SYNOPSIS

The main objective of this study is to develop a pedagogical model on chemistry teaching through computer–assisted guided inquiry for high schools in Iran. This study is carried out in three phases. The first phase was carried out to understand the current pedagogical practices in the classroom. The second phase was performed to describe and examine the influencing factors that impact teaching practices. The third phase was carried out to identify the essential features of teaching chemistry through computer in the high schools. In phase three, the Delphi technique was utilized in order to achieve the experts' consensus upon the proposed development. Based on the results, a pedagogical model for chemistry classes in Iranian high schools was developed.

Mixed methodology with naturalistic qualitative study adopting triangulation methods in data collection along with quantitative descriptive measures were used. Data were collected through observations, semi-structured interviews, questionnaires, and a three-round modified Delphi technique. The participants consisted of ten teachers, ten ICT teams, ten principals, thirty students, and twenty experts from the Ministry of Education and Higher Education. The quantitative data were analyzed using Wilcoxson's non-parametric formula and the Delphi technique. Feedback revealed that teachers were unable to use computers in practice. They could not handle the computer effectively; therefore, computer use was limited.

Teaching chemistry is in need of a pedagogical model; moreover, teachers are in need of professional development training. Interviews with ICT teams and principals revealed that problems encountered are limited budget, lack of knowledge, and lack of strategic planning. The three-round modified Delphi technique performed revealed experts strongly agreed with the development of a pedagogical model. Test-retest revealed an improvement in students' learning after undergoing the guided inquiry model. The guided inquiry aimed at helping teachers teach effectively by promoting deeper thinking and encouraging students to use computers efficiently. The model focuses on developing effective computer use in the classroom by providing the context for discussion and use of computer in teaching chemistry. The conclusion of this study is that the guided inquiry model is suitable for the 11th graders and can be a generic model in Iran.

PEMBANGUNAN MODEL PEDAGOGI INKUIRI BERBANTUKAN KOMPUTER UNTUK PELAJARAN KIMIA GRED 11 DI IRAN

SINOPSIS

Objektif utama kajian ini adalah untuk membangunkan sebuah model pedagogi inkuiri berbantukan computer bagi kimia untuk sekolah-sekolah menengah di Iran. Kajian ini dijalankan dalam tiga fasa. Fasa pertama dijalankan untuk memahami praktis pedagogi semasa di dalam kelas. Fasa kedua pula dijalankan untuk mengkaji faktor perangsang yang memberi impak kepada kaedah pengajaran. Fasa ketiga pula dijalankan untuk mengenal pasti kaedah berkesan untuk mengajar subjek kimia melalui pendektan inkuiri berbantulan komputer di sekolah-sekolah menengah. Dalam fasa tiga, teknik Delphi telah digunakan untuk mencapai konsensus pakar pada akhir pembangunan. Berdasarkan pada keputusan kajian, sebuah model pedagogi untuk pengajaran kimia di sekolah-sekolah menengah di negara Iran telah dibentuk.

Kaedah campuran dengan kaedah kualitatif yang bersifat naturalistik serta menggunakan triangulasi dalam pengumpulan data telah digunakan bersama pengukuran kuantitatif descriptif. Data-data telah dikumpul melalui pemerhatian, temuduga berstruktur, *questionnaires,* dan tiga pusingan teknik Delphi yang telah dimodifikasi. Peserta kajian yang terlibat adalah sepuluh guru, sepuluh pasukan ICT, sepuluh pengetua, tiga puluh pelajar dan dua puluh pakar-pakar dari Kementerian Pelajaran dan Kementerian Pengajian Tinggi. Data kuantitatif telah dianalisis menggunakan formula Wilcoxson's *non-parametric* dan teknik Delphi. Keputusan menunjukkan guru-guru gagal untuk mempraktikkan penggunaan komputer. Mereka tidak dapat mengendalikan komputer secara efektif; maka, penggunaan komputer adalah terhad.

Pengajaran kimia amat memerlukan model pedagogi; tambahan pula, guru-guru memerlukan latihan pembangunan profesional. Temuduga bersama pasukan-pasukan ICT dan pengetua-pengetua menunjukkan antara masalah yang dihadapi adalah kewangan yang terhad, kurang pengetahuan dan kurang perancangan stratejik.

Teknik tiga pusingan Delphi yang telah dimodifikasi yang dijalankan menunjukkan pakar-pakar amat bersetuju dengan pembangunan model pedagogi. Ujian dan ujian semula menunjukkan peningkatan dalam pembelajaran pelajar-pelajar setelah dipimpin mengikuti model inkuiri. Model tersebut disasarkan untuk membantu guru-guru mengajar secara berkesan dengan menggalakkan pemikiran mendalam dan menggalakkan pelajar untuk menggunakan komputer secara efisien.

Model tersebut difokuskan untuk menggalakkan penggunaan komputer secara efektif di dalam kelas dengan menyediakan konteks untuk perbincangan dan penggunaan komputer dalam pengajaran subjek kimia. Kesimpulan kajian ini adalah, model inkuiri secara dipimpin amat sesuai dengan pelajar gred sebelas dan akan menjadi model generik di Iran.

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