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The Analysis of Self Regulated Learner of Acceleration Class at Secondary School in Natural Science Subjects Based on Gender

Novia Dwi Rahmaningtyas[1], Septi Budi Sartika[1*], Nuril Maghfiroh[2]

[1] Natural Science Education Study Program, Faculty of Psychology and Muhammadiyah Sidoarjo, Jawa Timur, Indonesia.
[2] Natural Science Teacher in SMP Negeri l Sidoarjo, Jawa Timur, Indonesia.

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Corresponding Author:
Septi Budi Sartika
septibudi1@umsida.ac.id

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Abstract: The purpose of this research is to describe the self-regulated learner (SRL) of male and female accelerated students. The research method used is qualitative phenomenology research conducted at SMP Negeri 1 Sidoarjo. The research focused on one male student and one female student of accelerated class. Data collection techniques used in the research included observation, questionnaire and interview techniques. From the data obtained, data analysis was carried out using three stages including data reduction, data presentation and conclusion drawing. The results of the research obtained SRL of male and female students lead to academic and non-academic fields, and have unequal abilities in science subjects. Male SRL indicators that are not achieved are organization and seeking help while female SRL indicators that are not achieved are anxiety tests. The factor that influences the non-achievement of SRL indicators is that students are less able to manage organization, seek help and test anxiety on themselves. Future research is expected to develop learning tools to train students' SRL.

Keywords: Acceleration Class; Gender; Natural Science; Secondary School; Self Regulated Learner

Introductions

Self regulated learner (SRL) is a person's ability to regulate oneself to properly monitor feelings, thoughts, behavior, in achieving learning goals (Khoerunnisa et al., 2021). SRL owned by a student, one of which is learning, good students can manage their study time and complete their assignments on time (Ulum, 2016). SRL in students is required to actively learn, know the strengths and weaknesses in themselves, and be able to learn independently to find out the knowledge and information learned.

Zimmerman dan Schunk, (Mauludin & Nurjaman, 2018) define self-regulated learning in terms of self-generated thoughts, feelings, and actions, which are systematically oriented towards achieving students' own goals. SRL includes in the reciprocal and iterative interactions that occur between different components, and third, linking learning and achievement directly with oneself, namely one's goal structure, motivation, willpower, and emotions. SRL is the ability of students to control their learning through motivational beliefs in themselves and organize good learning strategies.

SRL in the 21st century has an important role in supporting education. The 21st century is an era of science and technology discovered over the past 5 decades that has been achieved by humans 2500 years earlier (Dinata et al., 2016). Science balanced with extraordinary technology is balanced and able to improve quality education for teachers and students in Indonesia. The 21st century skills include critical thinking skills, problem solving, collaboration, communication and creativity (Zubaidah, 2020).

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The National Education Standards Agency explains that the ideals of the Indonesian nation are to make a nation that is prosperous, honorable, and equal to other nations (Junanto & Afriani, 2016). The achievement of good education and being able to keep up with the times in the 21st century starts from the world of education, especially in schools, good human resources, students and the encouragement of the people around them (Abdillah & Hamami, 2021). Good human resources are independent humans. Independence is a conscious effort made to shape character, developed, one of which is with independent character values (Nova & Widiastuti, 2019). Students' independence in learning is seen from SRL in personal, behavior, and environment aspects (Oktariani et al., 2020). The three aspects of SRL are interconnected in independence, performance and changes that have an impact on learner achievement.

SRL in learners is able to be active metacognitively, motivation and learning behavior. Education in schools includes male and female students so that the abilities possessed by students are not the same (Lidiawati, 2016). SRL has a good influence in the world of education to find out the differences in abilities between male and female students. Student achievement between men and women has a difference when viewed from academic and non-academic, this is able to know the SRL possessed by male and female students. SRL in terms of gender, research that has been found by Hargis, explains that individuals who have high SRL in students tend to study better, diligently, and can manage time efficiently and get good grades (Nahdi, 2017).

Research on male accelerated students has been conducted that male students are more likely to be in the fields of science technology and mathematics, including abilities that are owned including cognitive abilities, relative cognitive strength, interests or occupational preferences. A student's intelligence affects the ability to adapt or adjust to the environment (Patty et al., 2017).

SRL research conducted by (Fatimah, 2019) explains that female students have high regulation, specifically female students are more prominent in the fields of calculation or keeping records and monitoring and planning (goal setting and planning).

Accelerated students are students who have IQs above average, and learning that enforces accelerated curriculum in the study period. The importance of accelerated students in this study is to determine students' SRL by focusing on male and female gender in controlling learning, independence, organizing strategies, improving learning outcomes and achieving good academic or non-academic achievement.

Natural science learning that connects SRL in students can optimize the learning process. Science learning can be done in various ways to support student regulation by applying effective, active, and related learning strategies in everyday life. Science learning can be linked to SRL when viewed from the SRL model, namely analyzing, planning, implementing, observing, understanding, problem solving, evaluating, modifying and elaborating (Putra et al., 2019).

Research (Nugroho et al., 2022) shows that the factors that cause low SRL of secondary school students are lack of confidence, lack of exploring talents and interests, and lack of support from the surrounding environment so that it can affect the achievement of learning outcomes of male and female accelerated students. The purpose of SRL research in accelerated class at SMP Negeri 1 Sidoarjo is to describe the ability and learning strategies between male and female students. The benefit of the research is to describe how to regulate themselves in learning accelerated male and female students in natural science subjects.

The results of research on accelerated class SRL in natural science learning found that male and female students have different learning styles. According to (Alfina, 2014) explains that students who have high self-regulation explain that students who have high self-regulation include the ability to plan, self-organize, regulate, and evaluate their behavior at natural science learning in secondary school. This research aims to deepen the learning strategy towards student independence to get satisfactory achievement and results.

Method

The research method uses qualitative research of the phenomenological type. Research in the phenomenological view understands events and their relation to people in a particular situation, for example in the study of the students studied (Nugroho et al., 2022). The research was conducted at SMP Negeri 1 Sidoarjo with research subjects including one male student and one female student in the accelerated class. Data collection techniques used in the research included observation, questionnaire, and interview techniques. Triangulation of data using triangulation techniques. From the data obtained, data analysis is carried out using the stages of (1) preliminary study (2) literature study (3) research instrument design which includes observation, questionnaire and interview techniques, (4) validation (5) data collection, and (6) data analysis which includes reduction, data presentation and conclusion drawing. The following are the stages of research according to Miles and Huberman:

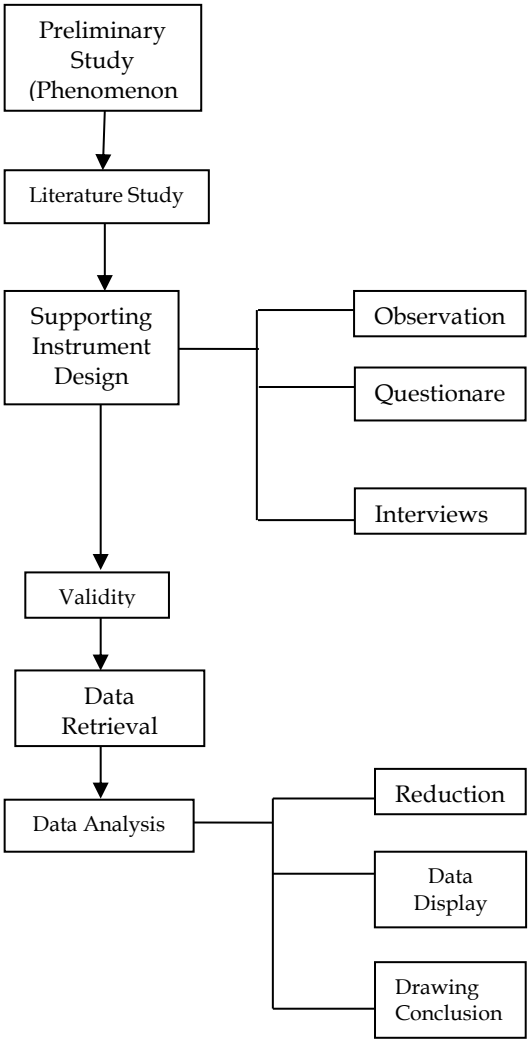

Figure 1. Stages of Data Collection

Result and Discussion

Result

Male SRL

Observations were made in accelerated class seven by following science learning, observations of students were made 3 times a meeting. Observations were made to describe the SRL aspects in the sub-components and criteria of students in participating in the learning that was being followed, the following table shows the results of observations on male accelerated students.

Based on Table 1, the results of male SRL observations can be stated that the SRL aspects, components, and sub-components of students have been in accordance with SRL indicators, male SRL is observed in all aspects of science learning, namely in the aspects of motivational strategies and learning strategies.

Tab1e 1. Observations Result of Male SRL

SRL Aspect	Component	SRL Alignment
Motivational Strategy	Value Component	Observed
	Expectation Component	Observed
	Afektive Component	Observed
Learning Strategy	Cognitive Strategy and Metacognitif of SRL	Observed
	Resource Management Strategy	Observed

After observation, the next data collection technique is questionnaire technique by distributing google form links to male accelerated students, below are the results of male accelerated students' questionnaires.

Table 2. Questionnaire Result of Male SRL

SRL Aspect	Component	Category Description
Motivational Strategy	Value Component	Very True About Me
	Expectation Component	Very True About Me
	Afektive Component	Very True
Learning Strategy	Cognitive Strategy and Metacognitif of SRL	True
	Resource Management Strategy	Very True

Based on Table 2, the results of the male SRL questionnaire show that the metacognitive subcomponents of SRL are not observed in the organizational and metacognitive subcomponents of SRL, this is known from the questionnaire results which show the correct number which means that they are still less capable in the metacognitive component of SRL in science learning.

After the questionnaire technique is carried out, the next is the interview technique, following the results of the interview of male accelerated students. Based on the results of the male SRL interview showed very good and able to answer every aspect and indicator of SRL according to himself.

Based on Table 3 the triangulation data of male SRL, the achieved indicators are intrinsic goal orientation, extrinsic goal orientation, task value, belief control, self-efficacy for learning and performance, anxiety testing, practice, collaboration, critical thinking, metacognitive SRL, time and learning environment, effort regulation, and learning with peers For indicators that are not achieved, namely organization and seeking help.

Table 3. Data Triangulation of Male SRL

Indicator	Obs	Quest	Inter	Description
Orientation Instrinsic Purpose	√	√	√	Credible
Orientation Extrinsic Purpose	√	√	√	Credible
Assignment Score	√	x	√	Not Credible
Learning Confidence Control	√	x	√	Not Credible
Self Efficacy for Learning Environment	√	√	√	Credible
Anxiety Test	√	√	√	Credible
Exercise	√	√	√	Credible
Collaboration	√	√	√	Credible
Organization	√	x	x	Not Credible
Critical Thinking	√	√	√	Credible
Metakognitive SRL	√	√	√	Credible
Time and Leanring Environment	√	√	√	Credible
Work Organizer	√	√	√	Credible
Learning with Peers	√	√	√	Credible
Seeking Help/ Support	√	x	x	Not Credible

Female SRL

Observations were carried out in accelerated class seven by participating in science learning, observations of students were carried out three times a meeting, as follows.

Table 4. Observation Result of Female SRL

SRL Aspect	Component	SRL Alignment
Motivational Strategy	Value Component	Observed
	Expectation Component	Observed
	Afektive Component	Observed
Learning Strategy	Cognitive Strategy and Metacognitif of SRL	Observed
	Resource Management Strategy	Observed

Based on Table 4, the results of female SRL observations that have been made have been in accordance with the aspects of SRL of female accelerated students observed in the science learning process, namely aspects of motivational strategies and learning strategies.

After the observation is done, the next data collection technique is the questionnaire technique by sharing the google form link with female accelerated students, below are the results of the questionnaire for female accelerated students.

Table 5. Questionnaire Result of Female SRL

SRL Aspect	Component	Category Description
Motivational Strategy	Value Component	Very True
	Expectation Component	Very True
	Afektive Component	Very True
Learning Strategy	Cognitive Strategy and Metacognitif of SRL	Very True About Me
	Resource Management Strategy	Very True

Based on Table 5, the results of the women's SRL questionnaire, the components and sub-components are observed and show a score with very correct criteria, meaning that they are able and signify true about me. After the questionnaire technique is carried out, interviews are conducted with female accelerated students face to face. In the SRL aspect, motivational strategies are divided into six sub-components, namely intrinsic goal orientation, extrinsic goal orientation, task value, control of learning beliefs, self-efficacy for learning and performance, and anxiety testing.

Interviews Result of Female SRL

Based on the results of women's SRL interviews show that they are very good and able to answer every aspect and indicator of SRL according to themselves.

Table 6. Triangulation Data of Female SRL

Indicator	Obs	Quest	Inter	Description
Orientation Instrinsic Purpose	√	√	√	Credible
Orientation Extrinsic Purpose	√	√	√	Credible
Assignment Score	√	x	√	Credible
Learning Confidence Control	√	x	√	Credible
Self Efficacy for Learning Environment	√	√	√	Credible
Anxiety Test	√	x	x	Not Credible
Exercise	√	x	√	Credible
Collaboration	√	√	√	Credible
Organization	√	√	√	Credible

Indicator	Obs	Quest	Inter	Description
Critical Thinking	√	√	√	Credible
Metakognitive SRL	√	√	√	Credible
Time and Leanring Environment	√	√	√	Credible
Work Organizer	√	√	√	Credible
Learning with Peers	√	√	√	Credible
Seeking Help/ Support	√	√	√	Credible

Based on Table 6, female SRL triangulation data, the achieved indicators are intrinsic goal orientation, extrinsic goal orientation, task-controlled beliefs, self-efficacy for learning and performance, practice, collaboration, organization, critical thinking, metacognitive SRL, time and learning environment, effort regulation, learning with peers and seeking help. For indicators that were not achieved, the anxiety test.

Discussion

Based result male SRL tends to like natural science learning that leads to calculations, such as physics subjects. Research relevant to male accelerated students has been conducted Fitriani et al. (2018), explaining that male students are more likely in the fields of science technology and mathematics including their abilities including cognitive abilities, relative cognitive strength, interests or job preferences. A student's intelligence affects the ability to adapt or adjust to the environment. According to Basri (2018), explains that intelligence is one of the internal factors in an individual that can influence the stimulus received. Anwar et al. (2019), explains that men have a larger brain volume than women. Anwar et al. (2019), explained that there is a difference in the average number of neocortex neurons in the brains of women and men by 16%, and about 19 billion neocortex neurons in the female brain and 23 billion in the male brain. Jaušovec & Pahor, (Anwar et al., 2019) state that there is a positive relationship between brain volume and intelligence level which is explained by the positive association between brain volume and the number of neurons. Human intelligence is related to neuronal complexity, action potential kinetics and efficient transfer of information from input to output in cortical neurons. The level of intelligence in each individual is different, a 2014 meta-analysis on sex differences in scholastic achievement found that women outperformed men from elementary school level, junior high school level, high school level and college level.

Based result female accelerated students tend to have good SRL in terms of SRL aspects. Female accelerated students prefer science learning in the field of biology, and have learning strategies that lead to memorization and repetition of materials. Research conducted by Cahyono (2017), states that education in America shows women are slightly better than men in general ability.

According to Azmi (2016), SRL is an activity of learners to be able to monitor, regulate, and control their cognition, motivation and behavior. SRL strategies according to explain about SRL cognitive strategies include summarizing, memorizing and taking notes in their own language. Motivational strategies include making greater efforts, emphasizing consistent reasons and increasing intrinsic motivation in doing tasks (Saraswati, 2017). Behavioral strategies include managing time and learning environment and getting help from peers. Female accelerated students prefer the learning style of memorizing and writing back in their notebooks and asking questions if they do not understand. Research in education based on female gender in the academic field is more active and superior than male students. Based on research that has been conducted by previous researchers, it explains that the IQ of female students is five points low compared to male students. However, with the passage of time and the changing times stated by the sixth IQ tester by experts (Muspiroh, 2020). Female IQ currently has a higher level than male students. Thus, from the change in the IQ level of female and male gender, it only has a difference of 5 (five) points from men. However, this finding shows that female students have a higher IQ level than male students. The findings that have been made by Flynn can show the equality or equality of the sexes in education that has been found (Yudho et al., 2020).

Based on the research of two accelerated students consisting of one male accelerated student and one female accelerated student, it can be revealed that SRL in terms of learning style and ability between male and female accelerated students tends to be higher in female students. In the world of education, male accelerated students excel more in math, physics and non-academic fields, while female accelerated students tend to like subjects such as biology and are interested in rote learning. Research conducted by Zimmerman and Martinez Pons, (Hasnah, 2018) explains that students who have high SRL and achievement tend to look to peers and teachers as a source of encouragement, and researchers found that students more often seek help from parents. 50% asked for help from peers, 35% asked for help from adults.

Conclusion

Based on the results of the study, it can be concluded that SRL based on gender, namely one male student and one female student in accelerated class in natural science learning at SMP Negeri 1 Sidoarjo, between male SRL and female SRL can be developed in learning, interests and talents they have in terms of academic and non-academic fields. Male SRL indicators that are not achieved are organization and seeking help while female SRL indicators that are not achieved are anxiety tests. Factors affecting the non-achievement of SRL indicators are thought to be that students are less able to manage organization, seek help, and test anxiety on themselves. Future research is expected to develop learning models that train SRL.

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Conflicts of Interest
The authors of this article has declare no conflict of interest.

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