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RESEARCH ARTICLE

THE RELATIONSHIP BETWEEN CRITICAL THINKING DISPOSITION, ATTITUDE AND PERCEPTION OF SPECIAL EDUCATION TEACHERS IN COOPERATIVE TEACHING WITH MIND MAP

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ABSTRACT

This study aims to assess the level of critical thinking dispositions, attitudes and perceptions in cooperative teaching with mind map among teachers in Negeri Sembilan. This study also examined the relationship between critical thinking disposition, attitude and perception of Special Education teacher in cooperative teaching with mind map. Critical thinking disposition has seven subscales measured by curiosity, open-minded, systematic, accuracy, truth-seeking, self-confidence and maturity. Special education teacher attitudes in cooperative teaching with mind map has three subscales namely cognitive, affective and behavioural. Special Education teachers in cooperative teaching with mind map has three subscales which are interpersonal relationships, motivation, support and guidance in their studies lessons. A total of 190 primary school of Special Education teachers in Negeri Sembilan have been selected using proportional sampling method. The instrument is based on previous research instrument and modifications made to the item so that it's relevant to the current study. Raw data obtained were analysed using SPSS. The descriptive analysis showed that the respondents have a level of critical thinking dispositions (M = 2.99, SD = 0.160), attitude in cooperative teaching with mind map (M = 2.96, SD = 0.194) and the perception of the cooperative teaching with mind map (M = 3.00, SD = 0.240) were moderate. The inference analysis showed novice teachers have a significantly higher critical thinking dispositions and attitudes of cooperative teaching with mind map compared with experienced teachers. For the gender, no significant differences between male and female teachers to construct critical thinking dispositions, attitudes and perceptions of cooperative teaching with mind map. The findings shows there is a significant positive relationship between critical thinking disposition and attitude (r = .443, p <.01) and perception (r = .442, p <.01) among Special Education teacher. This study suggested that the critical thinking disposition of teachers should be given special attention in order to improve the effectiveness of teaching to their Special Education student. Special Education teachers should also be exposed to the latest teaching methods so that student achievement can be improved.

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INTRODUCTION

According to the Division of Special Education (2012), children with learning disabilities are identified by a physician as having a disability that interferes with the learning process. These children are placed in schools that offer special education program together with ordinary schools, known as Special Education Integration Programme (SEIP). In Malaysia, Special Education students includes students who have had difficulty in speaking, physical disabilities, multiple disabilities and specific learning difficulties such as autism, Down syndrome, ADHD (Attention Deficit Hyperactivity Disorder) and dyslexia (MEB, 2013). *National Council for the Accreditation of Teacher Educators* (NCATE) defines the critical thinking disposition as a professional attitudes, values and beliefs reflected in the behaviour of verbal and non-verbal by educators to communicate with students, families, colleagues and communities (NCATE, 2007). In addition to content knowledge and pedagogical skills, teachers need to have critical thinking positive disposition to become an educator and professional quality. According to Borko, Liston and Whitcomb (2007), content knowledge and pedagogical skills were not adequate for a teacher, but they require critical thinking disposition to become an effective teacher. Critical thinking disposition refers to a person's inner motivation to think critically when faced with a problem to solve, make decisions or evaluate ideas (Facione and Facione, 1992). Critical thinking disposition teachers directly affect practice, behaviour and attitude of a teacher (Hockett, 2009). These

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aspects affect the way teachers, how teachers face problems and solve them as well. The critical thinking disposition is needed in teaching special education compared to the mainstream because teachers are faced with students with various learning problems (Hong *et al*., 2009). Negative disposition lead to have no passion for teaching and guiding Special Education students. Teachers believe Special Education students are hard to educate and they are not able to show an increase in learning (Andrew Ming Hei Tong and Chen Zhang Kaili, 2012). Teachers should not only focus on how to teach but he must personally engage fully in the profession and the success of pupils (Osguthorpe, 2008). This construct on critical thinking disposition and teachers can understand in depth how caring or helping to educate students in the teaching profession. The concept of teacher efficiency is defined as the belief that teachers have the ability to manage and perform a task of teaching effectively or practically that affect student performance (Paneque and Barbetta, 2006). Efficiency is an important aspect which is closely related to understanding the critical thinking disposition as reciprocity of teaching and learning in the classroom. In order to develop critical thinking of students, teachers first need to master these skills and also practice critical thinking disposition through the implementation of specific teaching pedagogy (Mohamad *et al*., 2015). A study conducted by Azlida Mohamad (2015) states that there are constructs in the disposition at the high level and at a moderate level. This means the disposition of critical thinking can be changed according to the environment survey respondents. His findings revealed that there is a relationship between critical thinking disposition with the teaching style at a moderate level. A study conducted by Giovannelli (2010) found that there were significant differences in the critical thinking disposition based on teaching experience. Critical thinking disposition among experienced teachers is less than seven years and significantly higher than experienced teachers who have taught for more than seven years (Giovannelli, 2010).

A major challenge to Special Education disciples is to master certain skills such as group work, communication, social and thinking skills (Mey and Vanderberg, 2010). These skills are very important to provide Special Education students transition from school to life in the community. Therefore, teaching methods should coincide with the focus on the implementation of the teaching and learning process. Teachers must master the method of teaching and learning that is more open (Khadijah & Siti Rohani, 2014). Cooperative teaching methods help students master the spirit of cooperation, self-responsibility and socialize. An important emphasis should also be given to teaching aids (Martini, 2015), especially in teaching Special Education pupils. Teaching aids for Special Education pupils should be a visual, colourful, great pictures and easy to understand. Mind map can be used as one of the teaching aids that can attract students to be more concentrated, enabling students to understand the subject matter and more active. Attention to the attitude towards the teaching methods is important and the basis for the field of education (Wadlington and Wadlington, 2011). Attitudes are formed as a result of learning and experience, which grow in a certain time period (Oruc, 2011). Canbay and Berecen (2012) stated that the attitude of teachers affects student performance. They also explained that teachers who have a positive attitude towards a particular teaching method or style of teaching will make them interesting, fun and easy to understand because of the spirit that is in their hearts. On the other hand, teachers who have a negative attitude toward teaching method or style will make them unattractive teaching sessions, not encourage students to master a lesson. Perception by teachers will affect the students, where previous studies have found the approaches used by teachers was found to have a correlation with the perception of teaching (Lotter *et al*., 2007). Therefore, teachers play a significant influence on the development of students. Teachers teach and help students to develop the knowledge of students so that they will become responsible and productive individuals in society. Scarlet *et al*. (2015) studied the relationship between the critical thinking disposition and perception in problem-based teaching methods. The results showed a significant small positive correlation between critical thinking disposition in problem-based teaching methods. Perception of teachers in style or method of teaching is the key to realizing their teaching practices. Special Education teachers must build a good attitude and perception towards the cooperative teaching methods with mind map. This is because the attitudes and perceptions of Special Education teachers will determine whether they will use this teaching method in teaching them or not. A study conducted by Barchok, Too & Ngeno (2013) found that teachers' attitudes were moderate positive in the implementation of teaching methods collaboratively with concept maps in teaching chemistry and the study by Anantha Kumar (2012) found that the perception of teachers in the constructivism teaching with concept maps for mainstream class as a whole is at a moderate level. This proves that the teachers are willing to use cooperative learning methods with mind map in their teaching. Teachers need to be exposed to the benefits of cooperative learning and mind map in order to build positive attitudes and perceptions in themselves. According to Hennessey and Dionigi (2013), teachers' attitudes will determine the effectiveness of teaching practices in the classroom and achievement. What is certain here, teachers should use sensitivity to see certain weaknesses related to teaching methods, in addition to enhance the weaknesses.

Appropriate teaching methods with Special Education students' abilities must be used in order to attract students to the learn and not get bored easily. It was found that new teachers experience less than 5 years old have a problem in teaching Special Education students of various categories of problems in the same class (Bishop, Brownell, Klingner, Menon, Galman, and Leko, 2010). Novices teacher with less than 5 years experiences may have difficulty in carrying out classroom teaching compared with experienced teachers (Zuhairah & Zamri, 2010). So, Special Education novice teachers should be monitored by the school to share problems faced by them in teaching pupils, motivate, guidance and encourage them to improve their teaching skills. During the group lessons, Special Education students exhibit problems in terms of behaviour, not concentrate and are demotivated that cause difficulty to Special Education teachers carry out teaching effectively (Trzcinka & Grskovic, 2011). However, Special Education teachers must change attitudes and perceptions of the method of group teaching. Special Education teachers should strive to teach in group methods to guide students so that students can develop the ability within them. If Special Education teachers do not take action, then the existing abilities of SEIP will not expand.

Objectives

1. To identify the critical thinking disposition among Special Education teachers.

2. To identify attitude in cooperative teaching with mind map among Special Education teachers.
3. To identify the perception in cooperative teaching with mind map among Special Education teachers.
4. To compare the level of critical thinking dispositions, attitudes, and perceptions in cooperative teaching with mind map based on teaching experience and gender.
5. To identify the relationship between critical thinking disposition and attitude in cooperative teaching with mind map among Special Education teachers.
6. To identify the relationship between the critical thinking disposition and perception in cooperative teaching with mind map among teachers.

Research Question

1. What is the level of critical thinking disposition among Special Education teachers?
2. What are the attitudes of Special Education teachers in cooperative teaching with mind map?
3. What are the perceptions of Special Education teachers in cooperative teaching with mind map?
4. Is there a significant difference in the level of critical thinking disposition, attitude, and perception in cooperative teaching with mind map based on teaching experience?
5. Is there a significant differences in levels of critical thinking dispositions, attitudes, and perceptions in cooperative teaching with mind map based on gender?
6. Is there a significant relationship between critical thinking disposition and attitude in cooperative teaching with mind map among Special Education teachers?
7. Is there a significant relationship between critical thinking disposition and perception in cooperative teaching with mind map among teachers?

Hypothesis

Ho1a: There was no significant difference in the level of critical thinking disposition among Special Education teachers based on teaching experience.

Ho1b: There was no significant difference attitude in cooperative teaching with mind map among Special Education teacher based on teaching experience.

Ho1c: There was no significant difference in the perception of cooperative teaching with mind map among Special Education teacher based on teaching experience.

Ho2a: There was no significant difference in the level of critical thinking disposition among Special Education teachers based on gender.

Ho2b:There was no significant difference attitude in cooperative teaching with mind map among Special Education teacher based on gender.

Ho2c: There was no significant difference in the perception of cooperative teaching with mind map among Special Education teacher based on gender.

Ho3: There was no significant correlation between critical thinking disposition and attitude in cooperative teaching with mind map among Special Education teachers.

Ho4: There was no significant correlation between critical thinking disposition and perception in cooperative teaching with mind map among Special Education teachers.

Methodology

This study uses correlation study design. Population comprises of primary school teachers of Special Education Integration Programme (SEIP) in Negeri Sembilan. The researchers chose one of the sampling method described by Chua (2012), which is proportional stratified random sampling. A total sample of 190 teachers based on Cochran (1977) formula and Krejcie and Morgan (1970) table. Selected from various demographics such as gender, teaching experience, and areas of specialization. The questionnaire instrument is divided into four parts namely Part A, B, C and D. Part A includes eight questions about the respondents' background information provided by the researcher. Part B, contains questions about disposition among teachers. Researchers used a questionnaire developed by Rosma Osman (2004), to examine the disposition of teachers. Part C contains questions that will measure the attitudes of teachers in the cooperative teaching with mind map. The items presented in this section is adapted and modified from previous studies conducted by Duckworth (2010) and Margaret (2007) to be compatible with the objectives and research questions. Part D contains questions to measure teachers' perceptions in cooperative teaching with mind map. The items presented in this section is adapted and modified from previous studies conducted by McCombs *et al*., (2008) and Duckworth (2010) to be compatible with the objectives and research questions. The questionnaire in the B, C and D were measured using a *Likert* scale of 4 points 1- strongly disagree 2- Disagree, Agree 3-, 4- Agree. For the analysis, the strength of the relationship between two variables is based on the interpretation of the coefficient proposed by Cohen (1988).

RESULTS

This study involved 190 teachers of special education programs for primary school integration in Negeri Sembilan. Of that amount, 25.3 percent (N = 48) had taught for 1 to 5 years, 54.7 percent of respondents (N = 104) had taught between 6 and 10 years, 15.3 percent (N = 29) was taught in 11 to 15 year, 2.6 percent (N = 5) has been teaching for 16 to 20 years and 2.1 percent (N = 4) have served more than 20 years. The distribution data shows that most teachers have experience teaching Special Education under 10 years.

Table 1. Frequency distribution and percentage of respondents teaching experience

Teaching Experience (Years)	No. of Respondent	Percent (%)
1 to 5	48	25.3
6 to 10	104	54.7
11 to 15	29	15.3
16 to 20	5	2.6
20 and above	4	2.1
Total	190	100

In terms of frequency of respondents by sex, majority of teachers at Special Education (N = 151) were female teachers (79.5%), while 20.5 percent (N = 39) were male respondents.

Table 2. Frequency distribution and percentage of respondents by gender

Gender	No. of Respondent	Percent
Male	39	20.5
Female	151	79.5
Total	190	100

Level of Critical Thinking Disposition

Based on Table 3, the results of the descriptive analysis as a whole shows that the level of critical thinking disposition among teachers at Special Education is moderate (Mean = 2.99, SD = .160). This means teachers at Special Education have critical thinking disposition in them and these features need to be improved. Elements of critical thinking disposition are very important for Special Education teachers in dealing with pupils, parents, school administrators and the people around them.

Table 3. Level of Critical Thinking Disposition

	Critical Thinking Disposition	Mean	SD
1	Curiosity	3.21	.344
2	Open-minded	3.01	.340
3	Systematic	3.14	.312
4	Thoroughness	3.09	.325
5	Truth seeking	2.86	.356
6	Self confidence	3.01	.314
7	Maturity	2.62	.432
	Total	2.99	.160

Note: min value: Low = 1.00-2.00, Moderate = 2.01-3.00, High = 3.01-4.00

Level of Cooperative Teaching with Mind Map

Based on Table 4, the results of the descriptive analysis as a whole shows that the level of attitude in cooperative teaching with mind map among Special Education teachers are moderate (Mean = 2.96, SD = .194). A moderate positive teacher attitude in cooperative teaching with mind map could provide an opportunity for teachers to try new teaching methods. This new teaching method could possibly affect the academic achievement and social of Special Education pupils and themself.

Table 4. Level of Attitude in Cooperative Teaching with Mind Map

	Attitude in Cooperative Teaching with Mind Map	Mean	SD
1	Cognitive	2.94	.308
2	Affective	2.89	.304
3	Behaviour	3.05	.285
	Total	2.96	.194

Note: min value: Low = 1.00-2.00, Moderate = 2.01-3.00, High = 3.01-4.00

Level of Perception in Cooperative Teaching with Mind Map

Based on Table 5, the results of the descriptive analysis as a whole shows that the perception of the cooperative teaching with mind map is moderate (Mean = 3.00, SD = .240). This means Special Education teachers have a moderate level of acceptance of cooperative teaching methods with mind map. Good perception give space to Special Education teachers in implementing cooperating teaching with mind map in their teaching without pushing this method before trying it.

Table 5. Level of Perception in Cooperative Teaching with Mind Map

	Perception in Cooperative Teaching with Mind Map	Mean	SD
1	Interpersonal Relation	3.01	.245
2	Motivation Support in Education	3.04	.226
3	Coaching	2.96	.249
	Total	3.00	.240

Note: min value: Low = 1.00-2.00, Moderate = 2.01-3.00, High = 3.01-4.00

Table 6. Analysis of Critical Thinking Disposition, Attitude and Perception of Special Education Teacher in Cooperative Teaching with Mind Map based on Teaching Experience

Factor	Experience	N	Mean	SD	*t*	*p*
Critical Thinking Disposition	Novice teacher	48	2.52	.503	2.244*	.026
	Experienced teacher	142	2.35	.481		
Attitude	Novice teacher	48	2.52	.504	3.078**	.002
	Experienced teacher	142	2.28	.451		
Perception	Novice teacher	48	2.33	.476	-.409	.683
	Experienced teacher	142	2.36	.483		

**. The difference is significant at the 0.01 level (2-tailed)
*. The difference is significant at the level of 0.05 (two-tailed)

According to Table 6, the t-test conducted showed that there were significant differences in the critical thinking disposition for teachers experience of novice teachers (Mean = 2.52, SD = .503) than experienced teachers (Mean = 2.35, SD = .481 t = (2244), p <.05). There are also significant differences in the attitudes of Special Education in cooperative teaching with mind map of teachers experience of novice teachers (Mean = 2.52, SD = .504) and experienced teachers (Mean = 2.28, SD = .451, t = (3078), p <.01). However, there was no significant difference in the perception of Special Education teachers in cooperative teaching with mind map for the mean factor of the novice teachers (Mean = 2.33, SD = .476) and experienced teachers (Mean = 2.36, SD = .483, t = (-.409), p> .05). Thus, the hypothesis Ho1a is rejected and the null hypothesis Ho1b and Ho1c is accepted.

Table 7. Comparison of Critical Thinking Disposition, Attitude and Perception of Special Education Teacher in Cooperative Teaching with Mind Map

Factor	Gender	N	Mean	SD	*t*	*p*
Critical Thinking Disposition	Male	39	2.98	.163	-.442	.659
	Female	151	2.99	.159		
Attitude	Male	39	2.94	.174	-.558	.577
	Female	151	2.96	.199		
Perception	Male	39	2.99	.142	-.575	.566
	Female	151	3.01	.133		

*. The difference is significant at the level of 0.05 (two-tailed)

According to Table 7, the t-test conducted showed that there was no significant difference between Mean gender and critical thinking disposition among teachers at Special Education (t = -. 442, p> .05), attitude in cooperative teaching with mind maps (t = -. 558, p> .05), perception in cooperative teaching with mind map (t = -. 575, p> .05). Thus, the null hypothesis Ho2a, Ho2b and Ho2c failed to reject.

Table 8. Relationship between Critical Thinking Disposition, Attitude and Perception of Special Education Teacher in Cooperative Teaching with Mind Map

Component	Critical Thinking Disposition (r)	Sig. (p)	Interpretation
Attitude	.443**	.000	Moderate Relationship
Perception	.442**	.000	Moderate Relationship

**. Relationships are significant at the 0.01 level (2-tailed)

The results in Table 8 shows that there is a significant positive relationship between critical thinking disposition and attitude in cooperative teaching with mind map among Special Education teachers (r = .443, p <.01). Thus, the null hypothesis

3 is rejected. The results in Table 8 also shows that there is a significant positive relationship between the critical thinking disposition and perception in cooperative teaching with mind map among Special Education teachers (r = .442, p <.01). Thus, the null hypothesis 4 is rejected.

DISCUSSION

Critical thinking disposition is one of the criteria that should have in professional teacher. This is consistent with the opinion of Borko *et al*. (2007) which states the content knowledge and pedagogical skills were not adequate for a teacher, but they require critical thinking disposition to become an effective teacher. Overall, the findings show critical thinking disposition among Special Education teachers in Negeri Sembilan at a moderate level (Mean = 2.99, SD = 160). The findings show the dimensions of critical thinking disposition which are curious, open-minded, systematic, precision and self-confidence is at a high level while the dimensions of the search for truth and maturity at a moderate level. This is consistent with the findings by Azlida Mohamad (2015) who studied critical thinking disposition in constructs of curious, open-minded, systematic, accuracy, truth-seeking, self-confidence and maturity. His findings show that there are several dimensions are at high positive and some dimensions are at low levels. The study also showed that teachers' attitudes in cooperative teaching with mind map is at a moderate level (Mean = 2.96, SD = .194). This means teachers have a positive moderate attitude in the implementation of cooperative teaching with mind map. Canbay & Berecen (2012) explain that teachers have a positive attitude towards a particular method of teaching will make them interesting, fun and easy to understand because of the spirit that is in their hearts. It directly can improve the overall performance of students. The results also showed that the perception of teachers in cooperative teaching with mind map at a moderate level (Mean = 3.00, SD = .240). The findings also show the perceptions of Special Education teachers in interpersonal relationships and motivation construct is at a high level. This means teachers feel that this teaching method can create opportunities for teachers to improve interpersonal relationships between students and teachers. This result is consistent with the findings of a study conducted by Barchok *et al*. (2013) and Anantha Kumar (2012) that expressed the attitude of teachers in collaborative teaching with mind maps in teaching and teacher perceptions of constructivism with concept maps are moderately positive. Results of comparative analysis regarding on experience of teaching shows that there are significant differences in the critical thinking disposition in novice teachers (Mean = 2.52, SD = .503) better than experienced teachers (Mean = 2.35, SD = .481, t = (2.244), p <.05). The finding is consistent with the findings Giovannelli (2010) who found that experienced teachers teach less than seven years have critical thinking disposition and significant better than experienced teachers who teach more than seven years. A comparative analysis based on gender for the critical thinking disposition that there were no significant differences between male and female teachers. This proves the level of critical thinking dispositions between male and female teachers are the same and there are no significant differences exist. Next, a comparative analysis based on teaching experience shows that there are significant differences in attitudes of Special Education teachers in the cooperative teaching with mind map in novice teachers (Mean = 2.52, SD = .504) better than experienced teachers (Mean = 2.28, SD =. 451 t (3078), p <.01). The study also found no significant differences in the attitudes of teachers in terms of gender. However, the results showed there was no significant difference in the perception of Special Education teachers in cooperative teaching with mind map regarding teaching experience and gender. Attitudes and perceptions of Special Education teachers in cooperative teaching with mind map between male and female teachers are the same and there are no significant differences. Correlation analysis shows the critical thinking disposition has significant moderate relationship with the attitudes and perceptions of teachers in cooperative teaching with mind map. Results of this study are in line with previous studies by Azlida Mohamad (2015) and Kirmizi *et al*. (2015) that found a significant moderate correlation between critical thinking disposition with attitudes and perceptions of teachers and teaching methods. A significant moderate relationship proves that critical thinking disposition can inspire teachers in applying certain methods in teaching and learning.

Conclusion

The survey was conducted to obtain information on the critical thinking disposition of teachers at Special Education. At the same time, this study examines the attitudes and perceptions of teachers at Special Education using cooperative thinking with mind map. Teachers should have a positive critical thinking disposition to be a professional teacher. Critical thinking disposition teachers will correlate with academic performance of pupils. Attitude and perception of teacher at Special Education in cooperative learning is at moderate level proves teachers ready to apply these teaching methods in their teaching sessions.

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