KESAN INTERAKSI MEDIA PENGAJARAN, KAEDAH BELAJAR, DAN TAHAP PENCAPAIAN PELAJAR TERHADAP TAHAP KEFAHAMAN KONSEP GERAKAN MELALUI TUGASAN POE

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PENGAKUAN

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Abstrak

Dalam laporan *The Third International Mathematics and Science Study* yang dihasilkan setiap empat tahun sekali dilaporkan pelajar sekolah di Malaysia kurang berkebolehan untuk memahami konsep fizik. Justeru itu, kajian ini bertujuan mengenal pasti kesan program multimedia ke atas tahap kefahaman konsep gerakan bagi mata pelajaran Fizik di sekolah menengah melibatkan 240 orang pelajar dalam dua belas kumpulan. Kajian faktorial 2 X 2 X 3 ini melibatkan tiga pembolehubah tidak bersandar: media pengajaran (simulasi komputer dan pembacaan), kaedah belajar (individu dan pasangan) dan tahap pencapaian pelajar (tinggi, sederhana dan rendah) serta satu pembolehubah bersandar (tahap pemahaman konsep Fizik). Dapatan kajian menunjukkan kesan utama media pengajaran dan tahap pencapaian pelajar adalah signifikan. Media pengajaran memberi kesan yang berbeza terhadap tahap pemahaman konsep gerakan. Pelajar menduduki ujian kefahaman dalam mata pelajaran Fizik sebagai ujian pasca dalam kajian. Dapatan juga menunjukkan pelajar mempunyai persepsi yang positif terhadap fitur gerak perlahan dan ulang tayang dalam menggunakan klip video semasa melakukan tugasan *Predict-Observe-Explain* (POE). Dapatan soal selidik pelajar juga mendapati sesi perbincangan semasa tugasan POE membantu mereka memahami konsep gerakan dengan lebih baik. Berdasarkan dapatan kajian ini, media pengajaran berbantukan komputer dan pembelajaran secara kumpulan perlu diberi penekanan dalam pendidikan Sains, terutama untuk pelajar berpencapaian rendah tetapi tidak kepada pelajar berpencapaian tinggi. Kombinasi tugasan POE dan media pengajaran berbantukan komputer menjadi pendekatan yang berkesan dalam pendidikan Sains.

Kata kunci: Simulasi komputer, *Predict-observe-explain*, Prestasi akademik, Kaedah belajar.

Abstract

In The Third International Mathematics and Science Study that is produced in every four years time, it is reported that Malaysians students are less capable to understand the concepts of Physics. Thus, this study aimed to identify the effects of a multimedia program on the level of understanding of the concept of motion for Physics in secondary schools involving 240 students in twelve groups.The 2 X 2 X 3 factorial study involved three independent variables: instructional media (computer simulation and reading), study method (individual and pair) and students' ability levels (high, medium and low), and one dependent variable (comprehension level in Physics). Findings showed that the main effect of instructional media (computer simulation and reading) and students' ability levels (high, medium and low) were significant. Instructional had different effect on the comprehension level in Physics. Students sat for a post-test in Physics comprehension in this study. Findings also showed that students perceived positively towards the use of slow motion and replay features in the video clip when performing the Predict-Observe-Explain (POE) task. The findings from the student survey also found that discussion during the POE tasks helped them to better understand the concept of motion in Physics. Based on the findings of the study, computer-assisted instructional media should be given emphasis in science education, particularly for students with low ability level but not for high ability students. The combination of POE tasks and computer-assisted instructional media is an effective method in Science education.

Keywords: Computer simulation, Predict-observe-explain, Academic performance, Learning methods.

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Kandungan

Senarai Jadual

Senarai Rajah

Glosari

POE	-	Predict-Observe-Explain
KPi	-	Kumpulan Modul Pembacaan Individu
KPiT	-	Kumpulan Modul Pembacaan Individu Pencapaian Tinggi
KPiS	-	Kumpulan Modul Pembacaan Individu Pencapaian Sederhana
KPiR	-	Kumpulan Modul Pembacaan Individu Pencapaian Rendah
KPp	-	Kumpulan Modul Pembacaan Pasangan
KPpT	-	Kumpulan Modul Pembacaan Pasangan Pencapaian Tinggi
KPpS	-	Kumpulan Modul Pembacaan Pasangan Pencapaian Sederhana
KPpR	-	Kumpulan Modul Pembacaan Pasangan Pencapaian Rendah
KKi	-	Kumpulan Komputer Individu
KKiT	-	Kumpulan Komputer Individu Pencapaian Tinggi
KKiS	-	Kumpulan Komputer Individu Pencapaian Sederhana
KKiR	-	Kumpulan Komputer Individu Pencapaian Rendah
KKp	-	Kumpulan Komputer Pasangan
KKpT	-	Kumpulan Komputer Pasangan Pencapaian Tinggi
KKpS	-	Kumpulan Komputer Pasangan Pencapaian Sederhana
KKpR	-	Kumpulan Komputer Pasangan Pencapaian Rendah
Bn	-	Bertujuan
R	-	Rawak
GP	-	Gerak Perlahan
UT	-	Ulang Tayang
B	-	Perbincangan
PdP	-	Pengajaran dan Pembelajaran

Lampiran

BAB SATU
PENGENALAN

1.1 Pengenalan

Kebanyakan arahan di dalam pembelajaran Sains memberi fokus untuk membantu pelajar mengumpul maklumat terhadap idea saintifik, tetapi tidak merangsang perkembangan terhadap pemahaman terhadap idea saintifik. Arahan ini juga tidak membantu pelajar belajar menggunakan konsep di dalam dunia sebenar di luar bilik darjah (Jarman & McAleese, 1996; Soudani et al., 2000). Hal ini tidaklah memeranjatkan kita di mana kebanyakan pelajar tidak dapat mengadaptasikan pengetahuan Sains yang telah mereka pelajari di sekolah di dalam kehidupan seharian mereka. Ini kerana mereka tidak berkesempatan melakukannya di sekolah (Gallagher, 2000). Menghubungkan pelajar dengan kehidupan seharian telah menjadi isu utama dalam pendidikan Sains dan ini seharusnya diintegrasikan ke dalam mata pelajaran Sains (Ogborn et al., 1996).

Beberapa alasan mengapa perlunya penyatuan pengalaman kehidupan seharian dan memberi fokus terhadap aplikasi kehidupan seharian di dalam Sains. Pertama, saranan oleh Campbell & Lubben (2000), pengalaman kehidupan seharian memberi makna kepada pelajar. Kedua, terdapat satu lagi pertelagahan jika hendak menjadikan pelajar yang berpelajaran dan celik Sains secara saintifik, maka tema kehidupan seharian mereka yang ada hubungan dengan Sains adalah perlu (Harlen, 2002). Dan akhir sekali, terdapat juga hujah tentang pandangan konstruktivisme di dalam pembelajaran di mana konsep-konsep alternatif berasal daripada pengalaman

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