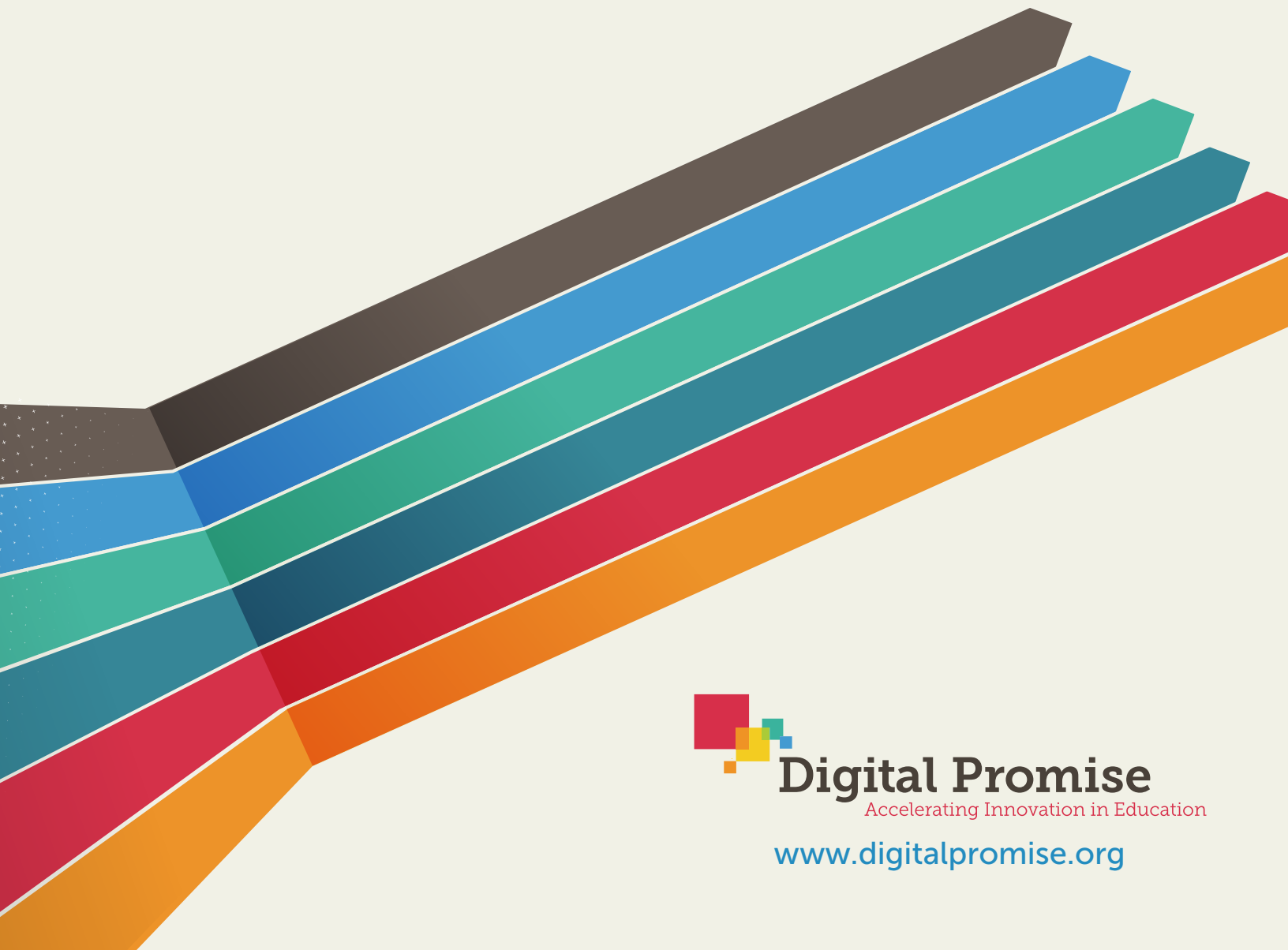


Designing Technology for Adult Learners:

Applying Adult Learning Theory



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It's a staggering statistic — 36 million adults in the United States read at a 3rd grade level or below.¹ Of these, more than two-thirds are members of the workforce but don't have the skills for advancement.² Yet, finding and completing education programs is often a struggle for this population.

Access to quality education programs is limited at best — our current adult education programs can only handle about four million of those 36 million learners.³ And, because they often juggle multiple jobs and family duties, staying in and finishing a program is a challenge for most.⁴ Additionally, much of what these students are learning does not align with the skills they need for today's workforce.⁵ So, often students (who may not be confident in their learning skills) struggle through courses that ultimately don't help them get to the next level.

The use of technology to support learning for K-12 students is gaining popularity, leading many to ask whether there might be similar solutions for low-skilled adults. Although in general these learners haven't had regular access to technology and broadband, recent surveys indicate that increasingly they own smartphones and use them to access the Internet, download apps, and learn.⁶

According to a Tyton Partners report, an estimated 75 percent of students enrolled in adult education programs own smart phones.⁷ The same survey indicates that as many as 72 percent of adult education administrators and instructors believe in the potential use of mobile devices for instructional purposes.

The potential for technology to play a critical role in providing adult learning opportunities is ripe. Today, there are a number of programs

making powerful use of technology with these learners, including online courses for factory workers in rural communities, cell phone based text and audio programs for English language learners, and libraries providing tablets for patrons to learn digital literacy skills.

This is only the beginning. 36 million adults means a potential market opportunity estimated at three to six billion dollars.⁸ As entrepreneurs and developers seek to capitalize on this opportunity and provide quality digital learning opportunities for underserved adult learners, it is important to consider ways to design products that will best fit how adults learn.

Research about adults as learners can inform the design of effective digital learning experiences. Although there is no one principle that can be applied to all adults, the design principles outlined here are based on five of the prevailing theories about how adults learn: andragogy, experiential learning, self-directed learning, transformational learning, and neuroscience.

1. Start with experience

At the heart of all of theories about how adults learn is the notion of experience. Andragogy, a theory born in the late 1970s, acknowledged that adults bring a wealth of experience to their learning and use this experience as a base when

they learn.⁹ Learning is successful when adults can make connections between their past experience and new information they are learning,¹⁰ or when they see how learning is relevant to them and their lives.¹¹ In some cases, explaining why the information will help them in their current or future work can make the connection.¹²

Also helpful is finding ways for students to “do” something with the new knowledge. The more practical and authentic, the better.¹³ For example, many adult English language learners lack the vocabulary necessary to fill out basic job application forms. [USA Learns](#), an online ESL program, created a lesson that teaches students that needed vocabulary in the context of a sample job application. As a final assignment, students fill out a job application form for a real job. Other “doing” strategies include authentic problem solving activities, role-playing, simulations of real life situations, case studies, and games.¹⁴

Additionally, there is no one typical adult learner experience to rely on — learners have varied educational backgrounds, employment history, travel experiences, ethnic backgrounds, family situations and the like.¹⁵ So when designing authentic activities, it is important to include a variety of perspectives

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and examples so students will find something they can relate to and connect with.

2. Take a problem-solving orientation

Because their learning is rooted in experience, adults are practical and naturally oriented to solving problems in their lives.¹⁶ In addition, we know from neuroscience that the brain continues to change and grow through adulthood,¹⁷ and that learning centered on problem solving helps make necessary connections for such growth.¹⁸ The key is to structure problems on what the learner encounters in work/life situations, and then help them practice strategies to solve them.¹⁹

A good example comes from Pine Technical College in Minnesota, where [a small technology group](#) developed a game for students who want to work in the medical profession. The game is based on realistic situations, and is used to train students for work in hospitals and clinics. After creating an avatar, students encounter a series of problems that emphasize skill development, such as how to deal with death and sickness, how to talk to patients, and how to engage family members of patients. Ultimately, the more learners can practice in authentic situations and apply what they learn immediately, the more likely they are to develop new skills.²⁰

From a brain science perspective, it’s also important to include problems that involve both sides of the brain’s learning centers. Specifically, learning activities that draw on the creative strengths of the right side of the brain *and* the verbal and analytical strengths of the left side are most effective.²¹ So, incorporating multiple approaches and pathways to solutions in games and activities is a good strategy to help students use both sides of their brains when solving problems.²²

Further, finding ways to incorporate assessments and feedback loops within the problem-solving environment helps students monitor their learning.²³ Games and simulations can be designed to provide opportunities for instant and continuous feedback. In the [medical simulation game](#) mentioned above, students work through each challenge and get feedback on their approach and choices. If their avatar's approach to engaging family members is not the best choice, they will experience something similar to what they would in real life – a family member will get angry or emotional, or display an inability to effectively deal with the situation. Students try again until the family member avatar engages in the desired behavior. Importantly, learners need to be free to make mistakes as they solve problems. Making mistakes, reflecting, and trying another approach is not only key to learning, but also builds persistence, which will help students meet their learning goals.²⁴

3. Give opportunities for reflection

“At the heart of adult learning is engaging in, reflecting upon, and making meaning of our experiences.”²⁵ According to experiential learning theory, time and space for reflection helps learners absorb and make sense of the experience.²⁶ A quick discussion about an activity with a peer or a coach helps adult learners crystalize ideas and thoughts.

For example, Chicago-based [Instituto del Progreso Latino](#) uses a blended learning model (part in class learning, and part online learning) in their Cyber ESL program, and incorporates a one-on-one coaching session for students via Skype. They have found that asking questions and talking about what they are learning and practicing during the week makes a big difference in students' confidence as they progress.

Strategies like this also give students an opportunity to process new information in smaller chunks, which raises the likelihood that the information will stick.²⁷ Other examples of activities that can be used for regular reflection include journaling, mind mapping visualizations, peer coaching, role-playing and discussion groups. And, tying those opportunities for reflection to learners' everyday lives and experiences helps them make sense of the experience.

4. Provide opportunities to control their own learning

Self-directed learning theory posits that adults can and should be active participants in their own learning.²⁸ For some students, particularly low-skilled students, this means having the option to control the pace of their learning by replaying a video, doing more practice before moving on, or choosing the order in which they do things.²⁹

[Cell-Ed](#), a cell phone based language and literacy program, is one example of a program that allows students to control the pace and trajectory of their learning. Students call in to listen to short lessons, and then receive and send texts through the week to practice what they have learned. Because they have access anytime, anywhere, students can choose when to call in, when to do the practice, whether to repeat practice, and when to ask for help from their “text” coaches. Cell-Ed has found that students are completing lessons at a faster pace than they would in a traditional classroom.

But theorists also suggest that self-directed learning means taking control of one's own learning at a broader level. In particular, students who are able to set goals, create plans to meet their goals, and monitor their own progress are more likely to persist in learning and ultimately achieve positive outcomes.³⁰ While low-skilled learners often

struggle with these tasks because they lack confidence in their learning,³¹ research has shown that with help and guidance, they can develop the skills for goal setting, planning, and persisting in their efforts

Some key methods to guide students in directing their learning include providing pre-tests like the ones found in the math products [Aleks](#) and [EdReady](#), so students understand what they know and what they need to learn.³² Another example of a tool for planning and setting goals is a program called [myPlace Online](#), developed by the Mayor's Commission on Literacy in Philadelphia. This program includes a short introductory module that helps students learn basic computer skills and study skills. It then leads them through the process of creating their own learning plan, including setting career goals and planning the courses they need to achieve those goals. Program directors report increased retention and program completion among students who use myPlace Online.

5. Support transformative learning

Some experiences can change the way people think about themselves and their world. This kind of learning often involves a shift in consciousness in response to an "ah-ha" moment or "triggering" event.³³ Such transformative moments can improve learners' motivation and confidence as they try out new ideas and perspectives.³⁴

While on the surface the notion seems a bit abstract, educators from the transformative learning theory perspective recommend creating an environment in which students open their minds to new possibilities about their lives and futures. To do this, it is first important to create trust. If students feel comfortable they will be more likely to share their thoughts, ask questions, and be open to probing or opposing views.³⁵

This can be tricky in a non-classroom situation, but finding ways to make the experience more personal (using video conferencing or one-to-one coaching with a tool such as Skype) can help.

Next, educators should find ways to facilitate a "trigger" event. Look for ways to get students to stop, pause and consider something that differs from their current thinking or world view.³⁶ Reading news articles, working with simulations, participating in team projects, conducting research, and discussing videos can introduce opportunities for triggering events,³⁷ where students are presented with alternative viewpoints.

As a final step, it is important for learners to reflect on these new viewpoints,³⁸ and take some kind of action, which will help crystalize the transformation.³⁹ For example, publishing a paper, producing a video or photo essay, developing a new goal, researching a new career, or joining a professional organization are all ways to take action. Not all students will have a transformative learning experience, but researchers argue that for some adult learners, this type of learning can make the difference between success and failure.⁴⁰

They need challenges to solve, and transformative learning experiences to help stimulate growth.

Summary: Design Principles from Adult Learning Theory

So what does adult learning theory tell us about adult learners? And what guidance does it give us for designing effective digital learning experiences? The adult learning theories of andragogy, experiential learning, self-directed learning, transformational learning, and neuroscience point to several considerations for entrepreneurs interested designing for adult learners:

- Base curriculum and interactions on real world, authentic situations that learners are familiar with, and/or will encounter in the job market.
- Help learners “do” something with new information, whether it is in the context of a simulation, or a real world problem to solve.
- Create opportunities for regular and periodic reflection throughout the learning experience — including self-reflection, group reflection, and peer reflection.
- Design ways for students to control the pace of their learning, such as the ability to pause, repeat or control the order of material, or access learning material anytime, anywhere.
- Facilitate self-directed learning via self-assessments, and tools for planning and goal setting.
- Incorporate ways for students to interact with alternative points of view, either via projects and activities, or through collaborations with others who have diverse views and experiences.

At first glance, much of what is outlined here seems familiar, especially if you have any experience in educational technology in K-12. But it’s important to

focus on the adult piece of the puzzle.

All of these adult learning theories converge around tapping into the experiences of adults as they learn. So providing authentic, *adult* level application of information is vital – no kid-oriented scenarios, no abstract made-up problems, no disconnected random problem sets.

Second, many adults haven’t been taught that their brain is still growing and changing. They need challenges to solve, and transformative learning experiences to help stimulate growth.

And finally, because low-skilled adults are adults, we tend to think that they can take the ball and run with it. But many low-skilled learners have had negative experiences with learning in the past, and haven’t developed some of the skills needed to direct their own learning. And, many may lack confidence in their ability to take charge of their own learning. Providing support, feedback, guidance, and coaching along the way is key to their success.

Millions of American adults are waiting for new learning opportunities to help them improve their quality of life and build skills needed for success in today’s workforce. Technology products can help meet this need by providing anytime, anywhere learning, and giving adults flexibility and control to learn at their own pace. Product designers who create new technology products tailored to adults’ unique learning preferences will have the best chance of meeting our nation’s great need — while capitalizing on an untapped market opportunity.

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