Effects of Neuroscience-Based Thinking (NBT) and Thinking Skills (TS) Strategies on Thinking and Emotion among Primary Schools Pupils

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بسم الله الرحمن الرحيم

In the Name of Allah. Most Gracious, Most Merciful

إِنَّ الْحَمْدَ لِلَّهِ، نَحْمَدُهُ، وَنَسْتَعِينُهُ، وَنَسْتَغْفِرُهُ وَنَعُوذُ بِاللَّهِ مِنْ شُرُورِ أَنْفُسِنَا، وَسَيِّئَاتِ أَعْمَالِنَا مَنْ يَهْدِهِ اللَّهُ فَلَا مُضِلَّ لَهُ، وَمَنْ يُضْلِلْ فَلَا هَادِيَ لَهُ، وَأَشْهَدُ أَنْ لَا إِلَهَ إِلَّا اللَّهُ وَحْدَهُ لَا شَرِيكَ لَهُ، وَأَشْهَدُ أَنَّ مُحَمَّدًا عَبْدُهُ وَرَسُولُهُ.

Verily all praise is for Allah, we praise Him and seek His aid and ask for His forgiveness, and we seek refuge with Allah from the evils of ourselves and our evil actions. Whomever Allah guides there is none who can misguide him, and whomever Allah misguides there is none who can guide him, and I bear witness that none has the right to be worshipped except Allah Alone, having no partner, and I bear witness that Muhammad is His slave and His Messenger.

DEDICATION

In the name of Allah, this completed work is dedicated to my beatitude, parents, whom donated to me their greatest love. This thesis is also dedicated to my life companions, my two wives. Delight of my eyes, my daughter Maymoona. I didn't forget all my whole brothers and sisters, whom I learned from them the meaning of the cooperation.

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May Allah guide us all to the right path and approach.

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GLOSSARY OF ABBREVIATIONS

NBT: Neuroscience-Based Thinking Strategy

TS: Thinking Skills Strategy

P: Prevalent Strategy

TCT: Test of Creative Thinking

STT: Science Task of Thinking

STE: Science Task of Emotion

Kesan Strategi Pemikiran Berdasarkan Neurosains (NBT) dan Kemahiran Berfikir (TS) terhadap Pemikiran dan Emosi dalam Kalangan Pelajar Sekolah Rendah

ABSTRAK

Matlamat kajian ini adalah untuk mengkaji kesan strategi Pemikiran Berasaskan Neurosains (*Neuroscience-Based Thinking, NBT*) dan Strategi Kemahiran Berfikir (*Thinking Skills, TS*) terhadap pemikiran kreatif dan prestasi tugasan sains (pemikiran dan emosi) dalam kalangan pelajar sekolah rendah di Malaysia. Kajian ini menggunakan reka bentuk kajian kuasi-eksperimen dengan satu kumpulan kawalan dan dua kumpulan eksperimen. Sampel terdiri daripada 98 orang murid pelajar darjah lima bagi tahun pengambilan 2010. Kedua-dua kumpulan eksperimen dikenali sebagai NBT dan TS, manakala strategi pervalens (P) sebagai kumpulan kawalan. Pengajaran dikendalikan oleh tiga orang guru sains yang berbeza. Ketiga-tiga kumpulan menjalani dua penilaian (praujian dan pascaujian) bagi tiga instrumen berikut: Ujian Pemikiran Kreatif (*Test of Creative Thinking, TCT*), Tugasan Pemikiran Sains (*Science Task of Thinking, STT*) dan Tugasan Pemikiran Emosi *(Science Task of Emotion, STE*). Kebolehpercayaan instrumen adalah baik sebagaimana yang ditunjukkan oleh Cronbach Alpha dan korelasi Pearson. Statistik inferensi ANCOVA dua hala dan ujian MANCOVA, serta kaedah LSD post hoc digunakan pada tahap $p<.05$ untuk menentukan secara statistik perbezaan yang signifikan di antara kumpulan kajian. Dapatan kajian menunjukkan bahawa terdapat perbezaan yang signifikan di antara kumpulan. Dapatan ujian pemikiran kreatif dalam sains dan subkemahirannya (kefasihan, kefleksibelan dan keaslian) menunjukkan bahawa murid-murid dalam kumpulan NBT mendapat skor yang lebih tinggi berbanding dengan kumpulan TS dan P dalam semua aspek kecuali dalam subkemahiran (kefasihan) yang mana kumpulan TS memperoleh skor yang lebih baik. Selanjutnya, keputusan menunjukkan bahawa tiada perbezaan yang signifikan dalam pascaujian di antara gender dalam semua kumpulan. Begitu juga, tiada kesan interaksi yang signifikan dalam pascaujian di antara semua kumpulan dan kedua-dua gender terhadap semua pemboleh ubah. Justeru, kajian ini mencadangkan agar pendidik berusaha meningkatkan pembelajaran dan kreativiti dalam kalangan pelajar dengan menerapkan prinsip neurosains dalam proses pembelajaran dan pengajaran, Hal ini boleh dilakukan dengan menyepadukannya ke dalam kurikulum.

Effects of Neuroscience-Based Thinking (NBT) and Thinking Skills (TS) Strategies on Thinking and Emotion among Primary Schools pupils

ABSTRACT

The aim of this study is to investigate the effects of Neuroscience-Based Thinking (NBT) strategy and Thinking Skills (TS) strategy on creative thinking and the performance of science tasks (thinking and emotion) among Malaysian pupils in primary schools. This study used quasi-experimental research design with one control group and two experimental groups. Ninety eight pupils enrolled in standard five during the 2010 educational year formed the sample. The two experimental groups were named NBT and TS while prevalent strategy (P) as the control group. The instruction was carried out by three different science teachers. These three groups were measured twice (pretest and posttest) of three different instruments: the Test of Creative Thinking (TCT), Science Task of Thinking (STT) and of Emotion (STE). The instruments' reliabilities are good as showed by Cronbach alpha and Pearson correlation. Inferential statistics, namely two ways ANCOVA and MANCOVA tests, and LSD post hoc method were used at α .05 level to determine statistically significant differences between study groups. The results showed that there were significant differences between groups. The result of the test of creative thinking in science and its sub-skills (fluency, flexibility and originality) indicated that the pupils in NBT group scored higher as compared to TS and P groups in all but one sub-skill (fluency) where TS group has better score. Likewise, the TS pupils are higher than P pupils except in originality where both were similar. Similarly, the results of thinking and emotion of science tasks revealed that the pupils of NBT scored higher than TS and P groups in their thinking and emotion. Furthermore, the results revealed that there were no significant differences in posttest between gender in all groups. Similarly, there were no significant in interaction effects in post-test between all groups and both gender on all variables yet the female pupils of TS group have high scores in fluency. Therefore, the study recommends that educators should work to enhance learning and creativity among pupils by employing neuroscience principles in teaching and learning process by integrating them into curriculum.