

Multimedia Product Critique Paper #3: WileyPLUS as a Study Tool

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One of a variety of suggested solutions to engage learners in the 21st Century is using online resources, such as training modules, study guides, and textbook companion websites. These tools can be used for multiple e-learning scenarios, both synchronous and asynchronous (Clark, R., 2014), such as online courses and hybrid courses. These online resources are not embraced by many computer science related educators, especially online courses, because they consider it a challenge to reach programming students at a distance for such difficult topics. Many instructors have yielded on this stance by offering web-enhanced and hybrid courses. These compromises allow instructors to see students face-to-face and also provide material that is accessible by students 24 hours per day. In this paper, I will review a tool called WileyPLUS (<https://www.wileyplus.com/>). This tool is a research-based online environment for learning and assessment. It can be used for online presentations, assignments, and a study guide for an introduction to Java Programming course.

The WileyPLUS (WP) tool can be used, if the instructor chooses, with the Big Java, Late Objects textbook by Cay Horstmann (2015). WP contains a static version of the textbook, in addition to assignments, animation worked examples, video examples, downloadable code, flashcards with practice quizzes, practice drills, and a gradebook. In reviewing the WP tool, I looked specifically at the textbook, animation worked examples, video examples, flashcards with practice quizzes, and practice drills. I was looking for multimedia design principles that would make the tool meaningful to the learner. Also, does the design of the tool allow instructors to create a learning module so that retention occurs?

Once the student logs into the WP tool and enters their course section, they will see the home screen provided in figure 1. The course instructor can provide learning “points” and

downloadable material in the “Prepare & Present” section, but my focus is in the “Read, Study & Practice” section. This section provides learning material created by the instructional designers

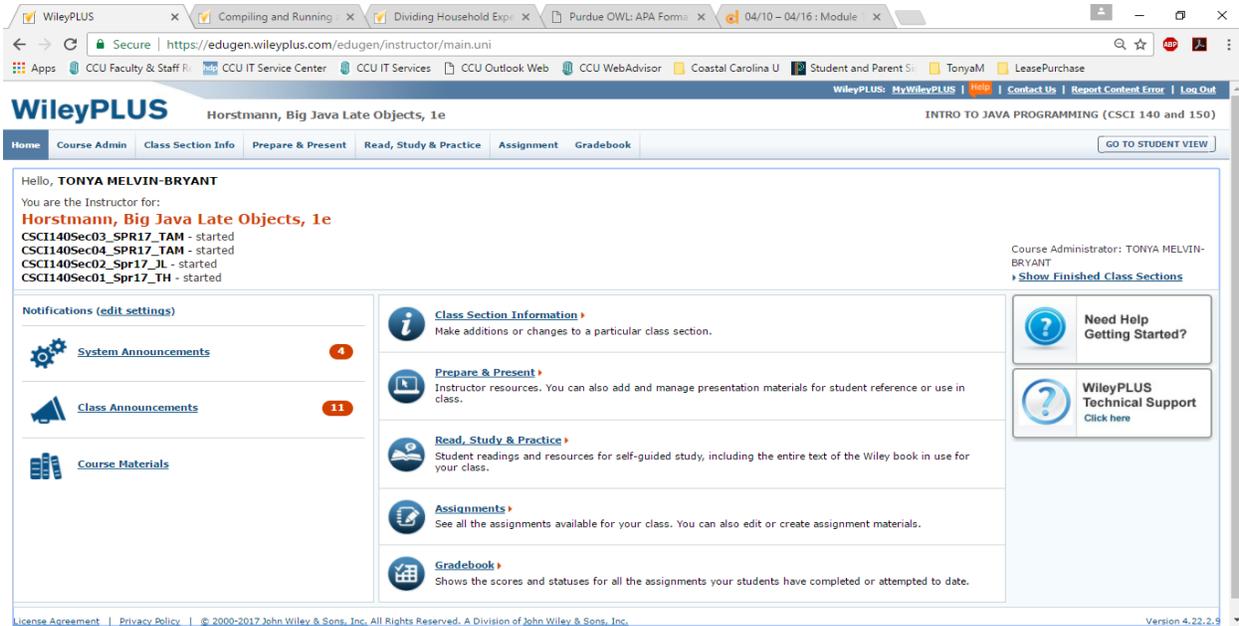


Figure 1 WileyPLUS Home Screen

and content experts at WileyPLUS. Clicking on this section link will show the chapter opener of the textbook as shown in figure 2, which also includes chapter goals. Provided is a two-frame

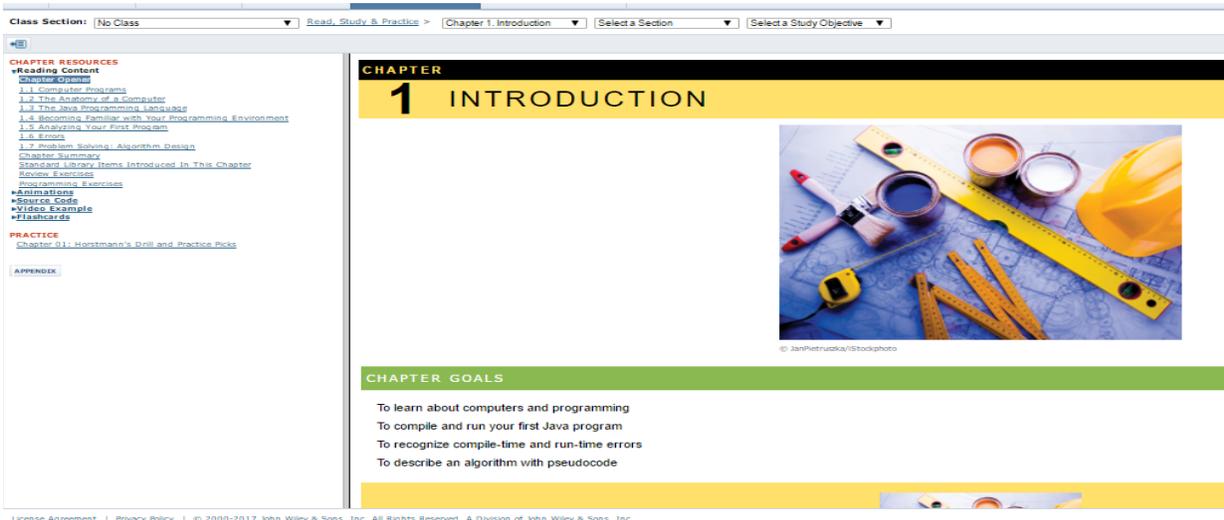


Figure 2 Textbook section

screen with the content on the right and the chapter resources on the left. Beginning with the main part of the text, I noticed that there are many images provided to give the learner context for the topics, such as a picture of the central processing unit (CPU), as well as providing a link to areas of the text that have additional information concerning the CPU (in addition to the definition in the paragraph). One of the links also includes the glossary section of the textbook. Also, at the end of each section, there is a set of exercises called “SELF CHECK”, see figure 3. The learner is able to determine if they know the answer to the question or practice exercise, and then click the ‘answer’ button to see if they received the correct answer. The principle that I believe is missing here is the feedback principle (Johnson and Priest, 2014). If the user does not understand the topic,

The screenshot shows a web browser window displaying the WileyPLUS interface. The browser tabs include 'WileyPLUS', 'Compiling and Running', 'Dividing Household Exp...', 'Purdue OWL: APA Form...', and '04/10 - 04/16 : Module'. The address bar shows 'https://edugen.wileyplus.com/edugen/instructor/main.uni'. The WileyPLUS header includes the course title 'Horstmann, Big Java Late Objects, 1e' and 'INTRO TO JAVA PROGRAMMING (CSCI 140 and 150)'. The navigation menu includes 'Home', 'Course Admin', 'Class Section Info', 'Prepare & Present', 'Read, Study & Practice', 'Assignment', and 'Gradebook'. The 'Read, Study & Practice' section is active, showing 'Chapter 1. Introduction' and 'Select a Section'. The main content area displays 'CHAPTER RESOURCES' on the left, including 'Reading Content', 'Chapter Overview', and 'Practise'. The main text area contains a list of bullet points: 'Put a red dot at a given screen position.', 'Add up two numbers.', and 'If this value is negative, continue the program at a certain instruction.' Below the text is a 'SELF CHECK' section with three questions: '1. What is required to play music on a computer?', '2. Why is a CD player less flexible than a computer?', and '3. What does a computer user need to know about programming in order to play a video game?'. Each question has an 'Answer' button next to it. The footer includes 'License Agreement', 'Privacy Policy', and '© 2000-2017 John Wiley & Sons, Inc. All Rights Reserved. A Division of John Wiley & Sons, Inc.' and 'Version 4.22.2.9'.

Figure 3 End of topic section

there is no information provided in addition to the answer, nor is there a link back to the page of the textbook where the topic was introduced, see figure 4. Also, notice that the designers allow the students to pace their way through the text via the “back” and “forward” buttons at the top of

content area, also shown in figure 3. The user can also click on the links in the left pane to go to any topic section they prefer at any time.

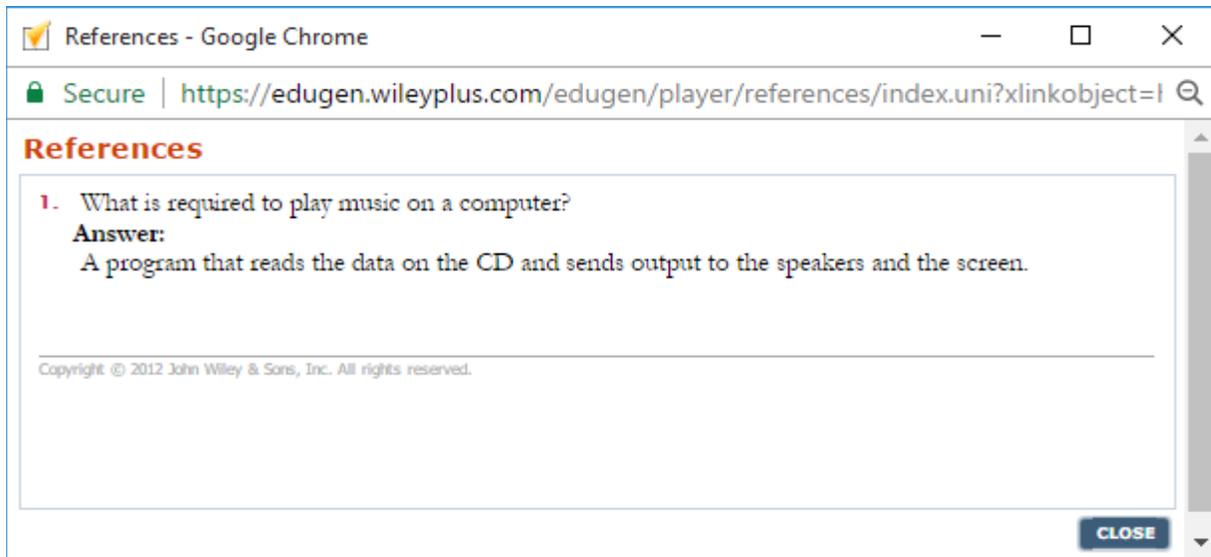


Figure 4 Answer box for SECTION CHECK

The next section I reviewed, in the left frame, is the Animations. Since I am in chapter 1, the topic is the compilation process, see figure 5. The animation shows the user how the compilation process works. This and other animations are more designed for learners who are not novice at how the compiler works. There are no instruction on how to get to the final steps

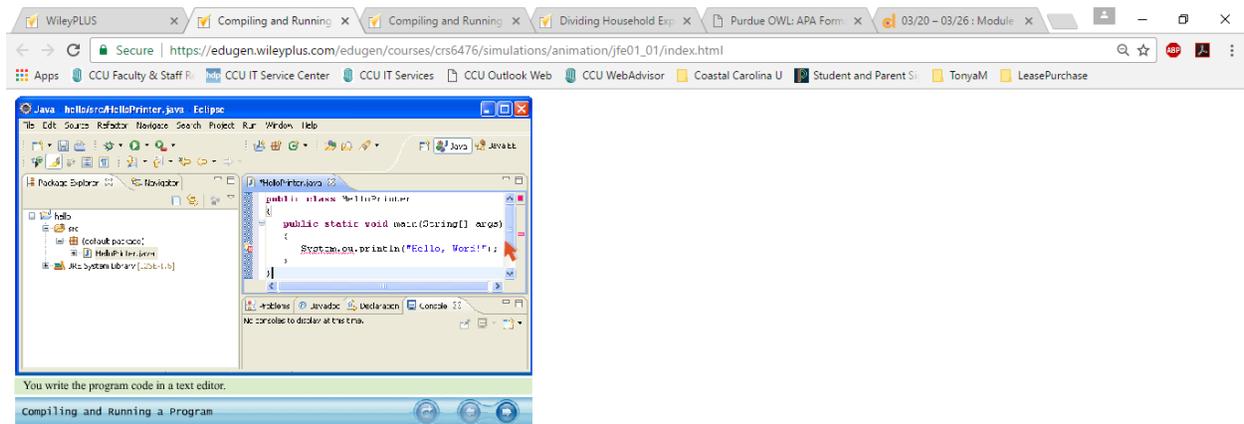


Figure 5 Compile Animation

that allow compilation and a novice user would not understand what the error is and why the compiler had an issue with it. They also would not understand how to read any errors that would display in the console window shown. There is an explanation of what is going on in each step of the compilation process, but the learner would experience split-attention (Ayres and Sweller, 2014) given the text is below the picture and the user is likely to be focused on the running animation. This animation would be better served with narration as discussed in the split-attention principle.

Next, I reviewed the “Video Example” section. The examples cover an application exercise based on the topics in the chapter, generally across all or at least multiple, sections of the chapter. The video in figure 6 is showing the student how to work through dividing household expenses (for say, roommates). Once the exercise is work by hand, the student is then shown how to use the topics in the chapter. The learner is able to pause or restart the video. This follows the worked examples principle as discussed by Renkl (2014). The downside of the video

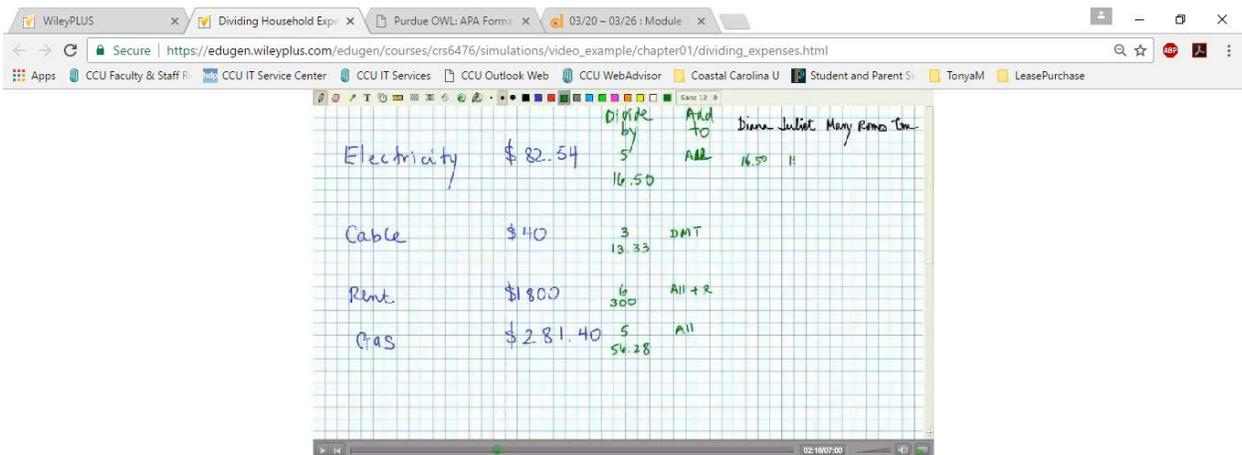


Figure 6 Worked Example

is split-attention (Ayres and Sweller, 2014). There is narration, but the narrator is talking about different and additional information than is shown in the video. This can cause cognitive overload for the learner while trying to listen to the speaker and take note of what is happening in

the video. They could easily miss something the speaker is saying while trying to take notes or miss part of the worked example by only taking notes on what the speaker is saying.

The next section reviewed is the flashcards, see figure 7. When the learner clicks this link to this section, they are able to choose one or multiple chapters for which to study. There are four tabs available, the chapters, the glossary, the cards, and the quiz. The (flash) cards allow the



Figure 7 Flashcards

learner to view the term, the definition, or both. The learner can use the right and left arrow keys to move forward and backward through the cards and they are shown which card they are working on and how many are available. This self-paced module allows the student to study and then take a practice quiz. The practice quiz only provides the total questions, total correct, and total incorrect. There is no feedback provided.

The final section reviewed is the drill and practice picks. When the learner clicks this link, a new window opens with a set of practice questions that look like an exam or test as shown in figure 8. The student is able to choose which question they want to answer by clicking either the back/forward button (located in upper right corner) or the links located in the left frame. The

student is able to “check” their answer for correctness, have the answer shown, or link to the text.

If the answer is not correct, the student is shown a red “x” and a box around the choices. They

are not provided any feedback. However, since this is like a practice exam, they should not

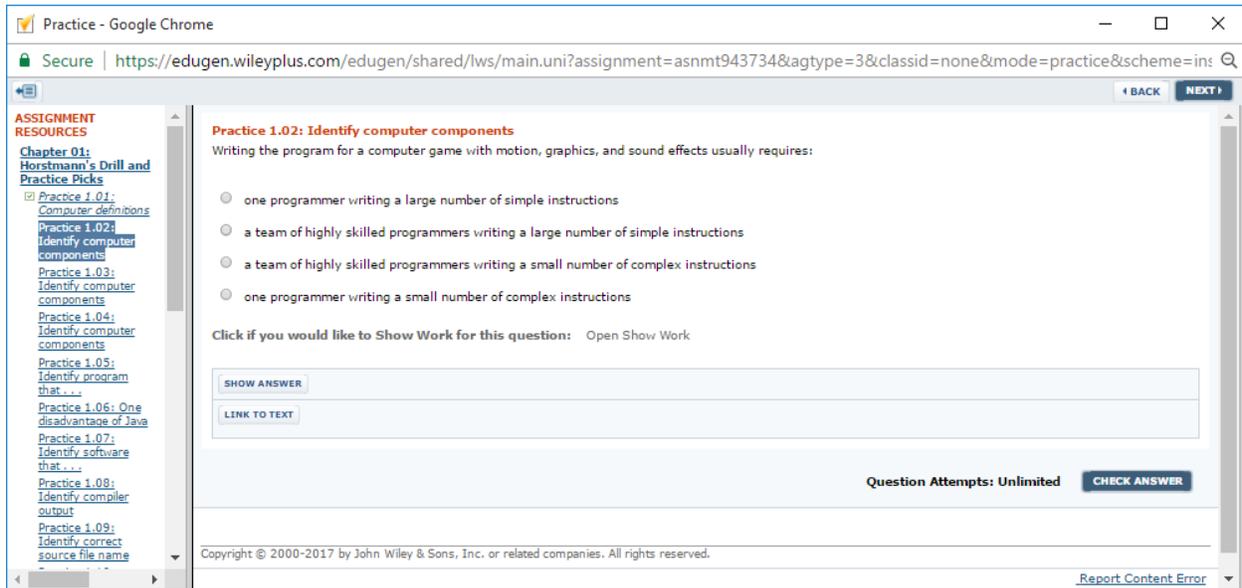


Figure 8 Practice Drill

receive feedback, but a hint could help. The student can then choose to have the answer shown,

but if they do not want to see the answer just yet, they can choose the button to link back to the

text. This link will take the student back to the section that will help them with the answer. Once

the student has completed the drill, they can review their score and review their results by study

objective as shown in figure 9 and figure 10.

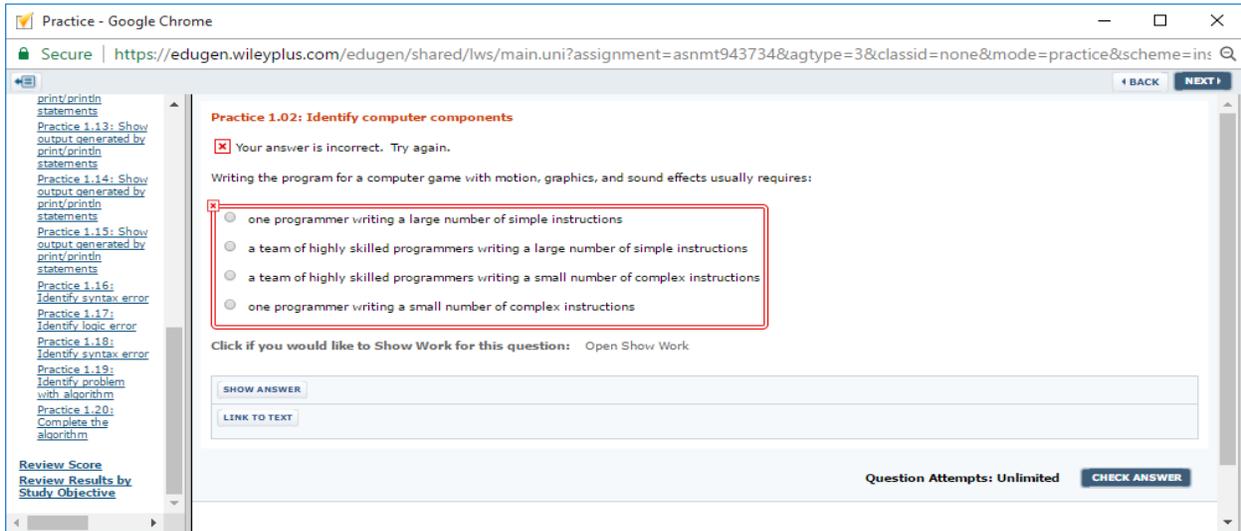


Figure 9 Practice Drill with incorrect answer

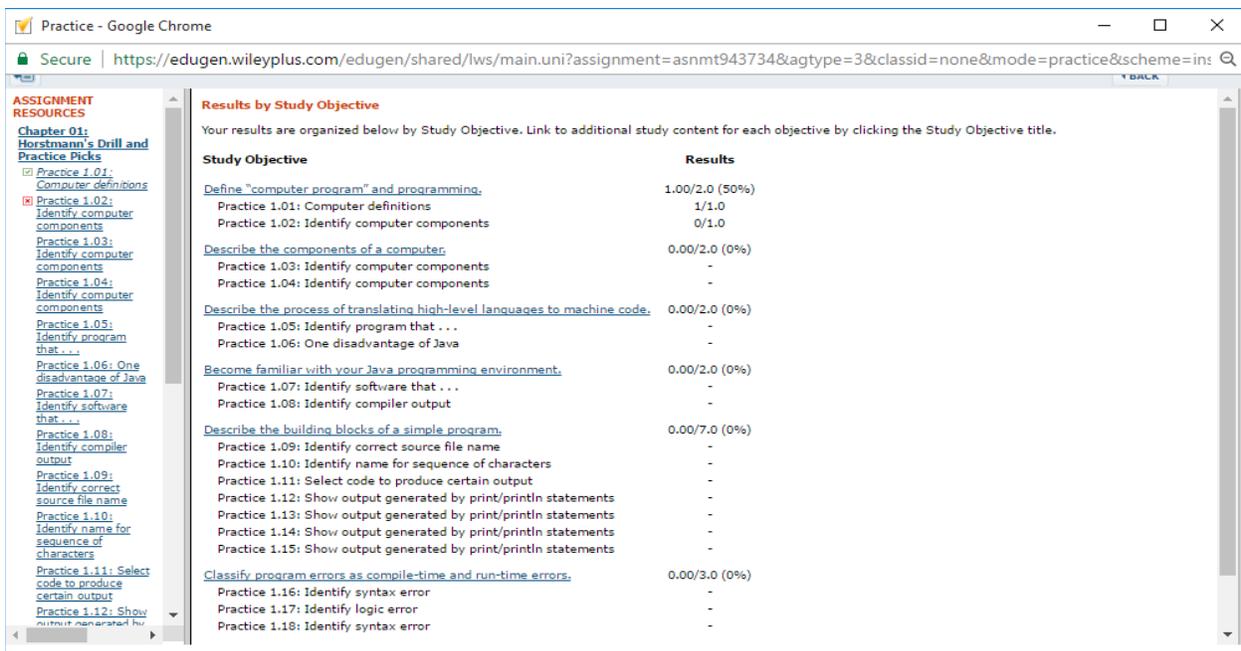


Figure 10 Practice Drill Results by Objective

Overall, I believe the WileyPLUS online tool is a good product. It follows many of the multimedia learning principles discussed this semester, including the basic multimedia principle, people learn better from words and pictures than from words alone, split-attention principle (they have both negative and positive examples of this), modality principle (video narration, but some

cognitive overload can occur when the speaker does not match what is presented on the screen), worked examples principle, learner control principle, and animation principle. WP does not follow the feedback principle well, although it does provide links back to the text sections in some cases. In the case of animations, low-knowledge learners do not benefit well because not much attention is given to instruction or narration.

In summary, WileyPLUS uses the above principles to prevent essential cognitive overload. It is an online tool that provides multimedia learning and uses a good number of principles to ensure learners receive information in a variety of ways, such graphics, text, videos, and animations. Additionally, WP uses some of the segmenting principle which supports the learner-paced environment. Students can work with the various activities as often as they desire to learn the material. Also, because this tool is available asynchronously, the learner can access based on their personal schedule (barring technology maintenance and updates).

Educators can view these activities in the gradebook by assigning them to course sections using the “Prepare & Present” or just allow students to have the freedom to work inhibited by the pressure of the teacher watching. According to the recent research discussed in Mayer (2014), many of the principles are affected by the environment of the user. More research is needed, especially in the area of e-learning. There seems to be many future research opportunities related to this topic. If asked to change this product, I would add a dynamic component for the textbook and allow learners to see their work on the actually pages of text. I would also enhance the tool to allow users to enter their code, test it, and have it run for errors. I believe this addition would provide more practical application learning for the students.

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