

TIPS, TOOLS & INTELLIGENCE FOR DEVELOPING TALENT

PERSONALIZING TRAINING WITH ADAPTIVE LEARNING SYSTEMS

James Bennett



INSTRUCTIONAL DESIGN

PERSONALIZING TRAINING WITH ADAPTIVE LEARNING SYSTEMS



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James Bennett has been a leader and innovator in education technology for almost two decades. As a professional educator, he has managed teams of instructional designers for 36 colleges and served as a subject matter expert in learning for the corporate sector. Bennett has participated in the single largest rollout of adaptive learning systems in education, developed and implemented a successful pilot for integrating adaptive and teacher-led instruction, and initiated the concept of multicourse learning path. In the adaptive learning courses implemented under his guidance, he has seen a documented increase of 20 percent in learner performance and mastery of competencies.

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In recent years, there has been quite a bit of excitement around the implementation of adaptive learning. Colleges and universities are adopting adaptive learning systems, and corporations are quickly following suit by using it to enhance training in ways that were simply impossible before.

While the concept has been around for some time, only through recent advances in technology has the approach become scalable to teach large groups of learners in ways that best serve each individual.

This issue of *TD at Work* will present an overview of adaptive learning and then take a deeper dive into details that will make working with adaptive learning systems much easier and more effective. In this issue, I will:

- identify the types of problems adaptive learning solves
- define the more common components through a model adaptive learning system
- design and develop in an adaptive system
- identify what to look for in selecting an adaptive learning system
- outline ways to show management and decision makers that adaptive systems are effective and advantageous.

WHAT IS ADAPTIVE LEARNING?

There are numerous interpretations of what adaptive learning is, but, unfortunately, many of those have centered on a specific product or delivery system. To develop a single, all-encompassing definition, you need to step away from the specific technology used, setting it aside for a moment with the understanding that the technology is just a delivery tool and that adaptive learning is an approach that works to tailor the learning experience to an individual's specific needs.

My own first true experience with adaptive learning did not involve computers or any learning technology, but it provided a good model of what effective adaptive learning should look like. During my undergraduate studies, I had taken a series

of courses with one professor, who at the end of one class told me to come by his office. Popular tradition held that a summons to the professor's office was usually not a good thing, but I had no reason to suspect that I was in any kind of trouble. Nevertheless, I was nervous when he asked me to have a seat.

The meeting began with the professor asking me a series of questions on topics related to my field of study. This went on for 15 minutes, and then he turned to a pile of books on his desk. He pulled out three and handed them to me. "Read these and bring them back next Thursday at the same time." That was it. The meeting was over and somehow I had earned myself three extra books to read in a week.

During our next meeting, much of the same occurred. The professor asked me questions about the assigned readings, we discussed the important points, and he gave me another pile of books to read. This pattern continued for more than a year.

I noticed that the books were all from the university library with current due dates stamped inside. In other words, the professor was taking his own time to go to the library to select books for my studies. In essence, I was receiving a tailored education based on my responses to the information he was providing me.

Objectives and Learners in Adaptive Learning

Let's now look at adaptive learning in the context of a classroom with multiple learners. Imagine the course has three learning objectives—three aspects we want the learner to come away with and three learners participating.

The first knows little about any of the objectives and is starting from scratch. Once the adaptive learning system identifies this, the learner is presented with the material for each learning objective and the system occasionally checks his progress until he has learned each objective to the required level of knowledge.

Quite the opposite, the second learner is already an expert in objective A, knows little about objective B, and is somewhat familiar with objective C. An adaptive learning system would evaluate this learner's ability and create a custom experi-

ence for her. The course would have nothing, or very little, material about objective A, quite a bit about objective B, and what hopefully would be the best content and material to help the learner meet objective C.

The third learner is much like the first in that the training program they are both taking is all new information, but this learner is able to quickly pick up and master learning objectives A and B but needs more time to achieve the required skill level for objective C. In this case, the adaptive learning system identifies when the learner attains a satisfactory level of the first two objectives and begins to focus the material for the final objective, even possibly supplying remediation, if required.

In this example, three people take the same course but the content, assessments, and experience are tailored to their specific needs, strengths, and weaknesses. With that in mind, we now have our first two components for a definition of adaptive learning—an educational approach that:

- allocates learning objects to students based on need and response
- provides a unique experience for each learner.

Technology in Adaptive Learning

Now we are ready to add the technology component back into our definition. As evident from the example, when working with a small group of learners, it is possible for a single instructor to tailor the individual learning experience to best suit each in their specific needs; but to do this with a large group of learners presents a problem. This is where technology comes in. Technology, usually in the form of artificial intelligence, helps determine each learner's exact needs and then delivers the required content to fulfill those needs on an individual basis.

This has proved extremely beneficial to learners, and several studies have shown results from adaptive learning that are quite impressive.

- In the article “New Research Validates Effectiveness of Adaptive Learning,” John Boersma details that learners in an accelerated, adapted course scored six times better than

their counterparts in traditional courses and in half the time.

- Further, the study showed a nearly 50 percent increase in learners who scored in the upper 20 percent using adaptive technology rather than traditional methods.
- Constance Johnson, in the article “Adaptive Learning Platforms: Creating a Path for Success,” states that learners showed a 27 percent pass-rate increase.

ADAPTIVE LEARNING IS AN APPROACH THAT WORKS TO TAILOR THE LEARNING EXPERIENCE TO THE INDIVIDUAL'S SPECIFIC NEEDS.

Adaptive Learning Structure

While all adaptive learning systems are not the same, most follow a similar structure to create a personalized learning experience. The training activity usually begins with the learner either taking an assessment or viewing some content and then taking an assessment. The purpose of the assessment is to determine what areas of knowledge the learner may already know and those the training program should focus on. The system uses the early assessment to build an overall plan for the learner.

What usually follows is a series of sections that include teaching content and smaller assessments that are intended to measure how well the learner is acquiring knowledge from the training course. In these segments, the adaptive learning system is usually comparing the results of the smaller assessments to the original and adjusting and adapting the personalized training to the learner's needs. The learner then advances through the content until the assessments document that the learner has acquired all the required knowledge.

Some systems will also periodically check on previous learning. In these cases, the assessments will occasionally contain questions about earlier sections of the course—those the learner has already mastered. These assessments ensure the

learner retains the knowledge and that the unique training content for the learner remains valid.

Be aware that the process just described is a generalized learner experience with adaptive learning systems and that different products may use an alternate order or may group the assessment or learning cycle into smaller or larger bits. Here are some examples:

Content > Assessment > Adaptation>
Content > Assessment > Adaptation

Precontent Assessment > Adaptation
> Content > Assessment > Content >
Assessment > Adaptation

Precontent Assessment > Adaptation
> Content > Content > Content >
Assessment > Adaptation

The key to recognize here is that the system always adapts the material that will be presented based on an assessment.

PROBLEMS ADAPTIVE LEARNING SOLVES

While the advantages of the personalized learning experience are evident from the learner's perspective, there are also several problems that adaptive learning can remedy in ways that other approaches cannot, making compelling reasons to implement an adaptive platform. Nick Howe, in his article "Six Killer Uses of Adaptive Learning," explains benefits of adaptive learning for organizations.

Benefits at the Organizational Level

Learning time affects the business. By providing a customized learning experience, time is not wasted on materials the learner knows or has mastered. If the learner already understands part of the training content, that portion is removed, thus shortening the overall training time.

This can be a tremendous benefit when employees need to spend as little time off the job as possible. With good adaptive learning systems,

time saved can be documented, and that data can be used to determine a dollar amount of savings resulting from adaptive learning.

Information and training courses require frequent updates. With the compartmentalized approach to information presented in adaptive learning systems, it is usually easy to update or add to any section of the training program. In some nonadaptive systems, any type of update requires extensive training redevelopment or an entirely new training program. If the course contains material or concepts that are continually evolving, it is a good candidate for adaptive learning.

Learning the material is vital to the business. It's often difficult to determine what level of learning has taken place. This can be a huge problem when information in the training program is critical to the business.

While assessments that attempt to measure learning will accompany good training, those are not always accurate or—worse—can be erroneous if learners share answers. In adaptive learning systems, the entire learning experience is based on accurate and exact measurement of achieved learning. Since the experience is different for each learner, it is difficult to fool the system.

Documentation of learning is required. In many cases, the law or company policy may require documentation of the training, and this is another issue adaptive learning resolves. Unfortunately, many conventional systems merely rely on someone recording whether a learner completed the training program or was able to reach an appropriate score on any assessments. Adaptive learning systems, by their very nature, record and verify that each individual learner understands the concepts covered.

Learners vary in knowledge level and aptitude. One of the bigger challenges facing learning professionals is developing training solutions that a wide array of learners will use. Finding the correct presentation to meet the needs of all members of an audience can be difficult. Even if a particular course has been designed to provide the best learning experience for the largest group, learners on either side of the spectrum can be marginalized. Yet, since adaptive learning provides individualized training, this problem is solved.

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