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Implementation of the ECIRR Learning Model for Increase Understanding Draft Students of MA Diniyyah Putri Pekanbaru, Grade XI, Fluid Material Static

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Abstract- Study This aim For describe understanding draft student after the application of the ECIRR (Elicit, Confront, Identify, Resolve, Reinforce) learning model to the material fluid static as well as analyze difference significant between class experiments and classes control.
Research methods use *quasi-experimental design* with form *posttest -only non-equivalent control group*. Research sample consists of from two class XI with total number of 30 students. Class experiment accept learning using the ECIRR model, whereas class control follow learning conventional. Instruments study in the form of test understanding draft as many as 21 questions were developed based on seven indicator understanding draft.
Research result show that class average grade experiment is 66.67 which is in the category Enough Good more tall compared to with class control get average 55.87 with category sufficient. *Independent Sample t-Test* produce mark significance 0.008 < 0.05 which shows existence difference significant between second class. With Thus, the ECIRR learning model is proven effective in increase understanding draft students on the material fluid static. Findings This confirm that ECIRR can made into alternative learning models that can assist teachers in increase quality learning physics in school.

Keywords : *ECIRR Learning Model , Fluids Statics , Physics Education*

1 Introduction

this modern era , every institutions education should Already do update or innovation For prepare student with source Power quality human beings (Hasanah and Himami 2021:1) . Education is activity main role important in increase quality education. Physics, as part from science learning demand student For understand draft in a way comprehensive, do reasoning scientific , and relate draft physics with phenomenon in life every day. However , the reality is Lots student experience difficulty in understand material physics , especially as it relates to with fluid static (Riwanto, Azis, and Arafah 2019:23–24) .

Learning is good interaction between students and resources learning. Quality learning impact on the results Study students, and one of them factor his supporters is skills social must owned by students in the learning process. Ability social is aspect important for student in optimize the learning process. Skills social is ability For interact with environment around so that individual can behave in accordance with situation , or in other words, can adapt with environment surrounding area (Rando and Ali 2021:295) . Teaching is task main a educators (teachers, lecturers, tutors, instructors, widyaiswara) (Mulyatiningsih 2015:1) .

Interest in learning student now tend weaken especially in learning physics , things This due to student difficult in understand content material learning and emergence perception that physics That

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difficult learning as well as seen that teachers tend to dominant use old techniques , and lack thereof variation in learning (Hazmiwati 2018:2) . Mastery and understanding draft own role important in determine success of the learning process teaching , including subjects lesson Physics . Based on Minister of Education and Culture Regulation Number 64 of 2013 concerning Learning Content Standards Physics , one of the objective learning Physics is develop ability reasoning and thinking analytical through implementation draft as well as principle Physics For explain various phenomenon nature and solve related issues with phenomenon (Mulyastuti *et al* . 2016:82) .

Success in the learning process influenced by two factors , namely internal factors and external factors external . Internal factors are related with self students , including ability , interest , motivation , activity learning , and others . While that , factor external originate from outside self students , such as learning models . Learning models own sufficient role big in activity Study teach (Yulia, Juwandani, and Mauliddya 2020:224) .

This also requires teachers to more creative and innovative in organize and plan appropriate learning with situations and conditions students . Realizing education quality as explained above in form reality is not easy job . Change paradigm learning from the beginning teacher - centered become student - centered *(student- centered)* demands teachers to help student in solve problem so that the goal education national can achieved in accordance hope . From the description said , it seems need done change in learning physics (Redhana 2019:2241) . One of solutions that can implemented that is with repair method learning , which can produced from selection of the appropriate learning model with the ECIRR learning model . The ECIRR learning model has five syntaxes in its learning process, namely *Elicit, Confront, Identify, Resolve, Reinforce* (Wulandari and Rusmini 2020:2) .

So from description this study aims to For describe understanding draft student after the application of the ECIRR (*Elicit, Confront, Identify, Resolve, Reinforce*) learning model to the material fluid static , and analyze difference significant between understanding draft students in class learning experiments with ECIRR model and class learning control through learning conventional .

2 Research Methodology

The research design used in study This is *posttest only nonequivalent control group design* . In this design this , done comparison between group experiments and groups control . Class experiment get treatment of the ECIRR learning model , whereas class control get learning model treatment conventional .

Table 1 Research Design *posttest only nonequivalent control group design*

Group	Treatment	Post-test
Experiment	X	O_1
Control		O2

Information :
Experiment : Implementing the ECIRR Learning Model
Control : Implementing learning models conventional
O_1 : *Post-test score* in group experiment after treatment
O_2 : *Post-test scores* in the group control without existence treatment
X : Learning with the ECIRR model

Study This has held at MA Diniyyah Putri Pekanbaru in the even semester year 2024/2025 academic year . Population in study This covers all over class XI MA Diniyyah Putri Pekanbaru, which consists of from two class with a total of 30 students . The type of sample in this study This that is using total sampling where amount sample The same with amount population . Determination class experiments and classes control done through lottery . For choose class samples , normality and homogeneity tests were carried out on two class population with using SPSS 25.

Data collection techniques used is in the form of *post-test* with instrument test understanding draft arranged based on indicators that focus on material fluid static. Data analysis includes analysis descriptive For know level understanding draft student with formula:

$$Skor = \frac{scores\ obtained}{maximum\ score}\ x\ 100$$

Score results categorized based on Criteria : Very Good (85-100), Good (70-85), Fair (50-70), Not Good (0-50). Analysis inferential using the independent t test for test hypothesis, with H0 criterion is rejected If mark significant $\varrho < 0.05$ which means there is significant difference in understanding draft between second class the.

3 Results and Discussion

One of the effective learning models in develop ability solution problem participant educate is the ECIRR learning model (Ardiansyah et al. 2019:78) . The ECIRR learning model is designed as innovation in learning strategies that focus on facilitation change conceptual , with objective repair draft alternatives available participant educate to be in harmony with draft scientific (Ningrum and Suliyanah 2021:445) .

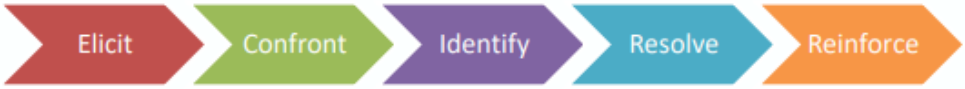

Figure 1. Syntax of the ECIRR learning model (Septianingsih, Netriwati, and Gunawan 2022:847)

From figure 1 it can be seen that this ECIRR learning model has 5 stages or syntax that is (Effendi et al. 2016:115) :

1. *Elicit* stage aim dig and identify conception beginning student about something phenomenon physics. The teacher proposed question lighter or dialogue for know understanding beginning before student introduced to the concept scientifically correct.
2. At the stage *confront*, the teacher presents phenomenon or opposing demonstrations with understanding beginning student so that bring up conflict cognitive. Mismatch between conception students and phenomena real This become driver for student For revise understanding they going to more concepts scientific.
3. *Identify* stage emphasize ability student For realize existence misconception in understanding they. The teacher helps student identify conception wrong alternatives for the change process conceptual can ongoing optimally.
4. At the stage *resolve*, the teacher presents draft scientifically correct with support evidence, explanation , and activities relevant learning . Through this process student build understanding newer accurate based on reasoning scientific.
5. *Reinforcement* stage functioning strengthen understanding the concept that has been revised. The teacher gives strengthening through practice, questions conceptual, or discussion advanced so that draft new can internalized with Good.

Understanding draft is a process for truly understand an idea or design abstract that allows somebody For classify object or incident (Elisa, Mardiyah, and Ariaji 2017:16) . Ability understanding draft physics refers to the ability student For understand or to interpret concepts physics. Based on Bloom's taxonomy has been revised , cognitive processes in understanding draft covers a number of level ability , namely (Sasmita and Hartoyo 2020:141–43) :

1. Interpreting , ability change information from One form to form others , such as from text to chart or on the contrary , so that show understanding meaning information .

2. Exemplify , ability give example specific from draft general with recognize characteristics main draft the .
3. Classifying , ability grouping object or phenomenon to in the right category based on characteristic features certain .
4. Summarizing , ability presenting the core information in a way concise with choose idea main from material studied .
5. Summarizing , ability find pattern or principle from a number of examples and interesting conclusion based on connection between observed characteristics .
6. Comparing , ability identify similarities and differences between two or more object or draft .
7. Explaining , ability to describe connection cause and effect in something system using a model or principle scientific .

Based on results research that has been done can obtained that the learning model ECIRR against understanding draft students on the material fluid static , obtained data that shows existence significant difference between class experiment with class control .

Analysis Descriptive

In accordance with post-test results are there difference results achievement understanding draft between class experiments that apply the ECIRR learning model with class control that uses learning conventional on the material fluid static . Class experiment get an average score understanding draft of 66.67 with category Enough okay , meanwhile class control reached an average of 55.87 with same category.

Although class experiment show higher average value height , difference the relatively small . This is can explained in a way theoretically by some factor that is complexity material , limitations time , adaptation student towards learning models , as well factor motivation Study students . This is show that the implementation of ECIRR is indeed give influence positive , but Not yet quite optimal for produce huge difference compared to with learning conventional .

Comparison results second class the displayed in form graphs that can seen in Figure 2.

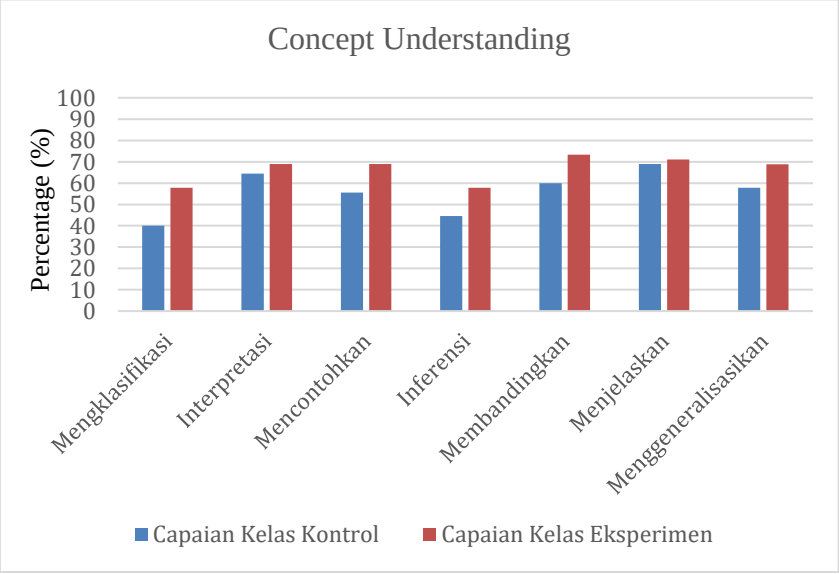

Figure 2 Graph Achievements Class Control and Class Experiment

Based on the results data The research obtained in Figure 2 above can be seen comparison achievements learning between class experiments using the ECIRR learning model with class control that uses method learning conventional . In general, results study show that class experiment show greater achievements tall compared to class control on almost all over indicator understanding the concept being measured . This is indicates that the application of the ECIRR learning model provides impact positive to improvement understanding draft students on the material fluid static .

The most prominent results seen on the indicator classify, where class experiment reached 57.78% while class control only 40.00 %. Significant difference of 17.78 % show that the ECIRR model is very effective in help student classify concepts fluid static. Likewise with indicators inference, class experiment reached 57.78% compared to class control which was only 44.44%. This 13.34% difference indicates that the ECIRR model is successful develop ability student in interesting conclusion from the concepts studied, which is one of the ability think level tall.

On the indicator compare, class experiment show greater achievements tall with 73.33% compared to class control 60.00%. This 13.33% difference show that the ECIRR model is effective in develop ability analysis comparative students. Similar things are also seen in the indicators generalize, where class experiment reached 68.89% while class control 57.78% . Greater achievement high on both indicator This show that the ECIRR model is successful develop ability think analytical and synthetic student in understand draft fluid static.

Although Thus, there are a number of indicator Where difference achievements relatively small between second class. On the indicator interpretation, class experiment reached 68.89% compared to class control 64.44%, with difference of 4.45%. On the indicator exemplify, class experiment reached 68.89% while class control 55.56%, with difference of 13.33%. Meanwhile, on the indicator explain the differences very small achievement Where class experiment reached 71.11% and class control 68.89%, only different by 2.22%. This result show that in some aspect understanding concepts, both the ECIRR model and method conventional own relative effectiveness comparable.

Based on the data in the analysis descriptive can seen that there is difference between second class, where the average value in class experiment more tall compared to class control.

Analysis Inferential

In the research This researchers use SPSS application version 25 where consists of from the normality test , homogeneity test and hypothesis test . Before done testing hypothesis, especially formerly normality and homogeneity tests were carried out as prerequisite data processing. Based on *Shapiro-Wilk* test results obtained results significant in class experiment of 0.101 while results significance in class control 0.082 meals from results the obtained that second class homogeneous. After normality test was carried out Eat furthermore homogeneity test was carried out Where aim for see whether two group samples used originate from population that has same variance or no. In the research This use *Levene test* with results significance obtained between class experiments and controls of 0.689 so that can stated class data experiments and classes control is homogeneous.

Based on the *Independent Sample T*- Test, the sig. (2-tailed) value is 0.008<0.05, so can concluded that H0 is rejected and Ha is accepted. Hypothesis statistics study stated there is significant differences in ability understanding draft student with implementing learning models *ECIRR* on material fluid static student class XI MA Diniyyah Putri Pekanbaru.

4 Conclusion

Based on results research that has been discussed can concluded that:

1. The application of the ECIRR learning model has been proven effective in increase understanding draft student class XI on the material fluid static. This is proven with class average grade experiment (66.67) and class control (55.87).
2. There is significant difference between the ECIRR learning model in class experiment with learning models conventional in class control. This is proven with the results of the independent t-test obtained mark significant 0.008<0.05.
3. ECIRR learning model provides impact positive throughout indicator achievements learning, with the most significant improvement in the indicator classifying (17.78%) and inference (13.34%).

4. The stages of the ECIRR learning model make it easier student for revise understanding beginning through conflict cognitive and formation draft scientifically correct, then strengthen it through repetition. This process effective increase understanding draft students on the material fluid static.

Thus, the application of the ECIRR learning model becomes alternative effective learning strategies for increase understanding conceptual student class XI on the material fluid static.

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