Measurement and Educational Research

ATI management has expertise and decades of experience in educational measurement and research. This expertise and experience guides the ongoing development of ATI software. ATI's research initiatives include the use of advanced statistical procedures associated with measurement theory to address issues associated with standards-based education. One central focus of the research program is the development and maintenance of item banks that can be used to build reliable and valid benchmark tests. An important statistical tool in these investigations is Item Response Theory (IRT). Application of IRT procedures allows for investigation of validity and reliability. Use of IRT also allows for the generation of an ability score that indicates the position of the student on a developmental progression. This developmental conception of ability leads to the construction of benchmark assessment instruments that are sensitive to growth and provide information that can be used by school districts to rapidly link benchmark assessment results to both standard setting and instructional improvement activities. Application of vertical equating techniques allows for measurement of progress within and across grades.

### • Experience in Aligning to Arizona State Standards

ATI has a great deal of experience aligning assessments to Arizona Standards. ATI item specification and certification procedures provide for quality item banks that align to standards at the strand, concept, and performance objective levels. As a result, Galileo K-12 Online provides districts with the capability to administer empirically-validated online and offline *district assessments* completely aligned with Arizona State Academic Standards and Performance Objectives for Reading and Literature, and Mathematics. The Grade Articulated Science Item Bank is currently undergoing field testing. Additionally, the ATI formative item banks can be used by teaching staff to construct, schedule, administer, and automatically or hand score *teacher-made*

# ATI Qualifications

assessments of specific skills for grades K-12. Items in the formative item banks are aligned with Grade Articulated Arizona State Academic Standards, Strands, Concepts, and Performance Objectives in Reading and Literature, and Mathematics.

- **Experience in Conducting Similar Work**

ATI has provided assessment and planning tools to educational programs since our company was founded in 1986. ATI has an established track record of technological innovation. ATI's early childhood department was among the first in the nation to offer online technology for the management of learning. Our initial work involved services to preschool programs such as Head Start and other early childhood education providers. Our online software is now used in hundreds of educational programs serving thousands of children throughout the nation. The service rendered to this constituency influenced many to request that Galileo be made available to educators in the K-12 schools. In response, ATI launched the Galileo K-12 Online Educational Management System in 2000.

ATI was among the first companies in the nation to offer online testing to school districts. ATI's collaborative approach to building partnerships and developing implementation plans is currently in operation with 38 districts/charter schools across Arizona representing about 25% of the Arizona public school enrollment and in a Massachusetts State Department of Education initiative. The districts implementing Galileo K-12 Online represent a broad diversity of clients ranging in size from 200 to 61,000 students, and varying in location, technology readiness, and need.

- **Experience in Building Successful Partnerships**

ATI has a strong track record in building successful partnerships with school districts through implementation planning, professional development training, hands-on service and support, and a rapid response to district needs. The *Partnership Model* utilized by ATI in working with school districts conceives of educational initiatives as a collaborative venture involving all of the stakeholders in the educational process as they relate to Galileo implementation, training, and adaptation to district needs over time. The partnership is designed to maximize communications between all the stakeholders and to utilize the complementary skills of both ATI and school district staff. ATI has long recognized that successful educational initiatives require building district capacity to embrace and use technology in a way that creates positive change. A fundamental precursor for building district capacity is the development of an *Implementation Plan* that is effective, has broad-based support, and where the role and contribution of each stakeholder is valued. The *Implementation Plan*, in particular, will help define the focus of ATI Technical and Field Services support provided to the District.

## B. Qualifications of Key Staff Assisting K-12 Clients

ATI partnering school districts benefit from ATI staff member expertise in a variety of disciplines related to Pre-K and K-12 education, curriculum, policy, measurement and outcomes evaluation, research, software programming languages, and the design of Web-based applications for education. The range of activities performed by ATI's staff includes: Technical Services, Field Services, Training, Assessment Development, Research and Development, Software Engineering and Quality-Assurance Testing, Multimedia Authoring, Communications, Administration and Operations, Information Technology, and Web Services.

ATI trainers, service staff, and technicians have extensive experience and knowledge in providing the training and support needed to implement the Galileo K-12 Online Educational Management System effectively. In addition, ATI staff members have classroom experience teaching students from preschool through graduate school. Background information on key staff members assisting K-12 clients is provided below.

- **ATI Contributing Staff**

***John Richard Bergan, Ph.D., President***

Dr. Bergan received his Doctor of Philosophy Degree in Psychology and Education from the University of Michigan. He has over thirty years of research experience in the area of children's development. Dr. Bergan is the author of several books and over 70 articles in scientific journals in education and psychology. He is the recipient of the Palmer O. Johnson Award from the American Educational Research Association, the Distinguished Psychologist Award from the Arizona State Psychological Association and the Presidential Citation from the National Child Care Association. As Founder and President of Assessment Technology, Incorporated, Dr. Bergan has designed and developed new technology to assist public schools, Head Start and private childcare programs to enhance student's learning and children's development.

***Jason Kane Feld, Ph.D., Vice President Corporate Projects***

Dr. Feld received his Doctorate in Educational Psychology at the University of Arizona. His research and professional activities in child development and early childhood education, developmental assessment, policy and practice spans 25 years. He co-authored the National Head Start Association position paper on Reading Readiness and has authored multiple reports and articles on children's learning. Dr. Feld currently serves on child outcomes research committees in the states of Florida, Ohio, and North Carolina. He is the recipient of the Presidential Citation of Achievement Award from the National Child Care Association and the National Head Start Association Award of Contribution to Education. As ATI Vice President Corporate Projects, Dr. Feld coordinates partnership activities between Assessment Technology Incorporated, and WestEd for NCLB related school improvement activities. He establishes and maintains relationships with State, Federal, and Corporate organizations responsible for education policy and practice.

Dr. Feld is a published author in books, scholarly journals, technical reports and early childhood journals and serves on the Editorial Board for the National Head Start Dialogue. He has been a speaker at many state and national conferences, including the Arizona Teaching in Education Alliance and Arizona Department of

## ATI Qualifications

Education State Series, Arizona School Board Association and Arizona School Administrators Conference, the Council for Chief State School Officers, the National Child Care Association, and the National Head Start Association. Dr. Feld has presented the research findings of ATI at the National Press Club in Washington, D.C., and his work on child outcomes in Head Start has been utilized on The News Hour with Jim Lehrer.

***John Robert Bergan, Ph.D., Vice President Research and Development***

Dr. Bergan received his Doctor of Philosophy Degree in Psychology from the University of Arizona. His research experience extends nearly twenty years and covers a wide variety of topics within psychology and education. He has spent the last ten years researching and developing technology to create electronic assessment tools for children from birth through the 12<sup>th</sup> grade. Dr. Bergan is the author of several articles in scientific journals. He is a member of the National Council on Measurement in Education. As Director of Research and Development, Dr. Bergan was instrumental in designing and developing ATI software focusing on assessment, accountability, and children's learning.

***Christine Guerrera Burnham, Ph.D., Senior Research Associate***

Dr. Guerrera Burnham received her Doctorate in cognitive psychology at the University of Arizona. Her research has focused on language development and language processing, with a particular emphasis on reading and word recognition. She has presented her research at several national conferences and workshops devoted to cognitive processing. Her Bachelor of Arts degree in psychology and education was earned at William Smith College, where she also acquired teaching certification in both K-6 and special education. Her work at ATI focuses on item response theory and test equating procedures with the goal of furthering the development of benchmark assessments that are optimally aligned with statewide assessments.

***Scott Cunningham, Assessment Department Director***

Scott Cunningham received his Bachelor of Science Degree in Education from the University of Nebraska and started his teaching career in Minnesota. He held an Arizona Teaching Certificate from 1998 through 2005. Scott draws on his years of experience in the classroom developing interactive, academically challenging lessons and assessments in his current role of supervising development of Item Specifications for consistent measurement of standards-based performance objectives. Scott also trains and supervises a team of Item Developers in the creation of item types, items, and test construction for the online measurement of standards and performance objectives.

***Peter MacMillan Booth, Ph.D., Senior Research Associate***

Dr. Booth earned his Bachelor of Arts with Honors from the University of Texas, his Master of Arts from the University of Arizona, and his doctorate from Purdue University. Working for several Arizona cultural institutions, Dr. Booth has been involved in the development and presentation of educational programming, including teaching college classes, since 1989. As the senior research associate responsible for ATI's District Assessment Services, Dr. Booth assists school districts in developing benchmark plans to meet assessment goals. Dr. Booth serves as a liaison between district administrators and ATI's Assessment Department facilitating the development and delivery of district assessment tools.

# ATI Qualifications

## ***Craig Mayhew, Field Services Director***

Craig Mayhew graduated from the University of Arizona in 1996 with a Bachelor of Science Degree in Regional Development with a minor in Business and Public Administration/Accounting. As Director of Field Services, Craig oversees services to current and prospective clients. He manages the field services component of the electronic management system to insure timely and responsive service to client needs. In addition, Craig plays an important role in assisting large client groups with child outcome research initiatives. For example, Craig is currently a member of the Florida Head Start Association Research Committee. He began his career in 1997 with CEO Software, Inc. as an account manager servicing and assisting clientele within his territory and eventually moving on to supporting larger strategic enterprise accounts which included first level technical support.

## ***Brandon Smith, Information Technology and Multimedia Director***

Brandon Smith has a Bachelor of Science Degree from the University of Arizona. After graduating from college, he served as an Air Force Officer responsible for network administration and information systems. Brandon is a Microsoft Certified Systems Engineer and Microsoft Certified Professional. He is responsible for the development and maintenance of the ATI technology infrastructure. He maintains ATI's internal network as well as the web infrastructure, which enables ATI to offer online services.

## ***Jonathon Spiegel, Network Administrator***

Jonathon Spiegel is a key member of our Information Technology Department. Jonathon has a Bachelor of Arts Degree from the University of Maryland and a Master of Arts Degree from the University of Arizona. Jonathon is a Microsoft Certified Systems Engineer. He assists in the administration of our internal network and our technology infrastructure. He also is responsible for aggregating data imported from external databases.

## ***Kerridan Smith, Instructional Development and Training Director***

Kerridan Smith graduated Magna Cum Laude from the University of Arizona with a Bachelor of Arts Degree in Secondary Education. Her professional affiliations include membership in the Arizona Education Association and past Chairman of the Technology Subcommittee for North Central Accreditation Team. Well versed in educational theory and practice, Kerridan is sensitive to the every-day challenges facing educators and includes innovative and practical solutions in the creation of training content. She has designed four online distance learning courses on Galileo technology and directs the delivery of On-site and online training for both administrators and teachers. In addition, Kerridan is involved in evaluating the impact of ATI's software on learning. Recently she managed a research project involving ATI's computer-based literacy curriculum in Head Start programs.

ATI's quality staff provides the continuous innovation to support a stable, full-featured web-based educational management system capable of meeting districts' needs for standards-based assessment, curriculum and reporting tools.

# Galileo K-12 Online Educational Management System

As introduced earlier, the Galileo Educational Management System (EMS) is an online system designed to provide the necessary tools to support efforts to improve the quality of instruction and enhance student achievement. The system provides a problem solving approach to educational management involving goal setting and planning, assessment, instruction, monitoring and evaluation. It includes features that support benchmark and formative assessment called for by the district. It provides forecasting and risk assessment services used to establish the relationship between benchmark assessments and AIMS. It includes a grade book and reporting features to support data-driven decisions promoting the achievement of instructional goals, and it provides professional development services to promote effective system implementation.

## A. Implementation Planning: The Big Picture

The effective use of an educational management system such as the Galileo EMS requires an implementation plan to guide the installation and ongoing functioning of the system. The implementation plan outlines in broad terms what is to be accomplished, when it is to be accomplished, and who is responsible for the various activities required to implement the system. The Galileo EMS includes an online *Implementation Planner* that is designed to guide the installation and maintenance of the management system. Implementation planning is initiated at the time ATI electronic services begin with the assistance of ATI Field Services Staff. The *Implementation Planner* was constructed using ATI's dynamic *Form Builder* technology, which makes it possible to modify the *Planner* to meet unique implementation needs. Placing a district's implementation plan online makes the plan readily available to all stakeholders and facilitates the coordination of activities and services designed to insure effective use of the system.

As mentioned previously, ATI approaches work with districts as a partnership. Through active involvement in the implementation planning process, district stakeholders take ownership of the system. The model schedule that follows is based on successful implementation by school districts ranging in size, location and technology readiness. ATI will work with your district closely to develop an achievable schedule for key implementation activities using Galileo's *Implementation Planner*.

# Galileo K-12 Online Educational Management System

## Model Implementation Schedule

### Galileo K-12 Online Educational Management System

Step	Components	Time Frame 2006-07
<b>Implementation Planning</b>	Delineation of goals, training content, stakeholders and lead staff, timelines, responsibilities, and expected outcomes. Galileo K-12 Online is used to document the various components of the Implementation Plan online.	Summer 2006
<b>Training</b>	ATI Training staff delivers both train-the-trainer and end-user training programs at district sites equipped with an Internet-connected computer lab. Training in this model covers all components of the application, assistance in planning to train others, and the permission to reproduce ATI training materials for internal district use. <i>-ATI also partners with WestEd for the district use of the Local Accountability Professional Development Series (LAPDS).</i>	Prior Summer / Early Fall 2006  <i>(LAPDS Training may occur during the Spring)</i>
<b>Galileo Set-Up</b>	Establishing appropriate login and password access levels.	Summer 2006
<b>Initial Data Importation</b>	Importation of Student/Class Information from district database to Galileo with Upload Planner.	Summer / Early Fall 2006
<b>Initial Benchmark Planning</b>	First year implementation plans include either of the following strategies for first year benchmarks: <ul style="list-style-type: none"> <li>• Use of ATI Core Benchmark Tests for 2006-07. With this option, benchmark tests can be administered in early fall 2006, assuming the district has technology in place.</li> <li>• Use of Galileo's Benchmark Planner to customize how each benchmark aligns to specific standards. This process requires more lead-time for test development. Districts have access to the Benchmark Planner to begin the process immediately after ATI receipt of a district purchase order.</li> </ul>	Summer or Early Fall 2006
<b>Scanline Set-Up</b>	Installing and testing hardware and software for the offline Scanline option.	Summer / Early Fall 2006
<b>Administer Initial Benchmark Test</b>	Online and Offline Test Administration according to Implementation Plan.	Fall 2006: Timing will depend on benchmark strategy selected. <i>(For customized tests, the Benchmark Planner must be completed well in advance of test dates.)</i>
<b>Ongoing Benchmark Planning</b>	Districts update Benchmark Planner for Winter and Spring Benchmarks to match instructional planning.	Fall 2006 to Spring 2007
<b>Ongoing Data Importation</b>	Districts provide data for uploading on a timeline that will ensure all student information is updated before each benchmark. This timeline is specified in the Implementation Planning process.	Fall 2006 through Spring 2007
<b>Curriculum and Evaluation Planning</b>	Provide consultation and training as needed related to formative assessment, curriculum planning tools, electronic grade book, and standards-based report cards.	Fall 2006 through Spring 2007
<b>Administer Additional Benchmarks</b>	Districts administer additional benchmarks according to schedule determined during Implementation and Benchmark Planning processes.	Winter 2006 through Spring 2007
<b>Analyzing Results &amp; Using Data to Guide Instructional Decision Making</b>	ATI provides ongoing district support as needed throughout the year as stakeholders learn how to maximize Galileo tools for assessment, reporting, curriculum planning and grading.	Fall 2006 to Spring 2007
	As Benchmarks are completed, ATI consults with districts regarding the use of resulting data.	Spring 2007 Consultation
<b>Future Planning</b>	Conduct year-end review and formalize Implementation Plan for following year.	Spring 2007 Forward

## B. Standards Setting and Planning Tools

The Galileo EMS views educational management as a goal-driven process. The fundamental management problem to be solved is how to achieve valued educational goals reflected in state and local standards. Standards are entered into the system using ATI's online *Standards Builder*. For example, Arizona standards in Mathematics, Reading/Language Arts and Science have been entered into the system using *Standards Builder*. *Standards Builder* makes it easy to update state standards in the event of changes made at the state level. *Standards Builder* also makes it possible to accommodate local goals. For example, standards can be developed for instructional content not currently covered by state standards.

After standards have been set, the focus of the management process is on the identification of standards to be achieved during specified time periods and to determine the order in which those standards will be addressed in assessment and instruction. Planning is initiated with ATI's online *Benchmark Planner*. The *Benchmark Planner* enables a school to plan a benchmark assessment and instructional program for an entire school year. The *Planner* allows the district to determine how many benchmark assessments there will be during the year, when benchmark testing will occur, which learning standards will be covered in instruction and benchmark assessment, and how many items will be included for each learning standard.

### Benchmark Planner

**Benchmark Planner**

**District:** Valley Unified School District  
**School:** Sunset Elementary School  
**Class:** Barbara Smith's 3rd Grade Class

[Home](#) | [Settings](#) | [Password](#) | [Tech Support](#) | [Site Map](#) | [Logout](#)

---

**Select Subject by Grade**

**Library:**  [Benchmark Plan Suggestions](#)

**Subject:**  [Print Plan](#)

---

**Check the desired Benchmark Tests. Set the REQUESTED DELIVERY DATE for each selected Benchmark Test.**

<input checked="" type="checkbox"/> Benchmark Test 1	August	31	2005	Number of Items per Objective	5
<input checked="" type="checkbox"/> Benchmark Test 2	November	30	2005	Number of Items per Objective	5
<input checked="" type="checkbox"/> Benchmark Test 3	April	30	2006	Number of Items per Objective	1
<input type="checkbox"/> Benchmark Test 4	June	10	2006	Number of Items per Objective	1

Total Test Items: TEST 1: 10 TEST 2: 10 TEST 3: 0 TEST 4: 0

---

**Select objectives to be included in each Benchmark Test.**

**S1C1 UNDERSTAND AND APPLY NUMBERS, WAYS OF REPRESENTING NUMBERS, THE RELATIONSHIPS AMONG NUMBERS AND DIFFERENT NUMBER SYSTEMS**

M03-S1C1-01. Read whole numbers in contextual situations (through six-digit numbers).

Test 1  Test 2  Test 3  Test 4  Not Tested

M03-S1C1-02. Identify six-digit whole numbers in or out of order.

Test 1  Test 2  Test 3  Test 4  Not Tested

M03-S1C1-03. Write whole numbers through six-digits in or out of order.

Test 1  Test 2  Test 3  Test 4  Not Tested

M03-S1C1-04. State whole numbers, through six-digits, with correct place value, by using models, illustrations, symbols, or expanded notation. (e.g., 53,941 = 50,000 + 3,000 + 900 + 40 + 1)

Test 1  Test 2  Test 3  Test 4  Not Tested

## C. Assessment Tools

Assessment in the Galileo EMS is used to provide information to guide instruction and to document learning outcomes. The Galileo EMS includes an extensive set of tools for constructing, administering, and scoring benchmark tests, district-wide assessments, diagnostic tests and classroom formative tests. Test construction is carried out using *Test Builder*. *Test Builder* makes it possible to construct tests by searching ATI item banks, which contain thousands of items aligned to standards. ATI maintains formative item banks intended for use in constructing classroom tests and secure benchmark item banks designed for use in customizing benchmark assessments. Users can add new items and align them to standards. Alignment with standards makes it possible to construct tests reflecting the standards identified in benchmark planning. Users can also share tests that have been locally constructed. For example, a curriculum team could develop sample formative tests, publish them and make them available in shared libraries for groups of teachers in the district.

The following displays illustrate features in the Galileo EMS that facilitate the construction of assessments. The first display shows the construction of a math item using the equation editing capability in *Test Builder*. The next display illustrates one approach for searching formative item banks to construct classroom tests.

### Equation Editor

The screenshot displays the 'Test Builder' interface. At the top, there are navigation tabs: Setup, Assessment, Curriculum, Grades, Student/Family, Staff, and Reports. Below these are sub-tabs: Test Planning, Test Construction, Bank Construction, Test Scheduling, Test Scoring, and Printing. The main header area includes the 'Test Builder' logo and user information: District: School District, School: Blue Hills School, and Class: Ms. Miller's 5th Grade Class. There are also links for Settings, Password, Tech Support, Site Map, and Logout. The 'Question' section displays subject, standard, and objective information. Step 1 shows 'Question Type' set to 'Multiple Choice' and 'Points question is worth' set to '1'. Step 3 shows a rich text editor with the equation '168 ÷ 14 ='. Step 4 shows a 'Question 1' section with an 'Image Equation Editor' that displays '14)168'. A red arrow points from the 'Image Equation Editor' button in Step 3 to the 'Image Equation Editor' in Step 4.

# Galileo K-12 Online Educational Management System

## Search Item Bank and Generate Questions

**Test Builder** District: Desert Dwellers District  
School: Desert Elementary School  
Class: Adam's Class  
Home | Settings | Password | Tech Support | Site Map | Logout

Test Title | Question Objective | Edit Questions | Search Item Bank | **Generate Questions** | Test Status

Generate Questions [Preview: 95 Unit Test](#)

Show Assignment Libraries (as opposed to item bank libraries)

**Step 1:**  
Select which test libraries to use for generating test questions. All questions will be selected only from the chosen libraries.  
Double click to select test library Selected Test Libraries (double click to remove)  
04th Grade Formative Library

**Step 2:**  
Select the subject, standard, and objective you wish to assess and the number of test questions.

Subject: AZ-R04: 4th Grade Reading & Literature  
Standard: S1 C4 ACQUIRE AND USE NEW VOCABULARY IN

Subject: AZ-R04: 4th Grade Reading & Literature  
Standard: S1 C4 ACQUIRE AND USE NEW VOCABULARY IN

Total Questions	Number of Questions	Objectives
10	0	R04-S1C4-01. Use knowledge of root words and affixes to determine the meaning of unknown words.
10	0	R04-S1C4-02. Use context to determine the relevant meaning of a word.
10	0	R04-S1C4-03. Determine the difference between figurative language and literal language.
11	0	R04-S1C4-04. Identify figurative language, including similes, personification, and idioms.
51	0	R04-S1C4-05. Determine the meanings, pronunciations, syllabication, synonyms, antonyms, and parts of speech of words, by using a variety of reference aids, including dictionaries and thesauri, glossaries, and CD-ROM and internet when available.
10	0	R04-S1C4-06. Identify antonyms, synonyms, and homonyms for given words within text.

Generate Test Questions

The Generate Questions feature allows the user to select the number of items desired to assess student competency on specific objectives. The application then selects items at random to be included in the assessment.

After tests are constructed, they can be administered online or printed and administered offline. Offline responses can be scanned into the system using ATI's *Scanline* utility. *Scanline* can process bubble sheets from an optical scanner. It can also generate plain paper answer sheets, and scan them with a multi-function unit including printing and plain paper scanning capabilities. Both online and offline assessments are scored automatically. A manual scoring option is also provided. The following display illustrates scheduling of online test administration.

## Schedule Test

### Schedule Test

**District:** Unified School District  
**School:** Elementary School  
**Class:** Barbara Smith's 3rd Grade Class

[Home](#) | [Settings](#) | [Password](#) | [Tech Support](#) | [Site Map](#)

**District:**

**School:**

**Class:**

**Library:**

**Test:**

**Test Availability**

Enter the date/time the test will be available for students to take. Online testing will only be available during this period of time. Offline testing materials can only be printed before the "To" date/time (offline materials can be scanned and graded at any time though).

**From:**    at  :

**To:**    at  :

**Student Scores Availability**

Check the "Post student scores on" box and select a date and time to post test scores to the Student Center. If you don't want students to view their test score online leave the box unchecked.

Post student scores on:

Sun	Mon	Tue	Wed	Thu	Fri	Sat
31	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31	1	2	3
4	5	6	7	8	9	10

**at**  :

**Additional Settings**

Check this box if you want test questions to appear in random order (online testing only).

Randomize the order of test questions

Make a password for the test. Each student will have to enter this password to take the test online.

**Password**

**Confirm Password**

## D. Curriculum Tools

Assessment tools are linked to instruction in the Galileo EMS through curriculum tools. Curriculum tools include a *Unit Planner*, *Lesson Planner*, and *Assignment Builder*. The *Unit Planner* is used to plan units of instruction. Instructional activities included in a unit plan can be linked directly to standards and performance objectives targeted for benchmark assessment. The *Lesson Planner* provides teachers with the ability to plan daily lessons online and to link daily lesson plans directly to standards and performance objectives. *Assignment Builder* makes it possible for teachers to construct assignments, post them online or print and disseminate them offline. Assignments may include resource materials such as web links that take the student directly to an online activity. As is the case for unit plans and lesson plans, assignments can be linked directly to standards and performance objectives reflecting district instructional goals.

The displays that follow illustrate the *Unit Planner*, *Lesson Planner*, and *Assignment Builder*.

# Galileo K-12 Online Educational Management System

## Unit Planner

### Unit Plan

**District:** Unified School District  
**School:** Elementary School  
**Class:** Barbara Smith's 3rd Grade Class

[Home](#) | [Settings](#) | [Password](#) | [Tech Support](#)

---

**General Info**
**Plan Objectives**
Lesson Plans

**Current Lesson Plans:**

Library	Lesson Plan	Remove?
Barabara Smith's Lesson Plans	Navajo Traditions and History	🗑️
Barabara Smith's Lesson Plans	Tohono and Akimel O'odham Tradition	🗑️

To add lessons plans to the unit, select a library and check one or more lesson plans. Then click Add Lesson Plans. Use the objective filter to only list lesson plans that assess the unit's current objectives.

**Library**

**Objective**

**No lesson plan filter**

**Add Lesson Plans**

M03-S1C1-01. Read whole numbers in contextual situations (through six digits) in standard form.

M03-S1C1-02. Identify six-digit whole numbers in or out of order.

M03-S1C1-03. Write whole numbers through six-digits in or out of order.

M03-S1C2-01. Demonstrate the process of subtraction using manipulatives.

M03-S1C2-02. Add two three-digit whole numbers.

M03-S1C3-01. Solve grade level appropriate problems using estimation.

M03-S1C3-02. Estimate length and weight using U.S. customary units.

R03-S1C1-01. Alphabetize a series of words to the third letter.

R03-S1C1-02. Recognize the distinguishing features of a paragraph (e.g., topic sentence, main idea, supporting details).

R03-S1C3-01. Read multi-syllabic words fluently, using letter-sound knowledge.

Drop down menu allowing you to select a lesson plan by filtering on a specific performance objective.

## Lesson Planner

### Lesson Plan Builder

**District:** Unified School District  
**School:** Elementary School  
**Class:** Barbara Smith's 3rd Grade Class

[Home](#) | [Settings](#) | [Password](#) | [Tech Support](#)

---

**General Info**
**Plan Objectives**
Assignments
**Resources**

**Current Assignments:**

The lesson plan does not contain any assignments.

To add existing assignments to the lesson plan, select a library and check one or more assignments. Then click Add Assignments. Use the objective filter to only list assignments that assess one of the lesson's current objectives.

**Library**

**Objective**

**No assignment filter**

**Add Assignments**

R06-S2C1-01. Describe the plot and its components (e.g., main events, characters, setting).

R06-S2C1-03. Describe the motivations of major and minor characters.

R06-S2C1-04. Identify the narrative point of view (e.g., first person, third person).

R06-S2C1-05. Analyze the influence of setting (e.g., time of day or year, weather, location).

R06-S2C2-01. Describe the historical and cultural aspects found in cross-cultural texts.

R06-S2C2-02. Identify common structures and stylistic elements in literature.

Add a new assignment by filtering on learning objectives.

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## Assignment Builder

### Assignment Builder

**District:** K12 Online Activities District  
**School:** AD School  
**Class:** K-12 3rd Grade Math Activities

[Home](#) | [Settings](#) | [Password](#) | [Tech Support](#) |

**Super Agency**

**District**

**School**

**Class**

**Library**

**Related Options**

- [▶ Assignment Types](#)
- [▶ Schedule Assignment](#)
- [▶ Lesson Plans](#)
- [▶ Create Library](#)
- [▶ Bulk-schedule](#)

▶ [Add a new assignment](#)

▶ [Copy an existing assignment](#)

Action	Assignment	Type	View
	S1C1O1 Read Whole Numbers	In-Class Assignment	
	S1C1PO20 - Factoring Numbers	In-Class Assignment	
	S1C1PO21 - Multiplication through 12	In-Class Assignment	
	S1C2PO5 - Calendar based Word Problem	In-Class Assignment	
	S2C2PO6 - Probability Experiments, Activity 2	In-Class Assignment	

## E. Monitoring Tools

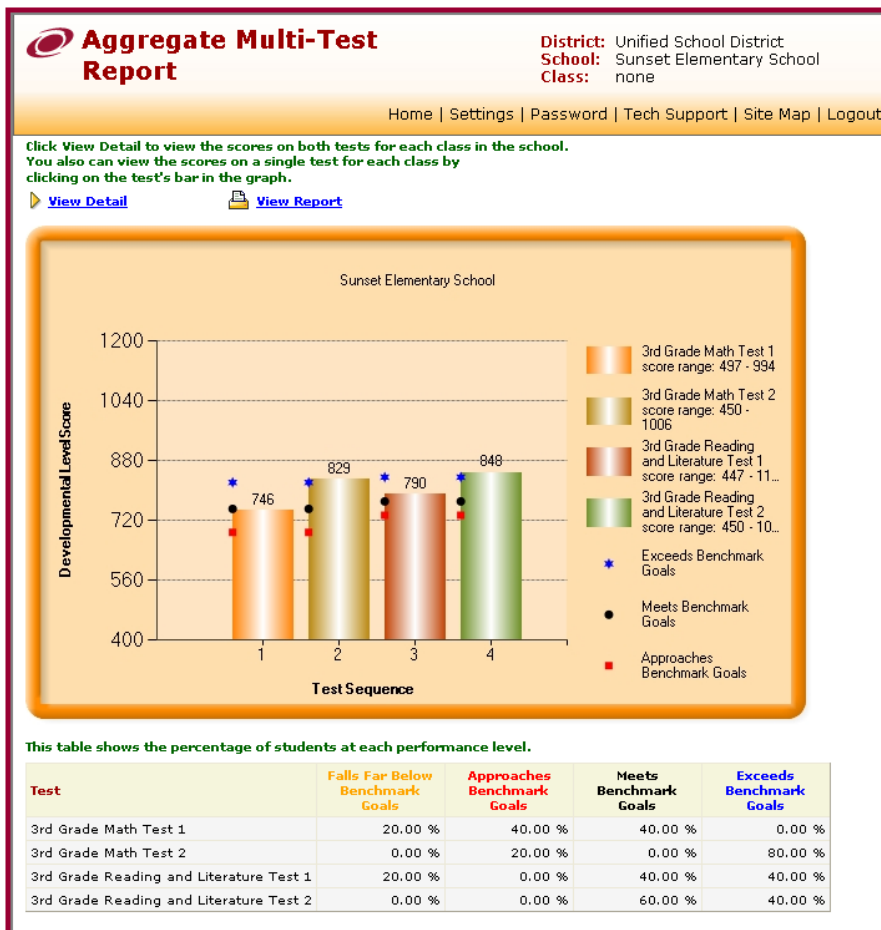
Effective educational management requires knowing whether or not implementation is proceeding as intended. When implementation problems are identified in a timely fashion, it is possible to address them in ways that will maximize the effectiveness of the implementation initiative. The Galileo EMS includes a broad range of monitoring tools designed to support implementation. One set of tools allows users to check the completeness of basic information in the system. For example, the user can check on the completeness of student information required for NCLB. A second set of tools makes it possible to monitor assessment. For example, the *Testing Activity* report included in the system indicates the numbers of students scheduled to take a test during a given time period and the number who actually took the test. A drill-down feature in the report makes it possible to identify specific classes with missing assessments. A third set of tools supports monitoring of curriculum implementation. For example, a curriculum mapping feature provides information on the learning standards covered in assignments during a given time period. Curriculum mapping makes it possible to determine the alignment between what is actually being taught, what has been planned for instruction, and what is assessed on benchmark tests.

## F. Evaluation Reporting Tools for Data-Driven Decisions

The role of evaluation in the management process is to provide information on goal attainment. Information on goal attainment drives educational decision making. When standards have been attained, instruction can be directed toward the attainment of new goals. When progress toward goal attainment is evident, implementation may be continued or modified to increase the rate at which standards are achieved. When standards have not been attained, an analysis of the implementation plan is required that may eventuate in a new plan and in some cases a modification in plan goals.

The Galileo EMS includes grading and reporting tools that may be used to evaluate student accomplishments, to communicate student accomplishments to students and parents, and to provide the information on student learning necessary to support effective data-driven decisions. Grading and reporting capabilities include an online grade book and related online customized report cards. The reporting engine also includes a full range of administrative reports, reports summarizing data from external tests such as statewide tests, reports on student learning, and customized reports on user defined variables put into the system. Reports may be generated for individual students and data may be aggregated at class, school, and district levels. Aggregation may also be accomplished for customized user-defined student groups. Filtering capabilities make it possible to generate information on subgroups such as those identified in NCLB. An example of a *Multi-Test* report appears below.

### Multi-Test Report



The information below describes some of the reports available to districts through the Galileo EMS.

- The *Development Profile Report* specifically indicates whether or not standards have been achieved and the mastery levels for each standard that has been assessed, but not mastered. This report is available from the individual student to the district level. Aggregate *Development Profile Reports* indicate the number and/or percentage of students who have mastered specific standards. Aggregated reports provide a global picture of which objectives may require further instructional attention.
- The *Development Summary Report* provides the Developmental Level Score, percentile ranks, normalized standard scores, and the normal curve equivalent scores. The Developmental Level Score provides an IRT-based estimate of student ability. The ability score can be interpreted as indicating the position of the student on a developmental progression. The Developmental Level Score is useful for measuring progress within and across years. Other norm-referenced scores are also available. Norm-referenced scores are useful for identifying students in need of differentiated instruction. These scores can be used to identify students who are performing well below the average for their peers. As these students are identified, instructional resources can be targeted to meet their needs.
- The *Multi-Test Report* provides an overall picture of the extent to which students are meeting standards. This information can be linked directly to curriculum planning aimed at promoting student learning. Progress on a continuous developmental scale can be followed with the *Multi-Test Report*. This report shows progress reflected in performance on a series of equated benchmark assessments. Scores on different benchmarks can be directly compared when the benchmarks have been equated. This report along with other reports in the system can be run online at the district and school levels as well as at the class level. The *Multi-Test Report* provides a drill-down feature to access specific student level data aligned to Arizona Academic State Standards at the performance level. The report also highlights specific standards requiring additional instruction for individual students in order to maximize the likelihood that those students will succeed in meeting state standards.
- The *Class Test Scores Grid* provides raw scores. It gives both a breakdown of the raw scores obtained by each student at the item level as well as a summary of the results for the class. Each student is listed along with the total points that they obtained for each item. The last column displays the score obtained for the class on the item. This report along with the *Item Analysis Report* and *Detailed Item Analysis Report* can be used to plan interventions at the item level. For example, these reports can be used to identify the kinds of errors that individual students make so that instruction aimed at correcting erroneous approaches to problem solving can be implemented.

- The *Item Analysis Report* provides raw scores and organization of performance into percentile groups. This report provides a summary of results obtained for each item including the percentage of students who selected each item distracter. Whereas the *Class Test Scores Grid* can only be run at the class level, the item analysis report can be run at the class, school and district levels. In addition to showing the summary data, this report also displays the standard and the item(s) used to assess each standard.

*Individual Student Reports for Students and Parents* related to Arizona State Academic Standards can be provided to students and parents through the Galileo K-12 *Student/Parent Center*. The Center is a secure site accessible only through a school-provided user name and password. Parents can print an *Individual Development Profile* and obtain information about those standards that their student has mastered and is likely ready to learn next. Additional information accessed from the *Student/Parent Center* includes: (1) the number of items correct out of the total number of items on assessments; (2) percent scores; (3) the standards learned based on the assessments scored.

## **G. Research and Development Services**

Effective educational management in the Galileo EMS requires reliable and valid benchmark assessments capable of assessing student progress. The task of providing reliable and valid benchmark assessments capable of assessing progress is complicated by the rapid changes in educational needs characteristic of the information age. Standards are frequently modified. Curriculums are altered. Local needs and student demographics may shift. The climate of change which is a hallmark of contemporary life requires a continual research program to insure the maintenance of reliable and valid assessments. ATI maintains research and development services as part of the Galileo EMS. These services include item calibration, test equating, forecasting and risk assessment.

- **Item Calibration Services**

ATI maintains a continuous research program using IRT techniques to calibrate items in its item banks. IRT models are used to estimate discrimination, difficulty, and guessing item parameters. Item parameter estimates are used to guide the selection of items included in ATI item banks. The inclusion of items with acceptable parameters contributes to the development of reliable and valid assessments that can be used to assess the achievement of instructional goals and can be related to statewide assessments of standards mastery.

- **Forecasting and Risk Assessment Services**

The achievement of instructional goals that will lead to the mastery of state standards requires that there be a relationship between what students learn in their local schools and what is measured on statewide tests. ATI maintains a continuous forecasting research program to assess the correspondence between performance on benchmark assessments administered in local schools and performance on statewide tests. Continuous forecasting is necessary because local benchmark assessments must be customized in order to reflect curriculum in the local schools. Static benchmark tests

that are not aligned with curriculum compromise the link between assessment and instruction that must be present if assessment is to be used to inform instruction.

Forecasting research is linked directly to risk assessment research aimed at identifying the extent to which students are at risk for not meeting standards. The Galileo EMS includes reporting tools that make it possible to link forecasting and risk assessment results directly to instruction. For example, the *Multi-Test* report included in the Galileo EMS includes a risk assessment feature that flags students likely not to meet state standards and flags the learning standards that need to be met to maximize the likelihood that state standards as reflected in statewide test performance will be met. Research papers describing ATI forecasting and risk assessment research are available upon request.

## H. Training and Support Services

No educational management system can be effective in improving student learning if it is not properly implemented. ATI's Training Department promotes effective implementation through professional development training for District level administrators, principals, teachers and paraprofessionals. The Department provides a variety of onsite and online training experiences to promote effective implementation of the Galileo EMS. ATI recommends **On-site Training** designed to provide start-up instruction for district staff and to address targeted training needs. **Start-up training** on ATI's core components typically occurs a few weeks prior to initial implementation of the system. Targeted training may occur at any time. **Online Training** provides for professional development on a continuous anytime, anywhere basis. Online Training tutorials provide a cost effective approach for providing targeted training to large numbers of staff at times that are convenient for them.

Effective implementation of an online educational management system requires the continuous availability of support services. Galileo's EMS includes a variety of online help services including Online Help Libraries built into the application. ATI's website contains additional online resources for training, technical assistance and basic reference help, all of which are easily accessible from the Home Page. **Field Services and Technical Support** are delivered by ATI staff through a toll-free phone support system.

## A. Advantages of a Web-Based System

Galileo K-12 Online is a web-based application. This affords school districts many advantages including easy accessibility, a high level of security, and low maintenance. A user with an appropriate account can access the application from wherever he or she has a computer with an Internet connection. Their access to the application is highly protected and their data is secure. Upkeep and maintenance of the software is performed entirely by the ATI Development team without interruption of service to members of the district. Upgrades and patches to the application are accomplished through “builds” posted to the application servers. This allows for prompt deployment of enhancements that may be user-driven or internally instigated to improve functionality, content or usability. ATI’s system architecture allows us to post builds *without system downtime*. This removes a burden to district IT staff because updates never require installation.

- **Security Measures**

Extensive security is in place to ensure the protection of all data in the system. Student information including test information is protected by encryption during transmission and stored in a database system that is not directly accessible from the Internet. Transactions with the database must be performed through the Galileo K-12 Online application servers. All traffic to and from the database system must pass through an internal (also known as DMZ) firewall further protecting the database system from all other systems within the ATI network. Logins to student information are restricted by user-assigned passwords. Users are assigned rights at the class, school, and district levels at the time the account is set up by an administrator at the district level. Access to student records is restricted to users assigned to the classes, school, and/or district in which the student is registered. Parent/student users are restricted to accessing only their own records.

- **Multi-Level Passwords**

The Galileo K-12 Educational Management System is comprised of a variety of built-in, integrated security measures that are designed to ensure data confidentiality, integrity, and viability of online data. Galileo users, for example, are authenticated with the standard username and password construct. All usernames are entered and passwords set by the individual clients. This can only be done once an identified district administrator has been entered into the system by ATI. This ensures greater control and accuracy for our clients. When the agency administrator sets up access for a user, they will determine the level of access allowed that user. This user will then only be allowed access to their individual school, class, or student level information. For instance, each online assessment scheduled for a particular time frame is always assigned its own password.

- **User Authentication Utilizing GUIDS**

All user accounts in the Galileo K-12 Online system are assigned a Globally Unique Identifier (GUID), as are all transactions placed in the system. This ensures the highest level of accuracy when performing data entry/retrieval within the Galileo K-12 Online system. When users access Galileo K-12 Online, their password is authenticated against their record in the system using the GUID, and entry is granted only in the event of a perfect match. No ‘fuzzy logic’ is used in authenticating passwords.

- **Secure Socket Layers and Data Encryption**

Another security measure is the implementation of Secure Sockets Layers (SSL). When a user clicks on the link to Login at [www.ati-online.com](http://www.ati-online.com), the entire session from this point forward (including entry of the username and password) is conducted using SSL. Every time data is transmitted to Galileo K-12 Online, the entire transaction is performed with 128-bit encryption. Only the Galileo K-12 Online web servers hold the private key to decode the encrypted data sent by users. All traffic for Galileo K-12 Online is transferred using SSL, typically transferred through a network (including the Internet) using TCP Port 443. Galileo K-12 Online utilizes the highest level of encryption possible while still maintaining a focus on performance. Our security is verified with a top-level site certificate hosted by Verisign, an industry leader in computer security certification.

- **Redundancy**

Galileo K-12 Online is hosted on ATI servers. ATI web applications currently operate on Windows 2000 servers. The software and hardware used for Galileo K-12 Online are engineered for complete scalability, high performance, and reliability. T1 lines are used to connect to the Internet backbone. Windows 2000 is used to create the Web server cluster. Clustering in this fashion makes it extremely easy to add additional servers as usage increases. The redundancy that clustering provides also minimizes down-time. If one server goes offline then another is available to take the full load. This feature is also useful when installing updates to the application. Installation can be completed without taking the system offline and interrupting use by members of the district's educational community.

## B. System Requirements for Galileo K-12 Online

### Windows OS

- 32 MB RAM (for Windows 98, ME) or
- 64 MB RAM (for Windows 2000, XP)
- High-Speed Internet Connection
- Super VGA (800 X 600) or higher resolution monitor with 256 colors
- 200 MB free hard disk space

### Macintosh OS

- 32 MB RAM, Virtual Memory set to 40 Mb (for Macintosh OS 9)
- 128 MB RAM (for Macintosh OS 10)
- High-Speed Internet Connection
- Super VGA (800 X 600) or higher resolution monitor with 256 colors
- 200 MB free hard disk space

The only specific hardware requirement associated with *Galileo K-12 Online* pertains to the use of the *Scanline* feature. Use of *Scanline*, if desired, requires either a plain-paper scanner/printer or a Pearson NCS OpScan. A PC with Windows 2000 or XP, Internet Explorer 5.5 SP2 and Internet access is required to use either scanner. Only the scanning operation and *Scanline* application require the PC, other Galileo K-12 applications are web-based and can be done from either Mac or PC.

# Recommended Criteria for Use in Evaluating and Selecting Technology for Educational Management

School districts are faced with many choices in software for educational management. The diversity of needs among schools, and the range of solutions available can challenge the most astute educational leadership. ATI's years of educational and practical experience advancing technology to promote learning has given us insight into the important factors to consider when choosing an educational management system. The following checklist is intended to guide you as you evaluate software that will most closely match your district's needs and resources. The suggested criteria below include areas identified from ATI client experiences and feedback, published educational research, government accountability requirements and advances in technology. As you review the items for consideration, keep in mind the benefits of building a close working relationship with the technology provider you choose.

1. Is the system comprised of assessment tools aligned with the most recent Arizona State Standards and Performance Objectives by grade level in reading and math from Kindergarten through grade 12?
2. Does the system contain both a secure item bank for benchmark assessments and a formative item bank for classroom assessments aligned with the most recent Arizona State Standards and Performance Objectives by grade level in reading and math from Kindergarten through grade 12?
3. Is the system capable of incorporating Arizona State Standards by grade level in social studies, science, writing and other subjects approved by the Arizona Department of Education? Is the system capable of adding new or revising existing standards when released by the Arizona Department of Education?
4. Does the system include provisions for continuous psychometric analysis of benchmark assessment items?
5. Are discrimination, difficulty, and guessing parameters (when using multiple choice items) provided for benchmark items aligned to the Arizona Standards and Performance Objectives?
6. Are reliability coefficients for benchmark assessments provided for school districts?
7. Are the items in the benchmark assessment item bank refreshed on a continuous basis based on student performance data in Arizona?
8. Does the system have the capability to use Item Response Theory (IRT) to equate benchmark assessments within and across years? Does the system have the capability to identify the risk that a student will not meet academic standards as measured on state-wide tests?
9. Does the system have the capability to provide benchmark assessments and reports that can assist schools in predicting performance on the AIMS Dual Purpose Assessment (DPA) for Grades 3-8, AIMS for high school, the CTB TerraNova for grades 2 and 9, and the new science test that will be developed

## Recommended Criteria for Use in Evaluating and Selecting Technology for Educational Management

10. Does the system make it possible for the district to generate benchmark and formative assessment test blueprints displaying percentage and item count coverage of each Arizona Standard and Performance Objective measured in the assessment?
11. Does the system make it possible for school districts to generate reports at the student, class, group, grade, school, and district levels that communicate progress in terms of the most recent Arizona Standards by Performance Objective at Arizona achievement levels (i.e., Exceeds, Meets Approaches, Falls Far Below)?
12. Does the system provide links to standards-based grade book and curriculum tools that can be used for creating, delivering and managing assignments, lesson plans and unit plans?
13. Is the system supported by experienced staff providing ongoing implementation assistance?
14. Does the system provide planning and monitoring tools to document district goals and to know plans are being implemented?

Choosing software for educational management is a process that provides districts with an opportunity to align NCLB and Arizona Department of Education requirements with local needs and resources. ATI's Partnership Model includes the offer of technical assistance with districts as they plan for educational management technology and RFP development. Our Field Services Team can provide references and a compendium of RFP requirements from other Arizona School Districts implementing technology for standards-based, research supported educational management.

For more information contact Assessment Technology, Incorporated at [Galileoinfo@ati-online.com](mailto:Galileoinfo@ati-online.com) or call 1-877-442-5453.