Man In India, 96 (4) : 1235-1246

INTEGRATING JAPANESE VALUES IN TEACHING MATHEMATICS IN INDONESIA

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This quasi-experimental research aims to analyse the application of character education*ala* Japan and studying Indonesian multiculturalism on the study of mathematics.Research subjects comprise 80 senior high school (*SMA*) pupilsand 87junior high school (*SMP*) pupils.The data in this research was producedthrough mathematical ability testing, character scale for independent study and mathematical disposition, lesson observation, as well as lesson study activities between the author, maths teachers and various post-graduate Mathematics Education students at STKIP Siliwangi Bandung. Research results showed that:1) Pupils' ability to learn independently was better for those pupils who studied maths integrated with character education *ala* Japan, as opposed to those who studied maths integrated with Indonesian multiculturalism; 2) The mathematical disposition of pupils who studied maths integrated with Indonesian multiculturalism was better than those who studied maths integrated with character education *ala* Japan; 3)There was no difference in the mathematical ability of pupils between those studying maths integrated with character studies *ala* Japan and those studying maths integrated with studying Indonesian multiculturalism, both were at an average level; 4) There was a very high association between pupils mathematical ability and learning independence; 5) There was a high association between mathematical ability and mathematical disposition of pupils; 6) There is a high association between pupils' mathematical disposition and learning independence.

Key Words: Character, Japan, Multicultural, Indonesia, Mathematics

INTRODUCTION

The current curriculumin Indonesia emphasises the need for character fomation in pupils, where lessons at school are tasked with producing pupils who are honest, disciplined, responsible, caring (community work, partnership work, tolerance, peace), polite, responsive and pro-active, and show these behaviours as part of the solution to various problems in effective interaction with the natural and social environment, as well as positioning themselves to reflect the nation in a global society (*Kemendikbud*, 2013). This emphasis on character is related to a current phenomena in Indonesia, a nation which is described as experiencing a reduction in the quality of national character.

To overcome this, the Government has launched a characher education approach, which is the focus of the National Ministry of Education(*Kementerian Pendidikan Nasional*)throughout all levels of education. This character education is hoped to be able to become the main foundation in an effort to strengthen the self-identity of the future generations, towards a successful Golden Indonesia 2025. Developing this national character, must start from the school, analogizing the

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learning process in school as a national life process, adopting all of the national character values to be developed(Mulyo, 2009).

Japan, as a developed country, has a population which still holds strongly to Eastern customs, and is worthy of becoming an example in formin and Indonesian national character. However, on the other hand, the Indonesian nation, which is a multiethnic nation compraising various cultures, tribes and customs original to Indonesia, which also hold on to Eastern customs, such as *gotongroyong* (community work), tolerance of differences, and *musyawarah*(formal discussion)toreach consensus in solving problems. As a result, the author researched the application of character education *ala* Japan and Indonesian multicultural study into maths lessons, related to the character development and mathematical capability of pupils. The aspects of character studied in this research covered:pupils' independent study and mathematical disposition (pupils' attitude tendency towards studying mathematics). It is hoped that integrating character-nuanced lessons would create a good character norm for pupils to implement in their daily lives. Various good norms from a young age, as propounded in Pavlop's theory (Nurhidayati, 2012) are worth implementing in school as a means of processing the future generations' national charcter.

CHARACTER EDUCATIONALA JAPAN

Character education for Japanese society starts from a young age, as in Indonesia lessons for young children ((*Houikuen dan Youchien*) are undertaken through various games to grow social sensitivity, togetherness, enthusiasm for hart work, enthusiasm and responsibility (Christian, 2011). Children in primary school (*shougakkou)* must walk to and from school in groups (5-6 people) led by a leader. When school is on holiday, children free their mothers from washing dishes, and do it for them. There are 3 charater aspects embedded in primary school children from the above obligations, namely:morale, unity and responsibility (Setiawan, 2011).

At the middle school level (*chuugakkou* and *kotougakkou*), pupils are motivated to actively give answers or opinions related to a problem given by the teacher, and are permitted to correct if the teacher explains incorrectly. In baseball contests, held each summer, pupils are taught to attempt to try hard and work within a team, whether or not they lose, they are taughtto accept wholeheartedly, and not cheat.Their friends and teacher come to give support to the competing teams. At the end of each competition, whether the team won or lost, whether crying or smiling joyfully, the game is always finished by showing respect and shaking hands. Middle school pupils are also permitted to go to school by bicycle, but not by motorbike or car. If the distance is too far, they may take a bus or train.

At all levels, there is good partnership between school and pupils' parents in character education, which is undertaken intensively through school books,

emails, or by phone.Parents always attend an assembly on their child's first day of school.

This shows the concern of parents towards their children's education and their commitment towards school culture in developing harmonious communication between the school and pupils' parents (Christian, 2011). In addition, pupils are given an understanding to not glorify one type of work and be contemptuous of other work, so that when they are asked their ambitions, there will be those who answer that they want to become a chef, florist, bookseller, etc. This is a reflection of a society which does not glorify one type of work and despise other types of work (Setiawan 2011).In Japan, teachers are a very respected profession.Parents will show respect when meeting a teacher, whatever their social status.

INTEGRATION OFCHARACTER EDUCATION *ALA* JAPANIN MATHS LESSONS IN INDONESIA

Because the curriculum in Indonesia requires integration of character education in all subjects, we can integratecharacter education ala Japaninto maths lessons at school.Ebbutt andStraker(Depdiknas, 2006) proposed that school maths characteristics are: (1) Activities searching for patterns and relationships, with the implication that lessons must provide pupils with opportunities to undertake pattern finding and investigation activities to determine relationships; (2) Activities which provide pupils with opportunities to undertake experimentation with various methods so that they can explore creativity, which requires imagination and intuition.The implications of these activities in the lesson include supporting pupil's initiative and providing pupils with opportunities to think differently; (3) Problem solving activities, the implications of which in lessons include supporting pupils' to think logically, consistently, systematically and to develop a documentation system.

Integratingcharacter education ala Japaninto maths lessons can be undertaken through the following:

- Maths teachers through lessons which put forward contextual character problems related to the mathematical material taught.
- Lessons using a cooperative learning setting, where pupils are motivated to communicate between pupils through discussion groups, then pupils are moticated to communicate with the teacher through class discussion. To make this more interesting, the lesson is given a competitive nuance in the form of a fun game.
- Pupils are tasked with going to or from school in groups of 4-5 people, according to where their houses are. These groups are then given specific tasks related to mathematical material. For example, they are asked to leave from a particular pupil's house and then calculate the distance

between the house and school, so they can manage their time to get to school on time. Then, in class, they are asked to present and discuss their report on the task given, and describe their impressions in implementing the task.

- By working in partnership with parents, pupils are given tasks at home to make their daily schedule to study, plan how to spend their pocket money, help their parents in certain routine activities and find mathematical problems when socialising with the community. Pupils must report on the implementation and results of these tasks, and the report must be signed by parents.
- At the end of the semester, pupils are given tasks to visit places which nourish the strength and richness of their character, such as religious places, sites of natural disasters, social institutions, cultural sites, and so on. Pupils are given tasks which link the places visited with mathematical material, and pupils then make reports.

STUDYING INDONESIAN MULTICULTURALISM IN MATHS LESSONS

The Indonesian Nation has a wealth of cultural richness, because it is made up of various tribes, traditions, customs, races and religions. This has the potential to to develop mathematical learning at school so pupils understand material taught through contextual problems related to the diverse and unique cultural reasons of Indonesia.According to Rohidi (2002), maths lessons based on these Indonesian multicultural issues make education perceptive to culture, which integrates ethnic and socio-cultural differences in national society.

Learning with a multicultural approach has already become a requirement and is inseperable from national and state life. This approach is hoped to be ableto give birth to a generation which is aware of cultural plurality. Zainudin (2008) said that multicultural based learning forms an idea within the educational renewal movement to achieve optimal educational aims. Pluralism must be viewed as inevitable within life.

Maths lessons with a multicultural approach lead pupils to problems contextualised in the diverse Indonesian national customs. It is hoped that through knowing these diverse Indonesian national customs, pupils will better understand material and develop feelings of nationalism. Referring to constructivism, if pupils feel that knowledge is a part of themselves, then the learning becomes meaningful, and he/she will push to find their own way to deepen and maintain their knowledge at school. This is also in line with Piaget's theory of cognitive development, which states that pupils' cognitive development is determined through a child's manipulation and interaction with the environment.Following is an example of learning maths with this multicultural approach:

Example (1)

Indonesia, which comprises various tribes, has a variety of regional songs. The following is a list of some Indonesian regional songs:

- Kampuang Nan Jauh Di Mato (Sumatera Barat)
- Ampar-Ampar Pisang (Kalimantan Selatan)
- Angin Mamiri (Sulawesi Selatan)
- Apuse (Papua)
- Ayam Den Lapeh (Sumatera Barat)
- BubuyBulan (Jawa Barat)
- Sarinande (Maluku)
- Sajojo (Papua)

Draw the relationship between the song titles and the regions using an arrow diagram. Does the relationship form a function?

Example (2)

Below are images of traditional dress from various regions of Indonesia:

Jawa Barat *Sumatera Barat* *Jawa Tengah* *Bali* *Kalimantan Barat*

A tailor differentiates the costs of sewing traditional costumes from within *Jawa* and out of *Jawa*. If he sews 2 traditional costumes from*Jawa* and 3 traditional costumes from outside of *Jawa*we must payRp 900,000. Meanwhile, if he sews 1 traditional costume from *Jawa* and 4 traditional costumes from out of *Jawa*, we must pay Rp 950,000. What is the cost of sewing 1 traditional costume from*Jawa*? How much does it cost to sew 1 traditional costume from outside *Jawa*?

RESEARCH METHOD

This quasi-experimental research, undertaken for the duration of one semester, aims to analyse application ofcharacter education ala Japanand Indonesian multicultural learning in maths lessons. Learning activities are packed into lesson study activities between the author, maths teachers and several post graduated

mathematics education students at STKIP Siliwangi. Research subjects comprise 80 senior high school (*SMA*) pupils and 87 junior high school (*SMP*) pupils, where 84 pupils (41 *SMA* and 43*SMP* pupils) studied mathematics integrated withcharacter education ala Japan and 83 pupils (39 *SMA* and 44*SMP* pupils) studied mathematics integrated with Indonesian multiculturalism. Before and after studying, pupils mathematical abilities were tested. At the end of each semester, pupils were given an attitude scaletomeasure their character(independent study and mathematical disposition). All data in this research was processed using SPSS software.

RESEARCH RESULTS AND DISCUSSION

As previously detailed, this research was undertaken on 80*SMA* and 87 *SMP* pupils. Of the 80 *SMA* pupils, 41studied maths integrated withcharacter education ala Japan andthe remaining 39studied with an Indonesian multicultural approach. Meanwhile, of the 87 *SMP* pupils, 43 studied maths integrated withcharacter education ala Japan, and 44 studied with an Indonesian mulicultural approach.The results of mathematical ability testing, independent study attitude scale and mathematical disposition scale can be described as follows:

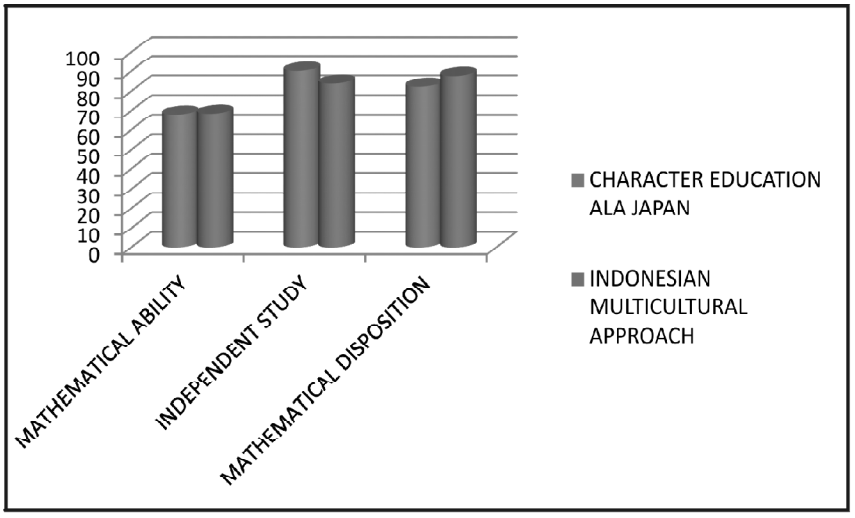

Diagram 1: Description of the Three Variables Based on Learning Used

From Diagram 1 we can see that pupils' mathematical abilities for those who studied maths integrated with character education ala Japan, with an average score of 68.14 is not very different from the mathematical abilities of those studying maths integrated with Indonesian multiculturalism, who had an average score of 68.54. Pupils' independent study for those who studied maths integrated withcharacter education ala Japanhad an average score of 90.23, higher than the

average score of pupils who studied maths integrated with Indonesian multiculturalism of 83.95. Meanwhile, the mathematical disposition of pupils who studied maths integrated with character education ala Japanwith an average score of 82.31 was lower than the mathematical disposition of pupils who studied maths integrated with Indonesian multiculturalism, whose average score was 87.75.

To see the significance of differences in the averages of these three variables, inferential statistics were used through SPSS software, where for independent study, the results were as table 1.

From Table 1 sig=0.22 was obtained, because one-sided testing was used, so sig=0.22/2=0.11 is less than 0.05 therefore Ho is rejected, so it can be concluded that pupils' independent study for those who studied maths integrated withcharacter education ala Japanwas better than the independent study of those pupils studying maths integrated with Indonesian multicultural study. Independent study of pupils who studied maths usingcharacter education ala Japancould be better becaus there was more learning directly in the field. These results are in line with the research results of Rohmah (2013), who concluded that using practical life activities increase pupil's independence.

The significance of average differences for mathematical disposition can be seen in the table 2.

From Table 2 sig=0.043 is obtained, because one-sided testing was used, then sig=0.043/2=0.0215is less than 0.05, so Ho is rejected, so it can be concluded that mathematical disposition of pupils who study maths integrated with Indonesian multicultural study is better than the mathematical disposition of those who study maths integrated with character education ala Japan. This is because mathematical problems packaged in an Indonesian multicultural approach made pupils feel that the problem was part of themselves and they could see the relationship between daily problems and mathematical solutions, so they could see the benefits of learning maths and acquired a positive mathematical disposition towards studying maths.This is in line with the research of Sunaryo (2014), which stated that the attitude(mathematical disposition) of pupils using problem based learning tended to be positive.The average significance of mathematical ability itself can be seen in the table 3.

From Table 3 sig=0.837 is obtained, because one sided testing was used, so sig=0.0837/2=0.4185 is greater than 0.05, so Ho is accepted, so it can be concluded that there is no difference between the mathematical abilities of pupils who studied maths integrated withcharacter education ala Japan and those who studied maths integrated with Indonesian multicultural studies, and both were at the average level. This is because both of these lessons are types of meaningful and contextual learning; character education ala Japanhaving activities directly practised in daily life, while Indonesian multicultural maths problems were contextual with pupils' day to day experience. Jamaludin*et al* (2013) stated that application of David

TABLE 1: TEST RESULTS OF THE SIGNIFICANCE OF PUPILS' INDEPENDENT STUDY

		Levene's Test for Equality of Variances		*t-test for Equality of Means*						
		F	*Sig.*	*T*	*Df*	*Sig. (2-tailed)*	*Mean Difference*	*Std. Error Difference*	*95% Confidence Interval of the Difference*	
									Lower	*Upper*
INDEPENDENT STUDY	Equal variances assumed	1.429	.234	2.317	165	.022	6.286	2.714	.928	11.644
	Equal variances not assumed			2.315	163.391	.022	6.286	2.715	.925	11.647

TABLE 2: TEST RESULTS OF MATHEMATICAL DISPOSITION TEST RESULTS

		Levene's Test for Equality of Variances		*t-test for Equality of Means*						
		F	*Sig.*	*t*	*Df*	*Sig. (2-tailed)*	*Mean Difference*	*Std. Error Difference*	*95% Confidence Interval of the Difference*	
									Lower	*Upper*
MATHEMATICAL DISPOSITION	Equal variances assumed	.389	.534	-2.035	165	.043	-5.437	2.671	-10.712	-.163
	Equal variances not assumed			-2.036	164.939	.043	-5.437	2.671	-10.711	-.164

TABLE 3: TEST RESULTS OF SIGNIFICANCE OF DIFFERENCES IN PUPILS' MATHEMATICAL ABILITY

		Levene's Test for Equality of Variances		*t-test for Equality of Means*						
		F	*Sig.*	*t*	*Df*	*Sig. (2-tailed)*	*Mean Difference*	*Std. Error Difference*	*95% Confidence Interval of the Difference*	
									Lower	*Upper*
PUPILS' SCORES	Equal variances assumed	.074	.785	-.206	165	.837	-.399	1.939	-4.228	3.429
	Equal variances not assumed			-.206	164.892	.837	-.399	1.938	-4.227	3.428

Ausubel's meaningful learning theory in maths lesson activities increased pupils' learning mastery. Through learning mastery, their mathematical abilities increase.

The linkages between pupils mathematical abilities and learning independence, mathematical abilities with mathematical disposition, and between pupils' matematical disposition and learning independencecan be seen in the following Table 4, Table 5 and Table 6:

TABLE 4: NUMBER OF PUPILS BASED ON MATHEMATICAL ABILITIES AND LEARNING INDEPENDENCE CRITERIA

		Learning independence			
		High	*Average*	*Low*	*Total*
Mathematical abilities	Low	0	0	39	39
	Average	4	69	9	82
	High	42	4	0	46
Total		46	73	48	167

Results of SPSS calculation obtained sig=0.000 < 0.05 meaning Ho is rejected, so that it can be concluded that there is a significant association between pupils' mathematical ability and learning independence. C=0.94 C max was also obtained, meanint the association is in the very high category.

TABLE 5: NUMBER OF PUPILS BASED ON MATHEMATICAL ABILITIES AND MATHEMATICAL DISPOSITION CRITERIA

		Mathematical disposition			
		High	*Average*	*Low*	*Total*
Mathematical Abilities	Low	0	0	39	39
	Average	6	58	18	82
	High	39	7	0	46
Total		45	65	57	167

Results of SPSS calculation obtained sig=0.000 < 0.05 meaning Ho is rejected, so it can be concluded that there is a significant association between mathematical ability and mathematical disposition. C=0.891 C max was also obtained, meaning the association is included in the high category.

TABLE 6: NUMBER OF PUPILS BASED ON MATHEMATICAL DISPOSITION AND LEARNING INDEPENDENCE CRITERIA

		Learning independence			
		High	*Average*	*Low*	*Total*
Mathematical Disposition	Low	0	13	44	57
	Average	7	54	4	65
	High	39	6	0	45
Total		46	73	48	167

Results of SPSS calculation obtained sig=0.000 < 0.05 meaning Ho is rejected, so that it can be concluded that there is a significant association between pupils' mathematical abilities and mathematical disposition. C=0.888 C max was also obtained, meaning that the association is included in the very high category.

From Table 4, Table 5 and Table 6, we can see that each of the three variables is related to the others, or in other words, that pupils character and mathematical ability have a close relationship. This is in line with the research of Hendriana andRohaeti (2014), who stated that there is a high association between pupils' hard skills (mathematical abilities) and soft skill (character). So both must be developed optimally and in balance through a variety of innovative learning with a nuance of values and character.

CONCLUSIONS

Learning independence of pupils studying maths integrated withcharacter education ala Japanwas better than the learning independence of pupils who studied maths integrated with Indonesian multicultural studies.

Mathematical disposition of pupils who studied maths integrated with Indonesian multiculturalism was better than mathematical disposition of pupils who studied maths integrated withcharacter education ala Japan.

There was no difference in the mathematical abilities of pupils between thos who studied maths integrated withcharacter education ala Japanand those who studied maths integrated with Indonesian multicultural studies, and both were at the average level.

There was a very high association between pupils' mathematical abilities and learning independence.There was a high association between pupils'mathematical abilities and mathematical disposition.There was a high association between pupils mathematical disposition and learning independence.

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