

Increase Your Online Student Retention with Universal Design for Learning

Introduction

Well-designed online courses keep students engaged with each other, with the professor, and with the material being covered. We have all seen, though, online courses that are merely repositories of barely-warmed-over materials originally designed to support face-to-face courses (those PowerPoint slides that replaced the overheads that replaced the mimeograph sheets), perhaps with some asynchronous discussion forums or auto-scored quizzes thrown in.

Even when online courses are constructed “from scratch,” Hart (2012) identifies “quality of interactions and feedback” and “social connectedness/presence” as key predictors for student persistence in online courses—and “difficulty in accessing resources” and “lack of accessibility” as significant barriers to student persistence (p. 32-36). When was the last time one of your online students reported being unable to gain access to your carefully-crafted video lecture materials or narrated PowerPoint slide presentations?

The trend of online learners in higher education using a mobile device as their primary—or only—connection for class activities is also increasing (see Chen and Denoyelles, 2013 for a recent study). More and more students are time-shifting, screen-shifting, and place-shifting their studies. Learners in our online courses increasingly expect access to course materials, not only all of the time, but everywhere, and through narrower and narrower information “pipes.” For faculty members and those who support them, adopting the tenets of Universal Design for Learning (UDL) is an effective response to the challenge of creating and maintaining an enhanced connection with our students.

UDL is most often associated with the use of online technology to help extend learning opportunities to students with disabilities. UDL allows us to do much more than merely

accommodate student disabilities, though. UDL is an approach to the creation of learning experiences that incorporates multiple means of

- engaging with content and people,
- representing information, and
- expressing skills and knowledge.

UDL gives all individuals equal opportunities to learn and provides a blueprint for creating instructional goals, methods, materials, and assessments that work for everyone—not a single, one-size-fits-all solution, but rather flexible approaches that can be customized and adjusted for individual needs (CAST, 2013).

Why isn't this article about accommodating student disabilities?

UDL is not just for students with disabilities. Various populations of learners have access issues. For example, online students who are time-shifting their studies often experience bandwidth issues due to the expense of fast connections or the unreliability of Internet service in non-traditional study spaces (e.g., on the bus going home from work). Learners are also increasingly studying using non-computer devices, such as mobile phones and tablet devices (CATEA, 2013); this makes it challenging to consume content that requires specific software to open, such as PowerPoint presentations. Thousands of online students work their way through school and have family obligations; making productive use of formerly “free” time for studying is an imperative (Tobin, 2013).

Universal Design for Learning sets up course materials so they are *designed* to be accessible to everyone. Sam Johnston is a research scientist at the Center for Adaptive & Special Technology (CAST). When I spoke to her in November, 2013, she summed up the difference

between design and accommodation: “We want a situation that is good for everybody. . . . Part of it is thinking about what has to happen at the level of design that makes accommodation less necessary” (personal communication, Nov. 10). Thus, UDL provides paths for everyone to use; accommodations are implemented to address specific learner needs. UDL happens ahead of time, when you can plan things out; accommodations happen reactively, in response to specific learner requests and needs—and accommodations tend to be more rushed and based on the least-needed effort to make the accommodation.

Adopting UDL as a framework for online courses helps greatly to retain students, as well. Today’s higher-education students come from diverse backgrounds. We serve international students, learners across the socio-economic spectrum, adult students, students with disabilities, and first-generation college students. By expanding access to learning materials, interactions, and engagement, UDL-designed courses make it more likely that any students who might otherwise encounter challenges—not just those with disabilities—will be successful and persist in our online courses. Such “adjustments to teaching practice improve the learning experiences and retention rates of students with a disability and those from other under-represented groups such as non-English-speaking-background students as well. Inclusive adjustments to the intellectual environment work to improve all students’ experience of [the] university” (Crosling, Thomas, and Heagney, 2008, p. 24).

Five Strategies for Incorporating UDL into Your Online Courses

Each of these strategies can be applied to existing course materials in less than an hour. They rely on the principles of UDL to give learners different paths through course content,

different ways to demonstrate their skills, and multiple means of staying engaged with the content, each other, and the instructor.

1. Start with text: Build multiple paths based on a text foundation (Figure 1). This reveals gaps and needs. By scripting out what you want to say, demonstrate, and emphasize, you also reduce the amount of off-topic content produced when you create other versions like audio podcasts, screencasts, and video demos. Also, by starting with text you can work against the fact that “Videos are not all that great for conveying information. A 5-10 minute video carries less information than a chapter in a book. . . . be careful we are not watering down education to make students happy” (T. Zakrajsek, personal communication, June 23, 2014). Figure 1 shows a script outline for a presentation on evaluating online teaching. The next step for the creator of this outline will be to key out the exact words to be spoken for each element within the outline.

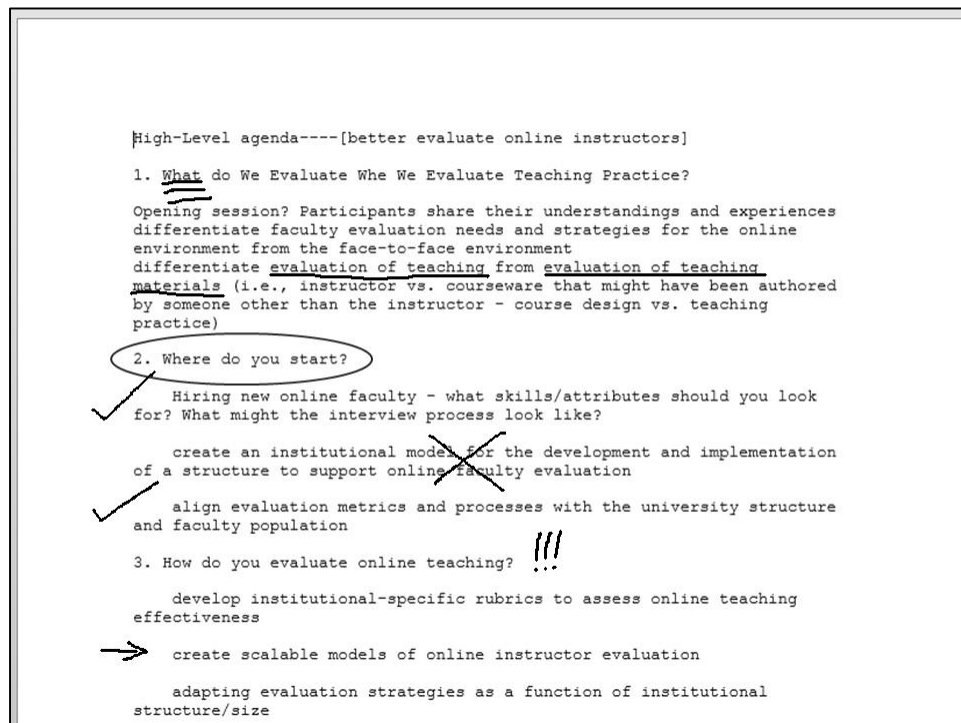


Figure 1

2. Create alternatives: At first, create just two versions of content/materials, then branch out. Select lecture materials on topics where students always have questions or always get the process mixed up. Create a text-only version and a video-demo version of just those materials. For example, Figure 2 shows students assisting a professor in making a video for her online chemistry course. The video is only one stream of information that will be shared with the professor's online students. From the professor's notes on her computer, a text-only version will be created. From the video feed, still images will be captured that explain or elaborate on the text- and video-based processes the professor is demonstrating (and ALT metadata descriptions will be created for the still images). The video itself will be captioned.



Figure 2 (“Honeybee Research 005,” © Jill Shockey, CC: BY-NC)

Note that all of the alternative-format content being created expands access not only for students with disabilities, but for all online students. For example, an adult learner with family

responsibilities can study after putting the children to bed by turning the sound off and following along with the professor's video via the captions.

3. Let 'em do it their way: Instructors set the objectives, students define the method & medium. Think of the last time you graded thirty 5-page essays on the same topic. Blech! Allow students to select their preferred method of responding to the assignment criteria: write an essay, record a podcast, or create a video by putting their mobile-phone "selfie" camera to good use. This makes assignments more engaging for students, and grading more engaging for faculty members, too. A caveat: if the assignment requires a specific format, stick to that. For instance, a business-memo assignment must be a written memo—no videos allowed, there. Figure 3 demonstrates that many course assignments need not be tied to a particular medium. The information transmitted by the student who wrote the traditional written essay could also be demonstrated by recording an audio podcast or by the student "reporting" on the topic via video.

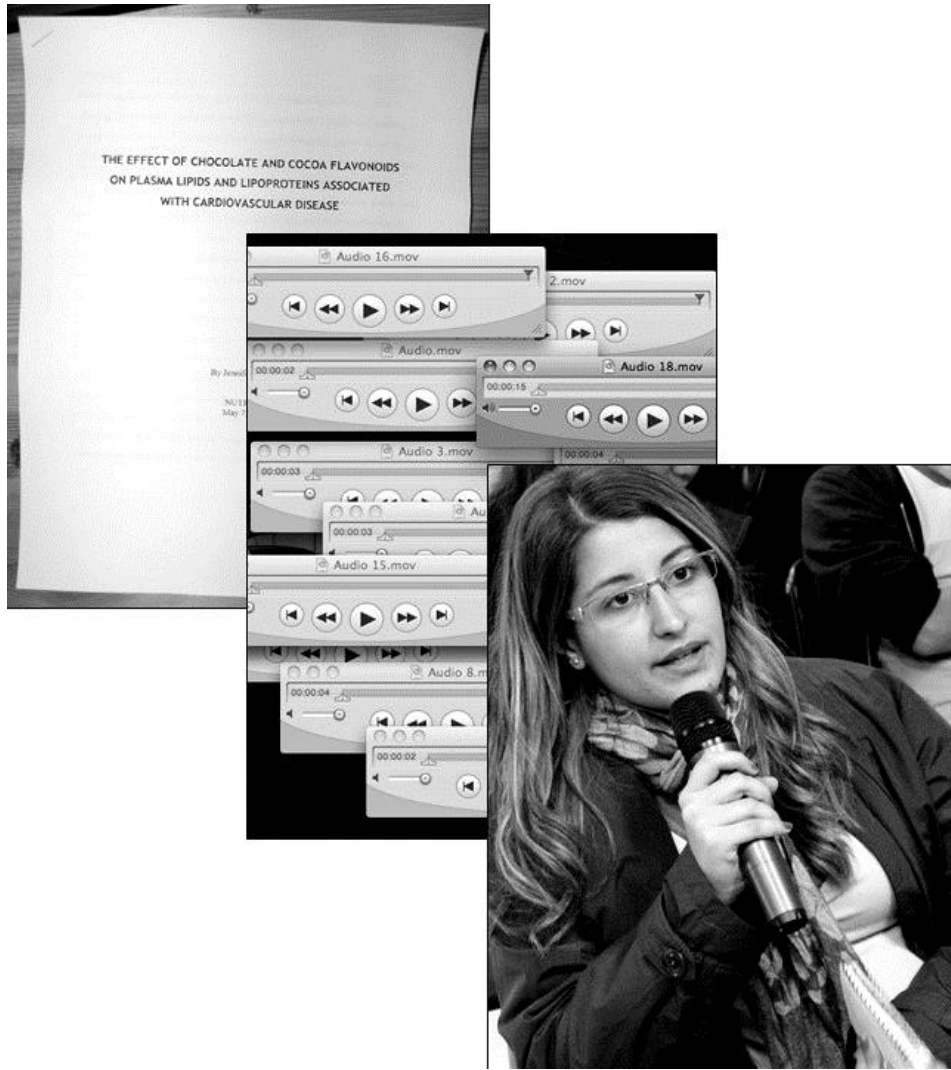


Figure 3

Course designers should strive to craft measurable behavior-based objectives for learner assignments. That way, so long as the items produced by students meet the objectives of the assignment, they can be assessed according to the same criteria, no matter the medium in which they were created. Instructors should also create limitations for media-selective assignments, such as indicating the file formats that will be accepted for credit. This helps to avoid the possibility of students submitting files in rarely-seen formats, and allows greater accessibility for students to see each other's work, while allowing the professor better access to student work, as well.

4. Go step by step: Break processes into units, steps, phases, and create separate resources. Look through your lecture notes and create segments that correspond to the logical breaks in the content. For example, make seven sequential text-based documents, and create videos to go along with the two most involved or most important pieces. This allows learners to re-consume short pieces repeatedly, and saves you time when you update, add to, or re-order the content. Figure 4 shows how materials that correspond to a traditional 50-minute class period might be broken up into smaller pieces, with discussion messages, knowledge-check self-quizzes, and other interactions sprinkled throughout. The result is a continuous whole that can be experienced a little bit at a time, repeated for reinforcement and study, or even experienced from multiple starting points and self-selected paths through the materials.



Figure 4 (icons used with permission from Sothilingam, 2014)

Such scaffolding is a good metaphor for this best practice for UDL: chunk up content into brief segments, ideally 5 minutes long or shorter. Each segment should cover one concept, or one step in a process—so long as it is a self-contained unit. The advantage for learners is that they can consume the short segments (especially true with video) more easily on mobile devices,

especially in low-bandwidth situations where content must be downloaded rather than streamed. The advantage for faculty members is that updates or changes to content can be made by re-recording a short segment, rather than, say, an entire hour's lecture content.

5. Set content free: Use tools that are accessible and easy for faculty and students to learn. A good example is creating a screen-capture video of a PowerPoint slide show with your own voice-over, and then hosting the result on a file-streaming site like YouTube. Where before, students needed to have PowerPoint in order to get the file and use it, now all they need is an Internet browser. Students on phones and tablet devices can watch the video anywhere. Content is no longer tied to the clock, either: students can review and study at any time.

Figure 5 shows how device-connected people, regardless of where they are on the ability spectrum, are now using tools once thought of as the exclusive preserve of those with disabilities. A football fan, stuck in the "nosebleed" seats at a Dallas Cowboys game, follows the play-by play by using the live captioning feature of the television broadcast of the game. There are also several free-to-use tools that allow faculty members and students to create multimedia, including Audacity and VoiceThread for audio content, and Jing, Screenr, and Screencast-o-matic for video and screen-capture materials.



Figure 5 (© 2014 Softeq Development Corp, used with permission)

Before leaving this strategy, we must discuss the most commonly used UDL strategy: captioning. For video resources, captions can help the vast majority of students. Thinking beyond students with disabilities, captions assist English-language learners, students studying in libraries and other “quiet, please” locations, and learners who process content better via text than via audio. For video content created by faculty members and instructional designers, we have an ethical (and often legal) imperative to provide an alternative format for the audio portion of the file. A separate transcript of the audio with time marks indicated is an acceptable, but not preferred way to meet this requirement.

Captions, although time-consuming to create, provide such broad benefits that they are well worth the investment of time. Some software allows for automated captioning, such as Camtasia, but auto-caption technology is still in its infancy, as any viewer of an auto-captioned YouTube clip can attest. Although this article cannot go into great detail about the best practices for captioning (see the Described and Captioned Media Program Captioning Key at <http://www.dcmp.org/captioningkey/> for a PDF quick-guide), one change of current common

practices can help all learners immensely. Most of us are familiar with the phrase “closed captioned.” This means that the captions do not automatically display when video is playing; users must select to display the caption text. The opposite is “open captioned” content, where viewers see the caption text whenever the video is playing, and have no way to select captions to be on or off the screen. By creating video content that relies on open captioning, students who view the video material do not have to take an action to get captions to display. On mobile devices like tablets and phones, especially, closed-caption controls in media-player software may be small and challenging to use, difficult to get access to, or missing all together. The take-away for creating video files is to caption them whenever possible (instead of providing a separate transcript), and to prefer open over closed captioning.

Now that you know these five general strategies, focus on a series of “next twenties”: what you can do in the next twenty minutes, twenty days, and twenty months to incorporate UDL into your online course environment.

What You Can Do in the Next 20 Minutes

Most of these twenty-minute tasks are planning tasks, but a few are actual applications of UDL that can be accomplished for a single document or file. These tasks average about twenty minutes—but don’t be discouraged if some tasks take longer, depending on the length, complexity, and number of items involved.

First, consider the characteristics of all of the potential students who take your course. Based on your experience teaching the course, remember the age ranges, experience levels, ability profiles, gender distribution, and comfort with technology that apply to your typical student population.

Identify elements in your existing or planned course that are currently “single stream.”

For example,

- Lecture notes might now be in text-only format.
- A course might rely only on PowerPoint presentations to deliver content.
- Video snippets created by the professor might currently be audio-and-visuals only (with no text alternative or captions).

Brainstorm expansions into different media, different methods, or different expressions. For example,

- Plan how you would record a voice-only podcast of your lecture content (or ask current students to record their own audio of a short piece of the lecture materials).
- Draft notes for recording a screencast video using your PowerPoint slides and voice-over.
- Type out a transcript of professor-created video content, or edit the captions produced by software (such as the auto-caption feature in TechSmith’s Camtasia product).
- Apply style attributes (e.g., headings, titles, emphasis) to a Microsoft Word document so that it can be read by screen readers.
- Apply ALT metadata tags to describe visual information like still images, charts, and graphs.

What You Can Do in the Next 20 Days

In the next twenty days, you can accomplish some planning, based on your earlier brainstorming. Plan out two paths through the course: one media-based, and one text-based.

- Go through your course—or, even better, ask a current student to go through your course—by finding nothing but text-based files. Where would such a student find gaps or be confused about what to do next?
- Go through your course by finding nothing but audio and video files. Where would a student using only those resources find gaps or be confused about what to do next?
- Map out the two paths, and note which pieces of content that already exist in your online course (or course plan) can become “anchor points” for creating ways for students to move through the content.

Also note areas where students have choices in how they can respond to their experiences in the course:

- Offer different options for responding to assignments.
- Provide asynchronous ways for students to converse with each other and with you.
- If you’re comfortable with doing so, offer students one “self-defined” assignment, where you provide the criteria, and they provide (and perform) the assignment details.

Create “interest points” throughout the course where you will

- recruit interest (get students involved in the learning),
- help students to sustain their efforts (offer encouragement, draw connections between previous work and future learning), and
- help students to self-regulate (talk to them about time management, help with planning, and provide milestones so students can compare where they are against where most students are at that point).

Also in the next twenty days, start watching how others have been successful and plan your own path. Complete the *UDL Guidelines Educator Worksheet* (CAST, 2011) to identify areas of

opportunity for incorporating universal design throughout the online course. Watch the University of Washington video on “Making Distance Learning Accessible to Everyone” (Burgstahler, 2011), and then fill out the *Equal Access: UDL Distance Learning Checklist* (Burgstahler, 2012) for hybrid and online courses.

What You Can Do in the Next 20 Months

Collect completion and usage statistics about resources in your existing online course. Ask students to share their use cases about how, when, and where they interact with the content in your existing online course. Many institutions already ask students to rate their experiences of courses via an end-of-term student survey. A best practice for UDL is to ask students during the course about their interactions with the content. Build a mid-term survey of your own that asks students to share their approach to course materials and the ease of using them. For example,

- What devices do they use to view and interact with the tools and content in the course?
- How much time do they spend learning how to use various elements of the course?
- What elements of the course gave students problems? Did any cause students not to use items?
- Were students unable to get to or use any parts of the course?

Answers to questions such as these allow you to follow the University of Washington’s DO-IT Center’s recommendation to map and build one alternative path through an existing online course, beyond the “text only” and “audio/video only” paths that already exist (DO-IT Center, 2013).

Share the possible paths through the course with your current students, and ask for their feedback about which parts need multiplying soonest. Collect completion and usage statistics about the resources in your UDL-augmented online course, for a pre- and post-change analysis.


Professional Resources

Along the way from twenty minutes to twenty days to twenty months, higher-education faculty members and staffers can reach out and consult with many people and resources to learn more about specific aspects of UDL, especially as they relate to making connections with online learners in order to keep them on track, in class, and motivated to achieve:

- **Association of Higher Education and Disability (AHEAD):** <https://www.ahead.org/>. This is an umbrella advocacy group that can put faculty members and staff in touch with local and national experts and resources.
- **Boston College:** <http://www.bc.edu/offices/help/comm-collab/webdev.html>. BC has an in-house seminar entitled “Introduction to Web Accessibility for Content Developers.” Although it is designed only for Boston College staff, the creators are willing to share their expertise and content, on request (Charleson & Sadecki, 2012).
- **CAST [Center for Applied Special Technology]:** <http://udloncampus.cast.org/>. One-stop web resource for learning about Universal Design for Learning. Updated in mid-2014 with new content specifically for higher-education applications of UDL.
- **CollegeSTAR [Supporting Transition, Access, and Retention]:** <http://www.collegestar.org>. North Carolina college consortium formed to implement strategies to reach out to “students who learn differently from what is most typical.”

- **EASI [Equal Access to Software and Information]:** <http://easi.cc/clinic.htm>. Resources and free seminars on accessibility concerns.
- **National Center on Universal Design for Learning:** <http://www.udlcenter.org>. General Resources for implementation in higher education, especially the *UDL Guidelines Worksheet* at <http://www.udlcenter.org/aboutudl/udlguidelines/downloads>.
- **San Francisco State University:** <http://ctfd.sfsu.edu/udl>. The Center for Teaching and Faculty Development has several guides to designing accessible multimedia that can be used in an online environment.
- **University of North Colorado:** <http://www.unco.edu/cetl/UDL/UDLonline/>. Stephanie Moore's online tutorial, *Presuming Competence by Design: A Tutorial for Systems, Environment, Curricular, and Materials Design in Learning Systems*, contains a unit on "Universal Design in My Online Course" (Moore, 2007).


In addition to these resources, I have created a "Chinese Menu" of UDL strategies for faculty members at my own institution. In addition to being an attention-getter, the menu serves as a reference, providing estimates for how much effort each strategy takes, in order to guide online faculty members in deciding where to begin and how to implement UDL in their online courses (Figure 6). By working on only a few elements of the overall UDL approach at a time, you can keep all of your online learners more engaged, and help to ensure that they stay on track toward their learning goals.



NEIU Center for Teaching and Learning

Universal Design for Learning MENU*

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<http://www.neiu.edu/~ctl/>



REPRESENTING INFORMATION <small>(choose 4 per semester)</small>			DEMONSTRATING SKILLS <small>(choose 1 per semester)</small>			KEEPING STUDENTS ENGAGED <small>(choose 5 per semester)</small>		
	Min	Max		Min	Max		Min	Max
1. Make an Alt-Text Version	30m	2.0h	15. 1 Assignment is Audio/Video	10m	20m	29. Write 1 Unit-Welcome E-mail Message	10m	25m
2. Give Background Knowledge	15m	1.0h	16. Vary Navigation Paths	1.0h	3.5h	30. Show Content Relevance to Students	30m	3.0h
3. Break Content into Chunks	10m	30m	17. Many Tool Options for Work	5m	15m	31. 1 Mid-Week Encouragement E-mail	10m	20m
4. Create Text Version First	1.0h	3.5h	18. Explore 1 "Outside" Free Tool	30m	2.5h	32. Offer No-Consequence Practice	1.0h	1.5h
5. Find Multi-Use Library Items	5m	15m	19. Build Skills Step by Step	20m	2.5h	33. Tie Course Goals to Student Lives	15m	30m
6. Cut or Make an E-Text	20m	2.5h	20. Design Multimodal Assignment	30m	1.5h	34. Vary Demands & Resources of Work	3.5h	5.0h
7. Highlight Patterns/Relations	15m	1.0h	21. Enhance 1 Discussion Board	30m	1.5h	35. Expect that Students Can do the Work	5m	15m
8. Select One Item to Outline	20m	45m	22. Write 1 Task Outline for Work	15m	1.0h	36. Allow Students to Reflect on Progress	5m	15m
9. Clarify Vocabulary & Symbols	10m	25m	23. Help Students Set Goals	45m	3.0h	37. Show How Work is Authentic	20m	45m
10. Caption a Video	2.0h	4.5h	24. Let Students Choose Format	10m	30m	38. Share Coping Skills and Strategies	10m	30m
11. Guide Information Processing	1.0h	1.5h	25. Collect Student Work Samples	30m	1.0h	39. Create Self-Assessments Throughout	3.5h	5.0h
12. Let Students Customize View	15m	30m	26. Help Students Plan the Work	1.0h	2.5h	40. Foster Collaboration & Communication	1.0h	2.5h
13. Turn PowerPoint into Video	30m	3.0h	27. Design Group Assignments	1.5h	4.0h	41. Compose "Way to Go" Messages	20m	1.0h
14. Screencast a Process	5m	15m	28. Show Monitoring Techniques	45m	1.5h	42. Increase Mastery-Oriented Feedback	30m	3.0h

Fast, free delivery (of your online content)! Learn more:

- CAST [Center for Applied Special Technology]: udlncampus.cast.org. One-stop web resource about Universal Design for Learning.
- EASI [Equal Access to Software and Information]: easi.cc/clinic.htm. Free seminars and resources on accessibility concerns.
- National Center on Universal Design for Learning: www.udlcenter.org. Resources for implementation in higher education.
- San Francisco State University: ctfd.sfsu.edu/udl. The Center for Teaching and Faculty Development has several guides to designing accessible multimedia that can be used in an online environment.
- University of North Colorado: www.unco.edu/ctl/UDL/UDLonline/. Stephanie Moore's online tutorial, *Presuming Competence by Design: A Tutorial for Systems, Environment, Curricular, and Materials Design in Learning Systems*, contains a unit on "Universal Design in My Online Course."

* We don't actually sell food—but we do help you to reach out to your students in ways that help them to succeed!

Figure 6

[IF POSSIBLE, PUBLISH FIGURE 6 SIDEWAYS AS A FULL-PAGE IMAGE?]

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