The role of AR Technology in supporting nursing acquiring clinical skills independently

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ABSTRACT

Current nursing curricula rely heavily on teacher-centered approaches to student learning. However, researchers challenge educators to shift to student-centered learning approaches (Murphy et al., 2011). This study introduces a new learning strategy by using mobile AR which will help nursing students to acquire clinical skills independently.

KEYWORDS: Nursing clinical skills, Independent learning, Mobile Augmented Reality.

INTRODUCTION:

The current learning approach of acquiring nursing clinical skills has limitations in supporting independent learning. Students use manikins that do not represent real patient symptoms, and they do not have enough experience to create a clear mental image needed for a simulated scenario. For that reason, it is difficult for them to understand without teacher explanations. This study aims to overcome the limitations of the current learning approach. Also, it introduces a new learning strategy by utilizing Mobile Augmented Reality (MAR) in order to support independent learning when acquiring clinical skills.

METHOD

An investigative study was conducted at Salford University to understand how nursing students learn in a clinical lab. The finding shows that the current approach heavily relies on the teacher, and figure 1 shows how our proposed framework will overcome the limitations of the current learning approach. As a result, we have developed a prototype of a Mobile Augmented Reality (MAR) application including four sections Anatomy, Pathophysiology, Scenarios, and Self-assessment. The application was designed based on the theoretical framework proposed by English & Kitsantas (2013). It changed the teacher's role in a face-to-face classroom into an interactive MAR environment. Heart anatomy and heart diseases form an example case were

used when developing the MAR. The application allows students the freedom to discover the solution independently and activate their independent learning. Moreover, the evaluation was conducted based on the "within-group" lab experiment, focusing on the evaluation of the user experience. The application was designed to create an overall positive user experience. The duration of the one-to-one lab session was around 50 minutes and there were 34 participants, and the questionnaire was designed based on the 5E dimension(Quesenbery, 2004).

RESULT AND CONCLUSION

5Es metrics	Anatomy	Patho-physiology	Patient's scenario	Self-Assessment	Overall
Effectiveness	4.76	4.70	4.82	4.73	**4.75**
Efficiency	4.21	4.39	4.30	4.36	**4.31**
Engaging	4.73	4.70	4.73	4.64	**4.70**
Error Tolerant	4.03	4.09	3.88	3.91	**4.00**
Easy to learn	3.33	3.64	3.58	3.79	**3.58**

The overall mean for each dimension was the range of 3.58 to 4.75, which indicates that the students were overall satisfied with the use of the MAR application as a learning tool. The results also show that most of the students prefer using MAR than the current learning approach in terms of supporting their independent learning.

The MAR learning strategy is creating a rich learning environment by immersing the learners in experiences and activities, rather than being the recipients of information from the teacher. While the students are using the MAR application they interactive with 3D model, view real patient's symptoms and assess themselves. These activities help them to activate their independent learning.

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