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THE APPLICATION EQ AND SQ IN LEARNING MATHEMATIC WITH BRAIN-BASED LEARNING APPROACH TO IMPROVE STUDENTS' MATHEMATICAL CONNECTION AND SELF-EFFICACY IN SENIOR HIGH SCHOOL

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Abstract

In this study, placing EQ and SQ in addition to IQ as learning objectives is based on current situation, that previously IQ is considered as the intelligence that strongly support students' success in learning. Nowadays, it was realized that there are other intelligences that equally

important which can support the success of learning process, those are EQ and SQ. Implementing EQ and SQ in learning hopefully influence students' cognitive and psychology. Therefore, this study aims to identify the improvement of students' mathematical connection skills and self-efficacy that experience Brain-Based Learning approach that apply EQ and SQ compare to students who experience conventional learning, both in terms of overall students as well as Mathematics Initia lAbility. This study applies quasi-experimental research with Non-equivalent Control Group Design. The subjects in this research are 68 students of the 11th grade at senior high school, which consists of 34 students as the experimental class and 34 as the control class. The experimental class experience Brain-Based Learning approaches that apply EQ and SQ, whereas the control class experience conventional learning. In this research, to obtain the data the writer use instruments such as mathematical connection skills tests and self-efficacy scale. Based on the results of the data analysis it can be concluded that the increase of students' mathematical connection skills and self-efficacy who experience Brain-Based Learning approach that apply EQ and SQ are better than students who received conventional learning, both in terms of overall students as well as the Mathematics Initial Aability.

Keywords

EQ, SQ, Brain-Based Learning, Mathematical Connection, Self-Efficacy

1. Introduction

Placing EQ and SQ in addition to IQ as learning objectives are based on the fact that nowadays people who only have intellectual intelligence does not necessarily success in their career. Many people are well educated and have high intellectual, but failed to develop his career due to lack of emotional intelligence (Ginanjar, 2005). EQ and SQ formulation in the learning process is expected to affect the psychological aspects associated with students' attitude of trust or confidence (known as self-efficacy) as the success support learning process.

Self-efficacy is the ability of beliefs that can affect students' way of thinking, motivation, and behavior. Bandura (2006) explains that *self-efficacy* is concerned with people's beliefs in their capabilities to produce given attainment. Hacket & Reyes's (Pajares 2002) research in mathematics learning show that self-efficacy can make a person more easily and feel more able to do math problems, even complex and specific math problems. Moreover, Betz & Hacket in

Pajares (2002) reported that in general students who have high self-efficacy are easily and successfully surpassed mathematics exercises that was given to them, so that the result is reflected in their academic performance and also tend to be higher compare to students who have low self-efficacy. Furthermore et al., (2008) states that self-efficacy is one of the important factors in determining one's achievement. This fact shows that students' self-efficacy are related to their achievements.

Based on 2012 PISA's (Programme for International Student Assessment) result, the index of Indonesian students' self-efficacy is -0.26 with an mean score of 17. The result above should become a reflection in education sector for Indonesian government .

Besides being able to influence psychological aspects related to students' self-efficacy, the expected formulation of EQ and SQ in the learning process hopefully can influence students' mathematics connection ability related to the meaning and value on relationship between mathematics with other subjects.

Mathematics connection ability is the ability to associate mathematics concepts, both among the mathematical concept itself (in mathematics) as well as linking mathematical concept to other areas (outside of mathematics), which include: the connection between mathematical topics, the connections with other subjects, and the connections with daily activity.

Johnson and Litynsky (1995) reveals that many students consider mathematics as static science because they feel that its not associated with their life. To give impression that mathematics is dynamic science, connection between math with what is currently done by mathematician or the use of mathematics in solving life's problems should be made (Swetz, 1984 in Johnson and Litynsky, 1995).

National Council for Teacher Mathematics (NCTM) formulate that when students are able to connect mathematical ideas, their understanding of mathematics becomes more profound and lasting longer. Students can identify that mathematics connection play significant role in mathematics topics, in context that link mathematics with other subjects, and in their life. Through learning that emphasizes connectedness of ideas in mathematics, students not only learn mathematics, but also learn to use math.

Based on description above, we need learning approach that can optimize EQ and SQ in learning, foster students' self-efficacy, and improve students' mathematical connections ability. Learning approach that appropriate with those characteristics is Brain-Based Learning, as this

approach is aligned with brain workings system that is designed to learn by nature (Jensen, 2008).

Brain-Based Learning offers a concept to create learning that oriented to the empowerment of students' brain potential. Brain-Based Learning helps students represent how to think visual, kinesthetic, and phonetics. The technique requires a place in a gear box, in this case, namely the prime brain (at best in its development) to learn.

Caine & Caine (1995) suggested that Brain-Based Learning is a holistic approach to learn with the perspective of social and cultural development based on the structure and function of the human brain. Brain-Based Learning is different from traditional methods, because Brain-Based Learning emphasize on meaningful learning, not on memorization.

Based on the background above the objectives of this study is to examine the increase of students' mathematics connection ability and self-efficacy of those who received Brain-Based Learning approach that apply EQ and SQ compare to those who received conventional learning both in terms of the whole student as well as from the Mathematics Initial Ability.

2. Literature Review

2.1 Learning Mathematics

Learning is an interaction process among learners with educators and learning resources in learning environment. Learning mathematics at school cannot be separated from the abstract properties of mathematics and the nature of students' intellectual development. For that reason, it is necessary to pay attention to the characteristics of mathematics learning in school (Suherman, 2003). Those characteristis namely: 1) mathematics learning phase, 2) Spiral method mathematics learning, 3) emphasizes deductive mindset mathematics learning, and (4) truth of consistency on mathematics learning.

2.2 Emotional Quotient (EQ)

Emotional Quotient (EQ) is the ability to feel, understand and effectively apply the power and sensitivity of emotions as a source of energy, information connection and human influence. According to Goleman (1996), EQ is the ability to manage our emotional life with intelligence, maintain the appropriateness of emotion and its expression through the skills of self-awareness, self-control, self-motivation, empathy and social skills.

In addition to its role in social life, EQ has an important role in learning at school. One of

them, EQ support the success of student's learning. Jensen (2008) argues that EQ has a major role in students' learning process along with the achievement of the quantity and quality of learning acquisition. Accessing EQ in the learning does not similar with accessing answers of questions, or does mathematical calculations as EQ cannot be accessed like fact or answer (Bowell, 2004).

Many studies shown that in achieving success, EQ has more significant role than IQ. IQ is only limited to the minimum requirements to achieve success, but the real emotional intelligence, almost entirely proven, leads a person to achieve their success. According to Goleman (1996) IQ accounted for only 20% of success, while 80% are consists of others contribution factors among them is EQ.

During the learning process IQ cannot function properly without the participation of the emotional appreciation towards the subjects presented in school. However, usually both intelligences are complement to each others. The balance between IQ and EQ is the key to the success of student learning. Education in schools is not only a need to develop a rational intelligence, which is the comprehension model commonly understood by students, but also need to develop students' EQ.

2.3 Spiritual Quotient (SQ)

Spiritual Quotient (SQ) is a spirit intelligence that can help one to establish itself as a whole. Zohar and Marshall (2000) initiated SQ's technical terms that IQ works to look out (the mind's eye) and EQ processing work that is inside (hear the feeling), then SQ refers to self-center condition. Bowell (2004) identifies IQ as an intelligence that seeks to understand the 'what,' EQ as an intelligence that seeks to understand the 'how', and SQ as an intelligence that seeks to understand the 'why'. Each of these three intelligences has its own relationship in the brain. These intelligences are the intelligences that lifts the soul functions as an internal tool of self that has ability and sensitivity to see the meaning behind the reality.

Zohar & Marshall (2000) argued that SQ is an intelligence that can help people to face and solve various problems related to the problem of meaning and value. Moreover, according to them spiritual intelligence is the "Ultimate Intelligence" as a supreme intelligence that exists and possesed by human beings as well as important condition to function IQ and EQ effectively.

Furthermore et al., (2000) asserts that SQ is our deep intuitive sense of meaning and value our guide at the edge". Spiritual intelligence is the deepest sense of meaning and value of

human beings which can deliver to success and happiness in life. They also say that SQ is *our conscience* because according to them SQ is *Soul Intelligence* that help people to establish himself which intact intellectually, emotionally and spiritually.

Zohar & Marshall (2000) provides some steps to improve spiritual intelligence, those are: 1) the provision of duty, 2) the custody or guardianship, 3) the way of knowledge, 4) the personal changes, 5) fraternity, and 6) the dedicated leadership.

According to the Zohar and Marshall (2000) the knowledge can be associated with learning, because this way of knowledge start from understanding of the practical problems, the general, the philosophical quest towards the truth, the spiritual quest for knowledge about God and the last unification through knowledge ,

To reach higher SQ, the stages that should be followed proceed from reflecting, understanding, and that lead to wisdom. This knowledge path is a very simple and practical. Furthermore, they said that this path beginning with simple curiosity and practical. Knowledge way is the way taken by the intellectual, scientists and scholars. Those are people who motivated by a love of learning or a great need to understand.

2.4 Self-Efficacy

Self-efficacy is the belief in one's abilities to drive motivation, cognitive resources, and a series of actions required to meet the demands of the situation. According to Bandura (1994), self-efficacy lead to person's ability to organize and carry out a series of actions to achieve the objectives. Self-efficacy determine how people feel, think, motivate themselves and behave. That belief produce diverse effects through four major processes, namely: (1) enactive mastery experience; (2) vicarious experience; (3) verbal persuasion; and (4) physiological and affective states. Aside from the four main processes, self-efficacy beliefs produce effects through cognitive, motivational, affective and selection process (Bandura, 1997). Moreover, Bandura (1997) states that self-efficacy expectations consists of three dimensions, namely: (1) level, (2) generality, and (3) strength. Each of these dimensions imply different measurement procedures. Term *level* refers to a sequence of tasks with levels of difficulty. *Generality* concerns the extent to which expectations about the efficacy of a particular situation can be generalized to other situations. Finally, *strength* refers to the judgment of how one can be successful in a particular task.

2.5 Mathematical Connections

National Council for Teacher Mathematics (NCTM) divides the mathematical connection into two essential parts, those are: (1) modeling connections between problem situations that may arise in the real world or in disciplines other than mathematics and their mathematical representation (s); and (2) mathematical connections between two equivalent representations and between corresponding processes. Based on this division, we can conclude that mathematical connection not only connects the topics in mathematics, but also connect mathematics with other subjects and daily life activities.

According to NCTM (2000) there is Connection Standard to measure mathematics connection. Instructional programs from prekindergarten through grade 12 should enable all students to (1) recognize and use connections among mathematical ideas; (2) understand how mathematical ideas interconnect and build on one another to produce a coherent whole; and (3) recognize and apply mathematics in contexts outside of mathematics.

Moreover, according to NCTM (2000), having students value mathematics because they can "see it" around them in other courses and in their everyday lives is probably one of the most valuable pieces of this standard. In addition, helping students to see the relationships between concepts within a course is also very influential for helping students to value mathematics. Making those connections between key concepts is fundamental to cognitive connections and deep learning. Discussing, writing about, and creating visual representations like concept maps are all ways to help students find connections within mathematics courses.

2.6 Brain-Based Learning Approach

Brain-Based Learning (BBL) is a way of thinking about the learning process. In this approach, learning is aligned with the way the brain is designed to learn by nature, where the majority of our brain is involved in almost all learning action (Jensen, 2008). Caine and Caine in Duman (2010) suggest that BBL is a process of how the brain (mind) receives a rule, and then organize the instruction of these rules in mind to achieve meaningful learning.

According to Jensen (2008), there are two important things in building learning style with BBL approaches, namely: (1) provide variety of different approaches; and (2) offer a choice. Furthermore, there are seven stages of learning by implementing BBL approaches, namely: (1) pre-exposure; (2) preparation; (3) the initiation and acquisitions; (4) elaboration; (5) incubation

and insert the memory; (6) verification and checking beliefs; and (7) celebration and integrity.

3. Research Method

This study applies quasi-experimental research with Non-equivalent Control Group Design. The subjects in this research are 68 students of the 11th grade at senior high school, which consists of 34 students as the experimental class and 34 as the control class. The experimental class experience Brain-Based Learning approach h that apply EQ and SQ, whereas the control class experience conventional learning.

4. Results and Discussion

4.1 The Comparison of Students' Mathematical Connections Ability in terms of The Overall Students

The results of significance test difference in the mean *N-Gain* on students' mathematical connection ability in terms of the overall student by using *t-test* are presented in Table 4.1 below.

Table 4.1: *Data Result of Independent Sample t-TestN-Gain Mathematical Connections Abilityin terms of The Overall Students*

Learning Activity	**N**		***t***	***Sig. (1-tailed)***	**H_0**
BBL–*ESQ*	34	0,653	7,982	0,000	Rejected
Conventional	34	0,377			

The table 4.1 above present that the probability valuesig (1-tailed) is smallerthanα=0.05, so$H_0$is rejected. Thus, there isa significant differenceon the mean *N-Gain* of students'mathematical connection ability between those who got BBL-ESQ learning withthose who received conventional learning It shows thatthe increase of students'mathematical connection ability of those who got BBL-ESQ learningare bettercompare tostudents who received conventional learning. Referring to Hake's (1999) opinion, theincreaseof mathematical connection ability that occurs in both classroomsis in middle category

4.2 The Comparison of Students' Mathematical Connections Ability in terms of Mathematics Initial Ability

The results of significance test difference in the mean *N-Gain* mathematical connection

ability in terms of Mathematics Initial Ability using *two-ways ANOVA* are presented in Table4.2 below.

Table 4.2: *Data Result of Two-Ways ANOVA Test N-GainMathematical Connections Abilityin Terms of Mathematics Initial Ability (MIA)*

Source	*SS*	*df*	*MS*	*F*	*Sig.*	H_0
Learning	0,917	1	0,917	72,202	0,000	Rejected
MIA	0,521	2	0,261	20,522	0,000	Rejected
Learning* MIA	0,024	2	0,012	0,944	0,395	Accepted

The table 4.2 above shows that probability *(sig.)*of 0,000 is smallerthan 0,05 or*p* (*sig*) < 0,05 which means that the improvement of mathematics connections ability according to Mathematics Initial Ability (high, medium, and low) in both classes are significantly different. To identify the significant group according to Mathematics Initial Ability, *Post Hoctest* was conducted, as the result could be seen in the table below.

Table 4.3: *Data Result of Post HocTestN-GainMathematics Connections Ability in Terms of Mathematics Initial Ability (MIA)*

(I) MIA	(J) MIA	Mean Difference (I-J)	*Sig.*	H_0
High	Medium	0,127	0,003	Rejected
	Low	0,272	0,000	Rejected
Medium	High	-0,127	0,003	Rejected
	Low	0,145	0,000	Rejected
Low	High	-0,272	0,000	Rejected
	Medium	-0,145	0,000	Rejected

The Table 4.3 above present the data about differences on mathematical connections abilitythat significantly increase that occurred within high and medium Mathematics Initial Ability categories, high and low Mathematics Initial Ability categories, and medium and lowMathematics Initial Ability categories. The calculation is according to overall Mathematics Initial Ability.To identify category of Mathematics Initial Ability that significantly improved in each group, t-*test* between Mathematics Initial Ability category was carried out, as the result presented in Table 4.4 below.

Table 4.4: *Data Result of Independent Sample t-Test-Gain Mathematical Connection Abilityin Terms of Mathematics Initial Ability (MIA)*

Learning Activity	**MIA**	**N**		***t***	***Sig. (1-tailed)***	**H_0**
BBL–*ESQ*	High	7	0,776	1,810	0,041	Rejected
	Medium	19	0,682			
BBL–*ESQ*	High	7	0,776	4,379	0,000	Rejected
	Low	8	0,476			
BBL–*ESQ*	Medium	19	0,682	3,832	0,000	Rejected
	Low	8	0,476			
BBL–*ESQ** Conventional	High	7	0,776	5,075	0,000	Rejected
	High	6	0,502			
BBL–*ESQ** Conventional	High	7	0,776	7,916	0,000	Rejected
	Medium	21	0,378			
BBL–*ESQ** Conventional	High	7	0,776	11,956	0,000	Rejected
	Low	7	0,265			
BBL–*ESQ** Conventional	Medium	19	0,682	3,452	0,001	Rejected
	High	6	0,502			
BBL–*ESQ** Conventional	Medium	19	0,682	8,167	0,000	Rejected
	Medium	21	0,378			
BBL–*ESQ** Conventional	Medium	19	0,682	14,570	0,000	Rejected
	Low	7	0,265			

Learning Activity	MIA	N		*t*	*Sig. (1-tailed)*	H_0
BBL–*ESQ**	Low	8	0,476	-0,403	0,347	Accepted
Conventional	High	6	0,502			
BBL–*ESQ**	Low	8	0,476	1,869	0,036	Rejected
Conventional	Medium	21	0,378			
BBL–*ESQ**	Low	8	0,476	3,951	0,002	Rejected
Conventional	Low	7	0,265			

The tabel 4.4 above describe that the students in high Mathematics Initial Ability category who got BBL-ESQ, their increase in Mathematics Initial Ability were significantly better compare to students in medium and low category of Mathematics Initial Ability within the same learning activity. They are also significantly better compare to students in every category of Mathematics Initial Ability who obtained conventional learning. In addition, the students in medium Mathematics Initial Ability category who got BBL-ESQ, their increase in Mathematics Initial Ability were significantly better compare to students in low category of Mathematics Initial Ability within the same learning activity. They are also significantly better compare to students in every category of Mathematics Initial Ability who obtained conventional learning. Whereas, students in low Mathematics Initial Ability category who got BBL-ESQ, their increase in Mathematics Initial Ability were not significantly better compare to students in high Mathematics Initial Ability category who got conventional learning, but they are significantly better compare to students in medium and low category of Mathematics Initial Ability who obtained conventional learning.

4.3 The comparison of Students' Self-Efficacy Improvementin terms of the Overall Students

The results of significance test difference in the mean *N-Gain* on students' self-efficacy in terms of the overall students busing *t-test* presented in Table 4.5below.

Table 4.5: *Data Result of Independent Sample t-TestN-Gain Self-Efficacy in Terms of The Overall Students*

Learning Activity	N		*t*	*Sig. (1-tailed)*	H_0
BBL–ESQ	34	0,636	9,033	0,000	Rejected
Conventional	34	0,464			

The Table 4.5abovepresentthat the probability values. *(1-tailed)* is smallerthanα=0.05, so$H_0$is rejected. Thus, there insignificant difference on the mean *N-Gain* of student's self-efficacybetweenthose who got BBL-ESQ learning withthose who received conventional learning. It shows that the increaseeofstudents' self-efficacy who acquired ESQ-BBL learningare bettercompare tostudents who received conventional learning. Referring to Hake's (1999) opinion, theincreaseof mathematical connection ability that occurs in both classroomis in middle category.

4.4 The Comparison of Students' Self-Efficacy Improvement according to Mathematics Initial Ability

The result of significance tests difference in the mean-Gain on students' self-efficacyin terms ofMathematics Initial Ability using *two-ways ANOVA* presented in Table4.6below.

Table 4.6: *Data Result of Two-Ways ANOVA Test N-GainSelf-Efficacy in Terms of Mathematics Initial Ability (MIA)*

Source	*SS*	*df*	*MS*	*F*	*Sig.*	H_0
Learning	0,318	1	0,318	153,48	0,000	Rejected
MIA	0,262	2	0,131	63,17	0,000	Rejected
Learning* MIA	0,015	2	0,007	3,58	0,034	Rejected

The Table 4.6 above present the data that the probability value *(sig.)* 0.000 less than 0.05 or p (sig) <0.05. It means that the increase ofstudents' self-efficacy in both classes among high, medium, and low categorieswere significantly different. To find out the significant Mathematics Initial Ability category, Post *Hoc test* was conducted as presented in Table 4.7below.

Table 4.7: *Data Result of Post HocTestN-GainSelf-Efficacy in Terms of Mathematics Initial Ability (MIA)*

(I) MIA	(J) MIA	Mean Difference (I-J)	*Sig.*	H_0
High	Medium	0,1368	0,000	Rejected
	Low	0,1914	0,000	Rejected
Medium	High	-0,1368	0,000	Rejected
	Low	0,0546	0,001	Rejected
Low	High	-0,1914	0,000	Rejected
	Medium	-0,0546	0,001	Rejected

The Table 4.7aboveshow that the different improvement of self efficacy were significant in high and medium Mathematics Initial Ability categories, high and low Mathematics Initial Ability categories, and medium and low Mathematics Initial Ability. The calculation are based on overall Mathematics Initial Ability. Whereas to identify significant Mathematics Initial Ability categories in each category, *t-test* between Mathematics Initial Ability in each group of learning was conducted. The result are presented in the table 4.8 below.

Table 4.8: *Data Result of Independent Sample t-TestN-GainSelf-Efficacy in Terms of Mathematics Initial Ability (MIA)*

Learning Activity	MIA	N		*t*	*Sig. (1-tailed)*	H_o
BBL–*ESQ*	High	7	0,736	2,631	0,018	Rejected
	Medium	19	0,638			
BBL–*ESQ*	High	7	0,736	5,267	0,001	Rejected
	Low	8	0,543			
BBL–*ESQ*	Medium	19	0,638	10,713	0,000	Rejected
	Low	8	0,543			
BBL–*ESQ** Conventional	High	7	0,736	2,852	0,008	Rejected
	High	6	0,599			
BBL–*ESQ** Conventional	High	7	0,736	7,874	0,000	Rejected
	Medium	21	0,443			

Learning Activity	MIA	N		*t*	*Sig. (1-tailed)*	H_o
BBL–*ESQ**	High	7	0,736	8,843	0,000	Rejected
Conventional	Low	7	0,411			
BBL–*ESQ**	Medium	19	0,638	1,812	0,041	Rejected
Conventional	High	6	0,599			
BBL–*ESQ**	Medium	19	0,638	17,912	0,000	Rejected
Conventional	Medium	21	0,443			
BBL–*ESQ**	Medium	19	0,638	16,561	0,000	Rejected
Conventional	Low	7	0,411			
BBL–*ESQ**	Low	8	0,543	-1,878	0,058	Accepted
Conventional	High	6	0,599			
BBL–*ESQ**	Low	8	0,543	12,093	0,000	Rejected
Conventional	Medium	21	0,443			
BBL–*ESQ**	Low	8	0,543	20,898	0,000	Rejected
Conventional	Low	7	0,736			Rejected

The table 4.8 above reveals that the students in the high Mathematics Initial Ability category who got BBL-ESQ their improvement in are significantly compare to medium and low Mathematics Initial Ability categories in same learing activity. They are also significantly better compare to all Mathematics Initial Ability categories who got conventional learning. Besides, students in medium Mathematics Initial Ability category who got BBL-SQ, their self-efficacy improvement are significantly better compare to students in low Mathematics Initial Ability within same learning activity, and are also significantly better compare to all Mathematics Initial Ability categories who got conventional learning. Whereas, students in low Mathematics Initial Ability categories who got BBL-ESQ learning their self-efficacy improvement did not significantly better compare to those students in high Mathematics Initial Ability category who got conventional learning, but are significantly better compare to medium and low Mathematics Initial Ability categories who got conventional learning.

5. Conclusion

Based on the results of the data analysis it can be concluded that the increase of students' mathematical connection skills and self-efficacy who experience Brain-Based Learning approach that apply EQ and SQ are better than students who received conventional learning, both in terms of overall students as well as the Mathematics Initial Ability.

References

Bandura, A. (1994). Self-efficacy. In V. S. Ramachaudran (Ed.), Encyclopedia of Human Behavior (Vol. 4, pp. 71-81). New York: Academic Press. (Reprinted in H. Friedman [Ed.], Encyclopedia of Mental Health. San Diego: Academic Press, 1998).

Bandura, A. (1997). Self-efficacy: The Exercise of Control. New York, NY: WH Freeman and Company.

Bandura. A. (2006). Guide for Constructing Self-efficacy Scales. Self -efficacy Beliefs of Adolescent,pp.307-337. Retrieved from http://www.uky.edu/~eushe2/Bandura/Bandura Guide2006.pdf

Bowell, R. A. (2004). The Seven Steps of Spiritual Intelligence-The Practical Pursuit of Purpose, Success, and Happiness. Nicholas Brealey Publishing.

Caine R. N. & G. Caine. (1995). Reinventing Schools through Brain-Based Learning. Educational Leadership, V.52, N.7.

Duman, B. (2010). The Effects of Brain-Based Learning on the Academic Achievement of Students with Different Learning Styles. Educational Sciences: Theory & Practice. Turkey: Department of Educational Sciences.

Ginanjar, A. (2005). Rahasia Sukses Membangun Kecerdasan Emosi dan Spiritual: ESQ. Jakarta: Arga.

Goleman, D. (1996). Emotional Intelligence. Jakarta: Gramedia.

Hake,R.(1999).Analyzing Change/Gain Score. Retrieved from http://www.physics.indiana.edu./-sdi/AnalyzingChange-Gain.pdf Jensen, E. (2008). Brain-Based Learning. Yogyakarta: Pustaka Pelajar.

Johnson, K.M. Dan Litynsky, C.L. (1995). "Breathing Life into Mathematics", in Connecting Mathematics across the Curriculum Editor: House, P.A. dan Oxford, A.F. Reston,

Virginia: NCTM.

NCTM. 2000. Principles and Standard for School Mathematics. NCTM.

Pajeres, F. (2002). Overview of Social Cognitive Theory and of Self-Efficacy. Retrieved from http://www.wmory.edu/education/mfp/eff.html

PISA. 2012. Results in Focus: What 15-year-olds know and what they can do with what they know. OECD Publishing.

Suherman, E. (2003). Strategi Pembelajaran Matematika Kontemporer. Bandung: UPI.

Wilson, S., & Janes, D.P. (2008). Mathematical Self-Efficacy: How Constructivist Philosophies Improve Self-Efficacy. Retrieved from http://www.scribd.com/doc/17461111/ Mathematical- Self- Efficacy- How- Constructivist- Philosophies- Improve- Self-Efficacy

Zohar, D., & Marshall, I. (2000). SQ: Memanfaatkan Kecerdasan Spiritual in Berpikir Integralistik dan Holistik untuk Memaknai Kehidupan. Bandung: Mizan Pustaka.

Zohar, D., & Marshall, I. (2000). SQ: Spiritual Intelligence, the Ultimate Intellegence. London. Bloomsbury Publishing.