



UNIVERSITI PUTRA MALAYSIA

**EFFECTS OF PROBLEM-SOLVING APPROACH ON PROBLEM-SOLVING
SKILLS, MOTIVATION, AND WRITING ACHIEVEMENT OF MIDDLE-EASTERN EFL
LEARNERS**

HAWANUM HUSSEIN

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By
HAWANUM HUSSEIN

**Thesis Submitted to the School of Graduate Studies,
Universiti Putra Malaysia, in Fulfillment of the
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Doctor of Philosophy**

February 2014

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Abstract of thesis presented to the Senate of Universiti Putra Malaysia in fulfillment of the requirements for the degree of Doctor of Philosophy

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By

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February, 2014

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This quasi-experimental research examined the effects of the problem-solving approach (PSA) on perceived problem-solving skills, motivation and writing achievement of International students who were EFL learners in an intensive English program. A quantitative method approach with a sample size of 57 students was used to collect and analyze the data. Qualitative data collected from a standardized reflection worksheet and a focus group interview was also obtained to support, explain and strengthen the quantitative findings. In this post-test control group research design, two intact Intermediate classes of EFL learners were randomly assigned as the treatment and the control group. Both groups were given ill-structured problems to solve but only the treatment group received the problem-solving approach (PSA). The PSA incorporated the problem-solving technique used in problem-solving learning (PBL) with elements of the process approach to writing. Task based activities were used to scaffold language learning. Quantitative data was collected using the Motivation Problem Solving Questionnaire (MPSQ) adapted from Shek et.al (2007) and Mori (2004) as well as from a post-test essay written in class. Supporting qualitative data was also collected through a standardized reflection worksheet as well as through a focus group interview at the end of the treatment period.

Three main hypotheses were created based on three dependent variables: perceived problem-solving skills, motivation and writing achievement. The Independent samples t-tests and the One-way MANOVA carried out to investigate the effects of the PSA on perceived problem-solving skills found one sub-skill: behavioral competence to be statistically different between the control group and the treatment group. The independent sample t-test conducted to compare behavioral competence mean scores between groups indicated a significant difference between the treatment group ($M = 20.64$, $SD = 1.96$) and the control group ($M = 18.62$, $SD = 3.42$); ($t(55) = 2.71$, $p < 0.01$). The magnitude of the differences in the means (mean difference = 2.02, 95%

CI: .53 to 3.51) was large (eta squared = 0.11). The One-way MANOVA found no statistically significant difference between groups for the combined dependent variables, $F(4, 52) p=2.08$, $p = .09$; Wilk's Lambda = .86; partial eta squared = .13. When the results for the dependent variables were considered separately, behavioral competence was found to reach statistical significance, using a Bonferonni adjusted alpha level of 0.01, $F(1, 55) = 7.39$, $p < 0.01$, partial eta squared = 0.11. Profile plots show an increase for the mean scores for self-determination, resilience and cognitive competence in the treatment group that were not statistically significant. Qualitative data showed that the problem-solving activities helped the participants become better problem solvers as they felt they had become more creative and open-minded to different ideas that might solve the given problem.

The Independent samples t-tests and the One-way MANOVA carried out to investigate the effects of the PSA on motivation found one sub-construct: intrinsic motivation to be statistically different between the control group and the treatment group. The independent sample t-test conducted to compare mean scores for intrinsic motivation between groups indicated a significant difference between the treatment group ($M = 25.96$, $SD = 2.54$) and the control group ($M = 23.83$, $SD = 3.00$; $t(55) = 2.89$, $p < .01$). The magnitude of the differences in the means (mean difference = 2.14, 95% CI: .66 to 3.61) was large (eta squared = 0.13). The one-way MANOVA performed to confirm the results of the independent samples t-test found a statistically significant difference between groups for the combined dependent variables, $F(4, 52) p=2.70$, $p < 0.05$; Wilk's Lambda = .82; partial eta squared = .17. When the results for the dependent variables were considered separately, intrinsic motivation was found to reach statistical significance, using a Bonferonni adjusted alpha level of 0.01, $F(1, 55) = 8.35$, $p < 0.01$, partial eta squared = .13. The profile plots also indicated increases in the mean scores for the treatment group that were not statistically significant for the other three sub-constructs of motivation. Supporting qualitative data revealed that participants liked working in groups as the activities allowed them to interact and work together to solve the problem and complete the writing assignments.

Writing achievement scores were found to be significantly different between the treatment and control group ($p < .05$). After adjusting for pre-treatment scores, results indicated a significant difference between the treatment group and the control group on writing achievement $F(1, 54) = 10.61$, $p < 0.05$, partial eta squared = .16. Supporting qualitative data indicated that the participants liked the PSA as it allowed peer learning and peer correction. They also felt that the PSA made them more open and accepting of other people's perspectives and improved their writing skills. Finally, the treatment group felt that group ideas and group work enabled them to write better and more organized essays individually.

This research provides evidence that the PSA can affect problem-solving skills and sustain motivation levels in International students who are EFL learners. Writing achievement can also be improved. In essence, the PSA provides an effective problem-solving teaching approach that reinforces teacher input and encourages peer learning based on constructivist principles in challenging environments where learners are most likely to experience adjustment and language problems in their host country.



Abstract tesis yang dikemukakan kepada Senat Universiti Putra Malaysia
Sebagai memenuhi keperluan untuk ijazah Doktor Falsafah

**KESAN PENDEKATAN PENYELESAIAN MASALAH (PPM) TERHADAP SKIL
PENYELESAIAN MASALAH, MOTIVASI, DAN PENCAPAIAN PENULISAN DALAM
KALANGAN PELAJAR BAHASA INGGERIS SEBAGAI BAHASA ASING DARI
TIMUR TENGAH**

Oleh
HAWANUM HUSSEIN
Februari 2014

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Kajian eksperimental kuasi ini melihat kesan Pendekatan Penyelesaian Masalah (PPM) terhadap, skil penyelesaian masalah, motivasi dan pencapaian penulisan pelajar program intensif bahasa Inggeris sebagai bahasa asing. Kaedah utama pengumpulan data adalah kaedah kuantitatif, diikuti oleh dapatan kualitatif yang berfungsi memperjelas dan memperkukuhkan data kuantitatif. Kajian ini menggunakan rekabentuk ujian pra-pasca dengan kumpulan kawalan. Dua buah kelas tahap pertengahan telah dipilih secara rawak sebagai kumpulan eksperimen dan kawalan. Walau bagaimanapun, hanya kumpulan eksperimen memperoleh intervensi PPM yang menggabungkan pendekatan penulisan berbentuk proses dengan teknik pembelajaran penyelesaian masalah. Proses pembelajaran bahasa ini dibantu oleh aktiviti berasaskan tugasan. Data kuantitatif dikumpulkan melalui instrument Soal Selidik Motivasi Penyelesaian Masalah dan dua buah hesei yang dihasilkan sebelum intervensi (ujianpra) dan selepas intervensi (ujianpasca). Data kualitatif diperoleh daripada lembaran refleksi pelajar dan transkripsi temubual kumpulan perbincangan berfokus yang dikendalikan setelah intervensi berakhir.

Tiga hipotesis utama telah diwujudkan berdasarkan tiga pemboleh ubah bersandar: persepsi skil menyelesaikan masalah, motivasi dan pencapaian menulis. Ujian-t Sampel Bebas dan MANOVA Sehalu yang dijalankan untuk menyiasat kesan PPM pada persepsi kemahiran menyelesaikan masalah mendapati hanya satu sub-skil: kecekapan tingkah laku berbeza secara statistik antarkumpulan kawalan dan kumpulan rawatan. Ujian-t sampel bebas yang dijalankan untuk membandingkan skor min kecekapan tingkah laku antara kumpulan menunjukkan perbezaan yang signifikan bagi kecekapan tingkah laku di antara kumpulan rawatan ($M = 20.64$, $SD = 1.96$) dan kumpulan kawalan ($M = 18.62$, $SD = 3.42$); ($t(55) = 2.71$, $p < 0.01$). Magnitud perbezaan min (perbezaan

min = 2.02, 95% CI: 0.53-3.51) adalah besar (eta kuasa dua =0.11). MANOVA Sehalu mendapati tiada perbezaan statistik yang signifikan antara kumpulan untuk pembolehubah bersandar digabungkan, $F(4,52)$ $p=2.08$, $p=.09$; Wilk's Lamda=0.86; eta kuasa dua separa=.13. Apabila keputusan untuk pemboleh ubah bersandar diteliti berasingan, kecekapan tingkah laku didapati signifikan, menggunakan tahap alfa 0.01 selepas pelarasan Bonferonni, $F(1,55) = 7.39$, $p < 0.01$, eta kuasa dua separa= 0.11. Plot profil menunjukkan peningkatan yang tidak signifikan bagi skor min untuk penentuan sendiri, daya tahan dan kecekapan kognitif dalam kumpulan rawatan. Data kualitatif menunjukkan aktiviti-aktiviti penyelesaian masalah membantu peserta menjadi lebih penyelesaian masalah yang lebih baik. Mereka merasakan yang mereka sudah menjadi lebih kreatif dan berfikiran terbuka kepada idea-idea yang berbeza yang mungkin menyelesaikan masalah yang diberikan.

Ujian-t Sampel Bebas dan MANOVA Sehalu yang dijalankan untuk menyiasat kesan PPM pada motivasi mendapati satusub-konstruk: motivasi intrinsik berbeza secara statistik antara kumpulan kawalan dan kumpulan rawatan. Ujian-t sampel bebas yang dijalankan untuk membandingkan skor min motivasi intrinsik antara kumpulan menunjukkan perbezaan yang signifikan bagi motivasi intrinsik di antara kumpulan rawatan ($M = 25.96$, $SD= 2.54$) dan kumpulan kawalan ($M=23.83$, $SD=3.00$; $t(55) = 2.89$, $p < .01$). Magnitud perbezaan min (perbezaan min =2.14, 95% CI: .66 to 3.61) adalah besar (eta kuasa dua=0.13). MANOVA Sehalu mendapati perbezaan statistik yang signifikan antara kumpulan untuk pembolehubah bersandar digabungkan, $F(4,52)$ $p =2.70$, $p < 0.05$; Wilk's Lamda=0.82; eta kuasa dua separa=.17. Apabila keputusan untuk pemboleh ubah bersandar diteliti berasingan, motivasi intrinsik didapati signifikan, menggunakan tahap alfa 0.01 selepas pelarasan Bonferonni, $F(1,55) = 8.35$, $p < 0.01$, eta kuasa dua separa= 0.13. Walaupun keputusan yang signifikan didapati hanya untuk motivasi intrinsik, plot profil menunjukkan peningkatan yang tidak signifikan bagi skor min untuk motivasi ekstrinsik, pencapaian dan kos dalam kumpulan rawatan.

Terdapat perbezaan yang signifikan untuk skor pencapaian penulisan antara rawatan dan kumpulan kawalan ($p < .05$). Selepas pelarasan bagi markah pra-rawatan, keputusan menunjukkan perbezaan yang signifikan di antara kumpulan rawatan dan kumpulan kawalan menulis pencapaian $F(1,54) = 10.61$, $p= .00$, eta kuasa dua separa=.16. Data kualitatif membuktikan bahawa PPM membantu pelajar dari aspek kerja berkumpulan dan pembelajaran rakan sebaya. Selain itu, PPM dapat membuatkan responden berfikiran lebih terbuka, menerima pandangan orang lain dan seterusnya meningkatkan skil penyelesaian masalah mereka. Kolaborasi dengan rakan sebaya juga telah menghasilkan esei yang lebih berkualiti dalam kalangan pelajar kumpulan eksperimen.

Kajian ini membuktikan bahawa teknik penyelesaian masalah yang digabungkan dengan sokongan pembelajaran bahasa dapat meningkatkan kemahiran menyelesaikan masalah di samping mengekalkan motivasi dalam persekitaran pembelajaran bahasa. Pencapaian penulisan juga boleh diperbaiki. Rumusnya, PPM menyediakan pendekatan pengajaran yang menguatkan lagi input guru serta menggalakkan pembelajaran rakan sebaya berdasarkan prinsip konstruktivisme dalam persekitaran yang mencabar di mana pelajar mungkin mengalami masalah penyesuaian dan masalah bahasa di negara tuan rumah mereka.



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