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Application of the ASICC Learning Model (Adapting, Searching, Interprenting, Creating, and Communicating) to Increase Physics Creativity

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© 2023 The Authors. This open access article is distributed under a (CC-BY License) Abstract: This research aims to improve students' physics creativity skills through the application of the ASICC learning model. This research is considered necessary because the results of the initial ability analysis of students through teacher and student respondents gave low results of 55 with less categories. This study is a class action research conducted as many as two cycles. Matter in the first cycle is sound waves and matter in the second cycle is light waves. This research was conducted at SMAN 1 Perhentian Raja Kampar regency, Riau province, with the research subjects of grade XI science students as many as 25 people, 10 men and 15 women. This step in research starts from the precycle stage (initial capability analysis), making learning tools and instruments, validating devices and instruments, actions, evaluation, and reflection. Assessment of student creativity is carried out every time the meeting is assessed by the teacher himself through the instrument of student creativity. The student work created is a simple work that can be completed in one meeting. The students' work is in the form of concept maps, poster designs, and data graphics. The average results of students' creativity skills obtained for cycle 1 to cycle 2 are, for cycle 1 with an average of 70.85 and cycle 2 with an average of 77.5. This increase can be seen from the change in the value of creativity for the same work in different cycles.

Keywords: Aplication; ASICC Model; Physics Creativity

Introduction

Education that is able to support humans in global competition is education that develops the potential of students (Rahmatullah et al., 2022). This development is not only in academic abilities, but also in the development of other abilities, such as creativity, communication, cooperation, and adaptation (Hamdani et al., 2019; Mitsea et al., 2021). Specific skill demands that need to be empowered in learning activities that must be possessed are creative thinking skills, problem solving, collaboration, and various other skills (Shafie et al., 2019; Zubaidah, 2016).

Teachers design learning activities in order to develop the potential of students so that students can obtain knowledge effectively and efficiently and get results as expected. Learning activities can be carried out in the classroom or outside the classroom (Nurwidodo et al., 2023)including Physics subjects , which can be carried out anywhere in accordance with the nature and characteristics of physics itself (Herwinda et al., 2022).

Physics is a branch of science which in the learning process focuses on direct experience through experimental activities (Darmaji et al., 2019; Herwinda et al., 2022). This is done to be able to develop students' skills in order to explore and understand physics concepts as a whole and deeply. Understanding the basic concepts of physics is the capital and the most important requirement to be able to solve problems regarding natural phenomena that occur and answer based on structured analysis (Rohmania et al., 2022; Trianggono, 2017).

Physics cannot directly study the product alone but needs a learning activity that involves students in a

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problem-solving process or experiment to produce a product in it (Arini, 2017; Yasiro et al., 2021). Students are trained in analytical thinking, so that high curiosity and scientific processes arise. The role of teachers in schools is very important in helping to increase student creativity (Henriksen et al., 2020), both through learning media, learning methods used, questions given to students and assignments given by teachers that require students to complete them in a more creative way (Imamora, 2020; Imaroh et al., 2022).

Creativity is one of the basic abilities that every individual must have which will later become the potential or initial foundation of self (self-actualization) (Grudistova et al., 2019) and become a necessity in living daily life (Algiranto, 2021). Basically, every human being born into the world must already have creative potential that exists in him. Most people are still unable to multiply the creative potential that exists in them. We can identify creativity ourselves and can also be trained through the right educational process. Creativity in the form of mental abilities that exist or are inherent in every individual born, either ideas or ideas to create a new product or develop something that already exists (Arnyana, 2019). In this case, the learning used by teachers must be able to stimulate students' creative thinking skills and help express the ideas obtained by students and communicate them scientifically (Sambada, 2012).

The ASICC (Adapting, Interprenting, Searching, Creating, and Communicating) learning model is a type of cooperative learning model designed to empower creativity and argumentation skills (Afifah et al., 2022; Santoso et al., 2022), utilize elements of e-learning, empower awareness and metacognition skills, and improve collaboration between students (Kumalasari et al., 2023; Santoso, 2021). Based on the characteristics possessed by the ASICC model, students will later be directed to follow each stage of learning this ASICC model, so that students have creativity skills from the work produced (Isari & Santoso, 2021). The stages of ASICC learning, in the creat stage, can be used as a benchmark in assessing student creativity (Sari et al., 2021).

Scientific research aimed at solving problems using new skills that are applied directly to classroom situations (Rusdi, 2018). In summary, classroom action research is how a group of teachers can organize the conditions of their learning practice, and learn from their own experiences. His research approach is in the form of concrete actions that are classroom-based. They can try an idea of improvement in their learning practice and see the real effect of that effort. It is very important to cultivate research in the school environment that involves teachers actively. Teachers are no longer regarded only as recipients of renewal, but also as doers of renewal. Research conducted by teachers can occur continuously because of the demands of needs from within the teacher himself, not because he is instructed from outside (Imaroh et al., 2022). Classroom research by the teacher can be a reflective activity in the thinking and acting of the teacher. Reflective thinking in the educational experience as always active, resilient, and always considering all forms of knowledge to be taught based on the belief that there are reasons that support and think about conclusions and consequences where the knowledge will take learners.

There are several steps that should be followed in conducting action research. These steps are as follows (Rusdi, 2018), namely: (1) identifying and formulating problems; (2) analyze the problem; (3) formulate action hypotheses; (4) create an action plan and monitor it; (5) carry out actions and observe them; (6) processing and interpreting data; and (7) report the results of classroom action research Naturally, those steps don't usually happen in a straight flow. If there is a change in the problem at the time of the problem analysis, a new problem identification is required. Data is needed to focus the problem by identifying causal factors in determining action hypotheses, in evaluation and so on. This study used a classroom action research design (Classroom Action Research). According to (Arikunto, 2006) the core concept of this research in one cycle consists of four steps, namely: 1. Planning, 2. Action / action, 3. Observation, and 4. Reflection. This research is carried out at least two cycles with different materials.

Method

The type of research is class action research which is carried out as many as 2 cycles. The method used in this research is qualitative and quantitative analysis (Mixed Method). The stages in this research consist of analyzing the initial abilities of students' creativity skills, preparation, validation, action, evaluation, and reflection. Broadly speaking, it can be seen from Figure 1.





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Problem Identification Phase

The problem identification stage is the stage where researchers analyze the need for this class action research to be carried out. The analysis stage consisted of interviews and filling out questionnaires to several physics teachers and class XI science students. The results of the analysis are used as an initial condition for students' creative abilities.

Planning Phase

The planning stage consists of making learning tools with the ASICC stages (RPP and LKPD) on sound wave and light wave materials, designing student creativity research instruments, and validating devices and instruments.

Implementation Phase

The implementation stage is carried out after the validation process is complete. The validation results need to be corrected first before entering the next stage.

Stage of implementation/action

The implementation / action stage is the teacher carrying out the learning process using validated devices. The implementation is carried out following the stages of ASICC learning. Students will create works in the form of concept maps, poster designs, or graphics for each meeting.

Observation/evaluation stage

The observation / evaluation stage is the stage where analyzing weaknesses and strengths to be taken into consideration to enter the next cycle.

Table 1. Student creativity assessment indicators

No.	Indicators
1.	Works are the result of one's own thoughts
2.	Focus and fluency in fattening ideas
3.	The work is in accordance with the material and
	concepts studied
4.	Has aesthetic value and is proportional
5.	Communicative work
C	(1,, 1,, 0.014)

Source: (Ibrahim, 2014)

Reflection stage

This stage is carried out to find solutions to previously discovered problems to enter the next cycle. Data collection techniques are carried out by providing an assessment of the work produced by students for each meeting. The indicators that are an assessment of student work (concept map/poster design/graph) consist of 5 indicators that can be seen in Table 1. The work produced by each meeting is assessed by the teacher / researcher. Student work is assessed based on the Likert scale for each indicator as shown in Table 2.

Table 2. Categories Creativity Assessment

Value	Descriptio
1	Exceller
2	Goo
3	Les
4	Very lackin
Courses (Curringen 2017)	

Source: (Sugiyono, 2017)

The number of marks students get for each work produced is given a score using calculations such as Formula 1.

$$\bar{x} = \frac{\sum Score \ obtained}{20} x \ 100 \tag{1}$$

The number of marks obtained by students for each work produced per meeting is made the categories obtained, such as Table 3.

Table 5. Student creativity assessment categorie	ent creativity assessment categories
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Value	Description
80 - 100	Very Good
66 – 79	Good
56 – 65	Enough
40 – 55	Less
30 - 39	Fail

Source: (Arikunto, 2019)

The results of students' creativity scores for each work and meeting will be analyzed per achievement indicator obtained. Cycle 1 of sound wave matter consists of 4 encounters. The cycle of 2 light waves consists of 3 encounters. The target result to be obtained is 75.

Result and Discussion

The value of students' creativity skills for cycle 1 of each meeting tends to change. Meeting 1 student work in the form of concept maps, meeting 2 student works in the form of poster designs, meeting 3 student works in the form of concept maps, meeting 4 student works in the form of data graphs. Changes in student creativity can be seen in Figure 2.



Figure 2. Results of students' creativity skills in cycle 1

The average creativity score for meeting 1 with a bill of works in the form of a concept map is still below the minimum achievement value of 69.6%, while for meeting 3 with a bill of works in the form of a concept map has also increased to 79.4% and above the minimum achievement target. The increase that occurred from meeting 1 and meeting 3 teachers tried to make students understand the concept of learning before making a work in the form of a concept map. One of the strategies carried out is to change student learning patterns from inside the room out of the room so that

students are more free and comfortable (Nja et al., 2022). Practicum at meeting 3 also attracted more attention and students were very enthusiastic, namely practicum in the form of practicum using objects around students.

The students' creativity skill scores for cycle 2 increased on average for each encounter. Meeting 1 of student work in the form of poster design, meeting 2 of student work in the form of data graphics, and meeting 3 of student work in the form of concept maps. The students' creativity scores for cycle 2 can be seen in Figure 3.



Figure 3. Results of students' creativity skills in cycle 2

The Creativity value for cycle 2 has reached the minimum achievement target. The value of creativity for the same type of work as cycle 1 has increased in cycle 2. One of the strategies carried out is to change student learning patterns from inside the room out of the room so that students are more free and comfortable. Many practicums are carried out directly and literacy studies through internet media that attract students (Santoso, 2021). Student creativity is above the target achievement value for all meetings in cycle 2, this is reflected in the good work of students. Works related to data graphics and poster design have also increased from cycle 1. The results of students' creativity skills for each product produced in cycle 1 and cycle 2 can be seen in table 4.

Table 4. Results of students' creativity skills cycle 1 and cycle 2

Cycle	Meeting			ting	A	Description
	1	2	3	4	Average	Description
1	68.4	67	78.6	68	70.5	Good
2	76	76.8	79.2	-	77.5	Good

The skills of students in cycle 1 were obtained on average 70.5 with good category. This result has increased from the value of student creativity from the initial ability analysis. The value of students' creativity skills in cycle 2 has increased from cycle 1, which is 81.2 with a good category. This increase is the result of refection in cycle 1 which is carried out in cycle 2.

Conclusion

The results of the analysis of students' initial abilities for students' creativity skills are still below the average KKM and the minimum target of achievement expected by researchers is 75. Based on classroom action research, creativity skills from cycle 1 have increased to cycle 2, namely from 70.5 to 77.5 with good categories. The right ASICC learning model to improve the results of student creativity skills is learning with activities that activate various student abilities, various varied practicums, especially direct practicums, the work produced by students is diverse and does not take too much time, the material delivered is packed with activities through LKPD, and learning is carried out in groups. Student work can be in the form of concept maps, poster designs, or data graphics. The work can be completed for one meeting. The results of this study show that the ASICC learning model is good for physics material by producing simple works after students look for data and facts on the material learned through practicum.

Author Contributions

The authors of this paper consist of three people, namely R.A.S, *Z*, and M.R. This article was done collaboratively at each stage.

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Conflicts of Interest

The authors declare no conflict of interest.

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