

Submission date: 02/06/2017

Accepted date: 13/08/2017

**IMPROVING MATHEMATICAL INTEREST AMONG MUSLIM
PRIMARY SCHOOL STUDENTS VIA SITIC***Memupuk Minat Terhadap Matematik dalam Kalangan Pelajar Islam
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Abstract

This article focused on the focal aim of analysing students' perceptions in regards to their interest in Mathematics before and after they implement SITIC, a combination of *Silat* and mental arithmetic skills. A group of Muslim students (N=84) were selected from three primary schools in the district of Nilai, Negeri Sembilan on the basis of snowballing strategy. The students were exposed to 6 sessions of SITIC in a period of 2 weeks with the supervision of their teachers. A set of questionnaire was developed to look into the students' interest towards mathematics before and after they join SITIC's sessions. The findings shown that the interest of the respondents in their particular learning subjects increased after it was combined with interesting activities in SITIC. The findings were discussed together with the recommendations for future studies.

Keywords: Muslim primary school students, silat, mental arithmetic, talents.

Abstrak

Artikel ini memfokuskan matlamat utamanya iaitu untuk menganalisis persepsi pelajar-pelajar di sekolah rendah berkenaan minat mereka dalam subjek Matematik sebelum dan selepas mereka melaksanakan kaedah SITIC, suatu gabungan antara seni Silat dan kemahiran Mental Aritmetik. Sekumpulan pelajar beragama Islam di sekolah rendah (N=84) telah dipilih dari tiga sekolah rendah di sekitar daerah Nilai, Negeri Sembilan

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melalui kaedah persampelan *Snowballing*. Semua responden didedahkan dengan 6 sesi SITIC dalam tempoh 2 minggu dengan pemantauan guru-guru. Satu set soal selidik telah dibangunkan untuk melihat minat responden terhadap Matematik sebelum dan selepas mereka selesai mengikuti sesi intervensi SITIC. Dapatan kajian menunjukkan terdapat peningkatan minat terhadap matematik selepas didedahkan dengan SITIC.

Kata Kunci: pelajar Muslim sekolah rendah, silat, mental aritmetik, bakat.

INTRODUCTION

In *Art and Creative Development for Young Children*, it is stated that children are unique individuals (Schirmacher & Fox, 2009). The uniqueness in them provides differences as a result of family background and individual factors. In most cases almost everyone in this world is talented or has a talent by nature. All children, whether unusually talented or not, will do best in an environment that provides support and stimulation that fits well with their abilities and interests.

Mastin (2010) stated that Mathematics might contribute to the development of critical thinking. As a basic knowledge of education, this subject was taught since pre-school. Due to many formulas and complicated steps in Mathematics, this subject will not be something fun to learn and make the students lost their focus to the end especially among the primary school students. This situation makes students with low academic achievement, difficult to understand thus dislike the subject. Several attempts made by past researchers on the combination of Mental Arithmetic skill and other interesting learning activities (See Schirmacher & Fox, 2009; Copoglu, 2015; Siti Aminah 2008) but none had attempted to combine Mental Arithmetic with Silat in the effort of improving mathematics absorption skills. Therefore, this research is aimed to introduce a newly combined skills of Silat and Mental Arithmetic called SITIC and investigate whether there is any increase of interest towards Mathematics among primary school students after they used SITIC.

LITERATURE ON MENTAL ARITHMETIC, SILAT AND SITIC

Talentedness is generally considered to come from both nature (heredity) and nurture (the environment) (Bhatt, 2009). Porter (1999) identifies that talentedness often runs in families. However, as with all children, talented children need to be raised in an interactive and stimulating environment (Copoglu, 2015).

The environment begins to influence a child's development before birth and during the birth. The first five years of a child's life are especially important in determining his or her later development, as it is during this period that the brain is undergoing very rapid growth and development

(Kamii & DeVries, 1993). An enriched environment offers talented children additional stimulation, experience, and interaction to meet their particular needs.

Previous research has indicated that one, or a combination of factors may affect achievement (See Siti Aminah, 2008; Bhatt, 2009; Mastin, 2010). These include personal characteristics such as ability, confidence and persistence. It has also been suggested that high achieving students might have different motivation to study than low achievers, and that they are able to organize their study materials and study habits more efficiently (n.a., 2009). Other studies have suggested that active, independent engagement in the learning process might be more conducive to achievement than a passive, instructor-dependent one.

A study developed among Hong Kong students (refer to n.a., 2009) indicate that there were some areas in which statistically significant differences occurred between the high-achieving and low-achieving students. For example, the high-achieving group had higher mean ratings regarding their self-perception of their ability to do the specified course, confidence with studies, perfectionism, desire to do more than just the minimum requirements, competitiveness, and interest in achieving excellence and success. They also perceived themselves to be highly motivated to avoid failure but, if they did fail, were more likely to see this as a valuable learning experience and recover from it (Cratty, 2012:3). On the other hand, the low-achieving students indicated a range of commitments or difficulties that influenced their course out-comes more than they influenced the outcomes of the high achievers.

According to Mudrak and Zabrodska (2015) this is the scenario for students who learn subjects like science and mathematics in school. In regards to the current study's focus, Mastin (2010) stated Mathematics came from the root word *máthēma*, which came from Greek, meaning "that which is learnt", or "to learn". So, it becomes the core subject during primary and secondary session in Malaysia.

One reason that students struggle with science and mathematics subjects, despite their hard work and effort, is because they have deficits in executive functions, the mental processes that control and coordinate activities related to learning. Executive functioning is not the same as intelligence. Even students who are quite intelligent might experience difficulties with executive function processes related to learning, such as processing information, retaining and recalling information, organizing materials and managing time, and selecting, monitoring, and using effective learning and study strategies.

Due to many steps in solving the basic Mathematics question, learning session needs to be in fun, interesting, motivated to learn, confidence, anxiety and task value environment. The best teaching style that claimed by Kamii and DeVries, (1993) is activities which involve engagement of

students during learning session. Therefore, it was suggested to use the students' talents in order to deliver the subject matters.

The combination talents of the students may be used during learning and teaching session. With this engagement, their understanding in Mathematics could be increased. Therefore this study is trying to combine student's talents to enhance the student's interest in Mathematics.

There are several activities that can be considered as talents such as drawing, mathematical skills and public speaking. Children may have one, two or more talents inborn or being nurtured. As research done, it is discovered that the reason for this particular combination is that it is something authentic and culturally-diversified to be shared to everyone (see Bhatt, 2009). This meets the main purpose of highlighting the chosen talent to achieve happiness for other children as well as sharing the talent.

In a study by Siti Aminah (2008) among secondary school students with low achievement in Arabic language subject in an Islamic boarding school, were found to be bored with the subject that required them to memorize a lot of Arabic words and vocabulary, and practice a lot of Arabic conversations. The researcher instilled a short-term intervention program which combined music in English and Arabic languages with the normal activities of learning Arabic language among those low-achievers and compared their academic results before and after the intervention. It was found that the students have a higher degree of interest towards the Arabic language subject. However, they found that it is hard to memorize a lot of different songs which could jive with different sets of vocabulary in Arabic language. One of the recommendations made by Siti Aminah through her findings is, future researchers should initiate attempts to combine any other significant talents with learning process to enhance the ability of students to learn faster.

In the current study, the researchers chose the combination of learning mathematics through mental arithmetic activities and 'SILAT'. Silat is deeply entrenched in the traditions and culture of Malaysian civilization. Though, Silat has left its footprints in civilizations of many other Asian countries such as Indonesia, Singapore, Brunei and Philippines, but its association and involvement with Malaysian population and culture is remarkable and hence so highly acknowledged. In Malaysia, around 20% of the total number of schools existent offers training in Silat (Shapie, 2010).

Today, as great as Silat in other Malay Archipelago's regions, Silat Malaysia is a very well-known martial art form, throughout the world (Pusat Cemerlang Silat, 2016). The secrets of this success are based on the system that laid down in the Silat syllabus. The Silat Malaysia system for Silat exponent consists of seven different levels that can be identified

and ranked using belt system starting from white, blue, brown, yellow, green, red and ending with black belt (Shapie, 2010).

As the Silat curriculum is based from the art of war of Malay civilization from thousands of years ago, it is important to know that Silat Malaysia teach their students that prevention is better than cure. It is better to avoid a fight rather get involved in it. It is prohibited to harm or kill others except in desperate situation where there is no other choice to defend yourself (Pusat Cemerlang Silat, 2016).

Every Silat topics will be majoring to 7 different topics such as *Bunga* (the pillars of Silat attacking and defensive positions), *Jurus* (the art of attack and defence either using weapon or bare hand), *Belebat* (the techniques of receiving strikes and how to counter it back), *Tapak* (the step pattern in Silat movements), *Buah Pukul* (the fast action of self-defense), *Tempur Seni* (the art of combat), and *Tempur Bela Diri* (the speed and power movements of self-defense combat) (Pusat Cemerlang Silat, 2016).

Every Silat exponent will learn different style of attacking and defensive skill such as *Elakkan* (avoiding technique movements), *Tangkisan* (blocking techniques), *Tangkapan* (catching techniques), *Potong* (counter-strike), *Amuk* (rampage with due diligent) and weaponry system such as sickle, sword, cudgel, *keris* or a short wavy dagger, rope, walking stick made of hardwood, and dagger with straight cutting edge.

All these attacking and defensive skill and movement has a strong connectivity with one's ability to remember facts and figures, where discipline, self-restraint, commitment, focus, memorization, believe and intelligence are all combined in order to keep himself safe from any physical attacks any time (Pusat Cemerlang Silat, 2016). Thus, the researchers believe that Silat could be combined with mental arithmetic activities in order to enhance the capability of memorizing facts and numbers, and retain it in a longer time among students who are learning mathematics in school.

This combined talent is believed to be useful to them in order to make a so-called boring activity interesting and being followed by even others who do not have the talent. The combination of both talents is called 'SITIC' which derived from the word Silat and mathematic. SITIC is the name given for an innovation of a combination of Silat and mental arithmetic skills developed by a group of academics and gifted primary level students in Kolej Permata Insan, Universiti Sains Islam Malaysia back in 2015.

The innovation of SITIC had been recognized internationally when the project won Bronze Award in an international innovation conference named 'The World Creativity Festival', held in the Korean Advanced Institute of Science and Technology (KAIST), Daejeon, South Korea in October 2015. However, SITIC was only implemented in a pilot study,

which never been tested in any further field studies. Hence, this paper is a report on a subsequent study which focused on the focal aim of analyzing students' perceptions in regards to their interest in Mathematics before and after they implement SITIC.

RESEARCH METHODOLOGY

This research was conducted among primary school students within three weeks in June 2016. It focused on the students who have low performance due to less interest in Mathematics. A group of Muslim students (N=84) were selected from three participating primary schools in the district of Nilai, Negeri Sembilan, to join the study on the basis of snowballing strategy. The students were exposed to 6 sessions of SITIC in a period of 2 weeks (over the weekends) with the supervision of their teachers. To measure the perception of the students about their interest towards mathematic before and after the exposure of SITIC, a set of questionnaires which were developed in the pilot study (reliability value of 0.87) had been disseminated among the respondents. A descriptive study is presented on the demographic background of each samples involved, where the information about the samples' gender, age and their interest towards mathematics were sought. A *t*-test was conducted to look into the differences of their perceptions on mathematics' interest before and after SITIC's exposure. All data were analyzed using the Statistical Package for the Social Sciences (SPSS).

FINDINGS AND DISCUSSION OF SITIC PROGRAM

Respondents Profiles

Respondents' demographic background is depicted in Table 1. Based on gender, 18 (42.8%) of the respondents are males and 25 (57.4%) of them are females. In terms of age, 10 (23.8%) of the respondents are 10 years old, 14 (33.3%) are 11 years old, and 18 (42.9%) are 12 years old.

Table 1: Respondents Profiles

		f	%
Gender	Male	36	42.8
	Female	48	57.2
Age (Years Old)	10	20	23.8
	11	28	33.3
	12	36	42.9

Differences of Perceptions on Mathematics' Interest Before and After SITIC's Exposure

The current study's findings in Table 2 resonate the findings of Siti Aminah (2008), where the interest of the respondents in their particular learning subjects increased after it was combined with interesting activities based on a specific talent such as Arabic Language and singing in Siti Aminah's (2008) and Mathematics and Silat in the current study.

Table 2: *t*-Test Result for Differences of Perceptions on Mathematics' Interest Before and After SITIC

Variable	Group				Levene's test for equality of variance		<i>df</i>	<i>t</i> -test for equality of means	Sig. (2-tailed)
	Before Sitic (n=42)		After Sitic (n=42)		F	Sig.		<i>t</i>	<i>p</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>					
Mathematics Interest	3.04	0.68	3.68	0.60	6.88	0.01	1041	2.21	0.03**

Note: *n*=total respondents, *M*= mean, *SD*=standard deviation, *F*= Value for Levene's test for equality of variance, *df*= Degree of Freedom, *t*= *t*-test value, *p*= significant value.

** Significant at $p < 0.05$

Talents and creativity are the ability to fantasize or to make up something new, a willingness to play with ideas and possibilities. There are talents and creativity in logic and analytic thinking and creativity with space, colors and design. There are talents and creativity in rhythms like being able to recite the Quran beautifully. Talents in spoken language, in contact with people and creativity in understanding nature. In regards to this, one could see many aspects that a Muslim should have among others, having insights (*tabassur*), thinking (*tadabbur*), having a full understanding (*tafaqquh*), keeping in mind or including in your heart (*tadhakkur*), using your spirit in the right way (*ta' aqqul*), considering or reflecting (*tawassum*) and reflection (*tafakkur*) (Copoglu, 2015). The same connotation goes to the effort of upholding Muslim students' ability and interest in studying. A Muslim student should all the time strive to show their excellent ability in the process of getting knowledge whether it is in a formal setting like in the classroom, or informally in his daily social life.

Perhaps, in the realm of its implication to the body of knowledge, the current study's findings added in the value of combining mental arithmetic ability with Silat as the martial art skill that captured the interest of a student while there were studying mathematics. Then, the attempt made by the paper to show the potential of having a better way of studying a particular subject through the combination of talents among the students was not a truly significant effort. However, the researchers clearly wanted to show the notion that combined talents would create greater benefits for students' ability to explore their own capacity and capability especially in academic.

In Islam, talent is a test and a responsibility. As Allah says: "And it is He who has made you vicegerents on Earth and has raised some of you above others in degrees that He may try you through what He has given you. Indeed, your Lord is swift in punishment; but indeed, He is

forgiving and merciful.” (al-An’am: 165). This verse explains three focal things in regards to talent. First, each of us is a vicegerent on Earth, so we are all gifted and talented in one way or another. Second, we differ in the degrees of our abilities and talents, hence we could explore and develop our talents for the betterment of our lives, and third, we are all being tested in what we are given and are held responsible for it.

As asserted by Md Khairuddin (2015) and Shapie (2010), Silat has so many benefits including to inculcate discipline, respect, memorizing ability, time management and proper conduct among the practitioners. In regards to this assertion, the current study combined the activity of mental arithmetic and Silat (SITIC), in the realm of introducing a more meaningful way of learning mathematics. 84 primary school students had been exposed to SITIC in 6 sessions in the period of two weeks with a tight supervision of their teachers respectively. The findings shown that the interest towards mathematics increased significantly after the respondents were exposed to SITIC program. The findings support the results of Siti Aminah’s study (2008) where SITIC is a significant intervention program which enhanced the capability and interest of students toward mathematics subject taught in the school.

CONCLUSION

The current study’s findings resonate the findings of Siti Aminah (2008), where the interest of the respondents in their particular learning subjects increased after it was combined with interesting activities based on a specific talent such as Arabic Language and singing in Siti Aminah’s (2008) and Mathematics and Silat in the current study. It is recommended that future studies explore on the same assertion of the findings in the current study in the realm of combining talents to enhance academic ability and results among students. The same study could also be developed among different level of students in secondary school level or in the higher educational institution.

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