INPLASY PROTOCOL

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A protocol of meta-synthesis on the perceptions and experience of healthcare students in Southeast Asia regarding technology-based learning

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Review question / Objective: What is the perception and experience of Southeast Asia healthcare students on technology-based teaching and learning in their education?

Condition being studied: Various type of technologies are considered from online learning such as blended-learning, e-learning or MOOC, internet-based learning such as using social media platform, watching online video, searching information from webpage, and using sophisticated or physical technology such as virtual reality, high-fidelity manikin, and gaming applications.

Information sources: All retrieved articles is obtained. Duplicates is removed initially before the screening process. The first author screened the title for eligibility according to the pre-determined criteria followed by two authors involved in screening the abstract and full text, conducted independently. Accepted articles from the two authors are compared and any discrepancy on the status is resolved trough discussion to achieve consensus on the final included articles.

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 17 February 2021 and was last updated on 17 February 2021 (registration number INPLASY202120053).

INTRODUCTION

Review question / Objective: What is the perception and experience of Southeast Asia healthcare students on technology-based teaching and learning in their education?

Rationale: Students are the customer in the higher education. Higher education institutions providing the education program as their product; therefore, any activities or innovation in teaching and learning delivered will impact the students

directly. Contemporarily, the institutions and educators are eager to apply technology in the teaching and learning activities - and the current situation of COVID-19 pandemic has prompt the effort. However, the perspective and opinion from the students are vital to ensure their receptibility on such effort.

Condition being studied: Various type of technologies are considered from online learning such as blended-learning, e-learning or MOOC, internet-based learning such as using social media platform, watching online video, searching information from webpage, and using sophisticated or physical technology such as virtual reality, high-fidelity manikin, and gaming applications.

METHODS

Search strategy: Database: Scopus, Academic Search Complete, CINAHL, Cochrane Libraries, Dentistry & Oral Sciences Source, MEDLINE, Psychology and Behavioral Sciences Collection, SPORTDiscus, Education Source, ERIC, Health Business Elite, ASEAN Citation Index. Keywords: ("medic*" OR "health" OR "health science*" OR "nurs*" OR "biomedic*" OR "pharma*" OR "nutrition" OR "dietetic*" OR "dental" OR "dentist*" OR "allied health" OR "occupational health" OR "environmental health" OR "occupational therap*" OR "physiotherap*" OR "phsyical therap*" OR "speech therap*" OR "speech language phatolog*" OR "occupational safety" OR psycholog* OR "audiolog*" OR forensic* OR "radiotherap*") AND (student* OR "undergrad*" OR "universit*" OR "college" OR "higher education*" OR "tertiary education*" OR "postgraduat*" OR "post? graduat*" OR "Master" OR "graduat*") AND ("e-Learning" OR "e-learning" OR "online" OR "web based" OR "blended" OR "internet" OR "computer*" OR "mobile" OR "simulation*" OR game* OR gamification* OR "MOOC*" OR "e-content" OR "digital" OR "virtual" OR "electronic" OR "computer-based learning" OR "technology enhanced learning" OR "augment*" OR technolog* OR "hybrid learning" OR multimedia OR "massive open online course" OR "m-learning" OR Moodle OR "flexible" OR "e-pedagogy" OR "social media" OR IoT OR "Internet of Things") AND (qualitative OR "focus group discussion*" OR "grounded theor*" OR "grounded-theor*" OR ethnograph* OR phenomenolog* OR triangulation OR "mixed-method*" OR interview*) AND ("Southeast Asia" OR "South-East Asia" OR "South East Asia" OR "Brunei" OR "Cambodia" OR "East Timor" OR "Timor Leste" OR "Indonesia" OR "Laos" OR "Lao PDR" OR "Malaysia" OR "Myanmar" OR "Philippine*" OR "Singapore" OR "Thailand" OR "Vietnam" OR "Viet Nam"). Boolean operators, truncations, wildcards, parenthesis and exact are used when necessary.

Participant or population: Medical and Health Sciences students either undergraduate or postgraduate.

Intervention: Technology-based learning consistent with the concept of Industrial Revolution 4.0 and Internet of Things.

Comparator: Other type of non-technology-based learning activities.

Study designs to be included: qualitative study.

Eligibility criteria: i) Study with higher institution's students either undergraduate or postgraduate, ii) investigate technology related to Industrial Revolution 4.0 (IR4.0) or Internet of Things (IoT), iii) qualitative study, and iv) study exploring on perception or experience of the students in using the technology for teaching and learning purpose.

Information sources: All retrieved articles is obtained. Duplicates is removed initially before the screening process. The first author screened the title for eligibility according to the pre-determined criteria followed by two authors involved in screening the abstract and full text, conducted independently. Accepted articles from the two authors are compared and any discrepancy on the status is

resolved trough discussion to achieve consensus on the final included articles.

Main outcome(s): The synthesis from the included articles resulting to the development of an overarching understanding and new worldview themes.

Additional outcome(s): None.

Data management: Electronic citation is managed using the EndNote reference manager software. Screening process against eligibility criteria in each stage (title, abstract, full text), and data extraction is recorded using Excel document. Management of qualitative coding is performed using QDA Miner Lite software.

Quality assessment / Risk of bias analysis: Hawker's Evidence Appraisal Tool (HEAT) instrument is used to evaluate the quality of included qualitative studies. HEAT has 9 items on i) title and abstract, ii) introduction and aims, iii) method and data, iv)sampling, v) data analysis, vi) ethics and bias, vii) results, viii) transferability and generalizability, and ix) implication and usefulness. Each item is rated in four categories of 1=very poor, 2=poor, 3=fair, and 4=good. A total score is calculated by summing the rating and then grouped into the following quality: low (9–23), medium (24–29), and high (30–36).

Strategy of data synthesis: Included.

Subgroup analysis: Findings are observed according to the conducted countries, student's population such as undergraduate and postgraduate, category of technology, and compare against Kirkpatrick's model, Bloom's taxonomies and BEME level.

Sensitivity analysis: At least two authors involved for inter-rater analysis. Inter-rater reliability analysis is implemented on pre-consensus agreement of the included studies, quality analysis rating on each articles evaluated by HEAT instrument, and categorization of the included studies over Kirkpatrick's model. Verification of

information extracted in the table is also done by discussion among authors.

Language: English.

Country(ies) involved: Malaysia.

Other relevant information: This meta-synthesis follows the methodology from Lachal et al. (2017) (Source: https://doi.org/10.3389/fpsyt.2017.00269) and informed by Romli et al. (2020) (Source: https://doi.org/10.1136/bmjopen-2020-041153).

Keywords: medical education; e-learning; internet of things; industrial revolution 4.0; systematic review; qualitative; opinion; experience; perception.

Dissemination plans: The systematic review is intended to be published as journal article and presented in academic conferences.

Contributions of each author:
Author 1 - Muhammad Hibatullah Romli - MHR involves in all process in this meta-synthesis, has a major role initiating the idea, involves in searching, screening and disseminating the articles, conducting quality evaluation, extracting, and synthesizing the data, and critically analyzing and writing the manuscript.
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