DEVELOPMENT OF LEARNING DEVICES OF CYBERNETIC COOPERATIVE IN DISCUSSING THE SIMPLEX METHOD IN MATHEMATICS EDUCATION STUDENTS OF FKIP UHO

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ABSTRACT

Simplex method as one of material of course Programs Linear all this time have characteristic that charge math modelling ability college student about life problem everyday by more than two spontaneous variables and with iterasi's working out procedure repetitive table – reand long enough. This condition of need learning design suitably as a learning planning that adjusts with consequent technological developing paradigm shift in particular media sort purpose as to establish college student studying amenity. Base that thing observational study that is featured is how development and learning peripheral result cooperatif cybernetics via modifies 4 d. on college student simplex method material programs to wink linear program college studi's program UHO'S mathematics education. There is result even of this research is as RPP'S peripheral, Material Teaches, LKM and Essays Cycle that valid and gets to be utilized to increase simplex method studying result college student programs studi FKIP UHO'S mathematics education gets Microsoft application help Excell - Tora.

Key word: Cooperative of cybernetics, simplex method.

A. Introduction

Suitable learning design, a have role strategy for the students in understanding mathematic with correctly. Learning design is one of the learning planning process that must be mastery every educator, in deal with a lot of improvement for the certain development step. It is improvement done concurrently with development technology learning it supported by various media using demand by aim in creating easily learn. Learning paradigm movement is initially from the concept theory behavior learning was grown up around in nineteen-seventy years ago it has been inspiration

by education expert particularly scientist learning to apply several of theory learning design including cybernetic theory.

In during development era in deal with various improvement the certain improvement was going on and the same time by followed learning technology development it supported by using media demand with aim to increasing easily learn.

Using by technology of computer learning process at the school, is given to the students in receiving material visualization in order the student not only get knowledge theoretically. The learning aim is cybernetic learning theory and practical. The learning presented is possible for the students to elaborate those are the concept. This learning star from cybernetic theory has been developed by Landa, Pask and Scott.

Students from cybernetic theory as information processing. Information system is considered as the role important in easily to present for the learning material that will present to the student. This theory is very relevant and become a basic of multimedia development it was grown up in education field. (Rahmat, obtained on March 18, 2013)

Based on the certain think above, can be formulated about a problem, how is the good develop the output learning devices cooperative cybernetic theory and practical to describe simplex method problem in linear program for the students in education mathematic of study program at the faculty teacher and education FKIP Halu Oleo University (UHO)?

As general the result of this research can be expected become a alternative the good document in learning device for the application computer standard to increase a high quality of student graduating in education study program of mathematic. As specifically this research can be expected to increase the result of study in course study in linear program the simplex material method on the students of education study program of mathematic FKIP UHO trough application of cooperative learning cybernetic theory and practical.

B. Theory Review

Learning cybernetic theory and practical. Cyber or cybernetic is sitement control and communication as the possible in getting feed back. The word of cybernetic is sources from Greece language in meaning controller or pilot. The first time of the term cybernetic was introduced by

Norbert Wiener a scientist from Massa Hosets Institute of technology (MIT) is to explain artificial intelligence. The research of Wiener is to develop anti air craft firing system with the purpose feed back concept as the standard of cybernetic, communication can be seen as the cycle connecting with the system other separating part, such as computer system, family system, organization system or media system (willmen obatained on march 16, 2011)

This type of learning theory is mentioned cybernetic theory was grown up by concurrently with the development of information science. According this theory, learning is information processing. And the glancing, is similar with cognitive theory with emphasize to the process. The process is really important in cybernetic theory, while the more important thing is information system be processed. Information for this matter that will describe for the process. (Ardie, obtained on February 12, 2011)
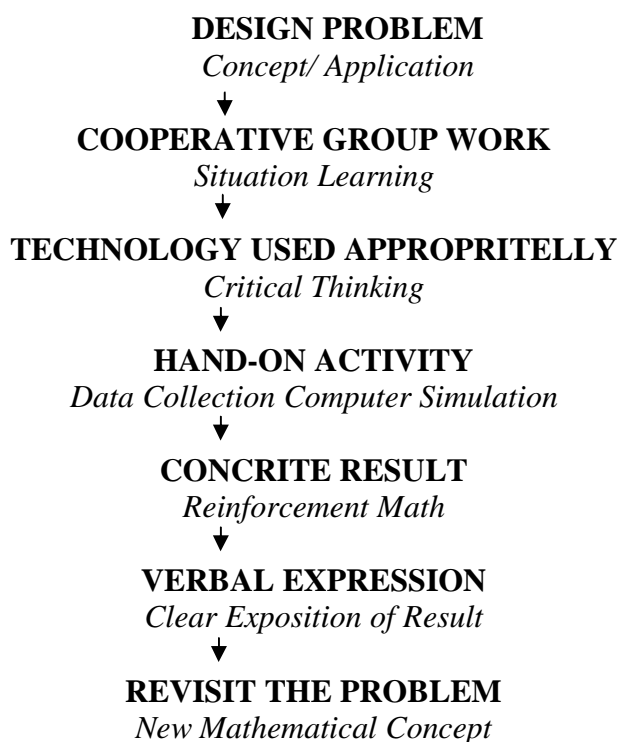
According Wahyu Ningsi (obtained on February 12, 2011) state the other assumption from the cybernetic theory is no one available in learning process even though idealism to every situation is suitable to all pupil participant. Therefore, a information possible will be learn by a student with one kind learning process, and the same information is possible will be learned by other student trough the different learning process. According Landa in Layyinah (obtained on February 12, 2011). There are two kinds of thinking process. First, mentioned algorimic thinking process namely, linear thinking process, convergence, linear to the one the certain target. Second, is heuristic thinking, namely divergent thinking, is going to several target all at once. Learning process will going on with correctly if there are want be learned or the problem that will be solved (or the other term technically namely information system is more closely be learned) can be identified for the typically, so in better solution in the thinking process of the students be guided going to heuristic with expectation their understanding to the concept is not singular, passive, dogmatic and linear (Mustica obtained February 12, 2011)

The other expert where his thinking more ideological to cybernetic is Pask and Scoot. His approaching also algorimic, while idealism thinking is holistic is not be the same with heuristic. The holistic thinking is think with the trend to jump in future, in direct the complete situation for information system.

As like to view of drawing is not specific for the previous observation, but the whole of the drawing all at once, and after that to the smallest other part. (Layyina, obtained February 12, 2011)

The oriented of information processing approach will emphasize to several issue like short term memory, long term memory and so on is related with what the happen in our brain during in information process. Therefore there are three steps information process in memory namely, start from encording followed storage information and finally with the review all information in our memory (Retrival). The component of information can be choose based on the different function, capacity, information form, and lost memory control. (Kurniasih, obtained February 12, 2011)

Frame cybernetic learning theory and practical from Simunza (obtained 31 March 2011) can be illustrated as the follow:

DESIGN PROBLEM
Concept/ Application
↓
COOPERATIVE GROUP WORK
Situation Learning
↓
TECHNOLOGY USED APPROPRITELLY
Critical Thinking
↓
HAND-ON ACTIVITY
Data Collection Computer Simulation
↓
CONCRITE RESULT
Reinforcement Math
↓
VERBAL EXPRESSION
Clear Exposition of Result
↓
REVISIT THE PROBLEM
*New Mathematical Concept*

C. Research Method

The research is development of learning device course study in simplex material linear method table with the implementing to the application of cooperative learning of the cybernetic theory and practical. The research will be conducted in education study program of mathematic

faculty of education and teacher at the Halu Oleo University, involved twenty eight students on April until May 2014 in the second semester academic year 2013/2014.

Implementation of development learning devices in this research based on 4-D Model Thiagarajan, at all (in Jazuli, LA, 2007, 4-D Model define, design develop and disseminate) because systematic and suitable to develop learning devices, while in this study the researcher will doing modification to 4-D Model. Modification will be conducted to design and develop only that will be presented by the following draw.
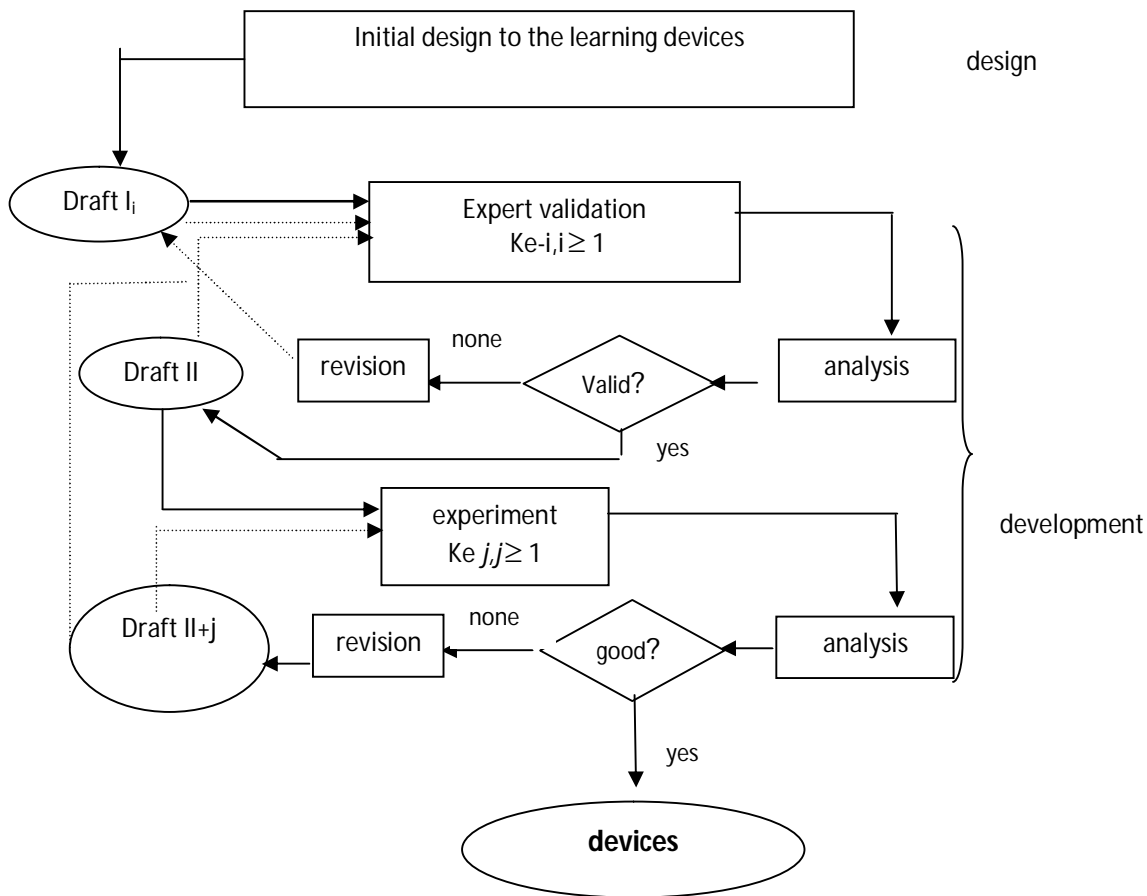
Picture 1. Step of development devices in this research can be describe as follow:

1. Design step.

   The objective in this step is to produce learning devices design. The result of this step is mentioned in draft 1.

   The item of activity in this step covered:

   a. Media selection

   The objective of this activity is to select of suitable media in presenting the simplex material learning method, and adapted with increasing of concept capacity in relations with the facility are available in mathematic laboratory.

   b. Format Selection

   The objective of this step is choose the suitable format in designing the contain lesson material, model learning method and literature reference that will be developed.

   c. Initial design

   Activity of this step is initial writing design for the learning devices, covered: lesson material (BA), improvement learning planning (RPP), student assignment sheet (LKM) and cycle test (TS) followed by observation sheet (LO) produce of design learning device namely draft one.

2. Development Step

   The objective of this step is to produce in final draft of learning device with correctly. The activity of this step is expert validation, readable test, and field experiment.

   a. Validation expert

   Development step started with validation by the expert. Validation conducted to the devices learning that has been done in design step (draft 1) in order to produce the second draft. The certain expert for this research are doctoral level in mathematic education and students education who has passed in linear program in the first semester academic year 2013/2014. Devices learning validation is be focused to the contain format, language, and illustration followed inter relationship with cooperative learning.

   To validator is given research instrument such as validation sheet and draft one it will be validated in getting data score about opinion, suggestion, and expert comment related with draft one. Every validation sheet, validator writes his evaluation. The evaluation consist of five categories refers to the good level standard namely negative (score 1) less negative (score 2), enough (score 3), positive (score 4), high positive (score 5). Every item in the score followed suggestion and comments. Data gathering will be analyzed by

consideration to the suggestion and comment by validator. The result of analysis become guidance to review in draft one, in order obtained drafts two.

b. Readable Test

Readable test to draft II conducted to observe the component of devices learning can be read clearly or be understood by the students. The readable tests of this research are students who have been taken course study linear program in a lot of kinds of the level semester and grade.

The input was obtained from the result readable test will be used to simplified perfect in draft two before used on the experiment step.

c. Experiment

The objective of the experiment to simplified perfect of learning device before learning device done the experiment followed by two observers, each other have mission to observe students activity including lecturer capacity in managing of the learning.

In this research, the implementation of the devices experiment are integrated with the linear semester program in education students mathematic Halu Oleo University (UHO) the second semester academic year 2013/2014 on this step the students asked give the response and fill up description of comment for the every devices it has been distributed in the study with are not to ignored the increasing role of the capacity and understanding of the students. There fore the implementation of the class action research PTK based on three cycle categories approach more running well. Every cycle conducted ones meeting that more appropriate time efficiently and effectively to the students' activity in the managing of their study in every meeting obtained. The steps in the class action research PTK for the experiment in research devices, this research are modified become ones cycle consists of: 1) action, 2) observation and evaluation, and 3) reflection.

D. Result and discussion

Design description step

In devices learning design previously it will be conducted curriculum analysis it refer to curriculum in mathematic education and reflected to the teaching experience and the last study achievement students by analyzing of the characteristic of simplex material method it was be obtained in the concept and practical. In learning devices design in consist of 1. Literature

reference, 2. Learning improvement learning (RPP), 3. Students activity sheet (LKM), 4. Cycle test, 5. Observation sheet (LO).

The activity in this design covered:

1. Media selection

   The result from the media selection is computer media as the suitable medium to present learning material simplex method and be adapted with the faculty laboratory are available in mathematic experiment room.

2. Format selection

   The result of this format it be choose the contain of design from literature reference and student activity sheet-LKM it be related with the concept procedure and the step application micro soft excel followed with TORA program. The result of format selection RPP is will be choose the contain of design RPP it related with the step cybernetic in cooperative learning type to the think part sharing (TPS). In other hand the result format selection cycle test is choose the contain design with related for the focus objective in learning class and improvement. Learning devices design that it produced in this step is draft one.

3. Development step description

   The objective of this step is to produce the final draft of devices learning with correctly. The activity of this step consists of:

   1. Expert validation

      In this activity step it be conducted by validation and correction to draft one that consist of literature reference, RPP, LKM, LO and TS via validator sheet, discussion meeting with validator in writing correction and his evaluation it refers to the manuscript analyzing. The result of validation test concluded that this devices is **good** and **can be used** with revision about the distribution of the material contain such as is needed simplication the number of meeting from four time meeting to be three time with underline note that it conducted with the material intensively particularly capacity achievement in mathematic modeling to the contextual problem and treatment solve problem from the none standard become the positive standard it has been conducted since the first meeting. The other revision needed is consistency in using the term on the four devices it has been design followed by intensively for the formula of the goal language learning at least consist of behavior, degree and audience. The other

appropriately correction is observation focus to the observation sheet it must be synergy with the step of cooperative learning model of cybernetic with the procedure step about using computer, micro soft excel application plus TORA program. In this step the researcher will analyze by suggestion consideration and correction from validator to produce the second draft.

2. Readable test

Readable to draft II conducted to analyze is the learning devices can be read clearly and be understood by the students. The subject of readable this test are two persons students where passed course study in linear program lesson with a lot of kinds level of semester and grade also included on the response step and comment.

Obtained suggestion from the result readable this test namely is needed improvement the sentences redaction to LKS with adapted the instruction application program it be used. Suggestion of readable test will be used to simplified perfect second draft before be used to improve learning process.

3. Experiment

Based on the result of devices experiment for RPP I all categories observation on fulfill effectively tolerance. For RPP III, all categories observation is significant effectively. So, all observation aspect for every RPP based on effectively criteria is all **effective.** Therefore, based on this analyze the produces devices can be used for simplex learning method in linear program of the course study.

E. Conclusion and suggestion

Based on the certain explanation above that the produce of device learning it consist of literature reference, RPP, LKM and LO a have valid and can be used for increasing student achievement to the simplex material method of the course study linear program by implementation cybernetic learning cooperative for the students in education mathematic study program.

The result of this research can be expected for consideration by educator course study in linear program as the alternative for simplex material method.

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