2024 INTER-REGIONAL RESEARCH SYMPOSIUM (IRRS)

HANDBOOK

Transforming Higher Education: Towards Sustainable Development

20-22 November 2024
Sukosol Hotel Bangkok, Thailand

With the collaboration and support of

In partnership with

From Classroom to Cloud: Radiology Education in a Post-Pandemic Era

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Abstract

The COVID-19 pandemic necessitated a shift from traditional face-to-face learning to online and blended learning modalities in medical education. This study aims to evaluate the effectiveness of online learning compared to blended learning in radiology education among medical students.

A cross-sectional study was undertaken among the medical students who completed two-weeks radiology posting in Universiti Malaysia Sarawak from year 2000 until 2023. Data were collected through questionnaire including feedback that covered various aspects such as student enjoyment, preferences, perceived helpfulness of learning methods, and overall learning outcomes, then followed by tests on the knowledge retention and interpretation skills.

The study included 433 medical students, divided into two groups: 254 engaged in blended learning and 179 in online learning. The mean age of participants was 23.5 years, with 70.2% being female. In the blended learning group, 76.8% enjoyed face-to-face (F2F) learning, and 82.7% found F2F sessions beneficial. In the online learning group, 57% enjoyed the virtual learning, and 65.4% found asynchronous sessions helpful. Knowledge acquisition was satisfactory by 90.1% of blended learning students and 86.0% of online learning students. Adequacy for clinical skills was perceived by 67.7% of blended learning students and 75.9% of online learning students. Preparation for clinical hospital work was positively rated by 70.1% of blended learning students and 72.6% of online learning students. The effectiveness of the E-learning Enrichment and Advancement Platform (eLEAP) was positively perceived by 71.6% of students overall. Regarding test performance, both groups achieved similar median score of 3 but online students generally performed better, with significantly higher overall scores ($p = 0.03$) according to the Mann-Whitney U test.

Both online and blended learning modalities were well-received, with students reporting high levels of satisfaction and positive perceptions of their learning experiences. Online learning showed a slight edge in content delivery and lower levels of hardship. However, blended learning was preferred for face-to-face interactions and hands-on sessions. The overall positive feedback and comparable quiz performances between the two groups suggest that both learning modalities can be effectively utilized in radiology education. Future research should focus on optimizing the blend of online and face-to-face components to enhance learning outcomes further.

Keyword: blended learning, online learning, radiology education