THE EFFECTIVENESS OF SCIENTIFIC APPROACH USING ENCYCLOPEDIA AS LEARNING MATERIALS IN IMPROVING STUDENTS' SCIENCE PROCESS SKILLS IN SCIENCE

by Diana Hernawati

Submission date: 27-May-2019 10:24PM (UTC+0700)
Submission ID: 1136559175
File name: JURNAL_Q3_2018.pdf (251.9K)
Word count: 4197
Character count: 23487

JPII 7 (3) (2018) 266-272

Jurnal Pendidikan IPA Indonesia

http://journal.unnes.ac.id/index.php/jpii

THE EFFECTIVENESS OF SCIENTIFIC APPROACH USING ENCYCLOPEDIA AS LEARNING MATERIALS IN IMPROVING STUDENTS' SCIENCE PROCESS SKILLS IN SCIENCE

D. Hernawati*[1,2], M. Amin[3], M. H. Irawati[4], S. E. Indriwati[5], N. Omar[6]

[1]Postgraduate Doctoral Student of Biology Study Program, Postgraduate Program, Universitas Negeri Malang, Indonesia
[2]Study Program of Biology Education, FKIP, Universitas Siliwangi, Tasikmalaya, Indonesia
[3]Department of Biology, Faculty of Mathematics and Natural Sciences, Universitas Negeri Malang, Indonesia
[4]Faculty of Modern Languages and Communication, Universiti Putra Malaysia, Malaysia

DOI: 10.15294/jpii.v7i3.14459

Accepted: May 23rd, 2018. Approved: August 31st, 2018. Published: September 20th, 2018

ABSTRACT

A scientific approach for biology students in the Vertebrate course is needed in order to improve the skills and enrich the experience for new spirit of learning. The research was a quantitative research aiming to explain the influence of the encyclopedia as learning materials used in the scientific approach to improving the students' science process skills. Meanwhile, to reveal the influence of each indicator in each predictor, a qualitative descriptive analysis was employed. The encyclopedia was found to be able to provide visualization to represent an explanation. The respondents in this study were biology students who attended the Vertebrate course. Thirty respondents were selected through a cluster random sampling technique. A test of science process skills was the instrument of this research. Furthermore, the ANOVA was utilized in testing the hypothesis. The analysis results showed that there was a different effect of the learning approach on the basic science process skills. Moreover, there was also a significant influence of the scientific approach to basic science processing skills at a significance level of 0.001 (on corrected model) with F value equal to 7.411. Meanwhile, the significance level for basic science process skills was 0.024 with the p-value <0.05 and F value of 5.357. For the integrated science, there was a significant effect of the learning approach to the integrated science process skills at the significance level of 0.000 with the F value of 12.537. The significance value for the integrated science process skills was 0.044 with p-value <0.05 and F value of 4.224.

Keywords: encyclopedia, scientific approach, science process skills

INTRODUCTION

Improvement of the quality of education is a continuous process from school to college. One of the ways is to train students' skills, and the potentially empowered skill is the science process skills. Science process skills (SPS) define as the development of insight into intellectual, social and physical skills derived from the basic abilities found in students (Ostlund, 1992; Ozgelen, 2012). The science process skills are necessary for discovery, inquiry and thinking process which help students be lifelong learners (Farsakoglu, 2012; Cigrik & Ozkan, 2015). The sciences process skills (SPS) are divided into two; the basic and integrated SPS. The observation, measurement, classification, conclusion, prediction, and communication belonged to the basic SPS.

*Correspondence Address
E-mail: hernawatibiologi@unsil.ac.id

Meanwhile, the integrated science process is a combination of two or more basic science processes (Kemendikbud, 2011; Nworgu & Otum, 2013). Integrated science process skills include some variables such as controlling, operational definition, hypothesis formulation, data interpretation, and experimentation (Chabalengula, & Mumba, 2010; Lancour, 2006; Padilla, 1990). The improvement of various skills can be done in many ways, by applying various learning approaches, for instance. The scientific approach was chosen in this study since it has been proven to be able to achieve a better learning outcome. A study by Dyer et al. (2011) discovered a concept known as the five discovery skills based on creative intelligence, an intelligence that is beyond the cognitive ability and involves two sides of the brain to create new ideas using 5 skills: associating, questioning, observing, experimenting, and networking (Dyer et al., 2009).

A scientific approach is also called a scientific-based approach. The process aims to acquire systematic scientific knowledge. The scientific approach roots in a scientific method, a concept that emphasizes science more as a verb rather than a noun. The scientific method is a procedure or process that gives priority to more active and participatory methods (Simonneaux, 2014; Baars, 2011; Reid, 2008). This kind of learning strategy can support students to develop hands-on and minds-on (Duda, 2010) as well as their basic ability such as communication skill, interpersonal relation, critical thinking, and problem-solving skill (Lazanyi, 2012). This is strengthened by Kumar (2013) and Prain (2012) who stated that to be able to live in a good competition in the 21st century, young generations must at least own these abilities; communication skill, interpersonal relation, critical and rational thinking, problem-solving, risk-taking, cooperating skill, innovative skill, leadership, and technology. To support the development of hands-on and mind-on students, the use of encyclopedia as teaching materials during has been considered important. An encyclopedia gives a better explanation (Yu & Lam, 2008) and it helps explaining everything as a phenomenon (Mills et al., 2010). An encyclopedia is equipped with scientific information and supported by original photographs. Komalasari (2011) argued that an image or photograph can provide a real picture to show the real object, give livelier learning atmosphere and it is more accurate than words, so as to stimulate the thinking ability of learners.

Abruscato (1995) pointed out a reason why some students were less successful in becoming active and independent students since they were less aware of their basic process skills. Kruea-In Buaraphan (2014) suggested that students' science process skills could be nurtured through proper instruction. Hodosyova et al. (2015) explored the relationship between basic science process skills and learning outcomes. They found that having sufficient understanding and science process skills are considered an important aspect in learning science. Some researches have shown how important science process skills is to be owned by students; however, it should not be forgotten that the integrated science process skills will not be proper if the basic science process skills required by students are not trained from the beginning. Therefore, the basic science process skills must be owned by students before they develop other skills. Fortunately, all these skills can be learned and obtained at school. To support science learning, students should not only learn facts, concepts, laws, and theories in science, but they should also learn the process of how products of science are created. Students should not only learn the products but the process, attitudes, and technology in order to truly understand science as a holistic (Mariana & Praginda, 2009).

There has been no published research on the influence of the encyclopedia-based scientific approach to the students' science process skills. Thus this study aimed to determine how strong the influence of the scientific approach to science process skills. Furthermore, it was expected that the research results could provide knowledge in the effort to improve the quality of education and the mastery of skills, as well as to enrich the students' experience and grow their passion in learning Biology. The main purpose of this study was to describe the effectiveness of encyclopedia-based scientific approaches to the students' science process skills.

METHODS

This research was carried out to determine the influence of encyclopedia-based scientific approach on the students' science process skills. Meanwhile, to observe the influence of each indicator from each predictor, a qualitative descriptive analysis was used. The researchers had performed this study for 1 semester. The sample in this study were pre-service teachers in biology program amounted to 105 students divided into

five classes. The respondents were 30 students selected through the cluster random sampling technique. The design used quasi-experimental, control group, post-test only design (Creswell, 2012).

The research instruments were tests on basic and integrated science process skills consisting of 20 validated items. The given test was in the form of an essay based on indicators presented by Chabalengula & Mumba (2010), Lancour (2006), and Padilla (1990) as mentioned above. There were two questions for each skill.

Prior to the test, a trial test was done to 32 respondents who were not the research sample. This trial aimed at determining the validity and reliability of the items. The reliability test using Cronbach's Alpha showed a result of 0.847 for the basic science process skills and 0.876 for the integrated science process skills.

The data were statistically tested using the ANOVA with a significance level of 5% ($p < 0.5$) (Kozub, 2010; Gamst, et al, 2008). The data obtained were first tested on the prerequisite normality and homogeneity test. All data analysis was performed using statistical package for the social sciences version 23.0 for windows.

RESULTS AND DISCUSSION

The results of data analysis to determine the influence of scientific approach to science process skills of biology students are presented in Table 1.

Table 1. Summary of Scientific Approach Analysis to Basic Student Science Process Skills

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	122.510[a]	2	61.255	7.411	.001
Intercept	1630.843	1	1630.843	197.312	.000
Group	100.876	1	100.876	12.205	.001
Pretest_kps_basic	44.281	1	44.281	5.357	.024
Error	553.776	67	8.265		
Total	24082.000	70			
Corrected Total	676.286	69			

Based on the results of covariate analysis, it explained that there was a different effect of learning approach on the basic science process skills by eliminating the pre-test of basic SPS as a covariate at the significance level of 0.001 with a value far from 0.05. Simultaneously, there was a significant influence of the scientific approach to the basic science process skills at the significance level of 0.001 (on the corrected model) with the F value of 7,411. Meanwhile, the significance value for the basic science process skills was 0.024 with p-value <0.05 and F value of 5.357.

The next analysis was to test the influence of the scientific approach to the integrated science process skills among biology students. The analysis results are presented in Table 2.

Table 2. The Effect of Scientific Approach on Integrated Student Science Process Skills

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	118.350[a]	2	59.175	12.537	.000
Intercept	1269.431	1	1269.431	268.951	.000
Group	64.309	1	64.309	13.625	.000
pretest_kps_integrated	19.935	1	19.935	4.224	.044
Error	316.236	67	4.720		
Total	9877.000	70			
Corrected Total	434.586	69			

The significance value of the corrected model shown in Table 2 signaled that there was a significant effect of learning approach on integrated science process skills with the significance level of 0.000 with the F value of 12.537. Meanwhile, the significance value for integrated science process skills was 0.044 with the p-value <0.05 and F value of 4.224. Moreover, the scientific approach had a significant effect on the integrated SPS with pre-test as the covariate at significance level of 0.05. The obtained value of significance was 0.000.

Results of analysis of student activity based on the results of observation on the learning process with the scientific approach are presented in Table 3.

Table 3. The Analysis of Student Activity

Activities	Score (%)							Means
	1	2	3	4	5	6	7	
Observing	60	60	65	65	77	88	88	71.86
Questioning	80	66	78	78	77	88	88	79.29
Experimenting	83	83	83	88	88	88	88	85.86
Associating	66	66	83	83	66	83	83	75.71
Communicating	66	67	67	83	83	83	83	76.00

A learning process using scientific approach gave relatively good results. The average score was lower than 80, which indicated that some activities such as the observing, reasoning, and communicating need detailed emphasis during the learning process. The learning habit using the scientific approach could improve the students' ability both cooperatively and collaboratively. Therefore, the exploration through learning activities in observation, making inquiries related to observations, conducting experiments, reasoning and communicating results through various interpretations needed improvement (Hernawati et al., 2018). The accumulation of all these stages would improve the intellectual ability, especially in higher-order thinking skills.

Based on the behavioral theory (Schunk, 2012), observation and learning behavior could give impacts to the learning implementation. Several things suggested in behavioral theory include the emphasis on stimulus presentation and strengthening of responses (Thorndike's learning theory), habituation (Pavlov's theory), strengthening (Skinner's theory) need to be the attention for all activities. Based on facts, the concept of meaningful learning as explained in Ausubel's theory is still needed to strengthen through various intellectual skills abilities.

There were seven reports of experimental activities undertaken by students during the learning process using the encyclopedia as the learning materials. The results of the analysis are presented in Figure 1.

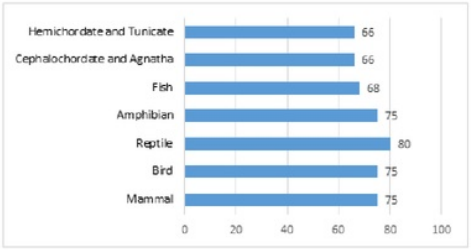

Figure 1. The Analysis of Students' Outcomes based on Experimental Activity

There were seven subjects that the students learned during the research explicitly hemichordate and tunicate, cephalochordate and agnatha, fish, amphibians, reptiles, birds, and mammals. The implementation of learning in the experimental class was carried out based on the steps of the scientific approach, which referred to the decree of Ministry of Education and Culture (Permendikbud) No. 103 Year 2014 by including several items as suggested by Dyer et al, (2009) such as observing, questioning, experimenting, associating, and communicating. In the last five years, conventional classes applied to conventional laboratory work.

The results indicated that active learning involving students in science process skill is needed during the learning process. This kind of activity allows students to improve their critical thinking ability in order to reach their academic target (Tutiaux-Guillon, 2008). Science process

skill was developed through innovative learning and collaborative group study. Chan et al. (2016) stated that any learning activity involving the variety of group discussions would improve students' interpersonal skill. Innovative learning often requires students to develop more autonomy and responsibility as well as self-awareness due to the student-centered activities (Bédard & Béchard, 2009). Some researches stated that science process skills could develop cognitive skills and support students' thinking, intellectual, examining, and problem-solving skills (Ozgelen, 2012). Thereover, there is a strong correlation between the students' science skills with the properties of science process skills. Previous studies have shown that science process skills are the important part that influences students' achievement (Baser & Durmus, 2010).

The observing skill is the most important thing for developing the other process skills (Abruscato, 1995; Carin, et al., 2005). Performing a measurement requires knowledge to use the measuring equipment properly (Abruscato, 1995; Carin, et al., 2005). Classification is a process skill for selecting various objects based on certain traits (Abruscato, 1995; Carin, et al., 2005). Furthermore, the inferencing skill refers to the development of possible conclusions. Predicting skill relates to making specific statements about everything based on certain patterns or trends. Valid prediction requires precise and correct determination (Abruscato, 1995; Carin, et al., 2005). Meanwhile, the communication skill is an effort in conveying relevant ideas. All of these basic science process skills are required as a bridge to improve the integrated SPS. This explanation is related to the study of Prihatnawati et al (2017) that science process skill could be improved with the module as the teaching materials.

The integrated SPS is essentially the skills needed to conduct research (Abruscato, 1995; Carin et al., 2005). Similar skill is required in defining operational variables that covers certain considerable limits depending on the area of science. Operational definitions are varied depending on the subject, for example, recognizing the attributes of independent variables, the scope limitation of the dependent variable (Abruscato, 1995). Data interpretation involved other science process skills, such as tabulating the data, drawing conclusions, and analyzing the data either quantitatively or qualitatively as a basis for testing the hypotheses. Experimenting defines as a skill to conduct testing on ideas originating from facts, concepts, and principles of science (Abruscato, 1995).

The process skills are the assimilation of various intellectual skills that can be applied to the learning process (Feyzioglu, 2009; Ozturk et al., 2010). Based on the Piaget's cognitive development stage, basic skills can be nurtured in the early stages of cognitive development, while the integrated skills can be introduced later in the formal operational development stage (King, 2011). Thus, the existence of the scientific approach with five aspects including observing, questioning, experimenting, associating, and communicating, supports the improvement of students' science process skills. Triyuni (2016) stated that scientific approach provides a positive and good learning environment that is conducive to improve the students' skills.

CONCLUSION

Based on the above discussion, the scientific approach applied in the learning process has proven effective in improving the basic SPS and integrated SPS among biology students. The statistical analysis informed that scientific approach significantly influenced the basic SPS and integrated SPS of biology students. In sum, the scientific approach had the right learning syntax to enhance and develop the students' academic abilities and gave them various skills.

ACKNOWLEDGEMENTS

We would like to thank the Doctoral Dissertation Research Grant from the Directorate of Research and Community Service, Directorate General of Research and Strengthening of Development, Ministry of Research, Technology and Higher Education of Indonesia for the funding of this research, As per decision no. 0045 / E3 / LL / 2018 on acceptance of research funds and community service in higher education by 2018.

REFERENCES

Abruscato, J. (1995). *Teaching children science: A discovery approach*. Boston: Allyn & Bacon.

Baars, T. (2011). Experiential Science; towards an Integration of Implicit and Reflected Practitioner-Expert Knowledge in the Scientific Development of Organic Farming. *Journal of agricultural and environmental ethics*, *24*(6), 601-628.

Baser, M., & Durmus, S. (2010). Mustafa. The Effectiveness of Computer Supported Versus Real Laboratory Inquiry Learning Environments on the Understanding of Direct Current Electricity among Pre-Service Elementary School Teachers. *Eurasia Journal of Mathematics, Science*

& Technology Education, *6*(1), 47–61.

Bédard, D. , Lison, C. , Dalle, D. , Côté, D. , & Boutin, N. (2012). Problem-based and Project-based Learning in Engineering and Medicine: Determinants of Students' Engagement and Persistance. *Interdisciplinary Journal of Problem-Based Learning, 6*(2), 7-30.

Carin, A. A., Bass, J. E., & Contant, T. L. (2005). *Methods for Teaching Science as Inquiry.* Upper Saddle River, NJ: Pearson Education, Inc.

Chabalengula, V. M., Mumba, F., & Mbewe, S. (2012). How Pre-Service Teachers' Understand and Perform Science Process Skills. *Eurasia Journal of Mathematics, Science & Technology Education*, *8*(3), 167-176.

Chan, Y. F., Sidhu, G. K., Suthagar, N., Lee, L. F., & Yap, B. W. (2016). Relationship of Inquiry-Based Instruction on Active Learning in Higher Education. *Pertanika Journal of Social Sciences & Humanities*, *24*, 55-71.

Cigrik, E., & Ozkan, M. (2015). The Investigation of the Effect of Visiting Science Center on Scientific Process Skills. *Procedia-Social and Behavioral Sciences*, *197*, 1312-1316.

Creswell, J.W. (2012). *Educational Research: Planning, Conducting, and Evaluating Quantitatice and Qualitative Research.* Boston: Pearson

Duda, H. J. (2010). Pembelajaran Berbasis Praktikum dan Asesmennya pada Konsep Sistem Ekskresi untuk Meningkatkan Kemampuan Berpikir Kritis Siswa Kelas XI. *Jurnal VOX Edukasi*, *1*(2), 29-39.

Dyer, J. H., Gregersen, H. B., & Christensen, C. M. (2009). Five "Discovery Skills" Separate True Inovators from the Rest of Us. *Harvard Business Review*.

Dyer, J., Gregersen, H., & Christensen, C. M. (2011). *The Innovator's DNA: Mastering the Five Skills of Disruptive Innovators.* Harvard Business Press.

Farsakoglu, O.F., Sahin, C., Karsli, F., Akpinar, M. & Ultay, N. (2008). A Study on Awareness Levels of Prospective Science Teachers on Science Process Skills in Science Education. *World Applied Sciences Journal, 4*, 174-182.

Feyzýoðlu, B. (2009). An Investigation of the Relationship between Science Process Skills with Efficient Laboratory Use and Science Achievement in Chemistry Education. *Journal of Turkish Science Education*, *6*(3), 114-132.

Gamst, G., Meyers, L. S., & Guarino, A. J. (2008). *Analysis of Variance Designs: A Conceptual and Computational Approach with SPSS and SAS*. Cambridge University Press.

Hernawati, D., Amin, M., Irawati, M., Indriwati, S., & Aziz, M. (2018). Integration of Project Activity to Enhance the Scientific Process Skill and Self-Efficacy in Zoology of Vertebrate Teaching and Learning. *EURASIA Journal of Mathematics, Science and Technology Education*, *14*(6), 2475-2485.

Hodosyová, M., Útla, J., Vnuková, P., & Lapitková, V. (2015). The Development of Science Process Skills in Physics Education. *Procedia-Social and Behavioral Sciences*, *186*, 982-989.

Kemendikbud. (2011). Pedoman Pembuatan Alat Peraga Biologi Sederhana untuk SMA [Guidelines for the Manufacture of Biology Simple Props for Senior High Schools]. Jakarta: Direktorat Pembinaan SMA Dirjen Pendidikan Menengah Kemendikbud.

King K.P. (2011). Working with Young People: Intellectual Development over Time. Retrieved on 2012 February 1 from sites.roosevelt.edu/kking/files/2011/11/Development-and-STEM-Education.pdf

Kozub, R. M. (2010). An ANOVA Analysis of the Relationships Between Business Student's Learning Styles and Effectiveness of Web Based Instruction. *American Journal of Business Education*, *3*, 18-30.

Komalasari. (2011). *Pembelajaran Kontekstual: Konsep dan Aplikasi*. Bandung: Refika Aditama.

Kumar, A. (2013). Twenty First Century Educational Skills and Restructuring of Education System: A View to Ponder Upon. *International Journal of Advancement in Education and Social Sciences*, *1*(1), 1-4.

Kruea-In, N., & Buaraphan, K. (2014). Enhancing Lower Secondary School Science Teachers' Science Process Skill and Laboratory Lesson Preparation Through a Social Constructivist-Based Professional Development Workshop. *The International Journal of Science, Mathematics, and Technology Learning*, *20*, 43-56.

Lancour, K. L. (2006). Process Skills for Life Science: Training Guide.

Lazanyi, K. (2012). Study for Nothing? Literature Overview of Labour Market Opportunities of Individuals with Tertiary Education. In *Proc. of FIKUSZ'12 Symposium for Young Researchers* (pp. 37-45).

Mariana, I. M. A., Praginda, W., & Si, M. (2009). Hakikat IPA dan Pendidikan IPA. *Bandung: PPPPTK IPA*.

McGregor, D. (2007). *Developing Thinking; Developing Learning*. McGraw-Hill Education (UK).

Mills, A. J., Durepos, G., & Wiebe, E. (Eds.). (2010). *Encyclopedia of Case Study Research: L-Z; index* (Vol. 1). Sage.

Nworgu, L. N., & Otum, V. V. (2013). Effect of Guided Inquiry With Analogy Instructional Strategy On Students Acquisition Of Science Process Skills. *Journal Education and Practice, 4*(27), 35-40.

Ostlund, K. L. (1992). *Science Process Skills: Assessing Hands-On Student Performance*. New York: Addison-Wesley.

Özgelen, S. (2012). Students' Science Process Skills within a Cognitive Domain Framework. *Eurasia Journal of Mathematics, Science & Technology Education*, *8*(4), 283-292.

Öztürk, N., Tezel, Ö., & Acat, M. B. (2010). Science Process Skills Levels of Primary School Seventh Grade Students in Science and Technology

Lesson. *Journal of Turkish Science Education (TUSED)*, *7*(3), 15-28.

Padilla, M. J. (1990). The Science Process Skills. *Research Matters-to the science Teacher*, *9004*.

Prain, V. (2012). Acting on sustainability. *Research in Science Education*, *42*(1), 149-154.

Prihatnawati, Y.. Amin, M., Al Muhdar, M.H.I. (2017). The Effect of Module Implementation with STAD Cooperative Learning toward Process Skills in Science and Cognitive Achievement of 8th Grade Students. International Conference on Learning Innovation (ICLI 2017). Advances in Social Science, Education and Humanities Research, volume 164, 111-115.

Reid, N. (2008). A Scientific Approach to the Teaching of Chemistry. What Do We Know about How Students Learn in the Sciences, and How Can We Make Our Teaching Match This to Maximise Performance?. *Chemistry Education Research and Practice*, *9*(1), 51-59.

Schunk, DH. (2012). *Learning Theories an Educational Perspective.* Yogyakarta: Pustaka Pelajar.

Simonneaux, L. (2014). Questions Socialement Vives and Socio-Scientific Issues: New Trends of Research to Meet the Training Needs of Postmodern Society. In *Topics and Trends in Current Science Education* (pp. 37-54). Springer, Dordrecht.

Triyuni, T. (2016). The Influence of Science Learning Set Using Scientific Approach and Problem Solving Model on Learning Outcomes of Junior High School Students in the Subject of Heat and Temperature. *Jurnal Pendidikan IPA Indonesia*, *5*(2), 177-185.

Tutiaux-Guillon, N. (2008): *Interpréter la stabilité d'une discipline scolaire : l'histoire-géographie dans le secondaire français.* In: F. Audigier & N. Tutiaux-Guillon: *Compétences et contenus*, pp 117-146, De Boeck Université, Bruxelles.

Yu, X., & Lam, W. (2008). An Integrated Probabilistic and Logic Approach to Encyclopedia Relation Extraction with Multiple Features. In *Proceedings of the 22nd International Conference on Computational Linguistics-Volume 1* (pp. 1065-1072). Association for Computational Linguistics.

THE EFFECTIVENESS OF SCIENTIFIC APPROACH USING ENCYCLOPEDIA AS LEARNING MATERIALS IN IMPROVING STUDENTS' SCIENCE PROCESS SKILLS IN SCIENCE

ORIGINALITY REPORT

19%	16%	5%	4%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

1	journal.unnes.ac.id Internet Source	15%
2	Diana Hernawati, Mohamad Amin, Mimien Irawati, Sri Indriwati, Muhammad Aziz. "Integration of Project Activity to Enhance the Scientific Process Skill and Self-Efficacy in Zoology of Vertebrate Teaching and Learning", Eurasia Journal of Mathematics, Science and Technology Education, 2018 Publication	4%

Exclude quotes	On	Exclude matches	< 60 words
Exclude bibliography	On		