

PROCLAMATION 2014 GRADES 5-12 SCIENCE



Middle and High School Online Science Grades 5-12

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adaptive 😤 curriculum



Adaptive Curriculum is a leader in the field of interactive Math and Science learning, with solutions developed from the latest research pedagogy and best practices.

Headquartered in Scottsdale, Arizona in the Arizona State University (ASU) Skysong Center for Innovation, Technology and Imagination, Adaptive Curriculum's web-based Math and Science solution is used by nearly 3 million students in the United States, Europe and Asia. The company is a wholly-owned subsidiary of Sebit, LLC, a global eLearning corporation whose products have been chosen by numerous Ministers of Education as a country-wide solution.

Designed for grades 5-12, Adaptive Curriculum succeeds by providing teachers with easy-to-use content, resources and strategies to help students master concepts that are difficult to teach and learn. Developed in conjunction with our partners at ASU's Technology Based Learning and Research Center, the program is based on real-world, active learning pedagogy that requires students to explore, make hypotheses, manipulate items, and see the impact of their decisions. Adaptive Curriculum's goal is to deepen conceptual understanding and improve student's academic performance.

Adaptive Curriculum's instructional lessons align to the TEKS, Texas Science Standards, and the National Science Teachers Association (NSTA). Our development team and content experts are also completing an alignment to the recently released final version of the NGSS. Proclamation 2014 calls for a technology delivered solution for instructional materials. In Science a wide variety of courses are requested. Adaptive Curriculum provides a science solution for Middle and High School (Grades 5-12). It includes general sciences for middle school and Biology, Chemistry, Physics and Integrated Physics and Chemistry for high school.



"Adaptive Curriculum provides handson, project-based experiences that empower students to learn critical concepts."

Cara Herkamp, Cave Creek Unified School District, AZ



"Adaptive Curriculum reviews and reinforces concepts and helps students learn in different ways."

Dr. Rene Castenada, District Director of Assessment and Evaluation



Global Research Foundation

AC Math and Science are based on over 15 years of research in using technology to teach key concepts in math and science.

Started with a national science grant in Europe, Adaptive Curriculum's parent company, Sebit LLC, has created math and science Activity Objects that are used by over 3 million students internationally.

ASU Partnership

Since 2007, nationally known thought leaders at the Arizona State University and ASU's Technology Based Learning and Research (TBLR) Center have partnered with Adaptive Curriculum on curriculum alignment, classroom implementation, and professional development.

ASU faculty provides pedagogical research, multi-disciplinary expertise, and content collaboration, ensuring accuracy and appropriate pedagogy at every stage of development.

Subject Matter Experts from ASU

Adaptive Curriculum content utilizes the most recent research and is created by specialized Subject Matter Experts in Science who have extensive experience and expertise in their respective fields.

Dr. Fabio Milner Professor

Professor of Applied Mathematics, Mathematics Education, Mathematics, and Statistics

School of Mathematical and Statistical Sciences

Fabio Milner is a professor of applied mathematics in the School of Mathematical and Statistical Sciences at Arizona State University. He teaches ordinary differential equations, as well as upper-level courses in functional analysis, mathematical biology, and numerical analysis. Dr. Milner received a degree of Licenciado in mathematics from the University of Buenos Aires, and an M.A. and Ph.D. in mathematics from the University of Chicago. His work focuses on applied mathematics and mathematics education, including innovative ways to use technology to improve teaching and learning in the mathematics classroom, particularly for nonmathematics majors. Fabio is author or co-author of more than 70 scientific papers and of the textbook Gender-Structured Population Modeling: Mathematical Methods, Numerics and Simulations. He served on the Common Core State Standards Mathematics Review Committee and is a member of the Mathematics Committee of the National Board for Professional Teaching Standards.





Mariana Maris Senior Lecturer

School of Mathematical and Statistical Sciences

Mariana Maris is a Senior Lecturer at Arizona State University (ASU). She received a B.S. in Mathematics from ASU in 1994 and an M.A. in algebraic combinatorics in 1997, also from ASU. Mariana has worked as a Faculty Associate at Mesa Community College and as a Lecturer at ASU teaching mathematics courses that range from introductory algebra courses to more advanced courses as mathematical proof writing. She has coordinated numerous courses at the university and supervised honors projects. Mariana has also worked with graduate students in mathematics in preparing them to teach their own courses, and was a member of the First Year Mathematics Curriculum Committee. During her time at ASU, Mariana has been nominated four times for the Wexler Teaching Award and two times for the Graduating Senior Report Card.

Dr. Anton Lawson Professor

Organismal, Integrative and Systems Biology

School of Life Sciences

Anton Lawson is a professor in the School of Life Sciences at Arizona State University. He conducts research and teaches courses in biology, biology teaching methods, and research methods. Dr. Lawson received a B.S. from the University of Arizona, an M.S. from the University of Oregon, and a Ph.D. from the University of Oklahoma. Dr. Lawson has published more than 200 journal articles and more than 20 books including Science Teaching and the Development of Thinking (Wadsworth: Belmont, CA, 1995), The Neurological Basis of Learning, Development and Discovery (Kluwer: Dordrecht, The Netherlands, 2003), Biology: An Inquiry Approach (Kendall/Hunt; Dubuque, IA, 2008, 2nd Ed.), and Teaching Inquiry Science in Middle and Secondary Schools (Sage: Thousand Oaks, CA, 2010). He received NARST's career award for Distinguished Contributions to Science Education Research as well as the Outstanding Science Educator of the Year Award from the Association for the Education of Teachers in Science.





Dr. Gary Cabirac, Ph.D. Lecturer and General Chemistry Lecturer

Department of Chemistry & Biochemistry

Gary Cabirac is a Lecturer in the Department of Chemistry and Biochemistry at Arizona State University (ASU). He currently teaches undergraduate chemistry courses and coordinates the general chemistry laboratory course for approximately 3,000 students per semester. Dr. Cabirac earned his B.S in chemistry from ASU and a Ph.D. also in chemistry from the University of California San Diego. He was Senior Research Scientist and Research Manager at the Rocky Mountain Multiple Sclerosis Center in Denver and adjunct faculty in the Biochemistry, Genetics, & Biophysics department at the University of Colorado Health Sciences Center. His research involved investigations into the mechanisms of virus latency, neurovirulence, and autoimmunity. After a brief adventure into the world of small business, he returned to industry and teaching. Over the last few years, he has been devoted full time to teaching.

Dr. Otto Sankey Regents Professor

Department of Physics

Otto Sankey is a professor of physics in the Department of Physics at Arizona State University. He currently teaches Fundamentals of physics, as well as graduate courses in research. Dr. Sankey received a B.S. in Physics from University of Missouri-St. Louis and a Ph.D. in physics from Washington University. His research focuses on theoretical condensed matter physics and biological physics. Otto is a Fellow of the American Physical Society and has published more than 230 papers in peer-reviewed journals. His research work is currently cited 500-750 times per year. Recently, Otto received the Regents' Professor designation, which is the most prestigious faculty award at the university. In 2002, the Physics Department recognized Otto with its outstanding teaching award. In addition, ASU's Society of Physics Students recognized Otto while teaching quantum mechanics for his "enthusiasm in teaching and ability to present complex concepts in a lucid manner," and presented him with the Golden Opus Award for excellence in teaching.

Awards & Recognition

Adaptive Curriculum's award-winning instructional solution builds middle and high school math and science through dynamic, interactive learning.



Best Virtual School Solution for Students



Awards of Excellence 2012 Tech & Learning Magazine



CODIE// 2012 SHA COOLE WINNER BEST WHTUAL SCHOOL SOLUTION FOR STUDENTS

Best Virtual School Solution 2012 CODiE Award Software & Information Industry Association



Finalist in the Trendsetter Awards Product of Service Setting a Trend Category

adaptive 23







2011 CODiES Award Finalist

Best Mathematics Instructional Solution Best Virtual School Solution for Students Category



Teachers' Choice Award

2009 Learning Magazine



Best Middle School Math & Science Website 2009 BESSIE Award

ComputED Learning Center



Rookie of the Year 2008 EdNET Award The Heller Reports and Quality Education Data



Best Middle School Math & Science Website 2008 EDDIE Award ComputED Learning Center



Distinguished Achievement Award 2008 The Association of Educational Publishers



Best Science Instructional Solution 2009 CODIE Award Finalist Software & Information Industry Association



Education Newcomer of the Year 2008 CODIE Award

Software & Information Industry Association



Best Science Instructional Solution 2009 CODIE Award Software & Information Industry Association



Adaptive Curriculum Science

Adaptive Curriculum believes that science education can be transformed so that every student can excel, contribute to our society, and help improve our nation's competitiveness in the global economy.

Our mission is to inspire students with active online learning, engage them in concept mastery, and motivate them to succeed in science.

AC Science for the middle school is developed for students in grade levels 5-8. Adaptive Curriculum's High School solution is developed for grades 9-12 and includes science content for Chemistry, Biology, Physics and Integrated Physics and Chemistry (IPC). With the ability to implement the lessons in whole group, small group, and/or individual configurations within the classroom, students can be assigned learning objects at their instructional level with teachers making the determination of where a child needs to be.

Through our development partners at Arizona State University, Adaptive Curriculum (AC) has developed a comprehensive web-based, technology-integrated delivery system that addresses middle school and high school (grades 5-12) science content. AC is 100% aligned to the Texas Essential Knowledge and Skills (TEKS) includes over 1550 breakouts. Adaptive Curriculum Science is web-based and can be accessed 24 X 7, anywhere there is an internet connection. Incorporated within the program is a Learning Management System, My Adaptive Space (MAS). MAS allows teachers to create individualized and group lesson plans/assignments, share those lesson plans with other teachers in their school, track student progress and assessment results, as well as upload student data to the school or district's SIS.

Activity Objects are built on a design of structured instruction consisting of a carefully crafted sequence of activities to promote deep conceptual learning. This design model enables Adaptive Curriculum to provide instruction that is engaging and pedagogically sound. The design of all Adaptive Curriculum's instructional content starts with the identification of learner outcomes to determine the instructional objectives of the content. After the instructional objectives are identified, the design follows the 5E Instructional Model (Engage, Explain, Explore, Elaborate and Evaluate). Activity Objects provide the best embodiment of the 5E Model in Adaptive Curriculum, however additional forms of content are offered, including Animations and Interactive 3D Models.

Although the design of Activity Objects vary depending on the learner outcomes, Activity Objects tend to start with an engagement section designed to orient students to a new concept and engage them in the learning process. Next, students are presented with a series of interactive tasks that require them to engage in active learning. Instructional supports and scaffolding are provided as needed so students apply the new concept in interactive problem sets. As students progress through the Activity Object, explanations are offered and additional tasks are presented, which elaborate on the initial explanation given to students and challenges them to engage in additional practice. Finally, an assessment is presented at the end of the Activity Object that provides a final evaluation of students' conceptual understanding. By adopting the 5E Model, Adaptive Curriculum seeks to engage students in an active learning process that is student centric.



This flexible online learning environment helps teachers incorporate interactive content into their lesson plans and curriculum to enhance their instruction and differentiate instruction quickly and easily. Activity Objects range from 20-45 minutes in length and offer interactive learning experiences. Animations range from 1 to 3 minutes and offer video clips focused on a specific math or science concept. Teachers may present Activity Objects and Animations in whole class presentations utilizing an Interactive Whiteboard or projection system to introduce and/or reinforce concepts or use the program's student management system to make specific assignments to individuals or groups of students. In addition to teachers having the capability to create customized lesson plans, predefined lesson plans are available to aid teachers in curriculum planning. These pre-defined lesson plans provide the AC Science TEKS correlated learning objects in a sequenced format by topics, within the specific content area. Teachers have the ability to share their lesson plans with other teachers in their school providing collaboration between teachers in their subject area. Also included is an organization structure of folders allowing teachers to save their lesson plans in a variety of ways—from monthly folders to folders for a specific standard.

Adaptive Curriculum offers five types of Science Activity Objects, (see below for descriptions) all based on the 5E Instructional Model. Each of the different content types can be used with different types of learners under a variety of instructional delivery methods.

Science Activity Object Types

Experiment – Science

Students carry out scientific experiments in a virtual environment. They create hypotheses before the experiment, change variables and observe the results, and draw conclusions based on experimental data. Students develop scientific thinking skills without safety risks or the need for specific equipment. All steps are recorded in a printable experiment report.

Concept Development - Science

Students develop a scientific concept by first exploring its basic principles. They build knowledge by changing variables in a dynamic system and observing the results. The entire activity is based on relevant, critical real-life connections in which students can explore an application of the concept or follow its development.

Problem Solving – Science

Students follow basic problem solving steps that include understanding the problem, analyzing the givens and the unknowns, and develop a plan to follow. All steps are interactive, and the planning phase is flexible—students can form and follow varied strategies to solve the problem.

Procedural Development - Science

Students discover how to calculate unknown values by using known values and by following a structured process. The activity enables concept development through a guided procedure that develops and reinforces problem-solving abilities.

Interactive 3D Model - Science

Students explore and interact with objects and apply concepts in a virtual 3D environment. Students observe structures that could not easily be seen or experienced in a classroom. For example, they may embark on a self-guided exploration of chemical structures and physical laws in an engaging setting.



STEM

STEM education is an interdisciplinary approach, blending four disciplines (Science, Technology, Engineering, and Mathematics) into one cohesive learning and teaching paradigm focusing on realworld scenarios. A STEM classroom promotes integrated learning, investigation, and questioning. It places an emphasis on design and problem solving and blends the disciplines through research. A STEM classroom is a problem-based learning environment that requires students to conduct original research. Students must collaborate and use technology to design a solution, analyze and test data, and propose a joint solution, and then communicate their findings to their peers, collaborative partners, and the community. This problem-based learning approach requires foundational knowledge from which to build solutions. Adaptive Curriculum engages learners in the exploration of science concepts needed to build viable solutions through dynamic, interactive learning. With Adaptive Curriculum, students acquire core mastery through active participation in an immersive, differentiated and exciting learning environment that provides real-time feedback and assessment.

Learning Styles

Adaptive Curriculum Science addresses the Seven Learning Styles; visual, aural, verbal, physical, logical, social and solitary by building on-line interactive lessons that attend to the different ways students learn. The Adaptive Curriculum Science learning objects use highly engaging visuals that capture students' attention and help them focus on the instruction. Combining these highly engaging and interactive visuals with audio, in the form of voiced step-by-step directions and instructional content, students are able to see and hear the lessons. The interactivity of learning objects, along with the formative assessment and ancillary worksheet opportunities, encourages students to express what they have learned verbally and in writing. The hands-on simulations and virtual manipulatives within the learning objects address the kinesthetic learner as they become immersed in "doing" while they are learning. Students who are mathematical or logical thinkers are able to use their learned skills to solve problems within the learning objects. Having the ability to provide instruction in a whole class, small group or individually, addresses the social and solitary learner by providing them access to the content in numerous ways. The learning objects encourage students to use their favored learning styles, and allow teachers to address these learning styles within the classroom quickly and easily.

Multiple representations are used for visualizing science concepts.

Our program is developed with the understanding that students do not all learn the same way. That is why we incorporate multiple representations of a concept or learning standard in several ways. Some of those representations are as follows: pictures, graphs, mathematical representations, manipulatives, verbal explanations, and numerical representations.

Students have broad access to Adaptive Curriculum.

Within the student interface, in addition to the teacher assigned lesson plan, students may access the entire AC library of content focusing on any science topic of interest. The assessments and



worksheets are not accessible to the student unless the teacher assigns the Activity Objects. This unique capability encourages students to search the library for content of interest to them, but not have access to assessments and worksheets that might be assigned to them at a later date. This becomes a student driven time for exploration, addressing student interests, as well as their own curiosity about a given subject.

Students have the ability to review and repeat any portion of the Activity Object making the learning student directed while at the same time encouraging their success. In addition, if the teacher wants the student to retake an assessment, they have the ability to duplicate and re-assign the assignments, allowing all assessment grades to be recorded and tracked.

Each Activity Object includes a summative assessment specific to its content and learning objectives. Upon completion of the Activity Object, students respond to the assessment questions and receive immediate feedback on how they did, as well as access to the correct answers. Visually, they are provided with an item analysis of their results where they can see which questions were correct and which they need to re-learn. They have the ability to click on a solution button that provides a teachable moment where the correct response is explained. Students have the ability to access their results and progress reports, on an as needed basis, from the student interface. They will see an item analysis, a percentile score, and a circle graph of their results on each Activity Object's assessment. This same information is provided immediately to the teacher through the reports available in the program on the Analyze page.

Virtual manipulatives employ the same benefits of conventional manipulatives with the additive benefits of using multiple representations, enhancing cognitive processing, and increasing classroom efficiency. Virtual manipulatives can be used to enhance students' conceptualization of abstract ideas by combining multiple representations of a concept in a single environment. These benefits have made virtual manipulatives increasingly popular especially in teaching science concepts. With Adaptive Curriculum, students engage in active, conceptual, and inquiry-based learning with high-fidelity virtual manipulatives and simulations. Moreover, the use of virtual manipulatives may allow for a greater amount of instructional time during a class period as students and teachers can easily access them through the web without the need to hand out and clean up materials.

Many times students need a different modality of learning in contrast to what is being used in the classroom. Adaptive Curriculum promotes deep conceptual understanding of concepts and in order to promote it, the Activity Objects take what the learner knows and builds upon that knowledge. This knowledge is then refined through active learning. Using the reports as the source for individualized student results, teachers are able to determine student strengths and challenges and provide either reinforcement or accelerated instructional opportunities for students as appropriate.

Adaptive Curriculum is designed to enable formative assessment of student progress through the use of pointed pauses in lessons that afford teachers the opportunity to engage students in verbal discussions. Each Activity Object also includes interactive sections and formal assessments that assess how much students' have learned. Data from the assessments are immediately sent to teachers' accounts allowing analysis of students' knowledge and assisting in making immediate data driven instructional decisions. Informal assessment opportunities throughout the lesson allow teachers to monitor, adjust, and provide differentiated instruction to address students' unique learning needs.



Adaptive Curriculum includes content in science for grades 5-12, allowing teachers to select Activity Objects, Interactive 3D Models, and Animations appropriate for entire class instruction or for individual students. The flexibility to address multiple science abilities, regardless of age/grade level, is essential to addressing not only learning styles but also levels of instruction, from Special Education students to gifted or above grade level students.

Teachers have the ability to create student groups in a variety of ways. From a specific class, student roster, or small instructional group, students can be assigned content based on their individual strengths and weaknesses. Available in English and Spanish, Adaptive Curriculum Science helps middle school and high school students' master concepts through real-world active learning. Not only is the program flexible enough to use in whole class instruction or small groups, but it is also designed to provide all students equity and access to an interactive curriculum. It is a program that does not discriminate between students' abilities. Adaptive Curriculum's modular nature can differentiate instruction for the advanced learner and offer remediation to those students needing extra help. Activity Objects include interactive activities that provide feedback based on the performance of students. Feedback varies from praise to hints and explanations. In addition, Adaptive Curriculum makes it easy for teachers to provide scaffolding while presenting an Activity Object, including breaks where teachers may pause or answer questions. Questions are asked throughout Activity Objects and each Activity Object ends with an assessment that is graded by the system. After completing the assessment, students may see whether or not they answered correctly, and are given the correct answer with an explanation. Teachers can view student scores and schedule additional time on Adaptive Curriculum as needed.

Differentiated instructional practices are promoted by giving teachers access to an easy-to-use management system that encourages them to construct assignments for individual students or groups of students. Moreover, teachers can assess students' real-time performance by referring to a variety of reports offered by Adaptive Curriculum. Activity Objects, Interactive 3D Models, and Animations allow students to control the pace of instruction through play/pause controls, and feedback guides students through lessons. Directions are provided in both written and audio format and can be repeated or replayed when needed. Lessons are presented using multimedia, which provides instruction that caters to a variety of learning styles by presenting content through visual images and animations, onscreen text, audio, and most importantly, through student interactions. Customized lessons motivate students to explore, make hypotheses, manipulate items, and see the impact of their decisions. Adaptive Curriculum can meet the needs of diverse student populations such as English Language Learners, Special Education students, and students with achievement gaps.

Teachers can implement Adaptive Curriculum and its instructional materials to facilitate duallanguage learning environments by creating an inclusive classroom and supporting the needs of ELL students. Adaptive Curriculum offers a glossary with terms in English, Spanish, and an audio play feature for both languages. Most of Adaptive Curriculum's content is available in both Spanish and English making the transition for ELL students from their native language easier. Teacher Guides, Assessments, Activity Sheets, Independent Practice Sheets, and Question – Answer Sheets are also all available in Spanish and English. These resources facilitate the use of the product at home and encourage parental involvement. Adaptive Curriculum also works well with small groups where native and non-native speakers can work together to help each other. Finally, Adaptive Curriculum offers English Language Learner Guides for teachers on each math and science subject covered by Adaptive Curriculum.



For Special Education students, Adaptive Curriculum benefits users of the Inclusion, Resource/Pull Out, and Self Contained Special Education programs, fitting for a range of classroom models. Activity Objects are presented in mixed modalities addressing all types of learning, allowing students to work in peer groups or in a mentor/mentee setting. Adaptive Curriculum also embeds features such as Closed Captioning to assist Special Education learners who have hearing deficits. Adaptive Curriculum's lessons have a high level of learner control; students can control the pace of the lesson and repeat sections as needed. Special Education learners also benefit from the combination of audio and on-screen text.

For students with achievement gaps, Adaptive Curriculum allows teachers to assess and monitor certain groups on specific standards and concepts. This enables the teacher to assign/reassign content in areas where a student is struggling. Adaptive Curriculum is designed using best practices to result in the highest possible learning outcomes for students with various levels of academic skills. Not only do the primary instructional materials enable a variety of learners to learn based on our active and visual approach to conceptual learning, a variety of digital and print resources area also provided.

Activity Objects and Animations include a variety of supporting enrichment resources, which are designed as student handouts that may be used to engage students in independent practice, as formative assessments, and to address the school/home connection. Activity Objects also include extensive lesson specific Teacher Guides that include enrichment activities, as well as Activity Sheets that encourage students to delve deeper into what is being taught. Science Activity Objects can include Enrichment and Lab Investigation sheets aligned to the TEKS. All Animations include Question - Answer Sheets. Moreover, all ancillaries have a corresponding teacher's edition (answer key) for quick reference and grading.

Writing is encouraged with Activity, Enrichment, Investigations, and Independent Practice Sheets. Strategies for educators to encourage writing are presented in Teacher Guides. Specifically, many of these worksheets include sections that require an essay-style answer. The Learner Journal requires students to discuss the basic core ideas that are covered in the Activity Object, and the Reflections section presents more challenging questions that ask students to examine and extend their comprehension of the content covered. In addition, teaching strategies are discussed in the Engaging the Learner, Closure, and Extension sections of the Teacher Guide, which accompanies every Activity Object.

Making data driven instructional decisions is a critical component in today's classroom. Adaptive Curriculum Science and Math provides a balanced assessment approach where both summative and formative assessments are an integral part of information gathering for student evaluation of learned objectives.

Assessments are given at the end of each Activity Object and are developed to determine what students know and do not know. Each summative assessment is aligned to the objectives and expected outcomes of the specific Activity Object. Summative assessments at the district/classroom level is an accountability measure that is generally used as part of the grading process, which is a means to gauge student learning relative to content standards. End of Activity Object assessments are a tool to help evaluate the effectiveness of the classroom instruction and the alignment of curriculum, or student placement in specific programs.



Formative Assessments are also an integral part of the instructional process. When incorporated into classroom practice, they provide the information needed to adjust teaching and learning in real time. For example, students are asked to develop a hypothesis based on presented content in a "what if" scenario. Probing questions are presented throughout Activity Object and immediate feedback is given to the student. Questions are also asked in interactive simulations where students apply what they have learned. In this sense, formative assessments inform both teachers and students about student understanding at a point when timely adjustments can be made. These adjustments help to ensure students achieve targeted standards-based learning goals.

Formative assessments help teachers determine the next steps during the learning process, as the instruction approaches the summative assessment of student learning. With the Activity Object specific ancillary work sheets, students are given the opportunity to not only practice but also apply what they have learned to real world experiences. It's not teachers just collecting information/data on student learning; it's what they do with the information they collect. Based on this information, teachers can build lesson plans to provide students with additional support and re-teaching opportunities to assist in mastery.

Adaptive Curriculum balances formative and summative student learning/achievement information to identify where a student is relative to learning targets and standards. With built in questioning and application opportunities, and the assessment at the end of the lesson, students should be able to articulate this shared information about their learning. The more teachers know about individual students as they engage in the learning process, the better they can adjust instruction to ensure that all students continue to achieve, by moving forward in their learning.

Students need to be involved as assessors of their own learning. One of the key components of engaging students in the assessment of their learning is providing them with descriptive feedback as they learn. Descriptive feedback provides students with an understanding of what they are doing and gives them specific input on how to reach the next step in the learning progression. Students receive audio and written feedback after each interaction that takes place during the Activity Object. If their response is correct, positive feedback reinforces what they have done. If incorrect, they are given an opportunity to re-learn and retry what they missed. If they miss it a second time, the system will automatically provide additional instruction. Upon completion of the summative assessment, students immediately receive a results report that provides an item analysis. It provides the correct response, their actual result, and a solution explanation for each question. These serve as teachable moments for students to either confirm their reasoning or understand the correct response by describing how it was determined. In whole group and small group implementations, teacher and student team members provide feedback through conversation and immediate verbal response to student answers.

Student data is quickly and easily reviewed by teachers and students and available to both immediately upon completion of the on-line assessment. Parents are encouraged to go online with their students to review assessment results, which are provided in graphical format and item analysis format. Administrative reports are currently generated from our offices through your professional services team. The development roadmap includes an administrative panel allowing principals and district staff to access this information independently. This tool will be released as an enhancement during the 2012-2013 school year.

Adaptive Curriculum offers an easy-to-use learning management system that enables the assignment of content by specific standards or concepts. Up-to-the-minute performance



information with on-demand reporting allows teachers to assess student progress and the level of mastery guiding student intervention as necessary. This is based on the assessments offered at the end of each Activity Object. The program's report displays student level, item level, and aggregate data, thereby making it easier and faster for teachers to make informed instructional decisions.

Adaptive Curriculum's student data management system is completely web based and can be accessed at any time. Student data is also available to the student in their own account, so they can take an active role in their progress. Not only does the student data management system monitor assessment scores, it also monitors students' progress through completion points within a lesson. This information details the amount of time the student spent in the lesson and what percentage of the lesson has been completed.

The two main types of data reported are (1) student and whole class assessment results, and (2) individual student progress through their assigned lesson plans.

The Activity Object Assessment Report provides individual student assessment results in both graphical and item analysis format. Below is an example of the format students will see upon completion of the assessment. Parents can also login in from home to see student data. All data is downloadable to a PDF, HTML, or Excel spreadsheet.

Activity	Object Ass	essment Rep	port			×
Lizzie D	Davis					
AO	Comparing P Submitted on Oct	lant and Anima ober 6, 2011 D	al Cells uration: 00:02:37		60% CORRECT	
	QUESTION	CORRECT	STUDENT	STUDENT	0% BLANK	
	1	C.	с	1		
	2	в	в	×.		
	3	C	Б	×		
	4	в	G	×		
	6	Α.	A	1		

The **Class Assignment Score Report** provides results by assignment for a specific class, individualized student scores, class average scores, and the ability to drill down on both levels accessing more detailed information. With just a single click on the score for a student or class average, the teacher will be taken to the Activity Object Score Report (see below) this provides an item analysis report by individual student or by class with each student's information. This provides the teacher with a quick look at mastery.



on Date: October 3, 2011	Due Date: December 31,	, 2011					
Student	Class		Pro	gress	Com	paring Plant and Animal Cells	Agent Organell
Davis, Lizzie	Science 2nd Per	riod Hers	Cor	npleted		60%	60%
Jasper, Trey	Science 2nd Period Hers		Completed		40%		40%
Jones, Lesly	Science 2nd Period Hers		Completed		80%		80%
Roberts, Mandy	Science 2nd Per	riod Hers	Cor	Completed		40%	20%
	Saissas 2nd Day	rind Hore	Mot	Started		N/A	N/A
Wilson, Andy	Science znu Per	10011613	TADL	0101100		19//3	
Wilson, Andy AVERAGE ctivity Object S Comparing Plan	core Report	Cells	Not	otorios		55.00%	50.00%
Wilson, Andy AVERAGE ctivity Object S Comparing Plan Assignment Name: Plan Student	core Report nt and Animal Cells	Cells Assigned: 10 Q2	V03/2011 Q3	Q4	Q5	55.00% ×	50.00%
Wilson, Andy AVERAGE ctivity Object S Comparing Plan Assignment Name: Plan Student	core Report nt and Animal Cells Q1	Cells Assigned: 10 Q2 B	V03/2011 Q3 C	Q4 B	Q5 A	55.00% X	50.00%
Wilson, Andy AVERAGE ctivity Object S Comparing Plan Assignment Name: Plan Student Wilson Andy Deade Medic	core Report and Animal Cells Q1 C N/A	Cells Assigned: 10 Q2 B N/A	V03/2011 Q3 C N/A	Q4 B N/A	Q5 A N/A	Scores N/A	50.00%
Wilson, Andy AVERAGE AVERAGE Autivity Object S Comparing Plar Automatic Name: Plar Student Wilson Andy Davis Lizzle Debattic Mandy	core Report and Animal Cells	Cells Assigned: 10 Q2 B N/A B \checkmark	V03/2011 Q3 C N/A B x		Q5 A N/A A	55.00% 55.00% X Scores N/A 60.00% 40.00%	50.00%
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Adaptive Curriculum is continually upgrading the content library by providing new and enhanced learning objects to meet the instructional needs of teachers and students. We provide quarterly upgrades/updates, approved by the TEA to meet all requirements and aligned to the TEKS, that include not only new content, but also new capabilities of the teacher management tools.

Training/Professional Development

Being sensitive to the users of Adaptive Curriculum and their learning styles is the foundation of the development of support and ongoing professional development modules within the management system. These features are designed to be available "just in time", once the user has received initial product instruction and is ready to work independently. Built into My Adaptive Space, the teacher management system, a Support page provides access to:

- 1. Step-By-Step Illustrated User Guides
- 2. Step-by-Step Quick Start Guides (no illustrations)
- 3. English Language Learner Guides by content area
- 4. On Demand " How to" Video Tutorials
- 5. Latest news about AC regarding new content and features
- 6. Phone Support from 7am-7pm EST using a toll free number
- 7. Email Support with our technical support team
- 8. Recording of AC trainers and implementation specialists

Available within the Teacher version of the Activity Objects:

- 1. Activity Object Specific Comprehensive Teacher Guides
- 2. Parent Guides
- 3. Teacher Answer Keys for all Ancillary Worksheets

Technical Specifications

Adaptive Curriculum is a hosted service that uses the SAAS model. As part of the annual subscription all users receive new content and updates to AC Math and AC Science regularly. There are no hosting requirements or costs on the part of the district or school and users can access Adaptive Curriculum from any computer connected to the Internet at school or home. It is therefore unnecessary for schools or districts to host Adaptive Curriculum, but a school can set up a cache server if desired to ensure high speed access.

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In addition, our technical support team will assist in setting up an onsite caching and/or proxy server if desired at no extra charge to reduce the amount of Internet traffic.

Cache Server System requirements:

A dedicated computer with a Windows NT-based operating system (Windows Server 2002 or more, Windows XP, Vista and Windows 7 are supported).

At least 1 GB RAM (1 GB in addition to the OS requirement – Example 2GB total for XP)

At least 15 GB Free hard-disk space

Minimum Intel Pentium 4 3GHz (or compatible) CPU

Adaptive Curriculum is compatible with Windows XP, 7 and 8, Mac OS X and later, and the following Internet browsers:

- Internet Explorer 8.0 or later (Windows)
- Apple Safari 5.0 or later (Mac OS X)
- Mozilla Firefox 3.6 or later (All Systems)
- Google Chrome 11 or later (All Systems
- JavaScript and cookies must be enabled in browser
- Browser updates are highly recommended

Adaptive Curriculum is compatible the following devices:

IPAD and IOS devices – Currently most Activity Objects are in Flash and will not run natively on an iPad but there are several 3rd party apps that allow users to watch Flash activities, including Adaptive Curriculum on an iPad. Adaptive Curriculum is currently working to convert its content to HTML5 for iPad Optimization.

Android devices Yes

Recommended System Requirements

Internet Connection

Broadband (DSL, Cable, T1+) connection highly recommended (Minimum 256k connection) Caching and/or Proxy server highly recommended

Hardware Requirements (minimum)

2 GHz 32-bit processor 1 GB of system memory 64 MB of graphics memory



Required Application Adobe Reader version 9.0 or later

Required Plug-ins Macromedia Flash[™] plug-in, version 9.0 or later Unity Web Player

Operating System

Windows XP, Windows Vista, Windows 7 Windows 8 Mac OS X 10.4 or later Service Pack and other updates are highly recommended

Multimedia Requirements

Display unit at 1024×768 resolution (minimum) Speakers or headphones (required for Activity Objects) Printer (required for printing Experiment Reports and Activity Sheets)

Bandwidth Requirement

The recommended bandwidth for Adaptive Curriculum applications is 256 kbps per student.

Adaptive Curriculum will host the content library for all students. There is an option for implementing a cache server at the district office, if desired.

Adaptive Curriculum is a cloud-based solution that provides a username and password specific to each student. Therefore, the student will be able to use any computer with Internet access for Adaptive Curriculum at the school. Students and teachers have 24 X 7 access, allowing them to use the content anywhere there is an internet connection.

As Adaptive Curriculum is web-based, it is not tied to any directories or LDAP environments. We do not provide any MSI packages, as the software that is needed to run Adaptive Curriculum is a web browser with the Unity Player and Flash plugins installed. Adaptive Curriculum is a cloud-based solution hence all updates are completed automatically and on a quarterly basis, at a minimum. Adaptive Curriculum is continuously adding to the content library with new content that aligns to standards. All updates and additions are included with the annual subscription costs.



Adaptive Curriculum offers solutions that transform classroom into an environment where students can develop deep mastery of core concepts in math and science. Initially, this included Activity Object where students engage with interactive content. Today students and teachers can access over 1000 Activity Objects, animations, 3D modeling and teacher tools that monitor progress and achievement and align to the TEKS. Adaptive Curriculum is committed to enriching the solution to expand its content coverage to align to Common Core standards and provide teachers with daily curriculum for their students.

To take a closer look at AC Science Texas, please visit our web site at <u>www.adaptivecurriculum.com</u>.



Bear Creek Middle School Fairburn, GA

Goals

According to Estella Cook, Data Support Specialist at Bear Creek, the school had several goals in mind when it began a pilot implementation of Adaptive Curriculum in August 2009 and provided full access to the student body in January 2010.

"Our first goal was to improve math and science achievement on the Georgia CRCT," says Estella, "and our second goal was to increase student engagement. Then, because our teacher experience levels and content expertise vary widely, a third goal was to support them with an additional tool and fill in any gaps in content knowledge. We also wanted to make the extended day program more enjoyable for students."

The school's science textbook included a virtual lab DVD, but there was no way to track student progress, according to Estella. Because the school had started a formative and summative assessment program, a final goal was to improve the tracking of student performance and levels of understanding.

> Teachers in other content areas are envious—they want something like Adaptive Curriculum.

-Estella Cook Data Support Specialist

Adaptive Curriculum Case Study: Building Math and Science Mastery

Demographics:

- Small Community 25 Miles South of Atlanta
- Title I School
- 80% Black
- 11% Hispanio
- 4% White
- 5% Other

Building Academic Success

At the end of the 2009-10 school year, although students had worked with Adaptive

Curriculum for less than six months, Bear Creek saw considerable improvements in math test scores across all grades and in 6th- and 7th-grade science. According to 7th-grade math teacher Rhonda Mays, "I've seen a remarkable improvement in the retention and understanding of concepts. I no longer have students who are completely lost or behind."

Rhonda attributes this improvement to the program's flexibility and depth. "I can assign activities as make-up work to students who were absent, additional activities to students not performing at a mastery level, and lessons from different grade levels to different students as needed."

The school is pleased with the gains it's made so far and plans to strengthen its Adaptive Curriculum implementation, especially in the area of Special Education. Estella Cook is working with the Special Education teachers to implement the personalization features more fully.

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"This is now our focus," she says. "Since these students are easily overwhelmed, Adaptive Curriculum is showing them only a few activity objects, tailoring the program to their individual needs, and tracking their progress."

Engaging a Range of Students

Talented and gifted (TAG) students at Bear Creek have a tendency to breeze through problems without completing all the steps, according to Estella. "A group of 6th graders tried that with Adaptive Curriculum, and 'guess what' they got it wrong. So they had to go back and really figure out what was going on." TAG students complete most Adaptive Curriculum lessons outside of class, and many work on the program independently in the after-school program.

Estella reports that she was working with a teacher in the after-school program when a Special Education student asked for help with Adaptive Curriculum. The teacher asked him to wait a few minutes, but he soon completed the activity on his own and was thrilled with his accomplishment. "I saw that he was engaged enough to keep trying and not give up," says Estella. "That is so powerful."

Rhonda Mays believes that what sets Adaptive Curriculum apart is its ability to completely engage students. "Now I don't have to walk around and make sure they are not wasting time," she says. "I walk around and actually answer their math questions."

In science, students are motivated to keep on playing and beat the game portion of the program, according to Estella. And in the afterschool program, they are enjoying the change of pace from the regular school day.

> I saw a Special Ed student who was engaged enough to keep trying and not give up. That is so powerful

-Estella Cook Data Support Specialist I've seen a remarkable improvement in the retention and understanding of concepts.

-Rhonda Mays 7th-Grade Math Teacher

Involving Teachers

Estella has found the online teacher guides to be essential in helping teachers get up to speed. "They show how to use the program with the whole class, in the computer lab, and one-onone, and they provide background content that helps teachers be more confident," she says.

During the summer of 2010, a group of teachers participated in an extensive planning session to build Activity Objects into current lesson plans. The principal then requested that all teachers use the new lesson plans to ensure consistent use. "Now that the activity objects are specified within the instructional units, teachers are saving a lot of time," says Estella. "And teachers in other content areas are envious—they want something like Adaptive Curriculum."

Next Steps

"We are meeting our goals," says Estella," and we plan to continue integrating the activity objects into our curriculum. We are looking forward to the next batch of activity objects and beginning to communicate with parents about the program."

Bear Creek shared its successes using Adaptive Curriculum with the local high school, which then wrote Adaptive Curriculum into its school improvement plan for implementation in the fall of 2010. "This will provide continuity for the students," says Estella, "and it will help the high school teaching staff, since students will arrive already familiar with the program. We expect this to be a win-win situation for students and teachers alike."

For more information on Adaptive Curriculum:

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Besteiro Middle School Brownsville, TX

Adaptive Curriculum Case Study:

At-risk Students Make Gains with Real-world Lessons

Remembering Concepts

In 2007, when Principal Alma Cardenas-Rubio saw Adaptive Curriculum at a technology conference in Atlanta, she knew immediately that this was something she wanted for her school, where almost 75% of the students are at risk.

"What I liked from the start were the reallife scenarios," says Alma. "Often when we teach something in class, students have nothing to relate it to in the real world. So they forget it. I could see that Adaptive Curriculum would help them remember concepts because it connects to real applications."

Building Motivation

Unlike many schools, Besteiro Middle School began its Adaptive Curriculum implementation with the students, not the teachers. "It can be difficult to get teachers to buy in to new

> Our science scores have gone up six or seven points a year, and our math scores three or four points a year.

-Alma Cardenas-Rubio, Principal

Demographics:

- · 109/ Lispania
- 39% White
- 14% Black
- · 3% Asian

technology applications," says Alma, "so, with the exception of one science teacher, we began our implementation with the students."

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For the first year of

implementation, before the teachers were trained, students used the program independently in the computer lab. The strategy was to let students explore the interactive Activity Objects and report back to the teachers. "Our students didn't have to use Adaptive Curriculum," says Alma. "They were motivated to use it."

Fostering Understanding

According to Alma, "Students reported that Adaptive Curriculum helped them understand lessons they hadn't understood in class. One student told his teacher, 'I didn't get it your way, but I got it when I did it in Adaptive Curriculum.'

It was also very rewarding for students when they were able to show teachers how to do something in Adaptive Curriculum, and it was very motivating for the teachers to see how enthusiastic the students were."

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"When students get online with Adaptive Curriculum, that's the moment they really start thinking and using their brains," says Alma.

"They often mention real-world scenarios that they say helped them understand something, such as the paint rollers in the lesson on Calculating the Circumference of a Circle."



Calculating the Circumference of a Circle

Extending the Implementation

Teachers were trained over the summer before the second year of implementation. They are now integrating the software into whole group instruction in the classroom, often pulling out sections of lessons to introduce concepts, reinforce instruction, or provide additional practice.

Every student also has access in the computer lab and at home. According to Alma, "Previously, our students did not have much support from parents at home, especially in I didn't get it your way, but I got it when I did it in Adaptive Curriculum."

-Sixth-grade Student

math. Now more parents are helping students with math and science, and they are seeing the benefit of the software. Adaptive Curriculum is helping us create an instructional setting at home."

Improving Test Scores

"Now when students get to the test, they have an image in their minds—something they can remember and relate the question to," says Alma. "And that is reflected in our test scores. Over the last two years, our science scores have gone up six or seven points a year, and our math scores three or four points a year."

Based on its successful implementation so far, the school is planning to move to a campuswide implementation next year, using Adaptive Curriculum across all grades in labs, classrooms, and homes.

Now when students get to the test, they have something they can remember and relate the question to.

-Alma Cardenas-Rubio, Principal

For more information on Adaptive Curriculum:

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Adaptive Curriculum Case Study:

Building Motivation and Improving Performance

C.W. Ruckel Middle School Niceville, FL

Goals

C.W. Ruckel, generally a high-achieving school, initially introduced Adaptive Curriculum for its lower-achieving students, according to seventhgrade science teacher Alan Anderson.

"In our regular classes, as opposed to our advanced classes, we hadn't yet found the right combination to help students connect with school," says Alan. "We wanted to help these students value their school experience more and improve their scores on standardized tests."

The school wanted a computer-driven solution because of students' positive response to technology, along with the ability to track student progress and the flexibility to use with whole group and individual instruction. Other major requirements were alignment to the Florida Sunshine State Standards and easy navigation for students and teachers.

According to sixth-grade science teacher Chris Brown, the school was also looking for a solution with a real-world focus. "We believe that a relevant curriculum is an effective curriculum—students need to be able to apply their knowledge in the real world in order to retain it."

Adaptive Curriculum is their favorite thing to do all week.

-Alan Anderson, 7th-Grade Science Teacher

Demographics:

- 800 Students
- Title I
- 87% White
- 2% African-American
- 2% Hispanic

Implementation with Different Groups

Adaptive Curriculum, which teachers saw at the Florida Educational Technology Conference in January 2010, appeared to address these

needs. The school set up a controlled study in which one regular sixthgrade science class uses Adaptive Curriculum and the other does not. Both seventh-grade regular science classes are using the program.

The implementation was also expanded to include the advanced science students. "This group is intrinsically motivated," says Alan, "but Adaptive Curriculum meets a different need. I'm using it with these students in presentation mode, to introduce concepts using the classroom projector. It's excellent for introducing a unit and for reinforcement."

Building Enthusiasm

Adaptive Curriculum is addressing the school's goal of building motivation. "It's working," says Alan. "Students like it because it's entertaining and realistic. It's also very easy for them to log on and jump right in."

When Alan's students arrive on Mondays, their Adaptive Curriculum assignments are up on the

board. "They always rush to check the board," says Alan. "Adaptive Curriculum is their favorite thing to do all week, and it's all they would do if I would let them. They enjoy using the concepts I'm teaching in class to solve problems, so it motivates them and reinforces concepts. They're even accessing assignments early and jumping ahead—a good problem to have."

According to Chris, Adaptive Curriculum allows teachers to cover the material in a different way and reinforce instruction. "We do have labs and hands-on science, but we also have space and budget limitations," says Chris. "Adaptive Curriculum provides a different way to teach the content, with a real-world focus, and it's a way that students like."

Students can log on to Adaptive Curriculum at home, and many choose to do so, according to Chris and Alan. "When students take it upon themselves to do more at home, that's a good sign," says Chris. "When I ask students to work on vocabulary words at home, maybe eight will do it," says Alan, "but twice that number volunteer to work on Adaptive Curriculum at home."

Alan believes that students are enthusiastic because Adaptive Curriculum appeals to different learning styles and to digital-age learners. "Some students are more visual, and some are more tactile. Adaptive Curriculum works for both groups, " says Alan. "And it feeds into their way of learning much more than listening to me or reading a textbook." The Adaptive Curriculum students are doing better than the control group,

-Chris Brown 6th-Grade Science Teacher

Improving Performance

According to Chris, teachers enjoy being able to present to different cognitive levels at the same time using the differentiated instruction available through Adaptive Curriculum. This capability, along with the positive response from students, is impacting student performance.

As part of the control group study, students were tested at the beginning of the year and will be tested again at the end, with ongoing interim assessments. "The Adaptive Curriculum students are doing better than the control group," says Chris, "so we are seeing good progress toward our goal of improved student achievement."

According to Alan, " My students are doing better and better on the Adaptive Curriculum built-in assessments, and they say that the tests are helping them. I like that the tests are only five questions, so students don't mind doing them. They also give me a window into how students are doing and where they need help."

Alan emphasizes that his students are experiencing more success in science and building a new sense of mastery, "which is so good for them," he says. The school is evaluating progress toward its goals and considering an expansion to all 800 students next year.

The Adaptive Curriculum tests give me a window into how students are doing and where they need help.

-Alan Anderson, 7th-Grade Science Teacher For more information on Adaptive Curriculum:

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