

# RESULTS OF THE STUDY COGNITIVE STUDENTS THROUGH THE APPLICATION OF A CONCEPTUAL APPROACH TO INTERACTIVE LEARNING MODELS CHARACTERISTIC IN PHYSICS COURSES BASIC I IN THE COURSE OF EDUCATION

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### Abstract

The Reasearch aims to find out the results of cognitive improvement learning physics in university students in physical education courses University of Riau PMIPA FKIP through the application of the conceptual approach to interactive learning on the concept of characteristic in subject matter and energy businesses. This research is the research design of experiments with *The one-shot case study*, data gathering techniques is to use the test results to learn after the treatment. The data is analyzed using the analysis technique of descriptive which covers absorption, effective learning, learning passing grades students and passing grades students learning objectives. The results were analyzed data indicate the average absorbance 79,82% with good categories dan effectiveness study by category and effectively enough student learning passing grades 69,04% with no requirement has been completed while the learning objectives 69,04% passing grades by category not the complete application of the conceptual approach thus interactive learning models in characteristic on basic physics courses with material and energy business was quite effective.

**Keywords:** Cognitive Learning Results, Interactive Conceptual Approach, Characteristic Studies

## A. Introduction

Education is the process of science so that the results of the technology should be able to contribute to the educational process with educational objectives that have been set are achieved. Therefore, to achieve the goal of education, then a lecturer as an educator who should be held accountable. A Professor must have a strategy and appropriate learning model especially in communicating with students and a Professor also must have the ability to choose and use methods and media as a teaching tool. Lecturer as a teacher who gives knowledge and skills on students have a role as a facilitator, motivators and Preceptor in achieving progress in learning (Slameto, 2003).

Based on data from the results of students ' learning In Lessons 2010/2011 in the Elementary Physics Courses that student learning outcome 1 is relatively still not up, most of the spread value is still lies in the range of 65 – 75 or grade of C and B distribution of student grades on ... Courses Basic 1 Physics is as follows, A Value of, the value of B 7,96% 32,78%, amounting to the value of C \$ 59,25%. From the data obtained, the results of the study known Physics Courses Basic 1 in 2010-2011 Lesson is still in the category of being. Low level of



Learning Outcome because in the process of teaching and learning teachers are still using conventional methods in the classroom.

Science education research in recent years has shown a shift toward a constructivist paradigm. With regard to the Constructivist Learning, a lecturer's job is to provide or provide activities that can stimulate the curiosity of students and help them express their ideas and communicate their scientific ideas. So the role of Lecturer in learning is as a mediator and facilitator in the creation of knowledge and understanding the student (in Sham Suparno, 2008).

A conceptual approach to interactive (ICI) is an alternative conceptual change learning based konstruktivistik. Interactive conceptual Learning developed by Savinainen and Scott is very supportive of the development of students ' thinking skills, starting from a level of understanding of the concepts requires an interactive process that provides opportunities to develop ideas through a process of dialogue and thought.

Conceptual learning, interactive Approach is composed of four stages that cannot be separated, i.e., 1). *Conceptual focus*, 2). *Classroom interaction*, 3). *The Use of texts*, and 4). *Classrom based assesement*. In its implementation, the four components of this form of learning is intact (Utomo, 2010).

Character education is one form of Constructivism learning model of education plus manners, that involves aspects of the theory of knowledge, feelings, and actions. According to Thomas Lickona, without these three aspects is the character education will not be effective and its implementation must also done in a systematic and sustainable manner. In character education a child would be smart to his emotions. Emotional intelligence is the most important in preparing for future children, and embraced the future, With a person's emotional intelligence will succeed in the face of challenges, including the challenge to succeed academically. The application of character education in the learning process at the stage of exploration, elaboration, and confirm that potential can help students internalize the values taken from the standard process.

Based on the above description, the author is interested in conducting research with the title of Student Cognitive Learning Outcomes through the application of a conceptual approach to Interactive Learning Models in *character on the basis of Physics Courses in Physical education courses of the University of Riau PMIPA FKIP*

## B. Research Methods

This research was carried out in the course of Physics Department of the University of PMIPA Riau, on odd semester 2011/2012 year. Research time from september to December 2012 with the research subject is students who take the courses basic physics 1 of 42 people. This form of research is a type of experimental research because in this study provide treatment with application of conceptual learning approach in the learning berkerakter interatif. Research instrument in the form of a learning device i.e. the syllabus, SAP, MFI and Test sheets. Data collection instruments used in this research is in the form of test results 1 a basic study of physics is done at the end of the study and the results of the observation data during the process of learning directly while the data analysis techniques that are digunakan as follows: 1).Absorbance, 2).The effectiveness of learning, Student Learning ketuntasan 3) 4). Ketuntasan learning objectives. The Research Design used in this research is the design of *The one-shot case study*.

### C. Results and Discussion

After the data is retrieved and then in sports then obtained as indicated in table 1 below. Based on the data obtained on the attachment absorption students in subject matter and energy business with a conceptual approach to interactive learning models in character.

Table 1. Absorption of students on the subject matter and energy Business

No.	Interval	Category	Absorption (%)
1	85 – 100	Very Good	Gold 90.5
2	70-84	Good	91.5
3	50 – 69	Good Enough	-
4	0 – 49	Less Good	-
The average absorption (%) category			79,14 Good

On The Basis Of Table 1 average student absorbance on subject matter and energy enterprises with the application of a conceptual approach to interactive learning models in the model of learning is characteristic 79,14% categorized both Learning Effectiveness and based of absorbance students, learning effectiveness through a conceptual approach to interactive learning on characteristic in the model of subject matter and energy businesses on the category quite effective as mastery learning students on business subject matter and energy with the use of a conceptual approach to interactive learning model on the material characteristic Principal effort and energy is equal to 69,04%, there were only 29 students who has been completed, while others hadn't for a students ' learning of classical mastery on subject matter and energy effort is 69,04% and otherwise completely. Because a class is declared finished when the mastery percentage  $\geq 85\%$ . On a mastery of learning objective retrieved information about mastery grains of learning objectives in its subject matter and energy enterprises with the application of a conceptual approach to interactive learning models in the model study of character as seen below.

Table 2. Mastery achievement of learning objectives in its subject matter

Effort and energy

No TP	The number of students who actually	Mastery (%)	Category
1	34	77.27	T
2	37	were 84.1	T
3	36	50.8	T
4	40	90.9	T
5	36	50.8	T
6	16	22.6	TT
7	36	50.8	T
8	36	50.8	T
9	31	70.5	TT
10	31	70.5	TT
11	41	93.2	T



12	36	50.8	T
13	32	45.2	TT
14	42	59.3	T
15	24	33.9	TT
16	42	59.3	T
17	40	90.9	T
18	35	79.5	T
19	34	77,27	T
20	42	59.3	T
21	42	95.5	T
Ketuntasan learning materials		76,19	TT

TT = Not Completely T = Tool

On The Basis Of table 2 above retrieved mastery information of classical learning material on the subject matter and energy ventures is stated and 76,19% is not completely. because the subject matter stated in percentage in total ketuntasan  $\geq 85\%$ .

The results of the analysis of data about absorbance, the effectiveness of learning, mastery learning students and the purpose mastery of the study on subject matter and energy businesses with the use of the application of the conceptual approach to learning, interactive models in the model of the characteristic learning can be explained that the power is absorbency index or student level of understanding of the material. The results of this study showed that the average absorbance of each student for each meeting is different. This is because with the application of the conceptual approach to interactive learning models in the model of the characteristic learning demands of students to find concepts that they learn. On the learning process of students have diverse capabilities in terms of constructing material learned and material difference in difficulty level also affects the absorption level of the student.

Overall it can be seen that absorbance students with the use of a conceptual approach to interactive learning characteristic in the model at each meeting is not stable. This is due to several factors including the material being taught has a different difficulty level, the difference in the level of academic ability of students and also the readiness and the condition of the student in following the process of learning. Readiness and student conditions very influential towards students regarding absorption material being learned. Beside that, it also likely caused Approach through interactive learning models in conceptual characteristic is not always matched at each learning material.

This problem can be addressed among other things in terms of lecturers must have its own tricks to overcome the saturation of students, namely by making class more alive. Before starting the lessons should be able to make the Faculty student concentration fixed on the lessons so that students feel comfortable while lesson would initiate. Lecturers also should be able to provide motivation that attracted the attention of the students before the start of lessons so that students feel challenged to learn and excited in following lessons. It can be anticipated with learning models.

In general the average absorbance students on the application of conceptual approach to interactive learning on characteristic in the model of subject matter and energy business was 79,14% with the good category. This is because with the use of a conceptual approach to interactive learning models in character, students find themselves in the concepts learned through MFI and students working in a group discussion to resolve the problem. Then its

effectiveness is effective or whether a model applied in learning. Learning effectiveness determined by absorbance obtained student. The results of this study showed that the effectiveness of learning at each meeting is effective. through the application of a conceptual approach to interactive learning models in the model of the characteristic learning students being required to disclose his ideas creatively and actively critical thinking to solve the existing problems are not as expected. Because on certain material such as to solve equations in the form of calculation of students are still experiencing problems, besides the physical condition of the students has decreased as a result has been a lot of activity.

Overall learning effectiveness through the application of a conceptual approach to interactive learning models in the model of the characteristic learning on subject matter and energy businesses categorized quite effectively. This can be enhanced by making use of the time available so that it can increase the emphasis on material concepts learned.

Mastery learning is the attainment of a minimum mastery level assigned to each unit of materials lesson, either individually or in groups. The students are said to be completely in learning if control of at least 75% of the subject matter. With the application of a conceptual approach to interactive learning models in the model of the characteristic learning on subject matter and energy businesses there were 29 students who are finished and 13 people who aren't completely. This is because in applying the conceptual model approach to interactive learning character still less guidance of lecturers individually in a group that is caused by the number of students that too many yaitu 42 so that students in the tutoring individually worked constrained. Therefore, in need of creativity to get around the lecturer guidance individually in a group.

Based on the criteria set out in order that mastery for students of classical studies have been met if  $\geq 85\%$  of students have mastered the subject matter. In this study, the percentage of students' learning of classical mastery on subject matter and energy effort is 69,04% and found not completely meet the standards because not mastery learning. This is due in a matter of most students did wrong in a matter of a count, it is the karenakan with through the application of the conceptual approach to interactive learning models in the model of learning the lesson that just amplifies the process characteristic at the concept of the material they are learning and how those concepts used to solve problems in the form of calculation as well as the weak students in observing and understanding the problem lazy students to analyze, question and they find it difficult to understand the question of should be reserved can be answered from the concept that has been their construction. This can be overcome by giving a little time at the end of meeting to give examples of the application of the concept in resolving a matter in the form of calculation and more give you the workout varied questions that students can answer correctly a matter in the form of calculation. Mastery Learning Objectives

The purpose of the study is said to be complete if at least 75% of the total number of students reach the mastery learning objectives. This can be seen in the following graph of mastery learning objectives through the application of a conceptual approach to interactive learning models in the model study of character.



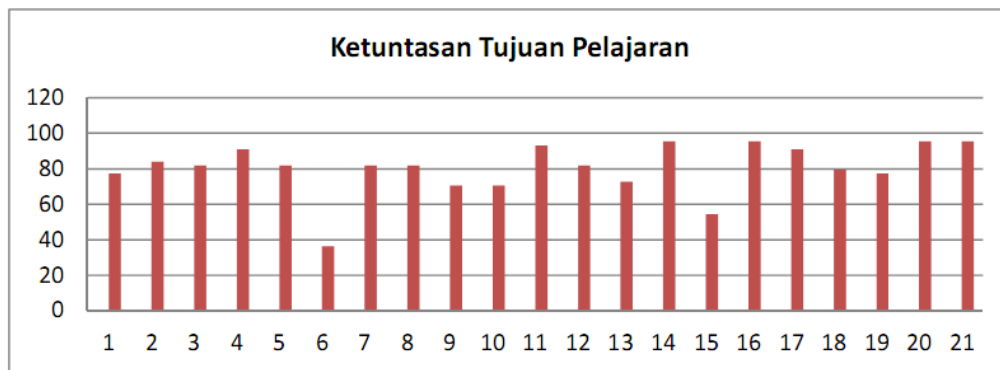


Figure 3. Graphics mastery learning objectives through the application of a conceptual approach to interactive learning models in the model study of character.

Learning objectives based on subject matter and energy efforts through the application of a conceptual approach to interactive learning models in the model of the characteristic learning only 16 goals the learning that has been completed (76,19%) and a learning goal 5 is not complete (23.81%). Based on the image can be seen that mastery grains of learning objectives by the application of a conceptual approach to interactive learning in a learning model is a prominent characteristic is present on the learning objectives 4, 11, 14, 16, 17, 20 and 21, and the lowest is on the learning objectives 6 and 15. Based on criteria set by the education and culture ketuntasan (1994), in mastery classical learning materials in subject matter and energy efforts through the application of a conceptual approach to interactive learning models in the model of the characteristic learning stated as not completely with the percentage of 79,19%.

To find out the cause of no completion of each of the 4 learning objectives learning objectives which are not completely in the subject matter and energy businesses are described as follows:

The question number 6 was to apply the equation for solving problem in mathematical calculations. From the results of the analysis are 16 people who answered correctly (38,09%). Based on the criteria established, mastery grains of this problem stated as not completely. Once analyzed not complete grain problem is caused due to lack of understanding of the concept of students in solving problems in mathematical form. Student difficulty connecting one concept with another concept. In addition students are less accustomed to discussing problems which is mathematically. In order for students to be able to resolve this matter as well, professors should be given more training. Lecturers also should be able to motivate students so that students remain familiar in applying the concept to implementation in physics

Reserved number 9 is Applying the equations in the settlement of a matter of mathematical calculations. The results of the analysis there are 29 people who answered correctly (69,04%). Based on the criteria established, ketuntasan grains of this problem stated as not completely. After examined not complete grain problem is caused due to less understanding about the concept of students in solving problems in the form of calculation. In addition the lecturer to students exercise less. In order for students to be able to resolve this matter as well, students should practice more and discuss problems which is mathematically. Lecturers also should be able to motivate students to keep students happy in following lessons.

Question number 10 this applying the equations in solving problems. The results of the analysis are 13 people who answered correctly (69,04%). Based on the criteria established, mastery grains of this problem stated as not completely. Once analyzed

ketidaktuntasan grain problem is caused due to lack of understanding of the concept of students in solving problems in the form of calculation. The students had trouble connecting with the concept the concept of the other. In addition the lecturer to students exercise less. In order for students to be able to resolve this matter as well, professors should be given more training. Lecturers also should be able to motivate students to keep students happy in following lessons.

Reserved number 13 is Applying the equation in the settlement of the question in the form of mathematical problems. The results of the analysis there are 32 people who answered correctly (71%). Based on the criteria established, ketuntasan grains of this problem stated as not completely. After analysis of not complete grains of matter is caused due to lack of understanding of the concept of students in solving problems in the form of calculation. In addition students should practice in working on problems which is mathematically. Lecturers also should be able to motivate students about the importance of the completion of the application of the concept in Physics problems that are mathematically

The question number 15 is Applying the equation in the settlement in the form of a mathematical problem. The results of the analysis contained 22 people who answered correctly (52%). Based on the criteria established, mastery grains of this problem stated as not completely. Once analyzed not complete grain problem is caused due to less students understand a concept in connecting with other concepts in the resolution of a matter in the form of calculation. We recommend that students are accustomed to working on the question of the application of the concept in the problems are purely mathematical. In order for students to be able to resolve this matter as well, professors should be given more training.

Based on mastery learning objectives, it can be seen that the purpose of the study is not completely contained on materials related to connect one concept with another concept related to mathematical calculations. Students are less able to associate an item with the concept they have gained with little analysis of the good and thoroughness.

In analyzing the problem, the students still often confused and can not analyze the question properly, so that it cannot apply the concepts that exist to solve the problem. Students are accustomed to see examples of existing and memorize so if given another student question will become confused, lazy students in doing exercises and questions are not repeated again, so they are easy to forget, being in the execution of the study has been discussed the exercise problems.

A conceptual approach to Interactive Learning models in the model of the characteristic learning can be used as an alternative to enhance cognitive learning results, especially on a matter related to the basic concept that requires experiments to prove the concept, although the results of this research has not been able to complete all learning objectives in its subject matter and energy businesses. This is due to the number of students too much in 1 class so in guidance students individually in a group becomes more difficult. To overcome this, lecturers can do things as follows:

1. Providing motivation in resolving problems which the application of the concept in Physics problems that are mathematically
2. More observant in noting the weakness of the individual student and looking for a solution.
3. Make the atmosphere pleasant and varied learning so that students do not feel saturated in learning.
4. Provide plenty of practice questions that are mathematically to students.
5. Give the tricks of solving the problem.
6. Apply learning models or methods which vary in accordance with the material at the time, for every model does not always fit in with any of the materials.



#### D. Conclusions And Suggestions

Based on the research that has been carried out, with the use of computer media through the application of pembelajaran model in the model of conceptual approach to interactive learning in learning science physics characteristic on subject matter and energy businesses earned an average student with absorbance categories either. based on absorbance is then categorized learning effectiveness is quite effective. mastery learning in students of classical mastery and not mastery stated learning objectives stated as not completely.

Based on the results of data analysis it can be concluded that the results of the study with the use of the model through the application of a conceptual approach to interactive learning in a learning model for effective learning and involves enough students in the subject matter and energy businesses.

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