

**THE EFFECTIVENESS OF THE CREATIVITY TRIGGER MODULE IN  
ACHIEVING HIGHER LEVELS OF CREATIVE THINKING AMONG  
PROSPECTIVE TEACHERS**

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**A thesis submitted in  
fulfilment of the requirement for the award of the  
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For my beloved wife, Jackie Chee Beow Lan who has unwaveringly supported and motivated me in this magnificent quest and academic journey.

In memory of my father, Chew Cheng Kheam, and mother, Tan Lean Eng who have always provided me with the freedom and moral support to try the best in everything I endeavoured.

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## ABSTRACT

The unoptimised level of creative thinking is seen as an issue among Semester 8 prospective teachers in Malaysian Teacher-Education Institutes (IPG). This could impede their teaching of creative thinking as one of the four components of 21<sup>st</sup> century skills in schools. In relation to this, this study sets out to investigate prior creativity levels of IPG prospective teachers and develop the Creativity Trigger Module (CTM) as a training module for enhancing their creativity. The Torrance Tests of Creative Thinking (TTCT) was used to compare the prior creativity levels of four respondent groups and test the effectiveness of the CTM on five dimensions of figural creativity, namely fluency, originality, elaboration, resistance to premature closure, abstractness of titles, and their overall creativity. A two-stage cluster sampling technique identified two IPGs with 68 respondents in the state of Johor namely, IPG-Kampus Tun Hussein Onn, Batu Pahat (IPGKTHO) as the control group site (34 respondents), and IPG-Kampus Temenggong Ibrahim, Johor Bahru (IPGKTI) as the treatment group site (34 respondents). Mathematics (MT) and Design and Technology (RBT) are the only two specialist subject combinations that provided enough sample size at both test sites. A quasi-experimental research design was used and this involved intact classes. Data analysis was carried out as follows: ANOVA, ANCOVA, and Wilcoxon Signed Rank Test analysis for TTCT scores while data analysis based on the NVivo software was used for the focus group interviews. Findings on prior creativity levels showed average or low creativity levels among all 4 test groups with IPGKTHO and RBT options having significantly higher posttest marks as compared to IPGKTI and MT option respectively. The CTM was found to improve significantly respondents' posttest marks for the treatment group in all the five dimensions of figural creativity and, their overall creativity. Feedback from respondents revealed positive support for the CTM. In conclusion, the prior creativity of IPG prospective teachers was at an unoptimised level before treatment but the CTM has been successfully developed as an effective resource for enhancing the creative thinking levels among IPG prospective teachers.



## ABSTRAK

Tahap pemikiran kreatif yang kurang optimum telah menjadi satu isu dalam kalangan siswa guru Semester 8 di Institut Pendidikan Guru (IPG) di Malaysia. Ini akan menjadi halangan apabila mereka mengajar pemikiran kreatif sebagai salah satu daripada empat komponen kemahiran Abad ke-21 di sekolah. Sehubungan itu, kajian ini dijalankan untuk menyiasat kreativiti sedia ada siswa guru IPG dan membangunkan *Creativity Trigger Module* (CTM) sebagai modul latihan untuk meningkatkan tahap kreativiti mereka. Instrumen *Torrance Tests of Creative Thinking* (TTCT) digunakan untuk membandingkan tahap kreativiti sedia ada empat kumpulan responden dan menguji keberkesanan CTM terhadap lima dimensi kreativiti figural iaitu kelancaran, keaslian, penghuraian, rintangan terhadap penutupan pramatang, keabstrakan tajuk-tajuk dan kreativiti keseluruhan. Melalui teknik persampelan kluster, 68 orang responden daripada dua IPG negeri Johor iaitu IPG Kampus Tun Hussein Onn, Batu Pahat (IPGKTHO) sebagai lokasi kumpulan kawalan (34 responden) dan IPG Kampus Temenggong Ibrahim, Johor Bahru (IPGKTI) sebagai lokasi kumpulan rawatan (34 responden) telah dipilih. Opsyen Matematik (MT) dan Reka Bentuk dan Teknologi (RBT) merupakan kombinasi dua subjek pengkhususan yang dapat menyumbangkan saiz sampel yang mencukupi di kedua-dua lokasi kajian. Rekabentuk kuasi-eksperimen dipilih dan melibatkan kelas yang sedia wujud. Analisis data dilaksanakan menggunakan ANOVA, ANCOVA dan Ujian Wilcoxon Sign Rank Test untuk skor TTCT dan perisian kualitatif NVivo untuk data temubual kumpulan fokus. Dapatan kajian menunjukkan bahawa tahap kreativiti sedia ada dalam semua kumpulan ujian adalah sederhana atau rendah dimana IPGKTHO dan opsyen RBT mencapai skor pasca ujian yang lebih tinggi secara signifikan berbanding dengan IPGKTI dan MT masing-masing. Maklumbalas daripada responden memberi sokongan positif terhadap CTM. Kesimpulannya, tahap kreativiti sedia ada siswa guru IPG berada pada tahap kurang optimum sebelum rawatan tetapi CTM telah dibangunkan dengan jayanya sebagai satu sumber yang berkesan untuk meningkatkan tahap pemikiran kreatif dalam kalangan siswa guru IPG.



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### LIST OF ABBREVIATIONS

ANCOVA	-	Analysis of Covariance
ANOVA	-	Analysis of Variance
BPK	-	Bahagian Pembangunan Kurikulum
CTM	-	Creative Trigger Module
HOTS	-	Higher Order Thinking Skills
IPG		Institut Pendidikan Guru
IPGKTHO	-	Institut Pendidikan Guru – Kampus Tun Hussein Onn, Batu Pahat, Johor
IPGKTI	-	Institut Pendidikan Guru – Kampus Temenggong Ibrahim, Johor Bahru, Johor
IPGM	-	Institut Pendidikan Guru Malaysia
KBSM	-	Kurikulum Bersepadu Sekolah Menengah
KBSR	-	Kurikulum Bersepadu Sekolah Rendah
KPLI	-	Kursus Perguruan Lepas Ijazah
KPM	-	Kementerian Pendidikan Malaysia
KSSR	-	Kurikulum Standard Sekolah Rendah
MOE	-	Ministry of Education
MT	-	Mathematics/ Matematik
PISA	-	Programme for International Student Assessment
PISMP	-	Program Ijazah Sarjana Muda Perguruan
PPISMP	-	Program Persediaan Ijazah Sarjana Muda Perguruan
PPPM	-	Pelan Pembangunan Pendidikan Malaysia
PT3	-	Penilaian Tingkatan 3
RBT	-	Reka bentuk dan Teknologi
SPM	-	Sijil Pelajaran Malaysia
SPSS	-	Statistical Package for Social Sciences
TIMSS	-	Trends in Mathematics and Science Studies



TTCT	-	Torrance Tests of Creative Thinking
UPSR	-	Ujian Penilaian Sekolah Rendah



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# CHAPTER 1

## INTRODUCTION

### 1.1 Introduction

Creativity is a human attribute that has been given much focus as a 21<sup>st</sup> century skill. It is among the most interesting topics or issues in social science and science research (Shiu, 2014). The creativity of a person can be shown through the process of creative thinking or the creation of new ideas (Torrance, 2018b). According to Reiter-Palmon, Beghetto & Kaufman (2014) creativity is a universal concept that crosses over into many academic fields and Roberto (2019) stated that it is a much needed asset to solve perplexing problems in education, healthcare, poverty and business. Innovation and creativity are always stated together as innovation is very closely related to creativity (Shiu, 2014). In terms of product or process, invention and innovation are both important application of creativity (Hunter, 2013). In historical context, human creativity in the form of inventions, innovations and technology stretches back to the birth of mankind. For example, Lewis (2012) noted the spectacular leaps of creativity in the invention of the wheel, the cultivation of crops, the use of tools, the creation of languages, the invention of printing and space travel in modern times.

Runco (2014) regarded creative talent and creative individuals as valuable economic resources. In relation to this, Ujang (2014) stressed that a creative and innovative culture is the catalyst for future economic growth of a nation which will be characterised as an innovative economy. Abd Wahab (2014) noted that the talents, skills and creativity of Malaysians are important resources for Malaysia to achieve its Vision 2020 goals when it becomes a developed nation. As such, it can be summarized that for a country to be successful and competitive in the 21<sup>st</sup> century, its workforce has to possess a high level of creativity.

Currently, in the field of education and teacher education, creativity in the form of creative thinking constitutes an important element in three areas namely, 21<sup>st</sup>



Century Learning Skills for learners (Partnership for 21<sup>st</sup> Century, 2015), Bloom's Revised Taxonomy (Anderson & Krathwohl, 2001) and higher order thinking skills (HOTS) (Rajendran, 2013).

The 21<sup>st</sup> Century Learning Skills consist of four components namely, critical thinking, collaboration, communication and creative thinking (Zakaria et al., 2018) and according to Veloo, Subramaniam and Bina (2018) enables students to be competitive in the new century. Aris, Ahmad Zuki and Badui (2018) disclosed that the Ministry of Education (MOE) in Malaysia has officially launched the 21<sup>st</sup> century teaching and learning initiative in 2015.

Creativity is highly relevant to the field of education and teacher education as teachers and prospective teachers encounter it as one of the cognitive levels in Bloom's Taxonomy (Revised). According to Anderson and Krathwohl (2001), 'creating' is situated as the highest form of cognitive level in Bloom's Taxonomy of Educational Objectives. Along with the cognitive levels of application, analysis and evaluation in Bloom's Taxonomy (Revised), it is also categorised as a higher order thinking skill (HOTS) (Jamil & Mohd Jailani, 2017; Rajendran, 2013). In recognizing this importance, great attention has been placed by Malaysian leaders and policy-makers, on the worth of creativity in Malaysian society, especially in educating the younger generation. For example, the Minister of Education in 2010 Muhyiddin Yassin, urged teachers help bring about the leap into the culture of innovation and creativity (Bahagian Pembangunan Kurikulum (BPK), 2010). Recognition of the importance of creative thinking in Malaysian education started with the infusion of critical and creative thinking skills in the primary and secondary school integrated curriculum in late 1980's (Rajendran, 2013) and has continued with the present Standard Curriculum (BPK, 2011) where creativity and innovation have been infused into the curriculum.

Issues that are related to the creativity of prospective teachers in teacher education institutes or *institut pendidikan guru* (IPG) in Malay Language become evident when survey findings indicated that many of them have not achieved a credible level of creativity in the final semesters of their basic degree programme. For example, Ahmad et al. (2016), and Bahaudin and Azman (2014) found that there are prospective teachers from different specialist subject options who view themselves as having low creativity. Ket, Johnny and Yeoh (2013) as well as Ket and Lim (2017) discovered that there are prospective teachers who are weak creativity components such as Fluency and Originality. This happened despite the fact that they had undergone an introductory





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