



**Aventa Learning's
Curriculum Development Methodology**

I. Aventa Provides a Depth and Breadth of Online Learning Content

Aventa Learning offers school districts a unique opportunity to expand and diversify their curriculum offerings through a comprehensive set of online courses for middle and high school students. Aventa's registry of media-rich course offerings is large and reaches across numerous subject areas. Each course is aligned to key state and national standards and is responsive to student ability levels. The curriculum development process is staffed with a team of experienced educators and instructional designers who craft content using research on how people learn and the best practices of online educational environments.

II. Expertise at Work: Creating and Delivering Superior Courses

A. The Educators who Create the Content

To meet the high expectations of districts, schools, teachers, parents and students, Aventa Learning has an exhaustive process for developing quality course content. Subject area, teaching, and instructional design experts all have a hand in creating the courses. Believing that educational experience matters, Aventa Learning hires teachers, educators, and scholars to write its courses. Writers come from a variety of teaching backgrounds and have served at least three years as a certified classroom teacher within their specific disciplines. Most have over 10 years of classroom teaching experience. Additionally those who construct the AP[®] courses are either college professors or have completed their general exams.

All Aventa writers and reviewers, regardless of experience and degree, go through an extensive, 30-50 hour training on methods for crafting dynamic learning environments that are sourced in educational research and well-accepted educational content development processes (Wiggins & McTighe, 2005). The course also provides writers an overview of the company's content standards and expectations. The project managers, who oversee course production, come from teaching backgrounds as well, which further ensures the quality of Aventa Learning's content.

B. Aventa Educational Content and Instructional Teams

During the development process, 15-30 educational experts, depending on the specific discipline, will either plan, write, illustrate, program, or examine and review the content of a course. Although it takes approximately 60-100 hours to craft the average raw content for an Aventa Learning course, the total development hours grow substantially when the planning and reviewing of content is taken into account. This time is well spent to assure clients receive superior educational online content. Additionally, since standards, educational methods and technologies change from year to year, planning and review teams are essential to assuring that

the online courses are in sync with current classroom practices and learning research. This means that established courses are continuously reviewed and revamped if necessary to be responsive to shifts in standards and classroom practices. For this reason, it is crucial that Aventa has experienced educators who write, review and deliver the course material.

While much attention to detail is devoted to course development, course delivery is also of importance to the success of Aventa courses. Because the instructors are familiar with how courses are received and see the content in action, they are also linked into the course development process often as reviewers. The result of this collaboration between experts in various fields and commitment to students produces a highly effective set of course offerings that go deeply into content areas while motivating students through interactive learning.

Consequently, Aventa Learning's synthesis of expertise forms the "pedagogical content knowledge" (Shulman, 1986) that acts as the foundation for its courses. While depth of knowledge associated with content, pedagogical, and technological integration is a complex and challenging task for traditional classrooms (Ornstein, Thomas, & Lasley, 2000), Aventa Learning development teams collaborate to leverage their collective expertise to produce a robust and challenging online environment to optimize student academic engagement and learning.

III. Approaches behind Aventa Learning's Course Development

A. Working with Standards

Well-established processes and methods for developing educational content are central to creating Aventa Learning courses. Principles from "Understanding by Design" (Wiggins & McTighe, 2005) act as the backbone of course development. To launch the course-making process, standards specialists select which educational objectives will be used to steer course development. Aventa uses the suggestions from the National Councils of Teachers to inform which sets of state standards are used to build content. Once a common set of standards is selected, the learning objectives are then placed in a preliminary order to guide the writer using both vertical (between grades) and horizontal (within grades) alignments (Martineau, Paek, Keene & Hirsch, 2007). These beginning stages outline the curriculum map for the lessons.

Educational writers then parse key state and national performance standards to call out the essential learning objectives or "power standards" that the lessons and courses must meet (Stiggins, Auter, Chappuis & Chappuis, 2007; Reeves, 2005). Bloom's taxonomy (1957, Anderson, 2001) and Webb's Depth of Knowledge (1999;

Webb, 2005) guide this process to highlight the complexity of the standards and levels of knowledge and understanding required of students.

B. Locating the End Goal

By using a “backward design” approach (Wiggins & McTighe, 2005), writers craft the course starting with the assessments first. By emphasizing the end product and the skills and knowledge a student should have acquired by the course’s completion, writers gain a coherent picture of the curricular and instructional goals for the course and what the students are working towards. The process shapes the contours of how student success will be measured or proven. Aventa strives to create measurements of success that go beyond memorization by creating authentic contexts that have connections to real world situations (Stiggins, 1987; Wiggins, 1993). Many state standards have actually facilitated the shift from rote memorization to more authentic assessments by focusing on higher order thinking objectives. As a result, Aventa formative assessments often measure learning growth more directly than traditional assessments by having students apply standards through a performance task that reflects a true-to-life activity.

Content development informed by “backward design” principles better assures success for the students since instructional practices are sourced in the assessment objectives. From an instructional standpoint, “backward design” is meant to avoid simplistic textbook coverage of content and activity-oriented teaching that has no clear purpose or set of priorities, which is often the pitfall of linear, rational planning models (Clark & Peterson, 1986). In contrast, Aventa Learning provides students with “considerate” learning environments in which instructional strategies are linked to assessment objectives. This bridge acts as the pathway for targeted student learning that is more likely to transfer across contexts (Royer, Mestre & Dufresne, 2005).

C. Scaffolding Complexity

The writers group sets curriculum and instructional strategies into progressive curricular units. Using guidelines established by researchers (Morrison, Ross & Kemp, 2007), writers codify the scaffold to assure objectives are introduced logically and practiced repeatedly with increased levels of complexity. From an instructional standpoint, student guidance through the content is more direct and frequent at the beginning of the units and slowly releases with time giving students increased independence and room for exploration of topics (Vygotsky, 1978; Bruner, 1975). The scaffolding of content and instruction assists writers as they incorporate two broad learning goals for the student—to be skillfully efficient either with using or recalling core content and to be able to apply or construct conceptual understanding of the content in service to specific authentic goals.

D. Constructing Knowledge

To facilitate the journey toward these goals, Aventa Learning creates learning environments in which online instruction builds knowledge through experience and increased student understanding via authentic situations and progressively difficult tasks. Aventa Learning courses are intended to engage students as active participants in the learning process. This becomes particularly important in courses in which teacher guidance is limited. In such situations, constructionist instructional techniques are specifically built into the system to prompt and motivate learners to construct meaningful relationships between the new knowledge presented in the instruction and the learner's existing knowledge (Morrison, Ross & Kemp, 2007).

IV. Learning Theory Underpinnings

While the above theoretical approaches inform content development, there are numerous theories of learning incorporated into Aventa Learning courses that make for a solid educational experience for students. Below is a sampling of learning theories that are embedded into Aventa course design.

A. Triggering Pre-Existing Knowledge

Activating student prior knowledge is part of every Aventa course lesson. This strategy has an extensive research base that is rooted in the observation that learners construct new knowledge and understandings based on what they already know and believe (Piaget, 1973; Vygotsky, 1978). Video, stories, animations, simulations, and writing are all methods that may be used to have students initially think about what they know about a topic and help them make relevant what they will learn. If initial understandings are not engaged, the learner may fail to grasp the new concepts and information that are taught, or the student may learn the concepts and information for an assessment, but return to their misconceptions outside the classroom (NRC, 2000). Indeed, without activating prior knowledge, learning transfer between contexts can be diminished. For instance in the area of math, concepts will likely be more coherent and pertinent if prior knowledge is activated to form more thorough understanding of how to solve problems. In fact, teaching the concepts in isolation can have a detrimental learning effect. Without instructional guidance, learners may not connect everyday knowledge to subjects taught in school or other educational settings. While one's prior knowledge can also make it difficult to learn new information or concepts, the feeling of confusion can at least identify the existence of a cognitive disconnect, and this struggle can actually prove quite productive for the learner if instruction is used to highlight these differences in understanding (NRC, 2000). Thus the instructional component is an essential factor of Aventa's learning environments.

B. Strategizing the Right Time to Tell

Direct instruction is used as part of all Aventa courses. Contrary to common understandings of constructivist approaches to education, direct instruction is part of constructivist pedagogy since new knowledge has to be communicated to students if they are to have something to construct. Using purely a discovery and unguided method of instruction is not supported by research as a sound method of practice (Kirschner, Sweller & Clark, 2006). At the same time, direct instruction alone is ineffective and produces a lack of motivation for students. Consequently, direct instruction happens purposefully and under the right conditions in Aventa courses. Having students grapple with ideas on their own or in collaboration can accentuate the power of direct instruction. Indeed, there is a “time for telling” to highlight and optimize learning objectives (Schwartz & Bransford, 1998). In Aventa courses, for instance, focused initial presentation of the content usually follows or precedes student activation of prior knowledge to surface contrasts between student and academically substantiated understandings and between different models and situations. Varying levels of direct instruction are incorporated into courses depending on the subject matter and the goal of instruction.

C. Establishing Generative Design Strategies

In Aventa courses, activating prior knowledge and utilizing direct instruction are followed by generative strategies that prompt the student to form or construct a greater understanding of the content. The activities are often inquiry based in nature or modified versions of discovery learning, allowing students time to interact with materials and manipulate objects so they can construct their own interpretation through guided exploration. To develop competence in inquiry and knowledge production, Aventa courses pedal students between learning factual knowledge and key concepts, understanding the larger context and conceptual framework in which the facts and knowledge operate, and organizing knowledge in ways that provide opportunities for students to retrieve and apply their new knowledge (NRC, 2000). During this process, students begin to develop an understanding of the problem or concept in terms of its big idea, as opposed to simply applying a formula, fixating on only one part of the problem, or calling on everyday impressions and intuition (McTighe & Seif, 2003; Michael, McFarland & Wright, 2008).

Interactive opportunities between student and teacher, student and student, or student and simulation or animation, play a large role in Aventa courses to facilitate students’ growth in learning. The interaction not only engages the students, but also provides them with multiple models and means by which to learn for understanding.

- **Incorporating Multimedia**

Although students and teachers have increasingly called for more visuals and interactive media within online learning environments, an array of research also suggests that multimedia helps facilitate learning. While research studies have shown the effectiveness of nonlinguistic representations in building understanding (Marzano, 2007), other researchers have investigated how various media elements in combination facilitate learning or overwhelm cognitive processing (Mayer, 2009). Taking this research in consideration, Aventa carefully selects and implements multimedia for specific learning purposes. Multimedia is used as a way to activate prior knowledge, directly instruct, and experiment and play with concepts across disciplines. The visual representations have direct connections to the course's content, and often the visual adds further meaning to the text. Interactive elements are also embedded into the instructional and assessment content in order to provide a varied and motivating experience for the students (Sims, 2003). Games, video, simulations and animations are all used to enhance learning in Aventa's learning environments.

- **Finding ways to Collaborate through Inquiry**

Although many of the courses occur asynchronously, Aventa content developers and designers have established methods of collaboration both real and virtual as a part of course offerings. In fact, state standards have grown to incorporate collaboration and peer review. Aventa has been responsive to this change. Many of the chemistry and earth science courses require some sort of active inquiry component. While peer-to-peer collaboration can occur in cohort-based classes through discussion boards and shared projects, virtual partners are being used in Aventa science courses where students work with an avatar as they perform "hands-on" experiments. The benefits of inquiry methods of instruction in science are well established (Hofstein & Lunetta, 2004), and online simulations and virtual worlds being used to facilitate inquiry have proven valuable in the researched literature (Ma & Nickerson, 2006). Alternatively, Aventa also offers science kits for science experimentation at home.

- **Providing Feedback and Formative Assessments**

Throughout the Aventa curriculum, formative assessments are integral to student learning, expanding assessment beyond traditional concepts of testing. Frequent formative assessments, which are conducted through interactive multimedia, help students make thinking visible to themselves and instructors (Wang, 2007). The immediate automated and teacher feedback is both general and targeted depending on the assessment's

goals, and the feedback is intended to guide the modification and refinement of student thinking (Vye, Schwartz, Bransford, Barron & Zech, 1998). Assessments are designed to focus on the students understanding of concepts rather than merely repeating facts or performing isolated skills.

Course instructors have access to the results of student formative assessments. Since the assessment items are connected to standards, instructors can view which objectives are missed most often, and thus they can steer their personalized instruction to assist students through their “developmental corridor” by helping them navigate academic trouble spots. The assessments are meant to be learner-centered and allow students to see progress over time. Aventa produces formative assessments for the explicit purposes of instruction—redirecting students toward the appropriate answer if need be and allowing them to monitor their progress. The process increases the ability of learners to transfer knowledge between contexts, and it accentuates the value of revision of thought (Black & Williams, 1998).

- **Learning Actively**

Metacognitive instructional strategies and practices are an important part of Aventa’s courses. Metacognition is described as thinking about thinking, and in an educational sense, it refers to people’s ability to predict their performance on various tasks and to monitor their current levels of competence and understanding (Flavell, 1973). Instructional practices that are congruent with a metacognitive approach to learning include a focus on sense-making, self-assessment and reflection. These practices have been shown to increase the degree of transfer in student learning between contexts (Palincsar & Brown, 1984; Scardamalia, Bereiter & Steinbacher, 1984; Schoenfeld, 1991). Modeling expert thought processes through authentic situations helps illuminate metacognitive strategies for students. In Aventa courses in social studies and science, for instance, students are exposed to particular brands of inquiry and asked to think like historians or scientists as they work with primary sources and data (Wineburg, 1991; Charney, Hmelo-Silver, Sofer, Neigeborn, Coletta & Nemeroff, 2007; Sadler, Burgin, McKinney, Ponjuan, 2009).

Using proven content development techniques that are informed by well-accepted educational theory and practices are key to producing courses of superior quality. Aventa Learning uses these methods and theories to inform all course development—from creation through review and out to publication. Expertise in subject area and pedagogical knowledge further assures that the student experience is dynamic and sourced in standards. These are the principles upon which Aventa Learning coursework is founded.



About Aventa

Aventa Learning partners with schools and districts to offer [online courses](#) to middle and high school students. Aventa's [online curriculum](#) includes core, elective, [foreign language](#), [Advanced Placement](#), and [credit recovery courses](#) for grades 6 - 12. Aventa's [virtual school solutions](#) are flexible and cost-effective whether your school or district offers [online curriculum](#) to thousands of students or less than a handful.

For more information on middle and high school courses from Aventa:

Aventa [course alignments to state standards](#)

[Case studies](#) of Aventa's partners' success

[Connect with](#) an Aventa representative

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