



Integrating Virtual Case-Based Activities into Online Courses

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The Problem

Infectious diseases are one of the most common diseases to appear in pharmacy practice. The appropriate treatment of many infections require basic knowledge of microbiology and anti-infective medications. We know many students struggle to integrate basic sciences with therapeutic decision making. The Infectious Disease Workshop (IDW) is offered to pharmacy students enrolled in Microbiology & Antibiotics and was designed to allow students to reinforce basic science skills in the context of a patient case. The IDW, originally designed as a wet-lab activity, also provides students the opportunity to understand the role of pharmacist in patient care.

Objectives

- To create an online IDW that allows students to utilize their basic science skills in the context of a patient case.
- To provide students with immediate, constructive, contextual feedback regarding therapeutic decisions made for the patient case.
- To provide a framework to assess student synthesis of these principles as a result of completing the workshop.

Results

Similar questions from the IDW were reintroduced to students during a mid-term exam. Close to 100% of the class were able to make appropriate diagnosis of the infection during the exam. Eighty percent of the students found that the IDW helped retain key concepts from the course and 88% of the students found the IDW to overall, be a useful tool for education. A student commented that the "IDW was great. It allowed us to follow the steps practioners take in diagnosing and choosing medication.

Fidelity & Interactive Narrative

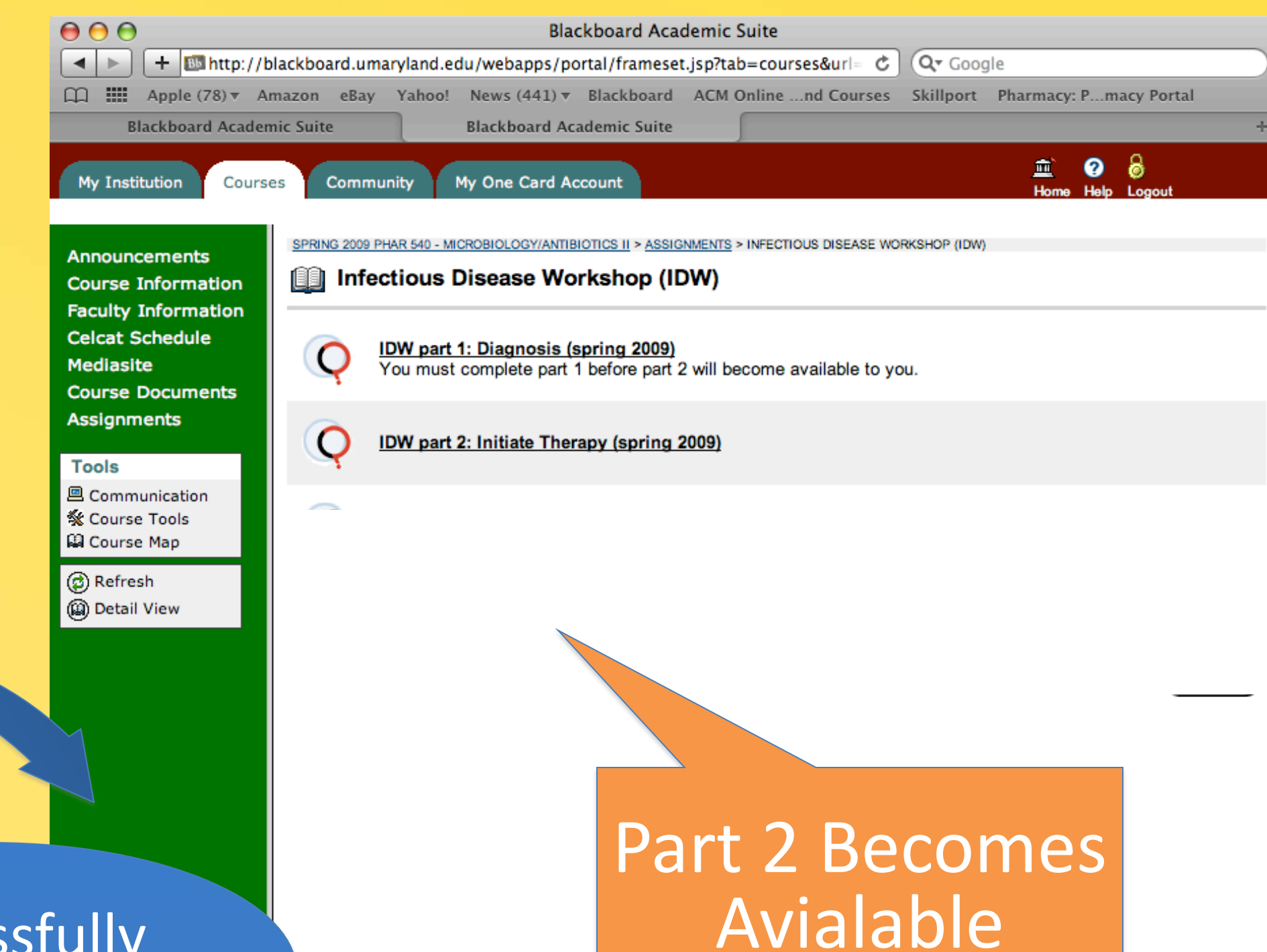
Virtual patients are a form of interactive narratives, a type of serious games that engage learners in authentic decision making. Virtual patients fall into two broad categories based on fidelity, or the extent to which the virtual patient simulates a "real" patient. High fidelity patients may include 3-d models and sophisticated simulations of physical responses. A wide range of interaction is possible, since the effects of a user decision can be computed on-the-fly instead of being designed in advance. However, high-fidelity virtual patients, can require significant amounts of time and money to produce.

When the educational goals focus on critical thinking and decision making, rather than complex physical assessments, lower fidelity assessments may be equally as effective. Lower fidelity simulations rely on text, audio, video, and simple graphics and animations, representing patient, hospital, and laboratory data.

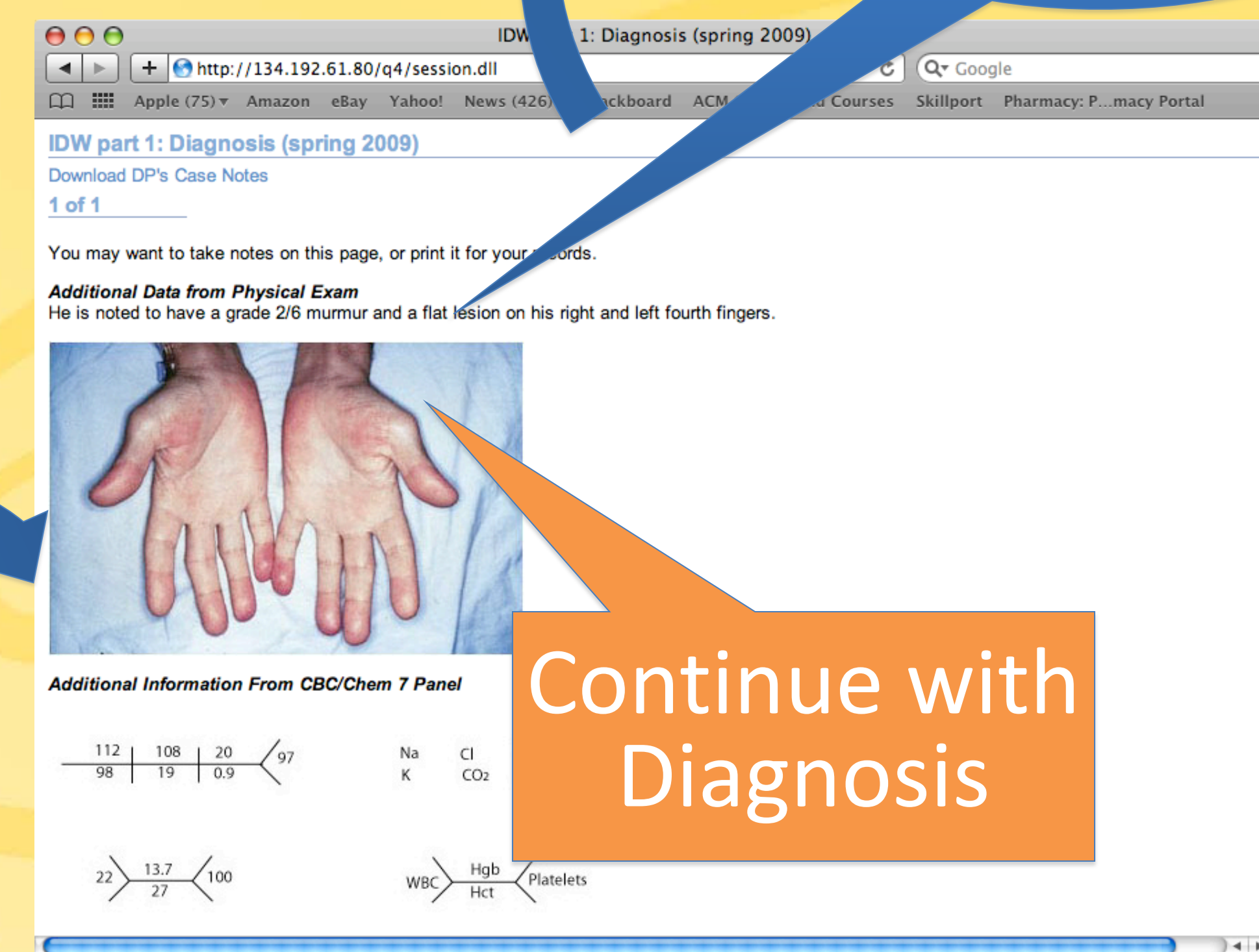
Questionmark & Blackboard Integration

We broke each chunk of questions and background data into chunks and created adaptive pathways for the questions using Questionmark Perception (v 4.3). We then broke the assessment into chunks based on stages in determining drug therapy and used Blackboard adaptive release to require that students successfully complete each segment of the process successfully before moving on to the next.

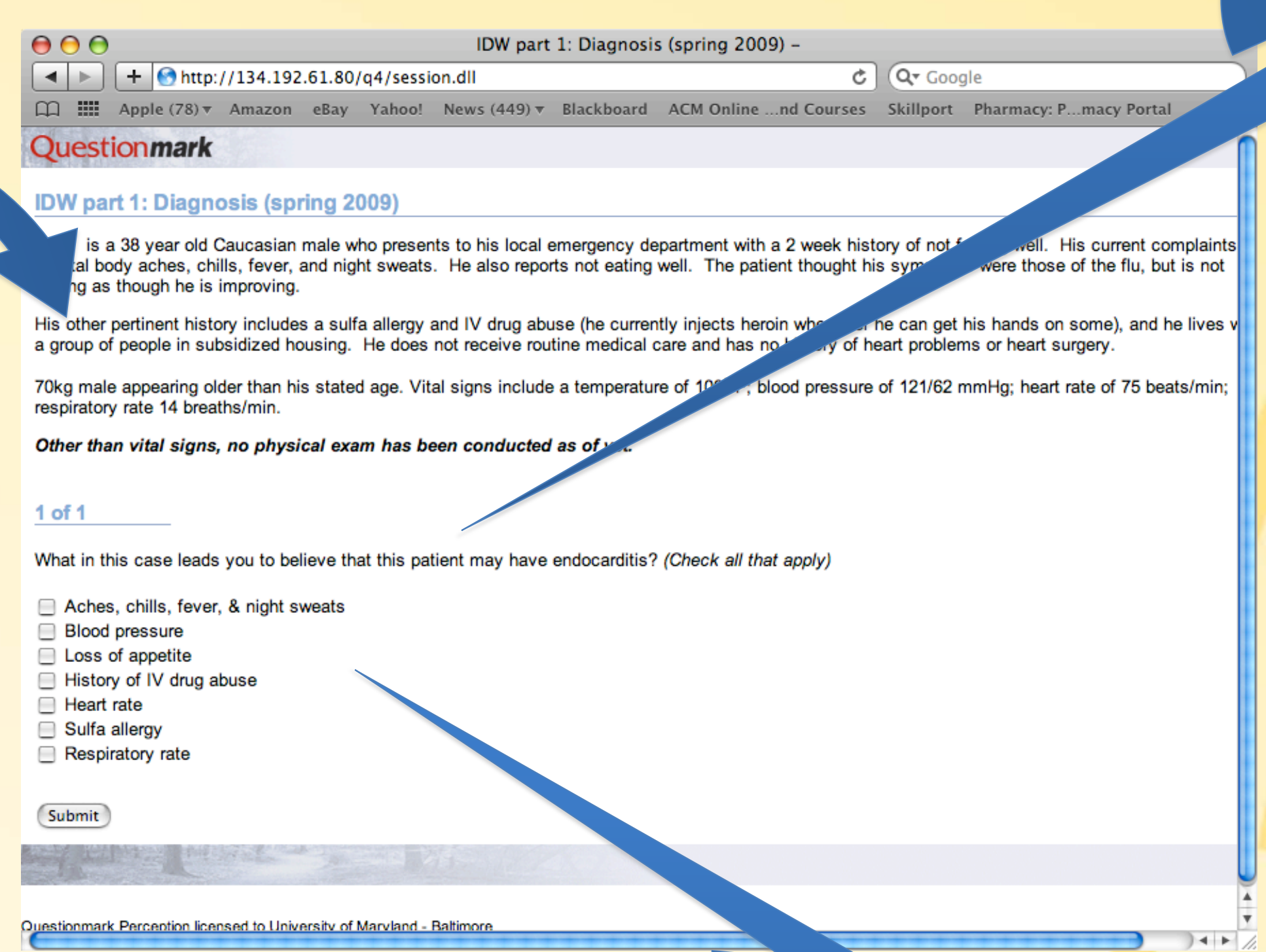
Students were allowed to repeat each segment as often as they liked, but had to successfully complete the whole clinical sequence in order to receive credit.



Part 2 Becomes Available

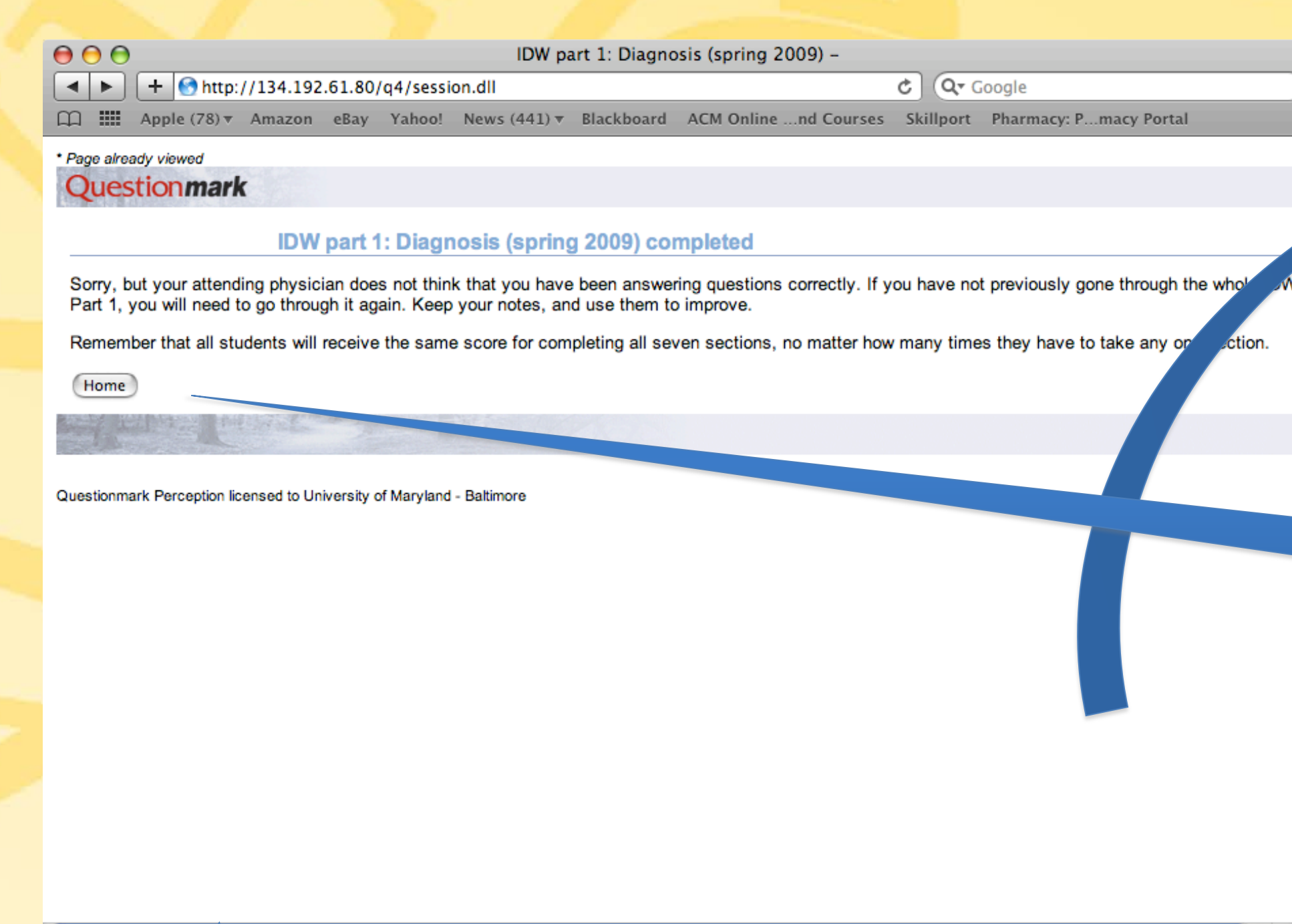


Continue with Diagnosis

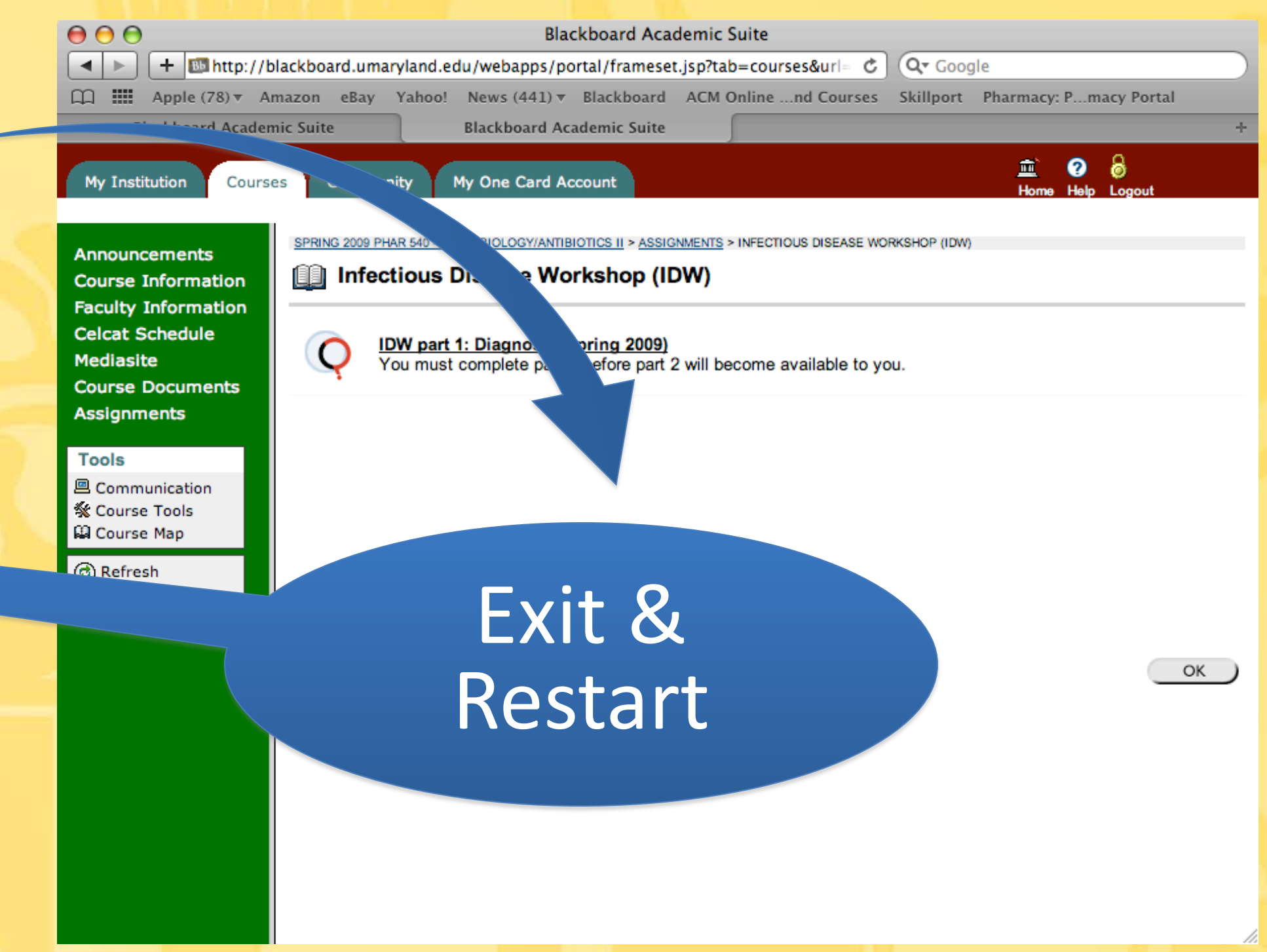


Start

Correct



Incorrect



Exit & Restart

Concluding Notes

While The UM School of Pharmacy is aware of other software useful in creating low-fidelity virtual patients and other interactive narratives, we have decided to stay with Questionmark Perception over the coming year due to its rich reporting features and ease of Blackboard integration. We are working over the next year to integrate richer narratives, including more complex input and feedback from multiple members of the health care team.