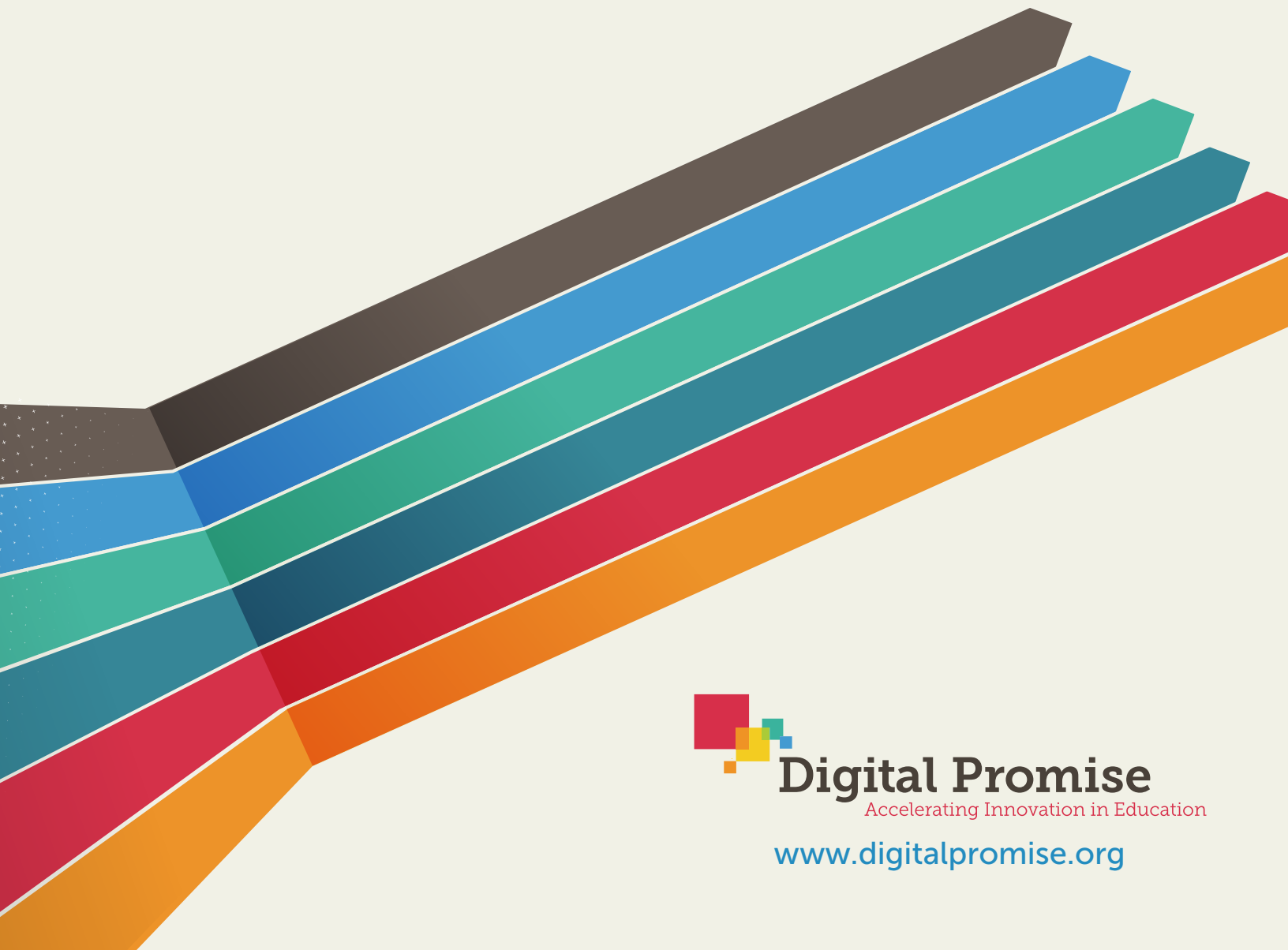


Designing Technology for Adult Learners:

# Support and Scaffolding



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Much has been said about technology and its potential to be a powerful tool for improving learning opportunities for underserved, low-skilled adults.

Mobile products can support adults who cannot attend education programs because of geography or busy lives. Adaptive technologies can help create personalized pathways for learners with special needs and mixed profiles. And, digital literacy skills can open a world of information and resources that form the gateway to today's job market.

However, online learning puts a tremendous responsibility on the student. To effectively learn online, students must use self-regulating learning strategies – that is, they must be active learners.<sup>1</sup>

Adult learners, particularly low-skilled adults, are often not prepared for this kind of learning. Many do not have practice in active learning skills, such as organizing and controlling their own learning environments and the amount of instruction needed.<sup>2</sup> They often have had past negative experiences in school and, as a result, have fewer learning skills than traditional students.<sup>3</sup> They also face many barriers, from managing multiple jobs and family responsibilities to issues with transportation and digital access, that make learning particularly challenging.<sup>4</sup> Finally, many adult learners are not native English speakers, thus need support learning English before they can pursue further learning opportunities.<sup>5</sup>

As a result, adult learners will achieve the most when using digital learning tools if they have additional support and scaffolding (a method of helping students move progressively toward stronger understanding). Research on instructional strategies that provide this support

suggests five principles for product developers to consider when designing for the adult basic learner. Taken separately, each principle can help enrich the learning experience. But rather than choosing one or two principles to incorporate, we encourage designers to consider ways of incorporating all five to provide the richest support and scaffolding possible for these vulnerable learners.

## 5 Key Design Principles

### 1. Keep it short

The brain works best in brief, focused bursts. Cognitive research has shown students process more efficiently and learn more effectively with short lessons followed by focused activities that require them to apply and reflect on what they have learned.<sup>6</sup>

The short lesson allows the brain to “chunk” information into meaningful units. Then, when learners apply and reflect on each chunk, they recall what they learned with more ease and can more readily connect this learning to subsequent chunks.<sup>7</sup> The result: deeper, more effective learning.

This is never more true than with the adult basic learner. Andragogy, a key tenet of adult learning theory, reminds us that adults bring a wealth of experience to their learning and that they learn more effectively when they make connections between these experiences and new information.<sup>8</sup> Short lessons provide scaffolding for the brain to connect these “chunks” of prior and new knowledge.

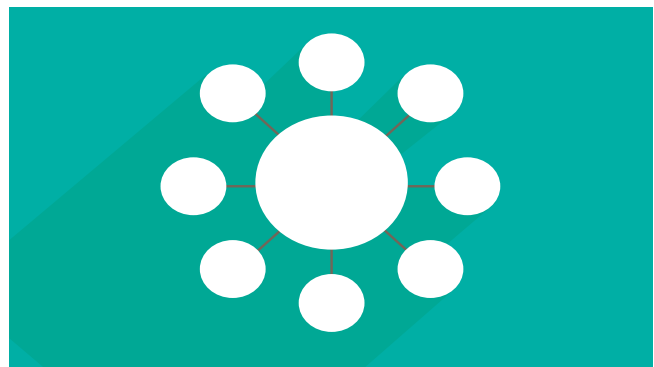
One adult-focused ed-tech company, [Cell-Ed](#), understands this. They developed English language learning (ELL) micro-modules consisting of a short audio lesson, a follow-up text reinforcing the lesson for learner reflection, and an interactive quiz for application. Learners using the program gained the equivalent of two to three years of schooling in just four months using these micro-modules.<sup>9</sup>

Not only do adults learn more with short lessons, they are also more engaged because short lessons provide regular feedback and a sense of success.<sup>10</sup> Cell-Ed maximizes this potential for increased engagement by building feedback and encouragement into their micro-modules. Learners find out immediately if they passed a quiz, and Cell-Ed sends pre-recorded, encouraging audio messages at regular intervals. Cell-Ed learners showed significantly higher self-esteem scores than a control group who did not use micro-modules.<sup>11</sup>

## 2. Go visual

Pushing further into andragogy, adult learners, who make many sacrifices to pursue learning, want very much to know the learning is relevant to their lives. Short lessons that enable learners to put their new knowledge and skills into action can help adult learners see the relevant connections between their experiences and what they are learning.

Yet simply having a short lesson followed by an activity does not ensure a connection between learners’ experiences and their learning. Visual organizers, however, do just that.



Just as short lessons take advantage of how the brain learns best, visual, or graphic, organizers mimic how the brain records and organizes information. Learning is the process of creating or strengthening connections between neurons that form the map that is the brain. Visual organizers replicate this map for learners, helping them understand and therefore strengthen the patterns being formed between old and new information.<sup>12</sup>

In this way, visual organizers provide mental scaffolding for learners in four ways:

- Clarifying their thoughts;
- Organizing and analyzing information;
- Integrating new knowledge; and
- Thinking critically.<sup>13</sup>

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Each time a visual organizer is used, learners see the mental paths their brains need to travel, helping establish these paths as part of their developing learning skills.

While in widespread use in K-12 education, visual organizers are used by few, if any, adult learning products. Visual tools in the K-12 space, such as [Inspiration](#), allow learners to create maps, flow charts, and other graphic representations to help them understand concepts more deeply. Students can use templates or create their own organizers, and they can easily manipulate and change any organizer as their learning develops and deepens. K-12 teachers use these organizers to have students present information, as an activity for learners to complete before or after a lesson, and as a visual roadmap of the course overall. Each of these uses can be equally effective with adult learners to provide the powerful visual support that in turn promotes mental growth.

### 3. Resources, resources, and more resources

Brain growth is also stimulated by repetition. Although the highest levels of brain growth are found in children, all brains can keep growing. Learners, especially non-confident adult learners, need increased practice as they get older to activate brain plasticity and growth.<sup>14</sup> This third principle focuses on providing adult learners with many opportunities for practice and repetition.

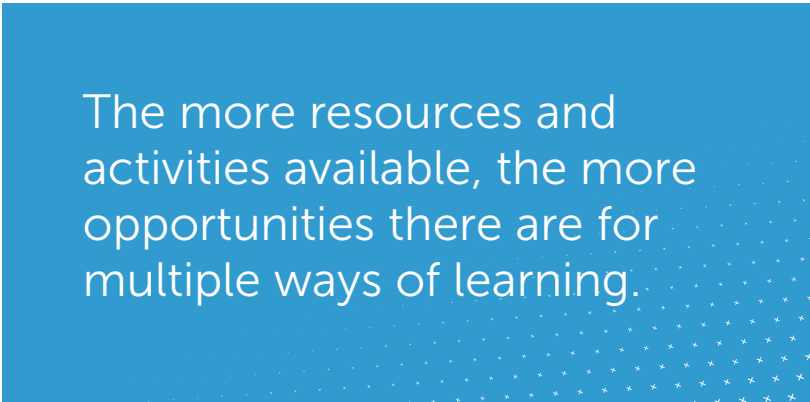
First, adult learners need access to resources of many types. Digital products are the perfect vehicle for support resources because they can store all types of content (documents, PDFs, videos, sound files, etc.). Listening to audio files, watching videos, and playing games (all as opposed to reading text) have been shown to increase learner engagement by being less threatening and simply more fun.<sup>15</sup>

Second, adult learners need *many* resources. The more resources and activities available, the more opportunities there are for multiple ways of learning. Adult educators in Washington State found: "With almost two-thirds of our participants being ELLs, we soon realized

that having good resources in both English and Spanish is imperative to the successful completion of a plan."<sup>16</sup> Educators in California agree: "Giving ELLs multiple opportunities to affirm or correct their understanding and use of language ... and providing them with the means of learning language on their own, outside of class," is critical.<sup>17</sup>

Finally, adult learners need easy ways to access these resources. Research has shown that students who feel they have strong support when learning online are more likely to stick with it. Knowing they can easily access resources is in direct correlation to learner course engagement.<sup>18</sup> This ready support is even more critical for adult learners because they are often fitting extra practice into limited time. Any struggle with accessing resources can be a major roadblock to their learning.

The best examples of providing abundant resources for adult learners can be found in online courses using learning management systems (LMSs) that allow instructors to upload a wealth of resources. The resources can be placed in a centralized space, shared, and accessed outside of class time. Other ways of providing resources include creating YouTube channels for videos and creating wikis with resource lists.



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However, LMSs and other resource storage options often suffer from usability problems, such as difficult navigation, different ways

of accessing different types of resources, and the need for multiple logins. For adult learners who often have less practice with and confidence in their digital skills, these issues can mean the resources are just not available for them. The challenge for designers is how to provide all of the resources that support adult learners in the most accessible way possible.

#### 4. Increase learner-teacher connections

Building on the scaffolding that resources provide, the next principle is facilitating frequent communication between the instructor and the learner. As the designers at Cell-Ed knew when they implemented their encouraging audio messages, adult learners have a particularly strong need for connection with and encouragement from their teachers because of the barriers and weaker skills they face. Adult learners need strong support to believe they can overcome the obstacles and succeed as learners.<sup>19</sup>

First, technology can provide multiple modes of learner-teacher communication: reflective activities (blogs, emails, videos), regular feedback (emails, discussion threads, videos), and “office hour” chats (written, video). [myPLACE](#), a digital learning platform developed by Philadelphia’s Office of Adult Education, embraces the power of multiple forms of communication. Instructors contact students via personal emails, discussion boards, LMS messages, and LMS global announcements.

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Jennifer Kobrin, Director of *myPLACE* and Digital Initiatives, says the impact of such communication is huge. One student told her she felt so connected to her teacher through these many types of communication that she expected her to come over to dinner.

Technology can also help deepen connections between learners and teachers by happening outside of class time, in turn building learners’ confidence and helping them progress more quickly. In the [CyberESL program](#) at Chicago-based Instituto del Progreso Latino, students and teachers have, in addition to class meetings, one-on-one [Skype](#) coaching sessions each week for individualized instruction and practice. Teachers have found that giving students these opportunities to ask questions and talk about what they are learning makes a big difference in their confidence as they progress.

Finally, technology can provide anytime communication. Learners have control over time with digital learning, as they can use the learning tool whenever they want. The communication tools should therefore allow them to communicate with their instructors when they need to, not just during a class meeting.<sup>20</sup> This ability to communicate whenever they need support can help adult learners in particular, as they often must fit practice in between other life commitments.

#### 5. Help learners engage with each other

The final design principle is founded in the research that students learn from their peers in addition to their teachers. Learning science has long known that we learn more when we interact with others,<sup>21</sup> particularly peers of different abilities and backgrounds.<sup>22</sup> The stronger the emotions involved in a learning experience, the stronger the resulting memory and retention of that memory.



Working with others increases the social-emotional memories of a learning experience, thus increases the learning.<sup>23</sup> For adult learners, these social and emotional connections also add to their confidence because they are learning with and from others who are also managing all that comes with being an adult learner.

As with learner-instructor connections, digital tools are a perfect match for providing peer-to-peer interaction that goes beyond face-to-face. Digital tools such as wikis, discussion threads, and video and text chats can be built into products as places for learners to work with each other, making connections to what they are learning and getting peer input, models, and support. And again, some of the best examples of peer-to-peer collaboration tools and practices come from online learning courses. Instruction can be peppered with opportunities to engage in discussions with peers, in peer-review writing activities, or in group projects.

### Summary: Support and Scaffolding Design Principles

So what support and scaffolding can be designed into digital learning tools to help this vulnerable population become independent, confident learners? Instructional strategy research points to five key principles for developers interested in designing for adult learners:

- Focused lessons: Break instruction and activities into short modules with opportunities for feedback, checks for understanding, and encouragement.
- Visual learning: Build in tools and opportunities to help adult learners visualize information and concepts. The more learners can manipulate the visuals themselves, the more effective the tool or activity will be for cognitive development.
- Easily accessible resources: Provide clear, simple ways for adult learners to access a large bank of resources for practice. The more resources and activities available, the more opportunities there are for adult learners to deepen their learning.
- Learner-instructor communication: Design in multiple ways for learners and instructors to communicate outside of class time. The more support adult learners have from their teachers, the more they believe they can overcome obstacles and succeed as learners.
- Peer-to-peer interaction: Design in tools and opportunities for peer-to-peer interactions as well. By learning from and with peers, adult learners not only deepen their learning but also develop an additional support system for managing their learning.

These principles are critical for designing products that create supportive learning environments to help adult learners acquire the skills they need for advancement. Product designers who create new technology products tailored to adults' unique support and scaffolding needs will have the best chance of meeting one of our nation's great learning challenges — while capitalizing on an untapped market opportunity.

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