International Journal of Instruction *April 2023 ● Vol.16, No.2*
e-ISSN: 1308-1470 ● www.e-iji.net *p-ISSN: 1694-609X*
pp. 803-822

Article submission code: 20220607230924
Received: 07/06/2022 Revision: 05/11/2022
Accepted: 28/11/2022 OnlineFirst: 16/02/2023

Impact of Science Process Skills on Thinking Skills in Rural and Urban Schools

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The novelty in this research is to test the students' science process skills on critical thinking skills in terms of students' gender. The purpose of this study was to determine the effect of science process skills on critical thinking skills based on the gender of students in rural and urban schools. This type of research is descriptive quantitative. The sample in this study was (534) grade VII students consisting of (281) female students and (253) male students. The instruments used were observation sheets and essay tests. The data analysis technique used descriptive statistical tests and inferential statistics. The result of this research is that the students' science process skills and critical thinking skills are categorized as good and critical and there is a significant influence and difference between the two variables in rural or urban schools. The recommendation of this research for further research is that it is expected to be able to examine indicators that have not been included in this study.

Keywords: critical thinking, experiment, gender, rural, science processing skills, urban

Citation: Astalini., Darmaji., Kurniawan, D. A., Wirayuda, R. P., Putri, W. A., Setiyarini, E. F., Ginting, A. A. B., & Ratnawati, T. (2023). Impact of science process skills on thinking skills in rural and urban schools. *International Journal of Instruction*, *16*(2), 803-822. https://doi.org/10.29333/iji.2023.16242a

INTRODUCTION

Science learning is a branch of science that focuses on providing direct experience in everyday life because it is the basis for the development of science (Nida et al., 2021; Sæleset & Friedrichsen, 2021; Torres et al., 2021). One branch of science that requires direct understanding is physics. Physics is able to direct students in improving process skills to produce good cognitive (Daher et al., 2021; Krumphals & Haagen-Schutzenhofer, 2021). One way that can be done to help students understand physics is through practical activities.

Practicum is an activity carried out to test and apply the theory that has been obtained during the learning process (Chang & Chiou, 2017; Kurniawan et al., 2019). Practical activities can actively involve students during the practicum process to develop scientific attitudes so that they can train cognitive, affective and psychomotor aspects (Chaaban et al., 2021; Wang, 2018; Yang & Lim, 2021; Astalini et al, 2022; Asrial et al 2022). In the implementation of this practicum, students can be involved in the process of observing, comparing, and formulating hypotheses so that students get experience and real case examples from the material being taught (Seung et al., 2016; Zezekwa & Nkopodi, 2020; Battaglia et al., 2021). With this practicum activity students can improve science process skills that require critical thinking skills in making problem-solving decisions.

However, in reality, students' science process skills in developing countries such as Malaysia and the Philippines are still relatively low. This is in accordance with the research of Tek et al (2012) which shows that in general, senior high school students in Malaysia have not acquired science process skills as expected by the Malaysian Ministry of Education. In addition, the findings of Derilo (2019) also found that most students in the Philippines had low and insufficient levels of science process skills. In addition, in the South Asian continent such as Sri Lanka and Bangladesh also found the same thing, namely the low science process skills of students. This is evident from the findings of Tilakaratne & Ekanayake (2019) in Sri Lanka which obtained the results that the science process skill level of the hypothesized indicator was in the medium category. However, science process skills of observing, measuring, classifying, inferring & logical reasoning, experimenting, and understanding variables are still poor. Meanwhile, in Bangladesh, through the Basic Education Completion Examination (PECE) in a period of 7 years, it was found that no integrated skills were found between process skills and only basic skills were found. Of the seven basic skills only observe, communicate, predict, conclude in PECE Bangladesh. Classifying, measuring, using space-time relationships and integrated skills are completely absent (Ahmed, 2016).

The results of the study are also similar to the findings of Nwosu (1994) and Rezina & Siddiquee, (2013) where only some basic science process skills are emphasized and prominent.. In addition to these countries, the low level of science process skills also occurs in Indonesia. This is evidenced by the finding Sukarno et al (2020) which states that the low science process skills in Jambi city junior high school students are due to various factors. First, there is still a shortage of science teachers to teach students science process skills. This is because the level of science process skills of science

teachers in junior high schools in Jambi city is also still relatively low, which only has a score of 63.6 with a score range of 10-100 (Sukarno et al., 2020). Second, the lack of science material that is more specific to teachers and students directly to develop and improve science process skills. Third, in general, teaching and learning activities that have occurred so far are still traditional, so that students do not explore science process skills. The impact of the low science process skills of students, students' critical thinking skills are also low, and if students' science process skills are high, their critical thinking skills are too high (Nugraha et al., 2019; Kamid et al, 2021; Syahrial et al, 2021). According to Nia et al.(2015), Fatmah, et al.(2019) Low science process skills have an impact on students' low understanding of concepts. In addition, the impact of low science process skills and students' thinking skills causes low student learning outcomes (Darmaji et al., 2020). Some expert opinions explain that critical thinking is one of the skills needed by 21st century society. In addition, the impact of low science process skills and students' thinking skills causes low student learning outcomes (Darmaji et al., 2020).

In addition to science process skills which are still low, the ability to think critically is also still in the low category. For example, in a developing country, namely Malaysia, it is known that students' critical thinking skills are still lacking. This is in accordance with the research of Yen et al (2016) which states that the application of thinking skills in teaching and learning still shows that teachers and students lack knowledge in thinking skills and are not skilled in applying critical thinking. This is because in the learning process their lecturers/teachers are not fully aware of how effective thinking skills can be integrated with their lessons automatically (Seman, 2017). If we look at the South Asian continent, especially Bangladesh, it is found that most private university students do not have basic skills and lack critical thinking, analytical skills and have low achievements in the field of work practice (Chowdhury, 2016; Kamid et al, 2021; Maison et al, 2021). Meanwhile in Chile, the critical thinking category of students is also still in weakness. This is consistent with Ruíz and others (2001), who concluded that effective high school students have very fragile and underdeveloped critical thinking abilities (Veliz, 2018; Verner et al., 2019).

In Indonesia itself also experienced the same thing as other countries. The critical thinking ability of students in Indonesia is also still relatively weak, research by Arifin et al (2020) states that students have different levels of critical thinking skills, but only a few are able to reach stages three (3) and four (4). This is also in line with the research of Purwaningsih & Wangid (2021) which states that students' critical thinking skills in learning are low based on the following evidence. First, none of the students took the initiative to answer the teacher's questions and they only answered the teacher's questions based on their limited understanding of the concept. The impact of critical thinking on students' academic performance has led to the development of research on the topic (Demirhan, Besoluk, & nder, 2011). The importance placed on critical thinking has led to a large amount of research on critical thinking skills (Pascarella & Terenzini, 2005). Higher critical thinking abilities have better performance than those with average critical thinking abilities and students with average critical thinking abilities have better performance than students with lower critical thinking abilities (D'

Alessio et al., 2019; Syahrial et al, 2022; Asrial et al, 2023). Thus, science process skills and critical thinking skills need to be improved.

One of the potentials that students The critical thinking ability of students in Indonesia is also still relatively weak must develop to understand science is science process skills. Science process skills are skills that every student must have (Akcay & Yager, 2016; Heeg & Avraamidou, 2021; Nurhayati et al., 2021). These science process skills are important to master as the basis for using the scientific method in developing knowledge (Çetin & Özdemir, 2018; Restiana & Djukri, 2021; Tanti, Maison, et al., 2020). Through this skill, students are trained to develop sensitivity to scientific attitudes which are expected to gain hands-on experience(Apaivatin et al., 2021; Suryawati & Osman, 2018). The science process skills possessed by students support scientific thinking to support further abilities. One of the important things with the development of student process skills is that it can improve students' critical thinking.

One of the characteristics of students who have the ability to think critically is always looking for and explaining the relationship between the problems discussed and relevant things (Özelçi & Çalışkan, 2019; Shaw et al., 2019; Verburgh, 2019; Maison et al, 2022). Science process skills and students' critical thinking skills are important aspects that students must have. Science process skills and critical thinking skills involve scientific investigation and problem solving related to science concepts in everyday life (Chikiwa & Schäfer, 2018; Nisa et al., 2020; Tanti, Kurniawan, et al., 2020). To get process skills and good critical thinking requires serious effort from students (Çetin & Özdemir, 2018; Darmaji et al., 2020; Sustekova et al., 2019) Achieving good learning outcomes is influenced by process skills and students' critical thinking. One of the things that affect the difference in the ability of scientific processes and students' critical thinking skills is gender.

The explanation above points to the need to conduct a study to see the abilities of students based on their gender.Gender difference is a plurality that can distinguish aspects of science process skills and critical thinking between men and women. In addition, gender is a cultural concept that seeks to make a difference in terms of roles, mentality and emotional characteristics between men and women. Gender differences can be referred to as a differentiating factor in a person's abilities such as the ability to learn in class (Heeg & Avraamidou, 2021; Ikonen et al., 2019). Based on research (Bhagat & Chang, 2018; Daher et al., 2021; Gulacar et al., 2019) that female students are more active than male students. However male students are more talented in science than female students Ikonen et al., 2019; Lee & Kung, 2018). Therefore, gender differences have an influence on students' science process skills and critical thinking.

researchers are interested in conducting experiments in the form of research to answer students' critical thinking skills and science process skills based on gender and school location. This study is located to determine the differences and the influence of science process skills and students' critical thinking skills based on the gender of students in rural and urban areas, so the purpose of this study was to answer the research questions posed by the researcher. The questions posed in this research are: How are students' critical thinking skills and science process skills in rural and urban areas? Are there

differences between students' critical thinking skills and students' science process skills in urban and rural areas? the effect of science process skills on critical thinking skills?

METHOD

Research Design

This type of research is descriptive quantitative research using an experimental approach posttest only control group design. The data analysis technique in this study used descriptive statistical tests and inferential statistics.

Participants

The sample is part of the group selected to represent the population in the study (oginni, 2021; onanuga et al., 2021). The sampling technique used is cluster sampling. The sampling criteria were VII grade students of state junior high schools accredited a and obtained a sample of 534 students from 6 schools consisting of 3 schools located in the city (Junior High School 17 Jambi City, Junior High School 19 Jambi City, & Junior High School 22 Jambi City) and 3 schools which are in the village (Junior High School 2 Batanghari, Junior High School 8 Batanghari, & Junior High School 5 Batanghari) with details of students in urban areas, namely 126 female students and 115 male students and schools in rural areas as many as 155 female students and 138 male students.

Instrument and Procedure

Science process skills data were obtained using observation sheets and critical thinking skills data were obtained using essay test questions that included indicators of critical thinking skills. The grid of observation sheets and essay tests is as follows :

Table 1
Grid of observation sheets and essay questions

Type of science proces skills	Indicator science process skills	Number of statements	Indicator of critical thinking ability	Number of statements
Basic science process skills	Observation	1, 2, 3, 4, 5, 6	Give a simple explanation	1, 2
	Measure	7, 8, 9,10	Building basic skills	3, 4
	Conclude	22, 23, 24, 25	Conclude	5, 6
Integrated science process skills	Doing an experiment	14, 15, 16, 17	Provide further explanation	7, 8
	Arrange tabel experiment	18, 19, 20, 21	Set strategy and tactics	9, 10
	Designing experiments	11, 12, 13		

Where, the assessment of the observation sheet uses a Likert scale with 4 categories; 4 (very good), 3 (good), 2 (not good), 1 (very not good) while the critical thinking ability essay test uses an assessment rubric.

The steps in this research are students doing practical activities, then observers assessing science process skills when students do practical activities. After students carry out practicum activities using scientific process skill indicator steps, students are directed to answer critical thinking ability test questions regarding practical material.

Data Analysis

The data analysis technique in this study used descriptive statistical tests and inferential statistics. Descriptive test in the form of mean and percentage. The science process skill category intervals are listed in the Table 2.

Table 2
The range of scores for the quantitative criteria of students' science process skills based on each indicator

Types of science process skills	Indicator Science Process Skills	Value Range			
		TB	C	B	SB
Skills	Observation	6-10.5	10.6-15	15.1-19.5	19.6-24
Science process	Measure	5-8.75	8.76-12.5	12.51-16.25	16.26-20
Base	Conclude	4 – 7	7.01 – 10	10.01 -13	13.01 – 16
Skills	Doing an experiment	5-8.75	8.76-12.5	12.51-16.25	16.26-20
Science process	Arrange table	4-7	7.01-10	10.01-13	13.01-16
Integrated	Designing Experiments	3-5.25	5.26-7.5	7.51-9.75	9.76-12

According to research by Darmaji et al., (2022) the intervals for the categories of critical thinking is in Table 3.

Table 3
The range of scores for the quantitative criteria of students' critical thinking skills

Interval	Category
0,0 – 10,0	Very Not Critical
10,1 – 20,0	Not Critical
20,1 – 30,0	Critical
30,1– 40,0	Very Critical

After the descriptive test, the inferential statistical test was carried out in the form of a simple linear regression test. Simple linear regression test is useful to determine whether there is an influence of science process skills on critical thinking skills. before conducting a simple linear regression test, the researcher must perform a prerequisite test in the form of a normality test and a linearity test. Tests on this data analysis were carried out using the SPSS version 22 application.

FINDINGS

Science process skills are divided into two types, namely basic science process skills and integrated science process skills. The following are the results of the descriptive test of science process skills in urban areas.

Table 4
Science process skills of student in learning science for urban junior high school

Region	SPS	Gender	Category (%)				Mean
	Basic		Very not good	Not good	Good	Very good	
Rural	Observation	Male	1.3(2)	16.8(26)	50.3(78)	31.6(49)	18.07
		Female	0(0)	31.2(43)	47.8(66)	21.0(29)	16.94
	Measure	Male	2.2(3)	34.1(47)	51.4(71)	12.3(17)	13.44
		Female	1.9(3)	27.7(43)	52.9(82)	17.4(27)	14.05
	Conclusing	Male	9.4(13)	29.7(41)	45.7(63)	15.2(21)	11.11
		Female	2.6(4)	23.9(37)	57.4(89)	16.1(25)	11.92
	Integrated						
	Experiment	Male	4.3(6)	30.4(42)	53.6(74)	11,6(16)	13.39
		Female	1.9(3)	27.1(42)	54.8(85)	16.1(25)	13.94
	Make a table	Male	8.7(12)	35.5(49)	42.0(58)	13.8(19)	10.81
		Female	3.2(5)	17.4(27)	54,8(85)	24.5(38)	11.90
	Design experiment	Male	5.8(8)	18.8(26)	43.5(60)	31.9(44)	8.67
		Female	5.2(8)	18.1(28)	42.6(66)	34.2(53)	8.63

Based on table 4 shows that the average results of the basic science process skills andintegrated science process skills in urban junior high schools are almost similar. In the basic science process skills of students in urban areas, the highest results were obtained on the observation indicators with a mean value of 18.07 for male gender and 16.94 for female gender. Meanwhile, for integrated science process skills, the highest results were obtained on experimental indicators with 13.39 for male gender and an average value of 13.94 for female gender. Furthermore, table 5 is shown which is a description of basic science process skills and integrated science process skills.

Table 5
Science process skills of student in learning science for rural junior high school

Region	SPS	Gender	Category (%)				Mean
	Basic		Very not good	Not good	Good	Very good	
Rural	Observation	Male	2.4(32)	25.4(32)	54.8(69)	17.5(22)	16.93
		Female	0(0)	0(0)	42.9(52)	57.1(72)	19.87
	Measure	Male	0.9(1)	40.9(47)	49.6(57)	8.7(10)	13.31
		Female	0(0)	10.3(13)	61.1(77)	28.6(36)	15.18
	Conclusing	Male	4.3(5)	43.5(50)	47.8(55)	4.3(5)	10.63
		Female	0(0)	21.4 (27)	59.5(75)	19.0(24)	11.92
	Intergrated						
	Experiment	Male	1.7(2)	36.5(42)	55.7(64)	6.1(7)	13.42
		Female	0.0(0)	15.1(19)	64.3(81)	20.6(26)	14.89
	Make a tabel	Male	6.1(7)	33.0(38)	49.6(57)	11.3(13)	11.03
		Female	5.6(7)	19.0(24)	54.8(69)	20.6(26)	11.67
	Desaign experiment	Male	4.3(5)	20.9(24)	36.5(42)	38.3(44)	8.7
		Female	0(0)	10.3(13)	46.0(58)	43.7(55)	9.6

Table 5 is a table of descriptions of basic and integrated science process skills in Rural Junior High Schools. Based on the table, it is known that the highest basic science process skills for male gender are the observation indicators with an average of 16.93 or a percentage of 54.8% (69 people). For female gender, high basic science process skills are also in the observation indicator with an average of 19.87 or with a percentage of 57.1% (72 people). Meanwhile, the highest integrated science process skills are in the experimental indicators, with male gender having an average of 13.42 or a percentage of 55.7% (64 people) and female gender with an average of 14.89 or a percentage of 64. 3% (81 people).

After seeing the description of science process skills, the next step is to look at the description of students' critical thinking skills in urban and rural junior high schools. Critical thinking ability is a cognitive ability that is used to improve student learning outcomes. the results of the description of students. Critical thinking skills in urban and rural junior high schools are shown in table 6 and table 7.

Table 6
Critical Thinking of student in learning science for urban junior high school

Interval	Category	Mean	%	Gender
0,0 – 10,0	Very Not Critical		-	
10,1 – 20,0	Not Critical		-	Male
20,1 – 30,0	Critical	14,19	61,6	
30,1– 40,0	Very Critical		38,4	
0,0 – 10,0	Very Not Critical		-	
10,1 – 20,0	Not Critical		1,3	Female
20,1 – 30,0	Critical	28,74	68,4	
30,1– 40,0	Very Critical		30,3	

Based on the table. 6 students' critical thinking skills in urban areas are in the good category with a percentage of 61.6% for male gender and good category with a percentage of 68.4% and an average of 28.74 for the female gender. Furthermore, table 7 is presented which is a table of students' critical thinking skills in Rural Junior High Schools.

Tabel 7
Critical thinking of student in learning science for rural junior high school

Interval	Category	Mean	%	Gender
0,0 – 10,0	Very Not Critical		-	
10,1 – 20,0	Not Critical		-	Male
20,1 – 30,0	Critical	29,71	60,0	
30,1– 40,0	Very Critical		39,7	
0,0 – 10,0	Very Not Critical		-	
10,1 – 20,0	Not Critical		1,6	Female
20,1 – 30,0	Critical	28,76	66,7	
30,1– 40,0	Very Critical		31,7	

Based on table 7, male gender is in the critical category with a percentage of 60.0% with an average of 29.71. Furthermore, female gender is in the critical category with a percentage of 66.7% with an average of 28.76.After seeing the description of science process skills and critical thinking skills, the next researcher will look at the regression between the variables of science process skills and students' critical thinking skills. Before looking at the regression between variables, the researchers conducted a normality test and linearity test.

Table 8
The result of normality test

		Gender	Sig.	Distribute
SPS	Rural	Male	0,066	Normally
		Female	0,066	Normally
	Urban	Male	0,200	Normally
		Female	0,089	Normally
CT	Rural	Male	0,063	Normally
		Female	0,061	Normally
	Urban	Male	0,097	Normally
		Female	0,089	Normally

Based on table 8, it is explained that the data obtained by the researcher has been normally distributed. Where, the significance value of science process skills and critical thinking skills for both male and female students in urban and rural areas is greater than 0.05.

Table 9
The result of linearity test

		Sum of square	Mean square	F	Sig.
sps*ct	deviation from linearity	550,494	28,973	0,578	0,922

Table 9 shows that the significance value is 0.922. That is, the significance value is greater than 0.05. This shows that science process skills are linearly related to criticalthinking skills.after the data has met the prerequisite test, the next step theresearcher is to test the simple linear regression hypothesis. And get the results in the table below.

Table 10
The result ofthe variance test

Model	sum of square	Mean square	f	Sig.
regression	25417,153	25417,153		0,000[b]
residual	828,145	1,557	16327,959	
Total	26245,298			

Based on table 10 it is known that the significance value between the variables of science process skills and students' critical thinking skills is 0.000. So based on this value there is an influence between the variables of science process skills and critical thinking skills because the value obtained is smaller than the simple linear regression test requirements, namely 0.05.

Table 11
The result of coefficient determination

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	984[a]	0,968	0,968	1,248

Table 11 is a table of the coefficient of determination or R square of the variables of science process skills and students' critical thinking skills. Based on table 11, it is found that the value of the coefficient of determination or R square is 0.968. The value of the coefficient of determination is 0.968 x 100% = 96.8%. This means that the magnitude of the influence between the variables of science process skills on students' critical thinking skills is 96.8% and 3.2% is influenced by other variables.

Table 12
The result of simple linier coefficient

Model	B	Std. Error	Beta	T	Sig.
(Constant)	12,717	0,466		27,288	0,000
SPS	0,810	0,006	0,984	127,781	0,000

Table 12 shows the regression equations of science process skills and students' critical thinking skills. Based on the table, the equation Y = 12.717 + 0.810X is obtained. For p-value obtained 0.000 which means it is smaller than 0.05. So it can be said that the variables of science process skills and students' critical thinking skills have an influence.

DISCUSSION

Based on descriptive statistical tests, mastery of basic science process skills and integrated science process skills in urban and rural junior high schools is classified as good and not much different. In the basic science process skills of students in urban and rural areas the highest is the observation indicator. Meanwhile, for integrated science process skills, the highest results were obtained on experimental indicators and were dominated by female students.

Based on the facts in the field, the science process skills of female students are better than male students. Gender difference is a plurality that can distinguish aspects of science process skills and critical thinking between men and women. Gender is a cultural concept that seeks to make a difference in terms of roles, mentality and emotional characteristics between men and women. Gender differences can be called a differentiating factor in a person's abilities such as learning ability in classroom (heeg & avraamidou, 2021; ikonen et al., 2019; sultan et al., 2020). Based on research bhagat & chang, (2018) ; daher et al., (2021) ; gulacar et al (2019) that female students are more active than male students. However male students are more talented in science than female students (bustami et al., 2020; ikonen et al., 2019; lee &kung, 2018). Previous research has also revealed that there is a relationship between gender, student achievement and skills, while the findings of previous studies also show that there is a difference and relationship between gender and students' science process skills. Then, it is also said that female students can perform better in science process skills compared to male students(abungu et al., 2014; hamdani, 2017; jager pd, 2015; yuliskurniawati et al., 2019).

Based on the findings and direct observations by observers at the location, it is seen that female students have more enthusiasm than male students. While in rural schools, students who actively ask questions during practicum activities are female students. Most male students in rural schools do not analyze the test items first. Differences in student outcomes are also influenced by the school area where practical activity-based learning in village schools has not received much attention because of inadequate facilities and the lack of teacher skills in carrying out practical activities, causing teachers to tend to carry out classroom learning and the absence of practical activities. Similarly, previous research shows that the application of learning in rural areas is very low, and the learning process is still lagging behind compared to urban schools (Addy, 2013; mohammed et al., 2020; ramnarain & hlatswayo, 2018; somuah & mensah, 2013).

In some rural schools, laboratory facilities are still not adequate, so some teachers choose demonstrations as a middle way so that the practicum can still be carried out. (darmaji et al., 2020; motlhabane, 2013; ramnarain & hlatswayo, 2018; somuah & mensah, 2013). There are also teachers who only ask students to imagine an activity,

then the teacher provides data on the results of previous experiments and then students are asked to interpret and draw conclusions. Some schools also have laboratory facilities but they are not used properly and there are also schools that leave tools in boxes so that they are not used and many teachers say that there is no opportunity for time to do practicum because the time used tends to be administrative and theoretical activities (motlhabane, 2013). Meanwhile, urban schools have been equipped with supporting facilities for practicum activities. However, the obstacle that occurs in several city schools in Indonesia, especially in the city of jambi is that it is difficult to allocate learning time due to the demands of solid physics material. In addition, another obstacle is that some laboratory equipment facilities are incomplete and some practical activities have not been running due to a lack of activity planning. This also happens and is explained by research conducted by (Atnur et al., 2015).

Likewise, students' critical thinking in urban and rural areas is also dominated by female students.Based on the simple linear regression test, it can be seen that science process skills have a significant effect on students' critical thinking skills. For example, when students perform the stages of scientific process skill indicators in the form of drawing conclusions, this is very closely related to inference on critical thinking.

The novelty in this study is to see the influence of science process skills and students' critical thinking skills on physics subjects at junior high schools in rural and urban schools and reviewed with gender innovation.science process skills are skills that must be possessed by students in the 21st century (aldila et al., 2021; ambross et al., 2014). Science process skills are skills that refer to experimental activities with methods based on scientific inquiry and are generally carried out with practical activities. (chen et al., 2021; darmaji et al., 2019b; lawson et al., 2015; sarlivanti et al., 2014). The existence of science process skills helps students in understanding physics material well.

The results of previous research studies show that students still find it difficult to find facts, concepts, and theories. Physics learning is more successful if physics learning in class is designed and modified into flexible activities and learning is changed to direct practicum (experimental) based activities, finding concepts by providing scientific evidence of the relevance of everyday life environments can improve understanding and scientific views in physics learning (abate et al., 2021). Practical activities have an impact on direct experience and train students' scientific process skills and critical thinking skills. With practicum activities, students are able to process experiments independently and be active in exploring their knowledge, this has an impact on their scientific skills, in practicum activities students are also required to find theories and answer questions why they do the practicum and this is unconsciously trained students to use their critical thinking skills in finding solutions to problems. Therefore, if students have good science process skills, their critical thinking skills must also be good and vice versa if students' science process skills are bad, their science process skills must be bad too. With the science process skills students are able to understand material concepts easily and reduce misconceptions in physics lessons and can have an impact on long-term memory. Then, the ability to think critically makes students able to sort out opinions, be able to think rationally and not immediately believe if without evidence of

the truth. In addition, critical thinking can improve students' cognitive aspects and can develop skilled thinking in planning careers in the future.

In addition, the scientific process skills and critical thinking skills also has an impact on student learning outcomes, especially in cognitive and psychomotor aspects. In addition, these two variables also have an impact on students' problem solving processes in everyday life. The existence of science process skills and science process skills also has an impact on student learning outcomes, especially in cognitive and psychomotor aspects. In addition, these two variables also have an impact on students' problem solving processes in everyday life.

Based on the results of the research found, the authors would like to provide suggestions for further research. First, because the indicators of science process skills used have not been fully included in the indicators carried out by researchers, further researchers should be able to continue research with different materials and at different levels so that all indicators of science process skills can be included. Second, the researcher suggests that further research should use two tests of critical thinking skills, namely pre-test and post-test so that later the differences in students' critical thinking skills before practicum activities and after the practicum activities method will be seen.

CONCLUSION

Based on the findings, it can be concluded that the science process skills of students in rural and urban schools have significant differences. Likewise, after a simple linear regression test was conducted, it was concluded that there was an influence between students' science process skills on students' critical thinking skills. With this conclusion obtained, it is expected to be able to have a positive impact on learning activities in rural and urban areas so as to improve the quality of learning that is able to support students' science process skills and critical thinking skills.

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