

# Becoming a Professional through Virtual Practice

Tabitha McKay, Andrea Cantarero, Vanessa Svihla, Elizabeth Yakes Jimenez, and Tim Castillo  
University of New Mexico, 1 University of New Mexico, Albuquerque NM 87131  
tmckay@unm.edu, arcantarero@salud.unm.edu, vsvihla@unm.edu, eyjimenez@unm.edu, timc@unm.edu

**Abstract:** Disciplinary practices are challenging to teach and assess, yet are integral to persistence and future success. This poster presents findings from an online, interactive case study system that allows learners to take on expert roles—in this case, dietitian—and learn content as they counsel virtual patients. We present results from two design-based research implementations, and preliminary findings from an ongoing third implementation. Analysis reveals that undergraduate and graduate nutrition students learned about professional practices.

## Major Issues Addressed

A major challenge for educating professionals is providing experiences that help them connect content to professional practices. For instance, nutrition assessment is a core professional practice, yet is difficult to teach. Myriad strategies have been sought for improving student learning in nutrition/dietetics courses, including experiential approaches and interactive online approaches. Increasingly, there has been a push to move instruction online. A systematic review assessed postsecondary online nutrition education courses, showing that online instruction was comparable to face-to-face nutrition courses in terms of learning gains, but less success has been found for changing perceptions (Cohen, Carbone, & Beffa-Negrini, 2011). Understanding more about the design of such environments is key to abstracting how or why they might support learning or foster change in perceptions. In research conducted with focus groups, students reported various challenges; of particular relevance to the current study is one challenge in particular: way-finding. Organizing relevant resources in an intuitive manner can support students to make productive and repeated use of them (Connors, 2012). Interactive, online instruction significantly increased paraprofessional knowledge, but at a greatly reduced cost (as compared to face-to-face training) (Christofferson, Christensen, LeBlanc, & Bunch, 2012).

## Significance

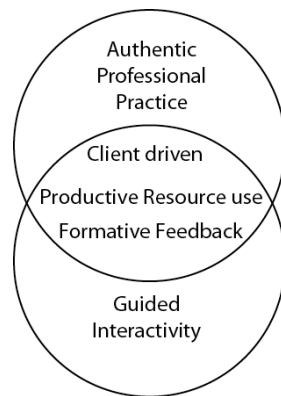
The current study reports a combined experiential, interactive online approach that provides authentic context, which has been shown to support learning (Rivet & Krajcik, 2008). Our system (system name blinded for review) allows students to try on professional roles (e.g., dietitian), use resources (e.g. journal articles) and apply conceptual understanding by counseling virtual clients (e.g., a patient with diabetes). Our system helps students see connections to their future professional selves. Past research on our system focused on high school life science, placing students in roles such as genetic counselor or conservation geneticist and asked to counsel virtual clients using resources, including the internet, to prepare responses. Our system helped identify misconceptions students held, which could be addressed adaptively, because our cases are formative (Black & Wiliam, 1998); this approach enhances participation (Hickey, Barab, Ingram-Goble, & Zuiker, 2008) and increases retention for students with low confidence about accurate ideas (Butler, Karpicke, & Roediger, 2008). Our system provides a safe atmosphere for students learn how to interact with patients around a new subject area. Other strategies that would provide a similar experience such as standardized patients can be cost prohibitive, particularly for undergraduate education.

## Theoretical and Methodological Approach

Our research uses Design-Based Research (DBR) (The Design-Based Research Collective, 2003). The purpose of DBR is to iteratively develop theories of and designs for learning (The Design-Based Research Collective, 2003). This paper reports two initial iterations (with a third in progress at time of writing) of a longer DBR study. Theory is instantiated in our designs for learning, and iteratively tested under real-world conditions to better understand how, when, and for whom learning occurred. The beginning theoretical stance is depicted in Figure 1.

## Participants and Setting

Students in DBR Iteration 1 (n=15) and 3 (n=30) were recruited from an undergraduate course on nutrition through the life cycle. Students in DBR Iteration 2 were recruited from a graduate course (n=14) on nutrition assessment. All courses were taught by one of the authors who is a faculty member in a nutrition program at a research university in the southwestern US. The case was completed as a course assignment. Students in iterations 1 and 2 completed one out-of-class case in 2-3 hours. Students in the ongoing iteration 3 are completing 8 cases distributed throughout the course.



**Figure 1.** Beginning theoretical stance for supporting learning

## Findings, Conclusions and Implications

Students overwhelmingly reported that they would use what they learned in other classes and in their careers, and that what they learned was important for their future professional work. Students also agreed that the case resembled a real life situation. Students who chose incorrect answers on the interactive case still performed well on the delayed post test. On the delayed post test, the average score was 98% for items related to the interactive case. In contrast, the average score for items targeting traditional (paper-based) cases was 89%. While not a large difference, this suggests that students may retain what they learn in these cases better than traditional approaches.

## Connection to Conference Theme: Learning and Becoming in Practice

The purpose of the study was to develop and pilot test interactive cases to help nutrition students (1) understand aspects of a professional practice, the Nutrition Care Process (Assessment, Diagnosis, Intervention, Monitoring & Evaluation), and (2) learn to make relevant professional decisions. We found that the cases supported both undergraduate and graduate students to do this. Our study extended our prior framework from high school students to undergraduate students at the very beginning of understanding professional practices and graduate students looking to extend their professional practice. Our research provides an exemplar of an efficient and feasible experiential approach to providing students a vision of practice.

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