IMPLEMENTATION OF FAST LEARNING ON BIOLOGY INTRODUCTORY TO IMPROVE SCIENCE PROCESS SKILLS ON MADRASAH IBTIDAIYAH TEACHERS PROSPECTIVE

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Abstract

This research was aimed to determine the effectiveness of *FAST* (*Fatonah, Amanah, Shidiq, Tabliqh*) learning on biology introductory to improve the learning outcomes, science process skills and *FAST* character education on Madrasah Ibtidaiyah teachers prospective. The objects of this research were42 respondents for the experiment group and 40 respondents for the control group. This research used the non-equivalent control group design. The instrument used esay test and observation. Data analysis used the independent sample t-testand the gain score. The results showed that there was a significant increase in learning outcomes (sig. 0,00<0.05). The results of the science process skills showed that the sig. value = 0,00, which means that there is an influence of *FAST* learning on science process skillsTheenhancement of know what the job was 94%, very high category; can do the task completely was 87%, high category; the honesty was 98%, very high category; and the able to communicate was 86%, high category.

Keywords: *FAST*, learning, science process skill

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INTRODUCTION

To overcome the challenges of the diruption era in the science and technology sector, the teachers prospective need to be equipped with the diruption era skills to ensure their competitiveness in the globalization era. They are expected to master the disruption era skills apart of justing being excelled in their academic performance. Therefore, it is crucial to incorporate disruption era skills in science education. The disruption era skills comprised of four main domains namely digital age literacy, inventive thinking, effective communication and high productivity (Turiman, 2012).

There are still many teachers who have not implemented learning by developing science process skills. Many teachers assume that by mastering the science concept, everything will be finished. Ratna & Sahyar's (2016) study showed that students' science process skills in the cognitive realm were very good, but in the psychomotor realm there were still less, that is, only 30% of students were able to experiment and understand what was being done. Prior studies have found out the root of the problem underlying the fact that more than 50% of students of Madrasah Aliyah (high school level), could not answer properly the biology questions requiring analytical thinking (Andrews et al., 2012). Green living topic in biology is important for environmental awareness. Moreover, in performing scientific works, the students tended to be fully dependent on the teachers. These proved that during classroom learning, the students were lack of independence and the teachers have not taught them to be.

The Madrasah Ibtidaiyah teachers prospective are required to integrate subjects with Islam include biology. Therefore, learning must be based on the characteristics of the Muhammad Prophet, namely by the *FAST* (*Fathonah, Amanah, Shiddiq, and Tabligh)* method. Personal character is the culmination of the individual maturity process, this is not only recognized by Muhammad SAW which is enshrined in the hadith that his sending by Allah SWT is only to perfect the morals of all humanity (Sholeh, 2018).

The development of science and technology is increasingly rapid, it needs to be balanced with good character, namely the characters that fahonah, amanah, shiddiq, and tabligh. Prophetic implementation in primary education institutions can be carried out through (1) structural approaches, (2) formal approaches, (3) mechanical approaches, and (4) organic approach (Sholeh, 2018). Wardi & Ismail (2016) in their research showed that learning with *FAST* contributed to the skills and competencies of students in the field of entrepreneurship.

The *FAST* learning can control emotions, forgiveness, laughter, cooperation, compassion and patience, because, the *FAST* learning method is learning by encouraging students to become a learner, creating a comfortable learning atmosphere, applying practice methods, teaching according to student abilities, variations in teaching, easy and not burdensome, teaching with stories, teaching by teaching, teaching with multimedia, and teaching with tallaqi method (Putra, 2014). According to Wibowo (2019), *fathonah, amanah, shiddiq*, and *tabligh*provide an overview of the apostolic characteristics of the prophet of Muhammad SAW. *Fathonah, amanah, shiddiq* and *tabligh*be able to compete in the era of industrial revolution 4.0, with accompanied by a mentality of tanmiyatul ilmi (developing knowledge). While Mansyur (2013) states that *FAST* character education can overcome corrupt behavior.

Based on the above problems, it is expected that in biology learning can develop process skills and make students have *FAST* characters. If both are obtained, then the purpose of biology on green living topic learning will get maximum results. The learning in Madrasah Ibtidaiyah teachers prospective is based on religious values, will providing and opportunities to improve mental attitude experiences to build maturity, independence, entrepreneurship, and reflection on the application of Islamic values and spiritual beliefs for students (Dzakiey, 2005). Be carrying out the vision to build a generation of independent achieves and missions to provide easy access to education, foster good and strong character, built generation of independence, improve religious understanding, and improve academic achievement (Arief, 2011). Prophets in Islamic Basic Education Institutions are expected to help students to improve intelligence, achievements, be a generation of people who are noble and spiritually Qur'ani (Burhanudin & Afriyanti, 2006). Therefore, this study was aimed to determine the effectiveness of *FAST*learning on biology introductory to improve the science process skills on Madrasah Ibtidaiyah teachers prospective.

METHOD

This study employed the quantitative of the quasi-experimental method with a non-equivalent control group design (Sugiyono, 2019). The quasi-experiment is suitable to analyze the cause by involving to groups; experimental and control. The research objects were the students learning biology

introductionon green living topic in both the experimental and control group at Madrasah Ibtidaiyah teachers Ppospective at IAIN Tulungagung. The independent variable was learning and the dependent variable were the students', learning outcome, science process skills, and learning improvement. The research design is presented in Tabel 1.

Table 1. The Research Design

Group	Independent Variable	Posttest
E	X_1	Y
C	X_2	Y

This research chose 42 respondents for the experiment group, and 40 respondents for the control group. The normality and homogeneity test result determined group 1 as the experimental groups (E) which implemented the FAST learning and group 2 as the control group (C) which applied direct learning. X_1 is the treatment using FAST learning and X_2 is the treatment with conventional learning. Furthermore, Y are the learning outcome, science process skills, and learning improvement. The test result indicated that the analyzed data were homogeneous, thus, a parametric test was possible to carry out. The students' ability in analyzing the material content of green living topics was assessed based upon the content analysis criteria adopted from Bloom. There were 10 questions provided. The data collection technique of this research appears in Table 2.

Table 2. The Data Analysis Techniques

The Observed Aspects	Techniques	Instruments
Learning Outcome	T-test	Test
Science process skills	T-test	Observing
Learning improvement (know what the job, can do the task completely, the honesty, able to communicate)	Gain score	Observing

The instruments consist of test and observations. The test is used to obtain data on learning outcomes through essay test. The observationsare used to obtain data on science process skills which include planning, observing, classifying, predicting, measuring, concluding, and communicating. In addition, the observationsare also used to obtain learning improvement data which includes know what the job, can do the task completely, the honesty, able to communicate. The observations using a scale of 1-4.

The given formula was employed to analyze the obtained score:

$$(g) = \frac{\%(g)}{\%(g)\max}$$

$$(g) = \frac{(\%(S_f) - \%(S_i))}{(100\% - \%(S_i))}$$

Where:
G = gain score
S_f = average of experiment group score
S_i = average of control group score
The research adopted the Setyowati (2015) assesment criteria, which are as follows: $1 \geq g > 0,90$ (excellent), $0,90 \geq g > 0,75$ (high), $75 \geq g > 0,55$ (enough), $0,55 \geq g > 50$ (low), $g \leq 50$ (bad).

RESULTS AND DISCUSSION

The learning outcomes obtained from both the experimental and control group were informed in Table 3 and Figure 1.

Table 3. The Analysis of MI Teachers Prospectives' Learning Outcomes from both the Experimental and Control Group

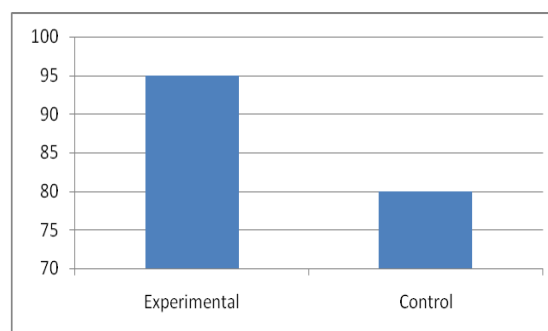| Group	Post-test average
Experimental	95
Control	80

Figure 1. The Analysis of MI Teachers Prospectives' Learning Outcomes from both the Experimental and Control Group

Then, analyzed by the T-test as in Table 4.

Tabel 4. The T-test of Learning Outcome

	Levene's Test for Equality of Variances		t-test for Equality of Means						
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
								Lower	Upper
Equal variances assumed	3.798	.055	38.975	78	.000	14.643	.376	13.895	15.391
Equal variances not assumed			41.000	41.000	.000	14.643	.357	13.922	15.364

Based on Table 3 showed that the experimental group post-test is better than the control group. While in table 4, showed that there are significant differences (sig.0,00 < 0,05) in the value of the post-test on the green living topic between the experimental and control group. The next will be analyzes the data of science process skills. Science process skills in this study, include several indicators: (1) planning, (2) observing, (3) classifying, (4) predicting, (5) measuring, (6) concluding, and (7) communicating, adopted from Subadi (2009) and Nawawi et al. (2017). During the learning, activities carried out data collection of students' science process skills carried out with observation sheets. The results of the science process skills can be seen in Table 5 and Figure 2.

Tabel 5. The Data of Science Process Skills Indicator Average

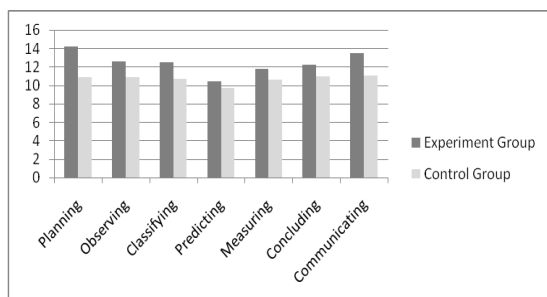| No	Science Process Skills	Experiment Group	Control Group
1	Planning	14,17	10,92
2	Observing	12,62	10,87
3	Classifying	12,48	10,74
4	Predicting	10,40	9,74
5	Measuring	11,79	10,61
6	Concluding	12,21	10,95
7	Communicating	13,48	11,05

Figure 2. The MI Teacher Prospectives' Science Process Skills in Experiment Group and Control Group

The guideline for the observation process of science process skills used a scale of 1 to 4. After calculated, there are differences in the average scores of science process skills in the experimental and control group, as presented in Table 6.

Tabel 6. The Data Score of Science Process Skills

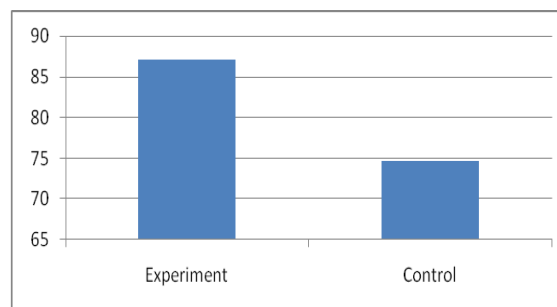| No	Group	Average	Criteria
1	Experiment	87,14	High
2	Control	74,61	Enough

Figure 3. The Data Score of Science Process Skills

The science process skills show a difference between the experimental and control group. In the experimental group, an average of 87,14 was obtained with high criteria, and in the control group, an average of 74,61 was obtained with enough criteria. Then, the data of science process skills were analyzed by the T-test. After being analyzed by the T-test, it shows the sig. value = 0,00, which means that there is an influence of FAST learning on science process skills. The results of the T-test analysis can be seen in Table 7.

Tabel 7. The Data of Analysis with T-test on Science Process Skills

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Y	Equal variances assumed	2.612	.110	7.519	78	.000	12.538	1.667	9.218	15.857
	Equal variances not assumed			7.396	66.185	.000	12.538	1.695	9.153	15.922

Table 7 shows that, there are differences in science process skills between the experimental an control group (sig. value = 0,000 < 0,05). Furthermore, an analysis of the FAST indicators is included: the enhancement of know what the job, can do the task completely, the honesty, and the ability to communicate, as presented in Table 8.

Tabel 8. The Data FAST Indicator Average

No	FAST Indicators	Group	Ave-rage (%)	Gain-Score	Crite ria
1	The enhance ment of knowing what the job	Experi ment Control	97 77	94	Very high
2	Can do the task complete ly	Experi ment Control	95 62	87	High
3	The honesty	Experi ment Control	99 60	98	Very high
4	The ability to communi cate	Experi ment Control	95 64	86	High

Based on Tabel 3, the average of the experimental group post-test is 95 and the control group is 80. Whereas based on the T-test in Table 4, a significance value of 0,00 is obtained, which means, there are differences in learning outcomes between the experimental an control group. This shows that *FAST* learning method can improve the learning outcomes ofbiology introductory on green living topic.

Based on Table 5 and Table 6 are a score of indicators of science process skills. The experimental group obtained an average of 87,14 and the control group is 74,61. The average process skill indicator in the experimental group is highest in planning ability, while in the control group is the communicates indicator. While the lowest in the experimental group are better than the control group. After being analyzed by the T-test, there were differences in science process skills between the experimental group and the control group (sig. = 0,00 < 0,05).

The indicator of communication shows second place. In the experimental group, the skills communication were higher than the control group. This is because, in the experimental group, the prospective MI teachers are required to practice communicating in the classroom by following the *FAST* learning that is tabligh, so that their communication skills are better. Rustaman, et al. (2007), states that science process skills can involve intellectual skills by using his mind in learning activities.

Besides, communication skills are influenced by the stages of *FAST* learning, namely at the tabligh stage. Agustina (2016) states that the *FAST* method can foster leadership, where one of the characteristics of leadership is to be able to communicate. The communication indicator on the control group also shows the highest value compared to other indicators. This is felt in the learning process of the prospective MI teachers divided into groups where it is indeed required to be able to communicate. According to Andana et al. (2014), the active involvement of students is believed to be able to create curiosity so the prospective MI teachers are interested in learning the material to be delivered.

Indicators of science process skills in the experimental group with *FAST* learning have high

completeness value. This shows that with the *FAST* learning, where the prospective MI teachers are expected to be creative, do work thoroughly, honestly, and able to communicate is very suitable to be applied to improve science process skills. As explained by Putra (2014), *FAST* learning will be able to control emotions, forgiveness and forgiveness, tawadlu', cooperation, fun, compassion, patience, and honesty. By implementing practical learning, a comfortable atmosphere, adapted to prospective MI teachers' abilities, variations in teaching, teaching with stories can improve science process skills.

Through *FAST* learning, the teachers as a model support the efforts of students to complete tasks independently. Guidance from educators is an important thing that happens in the classroom. Putra (2014), shows that learners benefit from educators who consider their relationship with students as facilitators, which helps students in learning problems. Besides, to encourage students to become learners, en educator can also make the Qur'an and Sunnah as a means to boost the spirit of learning. Effective learning is the result of the interaction of the whole body and mind. To achieve good learning outcomes, a good attitude is required.

Educators must create a happy atmosphere and great interest in something learned. *FAST* learning also applies practical learning methods, namely in explaining things accompanied by practice. The practice method is a teaching method with students carrying out exercises or practices so that the firmness or skills is higher than what has been learned. The *FAST* learning method also uses talaqqi method, which is a method for knowing something. There are two kinds of talaqqi categories, namely, first, a teacher reads or delivers knowledge in front of his student, while the student listens to it, and ends with questions. Second, students read in front of the teacher, then the teacher confirms if there is a mistake. The advantages of the *talaqqi* method are to make it easier for teachers to supervise students and guide them directly, and make it easier for instructors to choose the right teacher in delivering knowledge.

The lowest science process skill indicators in both experimental and control groups are predictive indicators. This is because, the MI teacher's prospective is still lacking in reading books and increasing knowledge, so the ability to predict still lacking. Learning biology requires a systematic comprehension of the biology process (Seniwati, 2015). The biology learning process should be emphasized in performing practicum to lead students to build their knowledge.

In addition to the science process skills indicators, this study also looked at indicators of the characteristics of the prophet shown from *FAST* learning. There are four indicators, namely the enhancement of knowing what the job, can do the task completely, honesty, and the ability to communicate. There is a significant difference seen with gain–score between the experimental group and the control group. Based on Table 8, the gain-score is obtained for the enhancement of know what the job was 94% (very high category).

This shows that there is a very high difference in the ability to know the tasks that must be done between the experimental group and the control group. This can also be seen from the indicators of planning which in the experimental group is higher. The next indicator is to do the task completely was 87% (high category). This shows that there is a high difference in the ability to complete the work completely. Whereas for honesty, it shows 98% (very high category). This shows that in the experimental class honesty is very high, while in the control group, the MI teacher prospective often find questions or see books in learning. The last indicator is the ability to communicate was 86% (high category). This shows that communication skills in the experimental group are higher than the control group.

Based on the results of the research, it shows that with *FAST* learning besides being able to improve science process skills, it can also improve the character of fathonah, amanah, shiddiq, and tabligh according to the characteristics of the Mohammad Prophet. The position of educators in the learning process plays a large and strategic role. Therefore the style and quality of prophetic implementation can generally be measured by the quality of the educator, because educators who have high qualifications as expected to be able to create and design more dynamic and constructive material, overcome the weaknesses of the material and their subject matter by creating conductive atmosphere and active learning strategies the good one. With educators who have high quality, output education can be guaranteed so that they can manage their potential, develop self-reliance to look at a health and prospective glorious future (Roqib, 2011).

Based on the explanation, that defines the Prophet's character are fathonah (intelligent), amanah (trustworthy), shiddiq (true/honest), amanah (trustworthy), and tabligh (convey). Fathonah means thought and action to do something in producing new ways or result from something you already have. Amanah means behaviors that show genuine efforts to overcome learning barriers and tasks, and complete task as well as possible. Shiddiq means that all deed was done and words that come out of his tongue are

always true and honest. The meaning of the two doors indicates the importance of honesty that human being must have to do. Because in this day, honesty and truth are very rare and become an expensive character (Rohman, 2017).work values so that it can have implications for the interest of stakeholders. High moral commitment is needed to implement Islamic work values so that it can have implications for the interests of stakeholders (Hamdani, et al., 2019).

CONCLUSION AND SUGGESTION
Conclusion

From discussion mentioned it can be concluded that *FAST* learning on introductory of biology can improve the learning outcomes, science process skills, and *FAST* character education.The results showed that there was a significant increase in learning outcomes (sig. 0,00<0.05). The results of the science process skills showed that the sig. value = 0,00, which means that there is an influence of *FAST* learning on science process skills.Theenhancement of know what the job was 94%, very high category; can do the task completely was 87%, high category; the honesty was 98%, very high category; and the able to communicate was 86%, high category.

Suggestion

This research should be developed again toobtain maximum research results. We recommend that in the learning process always use learning with *FAST* (*fathonah, amanah, shiddiq and tabligh)* character.

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