UNIVERSITI PUTRA MALAYSIA

EFFECTS OF PROJECT-BASED LEARNING STRATEGY ON IRANIAN EDUCATIONAL TECHNOLOGY STUDENTS' SELF-DIRECTED LEARNING READINESS,TECHNOLOGY COMPETENCY, AND LEARNING PERFORMANCE

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By

MOHSEN BAGHERI

Thesis Submitted to the School of Graduate Studies, Universiti Putra Malaysia in Fulfilment of the Requirements for the Degree of Doctor of Philosophy

January 2013

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DEDICATIONS

I dedicate this thesis to my loving family for providing me *with the support needed*

Abstract of thesis presented to the Senate of Universiti Putra Malaysia in fulfilment of the requirement for the degree of Doctor of Philosophy

EFFECTS OF PROJECT-BASED LEARNING STRATEGY ON IRANIAN EDUCATIONAL TECHNOLOGY STUDENTS' SELF-DIRECTED LEARNING READINESS, TECHNOLOGY COMPETENCY, AND LEARNING PERFORMANCE

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Chairman : **Professor Wan Zah Wan Ali, PhD**

Faculty : **Educational Studies**

This study sought to examine the effects of project-based learning strategy (PoBL) on self-directed learning readiness, technology competency, and learning performance among Educational Technology undergraduate students of Iran. In order to achieve this objective, a sample of 78 students who enrolled in the System-Based Education course were randomly assigned to experimental group (PoBL strategy) and control group (conventional teaching strategy). As the research instrumentation, a self-directed learning readiness scale, technology competency questionnaire, and System-Based Education achievement test were administrated at three phases namely, pre-test, mid-test, and post-test.

Data analysis consisted of descriptive statistics and inferential statistics. The descriptive results showed that: 1) students in experimental group achieved higher mean scores than control group in terms of overall self-directed learning readiness (M_{exp}=169.2 vs

M_{cont}=153.4), and its components such as self-management (M_{exp}=51.60 vs M_{cont}= 45.95), desire for learning (M_{exp}=56.26 vs M_{cont}=51.82) and self-control (M_{exp}=61.60 vs M_{cont}=55.70). 2) students in experimental group obtained higher mean scores than control group students in overall technology competency (M_{exp}=209.4 vs M_{cont}=175.28) and its components such as technology knowledge (M_{exp}=16.34 vs M_{cont}=15.81), technology skills (M_{exp}=56.34 vs M_{cont}=41.10), and attitude toward technology (M_{exp}= 138.6 vs M_{cont}=118.02). 3) learning performance mean score of students in experimental group was higher than that of the control group (M_{exp}=15.78 vs M_{cont}=15.42).

For inferential analysis the statistical tests employed were the mixed between-within subjects ANOVA, independent sample t-test, two-way ANCOVA, and two-way ANOVA. The following results were indicated: 1) experimental group performed significantly better than control group in terms of their overall level of self-directed learning readiness ($F(2, 152) = 27.42$, $p < .001$), self-management ($F(2,152)=14.80$, $p<.001$), desire for learning ($F(2,152)=12.86$, $p<.001$), and self-control ($F(2,152)=12.86$, $p<.001$). 2) Experimental group significantly gained better than control group regarding their overall level of technology competencies ($F(2,152)=49.25$, $p<.001$), technology skills, ($F(2,152)=.46.76$, $p<.001$), and attitude toward technology ($F(2,152)=24.84$, $p<.001$) . In terms of technology knowledge, however, there was no significant difference between the two groups ($F(2,152)=2.60$, $p>.05$). 3) there was no significant difference between the experimental group and the control group in terms of their learning performance ($t(76)=.945$, $p>.05$). Additionally, it was observed that low achiever students obtained higher mean scores in PoBL strategy, whereas high achiever students fared

better only when exposed to conventional teaching strategy. mid achiever students, however turned out to perform equally with both teaching strategies. Finally, it can be reasonably argued that since PoBL strategy proved to improve students' self-directed learning readiness, technology competency, and learning performance, this strategy could be fairly integrated into the Iranian ET curriculum.

Abstrak thesis yang dikemukakan kepada Senat Universiti Putra Malaysia sebagai memenuhi keperluan untuk ijazah Doktor Falsafah

KESAN STRATEGI PEMBELAJARAN TERHADAP KESEDIAAN PEMBELAJARAN KENDIRI, KOMPETENSI TEKNOLOGI DAN PRESTASI PEMBELAJARAN BERDASARKAN PROJEK TEKNOLOGI PENDIDIKAN IRAN

Oleh

MOHSEN BAGHERI

Januari 2013

Pengerusi : **Professor Wanzah Wan Ali, PhD**

Fakulti : **Pengajian Pendidikan**

Kajian ini bertujuan untuk mengkaji kesan strategi pembelajaran terhadap kesediaan pembelajaran kendiri, kopetensi teknologi dan prestasi pembelajaran berasaskan projek Teknologi Pendidikan pelajar ijazah Iran(PoBL). Untuk mencapai objektif kajian ini, seramai 78 orang pelajar yang mendaftar dalam kursus System-Base Educaton dijadikan sampel dan dipilih secara rawak untuk kumpulan eksperimen (strategi PoBL) dan kumpulan kawalan (strategi pengajaran konvensional). Bagi mendapatkan data kajian, Sampel kajian diberikan tiga jenis ujian, iaitu pre-test, mid-test, dan post-test.

Data dianalisis menggunakan kaedah statistik deskriptif dan statistik inferensi. Hasil statistik deskriptif menunjukkan bahawa: 1) secara keseluruhan pelajar dalam kumpulan eksperimen mencapai skor min yang lebih tinggi daripada kumpulan kawalan daripada segi kesediaan pembelajaran kendiri (MM_{exp}= 169.2 vs M_{cont}=153.4), dan komponen-komponen seperti pengurusan diri (M_{exp}=51,60 vs M_{cont}=45.95), keinginan

untuk pembelajaran (M_{exp}=56.26 vs M_{cont}=51,82) dan kawalan diri (M_{exp}=61,60 vs M_{cont}=55.70). 2) pelajar dalam kumpulan eksperimen mendapat skor min yang lebih tinggi daripada pelajar kumpulan kawalan dalam kecekapan keseluruhan teknologi (M_{exp}=209.4 vs M_{cont}=175,28) dan komponen seperti pengetahuan teknologi (M_{exp}= 16.34 vs M_{cont}=15.81), kemahiran teknologi (M_{exp}=56.34 vs M_{cont}=41,10), dan sikap terhadap teknologi (M_{exp}=138.6 vs M_{cont}=118,02). 3) pembelajaran prestasi skor min pelajar-pelajar dalam kumpulan eksperimen adalah lebih tinggi berbanding dengan kumpulan kawalan (M_{exp}=15.78 vs M_{cont}=15.42).

Untuk analisis statistik inferensi pula data dianalisis menggunakan kaedah campuran subjek ANOVA, ujian-t, dua hala ANCOVA, dan ANOVA dua hala. Keputusan kajian menunjukkan: 1) kumpulan eksperimen menunjukkan persembahan yang lebih baik daripada kumpulan kawalan daripada segi tahap keseluruhan kesediaan pembelajaran kendiri ($F(2,152)=27,42$, $p<.001$), pengurusan diri ($F(2,152)=14.80$, $p<.001$), keinginan untuk pembelajaran ($F(2,152)=12.86$, $p<.001$), dan kawalan diri ($F(2,152)=12.86$, $p<.001$). 2) kumpulan Eksperimen ketara mendapat yang lebih baik daripada kumpulan kawalan mengenai tahap keseluruhan kompetensi teknologi mereka ($F(2,152)=49.25$, $p<.001$), kemahiran teknologi, ($F(2,152)=.46.76$, $p<.001$), dan sikap terhadap teknologi ($F(2,152)=24.84$, $p<.001$). Walau bagaimanapun daripada segi pengetahuan tek nologi, tidak terdapat perbezaan yang ketara antara kedua-dua kumpulan ($F(2,152)=2.60$, $p>.05$). 3) tidak terdapat perbezaan yang signifikan antara kumpulan eksperimen dan kumpulan kawalan daripada segi prestasi pembelajaran mereka (t (76)=0,945, $p>.05$). Selain itu, didapati pelajar yang berpencapaian rendah, skor minnya lebih

tinggi dalam strategi PoBL, manakala pelajar yang berpencapaian tinggi memperlihatkan pencapaian lebih baik hanya apabila terdedah kepada strategi pengajaran konvensional. Bagi pelajar yang berpencapaian pertengahan, hasH pembelajaran yang baik jika melaksanakan kedua-dua strategi pengajaran. Akhirnya, bolehlah dianggap bahawa strategi PoBL terbukti dapat meningkatkan kesediaan pembelajaran kendiri, konpetensi teknologi, dan prestasi pembelajaran, strategi ini boleh disepadukan dalam kurikulum ET Iran.

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I certify that an Examination Committee has met on 29 .January 2013 to conduct the final examination of Mohsen Bagheri on his thesis entitled "Effects of Project-Based Learning Strategy on Iranian Educational Technology Students' Self-Directed learning Readiness, Technology Competency, and Learning Performance" in accordance with Universities and university College Act 1971 and the Constitution of the Universiti Putra Malaysia [P.U.(A) 106] 15 March 1998. The Committee recommends that the student be awarded the Doctor of Philosophy.

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This thesis is submitted to the senate of Universiti Putra Malaysia and has been accepted as fulfillment of the requirement for the Degree of Doctor of Philosophy. The members of the Supervisory Committee were as follows:

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DECLARATION

I declare that the thesis is my original work except for quotations and citations which have been duly acknowledged. I also declare that it has not been previously, and is not concurrently, submitted for any other degree at Universiti Putra Malaysia or at any other institution.

Mohsen Bagheri

Date: 29 January 2013

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