

SYNOPSIS

The purpose of this study was to develop a collaborative mobile learning module on the topic of nutrition in Form 2 Science. The module was implemented for a group of Form 2 students in a selected school in the Klang Valley. A developmental research approach was employed for the module, with three phases: needs analysis, design and development, and evaluation. Data from the needs analysis phase was mainly from a survey and the analysis of documents, while in the second phase, written records and interviews were used. In the third phase, data was collected from various sources: online communications records, journal records, interviews and surveys.

In the first phase, the needs analysis included a survey of the technology usage of 158 Form 2 students in a selected urban school in the Klang Valley. The findings indicated the respondents perceived themselves to be skilled in the usage of mobile phones, but averagely skilled in the usage of computers. Majority had access to mobile phones, while fewer had access to computers. Communications via phones discussions and text messaging, and the use of information search tools on the internet, were used frequently. The respondents also believed that computers were important for learning and were motivated to learn with computers. The analysis of documents was done to map the lessons to the learning outcomes, and determine the teaching and learning approach for the module.

From the findings of the first phase, a collaborative mLearning module was designed. In the second phase of design and development, the collaborative mLearning module on the topic of Nutrition was designed using Merrill's First Principles of Instruction. A social constructivist approach with mobile web-based technologies for the delivery of learning materials was employed in the design. Online discussion forums, collaborative work spaces or wiki, and text messaging, were used for learning. A team of five experts in educational technology and in the subject matter were selected to assist in the design of the module. The team brought up issues on management, instruction, the environment, and interaction, in the design of the module which was resolved in the development phase.

In the third phase, the evaluation of the usability of the module was done. During the implementation, the researcher was the facilitator of the module. Twenty (20) Form 2 students of varied science abilities were selected. Data was collected from the online communications, journal records, interviews, and survey, and analyzed to report on the participants' perception of the usability of the module. The participants' engagement in using the module indicated that a collaborative mLearning module could be used for learning science. Among the online communications used, the participants were most active learning with text messaging because of the accessibility of the mobile device.

Based on the findings, it is suggested that a collaborative mLearning module, with accessible mobile tools, could be used for learning science, as well as other subjects.

PEMBANGUNAN MODUL *COLLABORATIVE mLEARNING* BAGI NUTRISI TINGKATAN 2

SINOPSIS

Tujuan kajian ini adalah untuk membangun sebuah modul pembelajaran kolaboratif mobil bagi topik nutrisi dalam Sains Tingkatan 2. Modul ini diimplementasi bagi sekumpulan pelajar Tingkatan 2 di sebuah sekolah terpilih di Lembah Klang. Pendekatan pembangunan tiga fasa digunakan iaitu fasa analisis keperluan, rekabentuk dan pembangunan, dan penilaian. Data daripada fasa analisis keperluan adalah daripada tinjauan dan analisis dokumen, manakala fasa kedua, daripada rekod bertulis dan temubual. Bagi fasa ketiga, data adalah daripada pelbagai sumber: rekod komunikasi atas talian, rekod journal, pemerhatian, temubual, dan tinjauan.

Semasa fasa pertama, analisis keperluan melibatkan tinjauan penggunaan teknologi 158 pelajar Tingkatan 2 dalam sekolah bandar yang terpilih di Lembah Klang. Dapatan menunjukkan responden berpendapat diri mereka sebagai berkemahiran sederhana dalam penggunaan komputer, tetapi mahir dalam penggunaan telefon bimbit. Sebahagian besar daripada responden mempunyai akses kepada telefon bimbit, tetapi kurang mempunyai akses kepada komputer. Komunikasi melalui diskusi telefon dan mesej teks, serta pencarian melalui enjin pencarian di internet sering digunakan. Secara keseluruhan, responden percaya komputer adalah penting bagi pembelajaran dan bermotivasi untuk belajar dengan komputer. Analisis dokumen telah dijalankan bagi memetakan pelajaran kepada hasil pembelajaran, dan menentukan pendekatan pengajaran dan pembelajaran bagi modul.

Daripada dapatan kajian fasa kedua, modul *Collaborative mLearning* direkabentuk. Bagi fasa kedua, modul *Collaborative mLearning* bagi topik Nutrisi direkabentuk menggunakan *First Principles of Instruction* anjuran Merrill. Pendekatan konstruktivisme sosial dengan penggunaan teknologi berasaskan web yang mobil untuk penghantaran bahan pembelajaran digunakan. Forum diskusi atas talian, ruang kerja kolaboratif atau wiki, dan mesej teks digunakan. Sekumpulan pakar teknologi pendidikan dan kandungan mata pelajaran telah dipilih untuk menilai rekabentuk modul. Pakar-pakar telah menimbulkan isu berkaitan dengan pengurusan, instruksi, persekitaran dan interaksi bagi rekabentuk modul untuk dipertimbangkan dalam fasa pembangunan.

Bagi fasa penilaian, kebolegunaan modul diuji. Penyelidik memainkan peranan sebagai fasilitator semasa implementasi modul. Dua puluh pelajar Tingkatan 2 dengan pelbagai kebolehan Sains dipilih sebagai peserta kajian. Data dikumpul daripada komunikasi atas talian, rekod journal, temuduga, dan tinjauan, dianalisis untuk menentukan persepsi peserta mengenai kebolegunaan modul. Penggunaan modul oleh peserta menunjukkan bahawa modul *collaborative mLearning* boleh digunakan untuk pembelajaran sains. Komunikasi atas talian yang paling banyak digunakan adalah mesej teks kerana telefon bimbit mudah diakses.

Berdasarkan dapatan kajian, adalah dicadangkan bahawa modul *collaborative mLearning*, dengan menggunakan peralatan teknologi yang mudah diakses dan mobil, boleh digunakan untuk pembelajaran sains dan juga mata pelajaran yang lain.

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