The Development of the Character Education Model Through Face-to-face Tutorial for Mathematic Courses of the Primary Teacher Training Program at Universitas Terbuka .

Article

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The character education needs to be integrated to every course including mathematics courses in the Primary Teacher Training Program (PTTP) at Universitas Terbuka (UT). This paper will describe the result of the development research which aimed to generate a valid, effective and practical character education model in mathematics courses in PTTP. The output of the research was a tutorial kit which was incorporate with the character education. The research was conducted by purposive sampling at Jetis' Learning Centre in Yogyakarta; one of UT's regional offices locates in Central of Java, considering it conducted mathematic courses to be tutored. The subject of the research was 48 students who were on the second semester of 2012 academic year. The data of this research were collected in the form of the result of education character model on a kit tutorial evaluation, the observation of students' and tutors' activities, tutorial meeting notes and audio-video recording on tutorial meeting. The data were analyzed using qualitative analysis.
The result of the study revealed that the development of the character education model of the tutorial kit has fulfilled the valid, effective and practical criteria. In addition, this model could encourage students to develop their self-directed and confident learning characters, as well as to discover basic concepts of course content to be learned. This discovered basic concept would be more durable on their mind. Therefore, such students would be more capable in dealing with a new learning situation and in solving mathematic problems.

Keyword: character education, face-to-face tutorial, mathematic course

UPBJJ-UT Yogjakarta, one of UT's regional offices locates in Central of Java, as a part of UT's operational management obliged to contribute to the achievement of Indonesia' national education goals. Learner support is provided to facilitate student learning activities in the forms of tutorials, counseling, study groups as well as administrative services. Students' needs for tutorials are provided and facilitated by regional offices. A variety of tutorial methods have been implemented, namely face-to-face, correspondence, broadcast, and online tutorials.

The tutor is suppossed to integrate character education into course's tutorial. This should be applied not only into self development courses, but also into exact sciences courses as well. One of them is mathematics course. It is necessary for mathematics tutor to integrate character education in the planning and the execution of the said course.

Based on researcher's exeperience as a tutor, most of the students assumed that mathematics is only numbers and intricate calculation. There is no value or character in mathematics. Some of the tutors also have the same opinion. Tutor only taught the student how to answer questions. For an example, how to find a solution set from $-3x^2 + 19x - 29 < -9$. Character education problem especially for tutors of the courses reflected on the self-development of the students.

Kemendiknas (2010:43) expressed the need-to-be-developed-values in mathematics educations are : (a) thorough (b) diligence (c) hard work (d) curiosity (e) never yield and (f) creativity. Other opinions about values on mathematics explained by Sheah and Bhisop in Dede (2006: 87) that values on mathematic education are divided into two groups which are (a) value in the mathematics itself and (b) mathematics education value. The value in mathematics itself including rationalism, objectivism, control, progress and openness. Whereas mathematics education value including accuracy, clarity of thought, ability to predict, consistency, creativity, effective organization, happiness, flexibility, opennes of minds, determination and working systematically. It is visible in mathematics and mathematics education values that they are closely related with values of life.

- It means that it is important for tutors to include character education into tutorial courses. The integration starts from planning until the implementation of the tutorial activities. This also means that, character education aspect should be included into the tutorial kit such as

- The result of the study revealed that the development of the character education model of the tutorial kit has fulfilled the valid, effective and practical criteria. In addition, this model could encourage students to develop their self-directed and confident learning characters, as well as to discover basic concepts of course content to be learned. This discovered basic concept would be more durable on their mind. Therefore, such students would be more capable in dealing with a new learning situation and in solving mathematic problems.

After being planned, these tutorial kit will be implemented into tutorial activities. The result will be evaluated periodically: whether the expected characters appear on the tutorial activities or not.

Based on the description above, the researcher interested in developing a valid, effective, and practical character education model through PTTP's mathematics courses. In this context the models referred to tutorial kit (TAP, TAU, SW, and EP) that could help students to developt their character through mathematics courses. Character education model said to be valid if: (a) minimum two out of three experts said that character education model is based on strong theories and (b) its components said to be connected consistently. The model is said to be practical if: (a) minimum two out of three experts said that it could be executed and used on developing student's character and (b) at least 80% of tutor's activities on planned TAP could be executed on each session of tutorial activities. The model is said to be effective if (a) many students have an active participation on tutorial activities at 60% minimum level (b) average student's score in every assignment minimal 70 (scale 0-100) and (c) the planned characters emerged on tutorial activities.

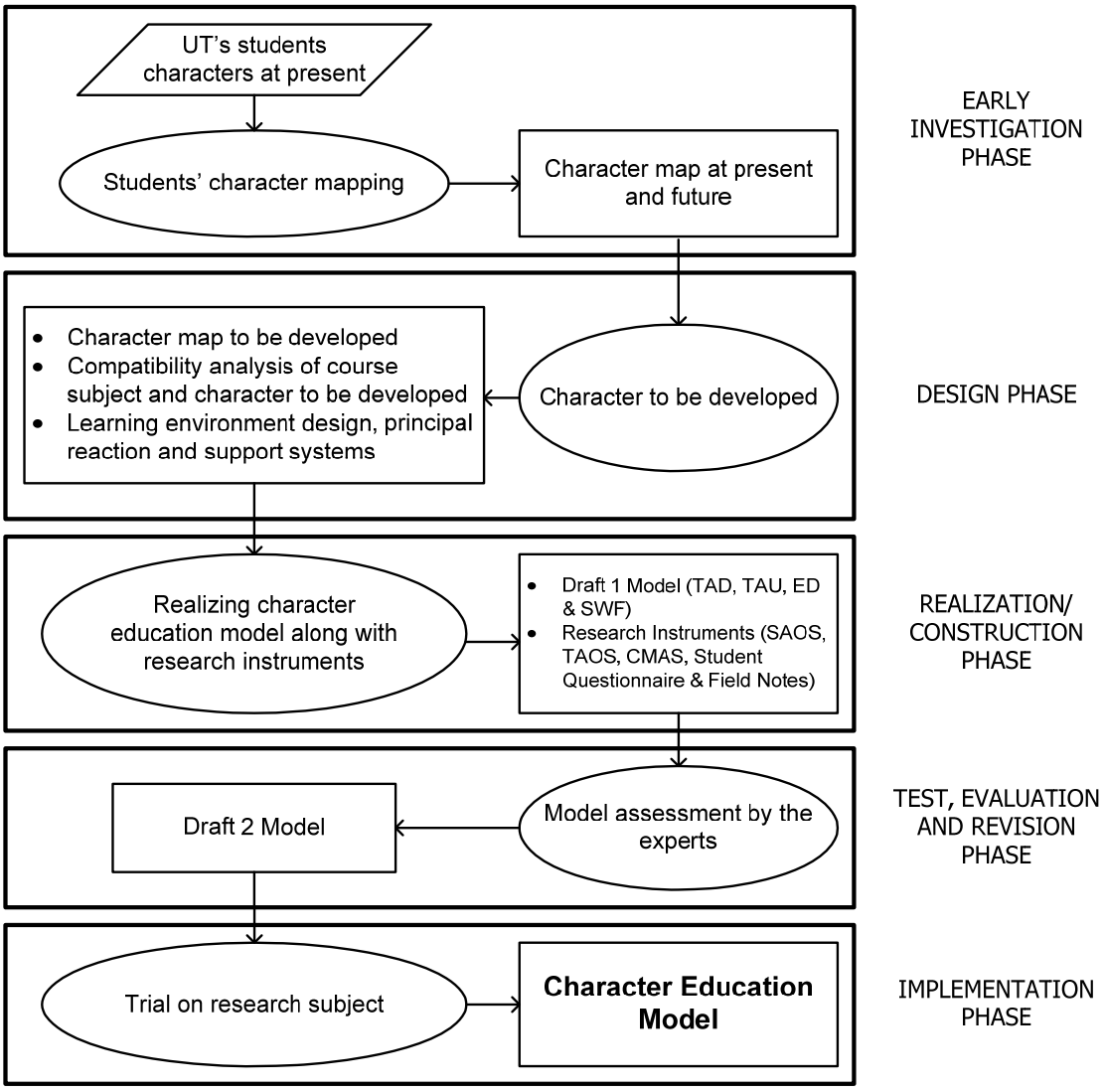
RESEARCH METHOD.

This research used quantitative approach with development research type. This type was used in order to develop certain product such as character education model through mathematics courses (Borg & Gail 1983:772; Gay, 1980: 8). Then this model would be used in tutorial activities.

The research subject was undergraduate PTTP's students in Pokjar Jetis from UPBJJ-UT Yogyakarta on 2012/2013 year of study. There were 24 students in Pokjar Jetis on class A and 24 students on class B. The research was conducted from August until December 2012. The research steps showed on Picture 1.

Data were collected in the form of the assesment result of character education model along with the tutorial kit, the observation result of students' and tutors' activities, the field notes result, and the audio-visual recording. The data were analysis by using the flow model stated by Miles &Huberman (1992) which includes several activities such as : (a) data reduction by summarising data from several observers into a certain statistic form such as average or percentage, (b) data presentation in the form of table and pictures or described it as

it was and (c) the conclution and data validation done by giving meaning and explanation of the result.



Picture 1. Character Education Model Development Procedure.

RESULT AND DISCUSSION

Result

The development of characters education model on mathematics course using steps proposed by Plomp (1997: 2-5). The results are explained as follows.

Early Investigation Phase.

Before developing character education model, **presence students' characters were mapped by using questionnaire.** The result showed that the character needed to be developed was **the student' self-directed learning character**. This character was very important since students who learned independently showed how motivated they were on learning. The motivation itself is one of the factors in determining the student's learning success.

During tutorial activities this character was **not trained yet due to unavaibility of SW** which could encourage students to understand mathematics concept in the learning material by themselves. Therefore**, a scenario should be taken into account** to put certain questions and examples in to SW which could attract students to do some actions. Further, based on these actions, students write the abstraction. To write an abstraction is to find similarities by ignoring the differences. These similarities, are then concluded to become a definition or a meaning of the said concepts (Skemp, 1982:22). Such process is encouraging students to find the concepts on their own. So, this model used **discovery learning method**. This method is implemented since it could encourage the student for self-directed learning (Sutawidjaja & Afgani, 2011: 3.21)

To overcome the constraints, researchers developed character education model which was consist of TAP, TAU, USW, and EP which was designed to encourage students to enhance their self-directed learning skill and to construct conceptual knowledge actively.

Design Phase.

Based on the result of previous phase, tutorial kit was developed which could encourage students for enhancing their self-directed learning skill. Besides, the tutorial activity used cooperative learning method to make the students actively participating on tutorial activities and to give them a chance to train teamwork abilities. If these abilities were continuously

trained, then these will shape students' disposition on learning. The positive disposition that has been continuously developed will become the positive character in them.

In general, the tutorial syntax used on developing character in the tutorial of mathematics course was as follows:

a) The tutor gave motivation before student learned a certain new concept. It could be done by linking the concept that had to be learned with their daily activities or with the already learned scheme in students' mind. The linking could be done by tutor by asking about the previous concept related to the concept to be learned.
b) The tutor informed the tutorials' goal and teamwork abilities to be trained on tutorial activities.
c) The student discussed to find the concept in SW. One group consist of 4 to 5 persons. The tutors' role were to help the students to understand the said concepts. In the beginning of tutorial, the tutors' role could be more dominant than the students. But in the next tutorial, their role could be reduced.
d) In every worksheet, tutors gave exercises to the students to reinforce students' understanding. The exercises would be done in working group.
e) Each representative from each group explained their answer in front of the class. The tutor facilitated a discussion in order to give the students a conceptual knowledege.
f) Students made a conclusion by tutor guidance.
g) The tutor informed the next tutorial plan.

Furthermore, the research instrument was designed to collect data. The research instruments were Students' Activity Observation Sheet (SAOS), Tutors' Activity Observation Sheet (TAOS), Character Model Assessment Sheet (CMAS) and Student Questionnaire.

Realization / Construction Phase.

In this phase, the plan designed in previous phase was put into realization which became draft-1 model. The development of draft-1 model in SW used discovery learning method with cooperative learning setting. Firstly, the students were motivated to learn the materials by delivering the benefit of it and the goal of the tutorial. Secondly, the tutor encouraged the students to exercise their teamwork abilities. Thirdly, the students learned from examples in

SW and answer the questions. Those questions were guiding the students in making abstraction to find certain concepts.

Test, Evaluation, and Revision Phase.

Before implementing in mathematics course tutorial, draft-1 model character assessed by three experts. The result showed that the character education model had fullfilled the criteria valid, practical (a) and could be used on mathematics course tutorial activities. Nevertheless, there were some improvement suggested by the experts for the model to be more appropriate with the expected characteristic and competency to be reached. Based on these suggestions, draft-1 model was revised to be draft-2 character education model. This draft-2 model will be used on tutorial activities.

Implementation Phase.

Draft-2 model from the previous phase, then was implemented in mathematics course of Pokjar Jetis class A and B.Meanwhile, the tutor was observed by two observer using SAOS and TAOS. Observation result in Sunday, 25th November 2012 toward student activites showed that 96% students from class A and 86% student from class B did the activities during tutorial. This means that character education model had fullfilled the effective criteria (a).

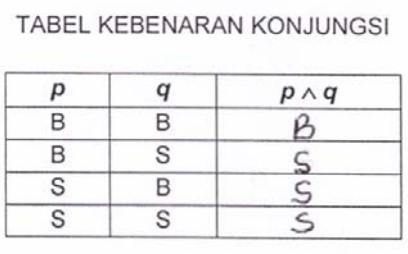
Activities done by the students showed that the students had obtain the self-directed learning character in which they were searching information from SW or mathematics learning material. The students showed the confidence character on learning mathematics from the activity of asking or answering the question from tutor or peers and presenting their group discussion result in front of the class. Those activities only could be done by the students who had self-confident. This showed that character education model had fullfiled the effective criteria (c). It was also supported by the field note which showed that students were enthusiastic in group and class disscussion. During those activities, the students showed positive characters which had already been planned for tutorial activities.

It was found that the observation result above was in line with the observation results of the tutor, which was 100% of the tutor activities planned on SAT were able to be executed on tutorial activities in each sessions. This fullfilment showed that the model had fullfiled practical criteria (c).

The grade of face-to-face tutorial assignment also showed that student could understand the concept in the course. This was shown in the average score of students' assignment in class A which was 86 and in class B which was 84,2. Altogether the average score was 84,2 greater than 70. Thus, character education model had fullfilled effective criteria (b).

DISCUSSION.

Implementation of character education model on mathematics tutorial courses showed that students could find concepts they were learning independently. For example, in the concept of logics students could find truth conjunction table, disjungtion, implication, biimplication table and the negation from the examples in SW which was a part of character education model. Example of the truth table found by students independently could be seen on Picture 2.



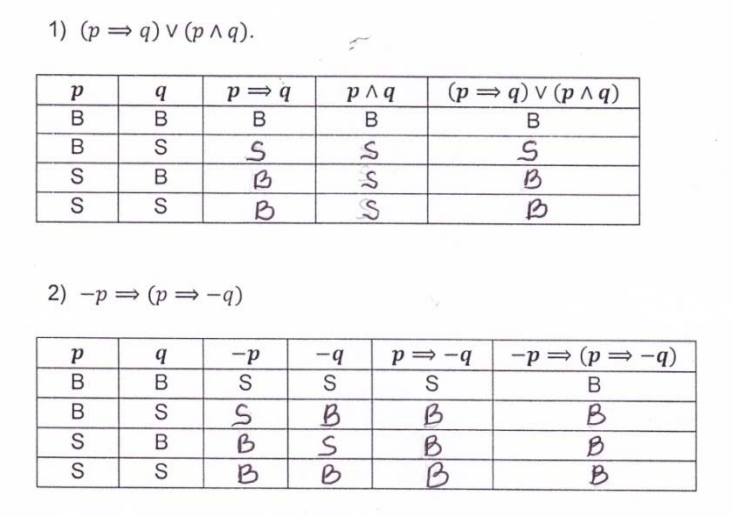
TABEL KEBENARAN KONJUNGSI

p	q	$p \wedge q$
B	B	B
B	S	S
S	B	S
S	S	S

Picture 2. Truth Table found by the students from examples in USW

The student who was able to find the concept, the said concept will last longer on his/her mind (Skemp,1982: 43) and help students for understanding concept better (Sutawidjaja & Afgani, 2011: 3.20). This was in line with the research result from Prastiti and Mairing (2011a:131; 2011b: 950) which stated that discovery method with explorative discussion can encourage student to play the active role in getting deeper understanding regarding material courses.

Student who understood the concept very well would have a greater ability to learn something new (Sutawidjaja & Afgani, 2011: 3.21) as well as in solving mathematics problem (Hudojo, 2005 :68). It is showed by the ability of the student to solve the truth table problems on UW. The answer can be seen in Picture 3.



1) $(p \Rightarrow q) \vee (p \wedge q)$.

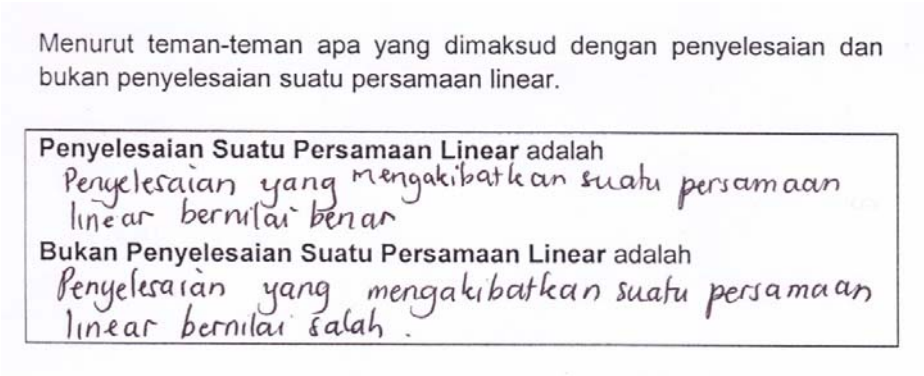
p	q	$p \Rightarrow q$	$p \wedge q$	$(p \Rightarrow q) \vee (p \wedge q)$
B	B	B	B	B
B	S	S	S	S
S	B	B	S	B
S	S	B	S	B

2) $-p \Rightarrow (p \Rightarrow -q)$

p	q	$-p$	$-q$	$p \Rightarrow -q$	$-p \Rightarrow (p \Rightarrow -q)$
B	B	S	S	S	B
B	S	S	B	B	B
S	B	B	S	B	B
S	S	B	B	B	B

Picture 3. Example of problem solving by students

Example of another concept found by students in SW can be seen on Picture 4.



Menurut teman-teman apa yang dimaksud dengan penyelesaian dan bukan penyelesaian suatu persamaan linear.

Penyelesaian Suatu Persamaan Linear adalah
Penyelesaian yang mengakibatkan suatu persamaan linear bernilai benar

Bukan Penyelesaian Suatu Persamaan Linear adalah
Penyelesaian yang mengakibatkan suatu persamaan linear bernilai salah.

Picture 4. Definition found by the students

This model could also encourage students to develop a positive character in mathematics course tutorial. The said characters were independent in learning, never yield and has self confident. This was line with Akinsolas' research (2008: 60) which stated that someones attitude on mathematics influenced by teachers' learning method. Learning from the conclusion and cooperative learning used in this model could encourage students to be independent in learning (Sutawidjaja & Afgani, 2011: 3:21; Mairing, 2011: 7).

Other advantage of this model was that by using cooperative learning could be motivate students to exercise teamwork abilities (Jacobs, dkk., 1996: 18). This ability constituted

positive character which needed to be developed by students on tutorial activities. As an example, teamwork ability could be trained in this models are (a) saying thank you-responding thank you utterances (b) listening carefully (c) giving compliment-responding compliment (d) waiting patiently-trying so people did not wait (e) asking for help-giving help (f) prompting other students' –participation-responding participation impetus (g) asking question-responding question (h) appropriate interruption-accepting interruption (i) inviting group to come back to assignment (Mairing, 2011: 4).

CONCLUSION AND SUGGESTION.

Character education model developed in this research had fullfiled criteria valid, effective and practical that had been determined. Besides, the model could encourage students to develop certain characters in tutorial activities. The said characters were self-directed learning and self confidence in learning.

Education learning model could also be able to push students to find the proper learning concept by themselves. Student who was able to find the concept during the learning process, the said concept would be last longer on his/her mind. The students would be able to confront new learning situation as well as in solving mathematics problem.

This character education model was developed on mathematics courses. The usage of the model should follow determined steps on SAT which was a part of this model. Character development would be better if the tutor stressed on the importance of positive character in tutorial and in a daily activities. In every tutorial activities, the tutor needed to remind what character that would be trained.

This model could be referenced to other courses in encouraging students to have certain characters. It was important due to positive character would influence students' success in learning or their daily activities.

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