Journal of Positive Psychology & Wellbeing
2021, Vol. 5, No. 3, 943 –949

http://journalppw.com
ISSN 2587-0130

The Effect of Metacognitive and Self-Systems on Indonesian Language Learning with the Concept of Assessment Based on Marzano Digital Assessment

A Subyantoro[1]
M Harsa Bahtiar[2]

[1]Universitas Negeri Semarang, Indonesia, bintoro@mail.unnes.ac.id
[2]Universitas Negeri Semarang, Indonesia, bahtiar.harsa@gmail.com

Abstract

The learning outcome evaluation activities carried out by educators currently tend only to cover cognitive and psychomotor aspects. The learning process and students' learning attitudes are often considered difficult to assess because there is no way to obtain these values validly and reliably. As a result, many educators find it difficult to derive metacognitive scores and self-systems and choose not to carry out these assessments. At the high school level, the need for students to get good and appropriate teaching from educators is necessary to develop a future mindset. An assessment concept called Marzano Digital Assessment (MDA) can be implemented to assess students based on three aspects, namely, cognitive aspects, metacognitive aspects, and aspects of the self-system. This study aimed to determine the effect of the Marzano Digital Assessment on Indonesian language learning at high school. The research sample was taken using the purposive sampling technique. The instrument data analysis technique used the validity and reliability test, the difficulty level of the questions, and the different power while testing the sample using the correlative test. The results of the analysis of the metacognitive effect on students' cognitive showed the regression equation based on the results of the data analysis was y = 28,208 + 0.700 X with tvalue 4.567 greater than ttabel 0.482, which means that metacognitive has a positive effect on students' cognitive values, while the results of the analysis of the influence of the self-system on participants' cognitive Students show the regression equation based on the results of data analysis is y = 39.080 + 0.554 X with tvalue 3.282 greater than ttabel 0.482, which means that the self-system has a positive effect on the cognitive value of students. From the analysis, it is known that there is a relationship between cognitive, metacognitive, and self-systems values. Based on these results, educators can use the Marzano Digital Assessment to improve teaching and learning activities through cognitive, metacognitive, and self-system assessments.

Key words: Metacognitive, Self-System, Marzano Digital Assessment.

Introduction:

Assessment in the 2013 curriculum has two functions that are applied in school. They are formative and summative functions. Two of them have different assessment purposes. The formative function aims to monitor the progress of students learning during the learning process is ongoing. The summative function aims to record the achievement of all students systematically. The education unit and government implement summative function assessment. In contrast, formative function assessment implementation as the teachers' domain must be implemented to improve the learning process through information about the learning's strengths and weaknesses. Through that information, it can be done to improve and complete the learning program.

The importance of assessment in the learning activity during this time is not supported by human resources in the arrangement and implementation of the learning result assessment. Assessment in the

learning is not new for the teachers or implementer of education because arranging and implementing assessment forms a series of basic and function of the teachers (Subyantoro, 2014; Amalia, 2014). However, the reality shows that plans and implementing an assessment are serious problems for the school teachers. According to Mulyani (2008) and Mindayani (2019) recently, the teachers direct the students to questions in the National exam and deny the curriculum's content that is not included in the National exam. In this case, it is a contradiction with the communicative competence that must belong to the students.

The role of government in education ministry no. 26 2016 section 4 subsection 1 explains that the teachers' learning result aims to monitor and evaluate process, learning progress and improve the learning result of students' continuity. Based on that role, the teachers have tasks to find out how far the students' comprehension is during the learning process so that the teachers can establish the next steps in the learning activity based on the students' learning results. The teachers must dig potential students from the learning result that is done. So that students know and can demonstrate in real life (Bundsgaard and Hansen, 2011; Nakyam, et al., 2013). Therefore, the teachers need to know the learning process of students through assessment activity in learning results.

The assessment carried out by educators must be carried out and should have a positive impact on students in participatory terms. According to Subyantoro (2014), the implementation of appropriate assessments can increase students' participatory attitude because they feel comfortable in carrying out assessment activities and have an impact on teaching and learning activities afterward to be more enjoyable and can make teaching and learning techniques more successful. Furthermore, according to Haolader (2015), a good assessment system is needed. An assessment system that can find out not only students' knowledge that comes from the given theories, but teachers can find out the ability of students in developing competencies and learning attitudes, in this case, metacognitive and systems self. One assessment tool that can be used to determine students' metacognitive and self-systems is the Marzano Digital Assessment. The Marzano Digital Assessment's basic concept is to be able to integrate a wide range of factors that affect how students think. Marzano (2013), argues that the deeper a person's knowledge in a field, the higher his ability to analyze a phenomenon in the field he is doing. The less knowledge he has, the more difficult it is for him to analyze something. Therefore, Marzano developed a new taxonomy resulting from the development of Bloom's taxonomy, which has been revised by Anderson (2003). According to Nayef et al. (2013), taxonomy can be more effective in assessment activities and more efficient in its implementation.

Educators in the implementation of evaluation get valid data about students' abilities. In the evaluation process, Marzano's taxonomy has three knowledge systems and domains. The three systems are the self-system, the metacognitive system, and the cognitive system. According to Prasetya and Rochmad (2018), the aspects that exist in Marzano's Taxonomy can identify learning problems that become obstacles for students during learning. In Marzano's taxonomy which is applied in the Marzano Digital Assessment concept, there are metacognitive aspects and self-systems. Therefore, by applying the Marzano Digital Assessment-based assessment, educators at a later stage can compile a problem-solving plan. Marzano Digital Assessment answers the challenge of assessing learning Indonesian explanatory texts in the 2013 curriculum that applies authentic assessment.

Marzano Digital Assessment is carried out by applying digital technology to facilitate the implementation of the assessment. According to Syaifudin (2012), with the support of technology, information, and communication (ICT) systems, learning activities can increase students' interest in carrying out learning activities. According to Piaw, C. Y. (2012), using computer-based assessments can answer these problems so that the assessments made by educators are valid and impact the motivation and performance of students. Regarding the application of the assessment system, technology is an assessment tool in learning using the concept of digital assessment (example Syah et al., 2021). By applying technology, the assessment becomes more effective and efficient.

According to Feng et al. (2013), educators who apply management using technology have advantages, among others, can improve professionalism in the implementation of assessments, educators get more comprehensive results. In addition, students also benefit from implementing the digital assessment. Furthermore, according to Göksu (2013), the application of mobile devices is very helpful for students because it can increase the effectiveness of the learning environment, increase interaction, and contribute to students' persistence in learning. According to Aeni, N., Prihatin, T., & Utanto, Y. (2017), digital concepts can provide learning comfort because they can be modified in such a way to attract students' interest. From this description, it is clear that digital assessment uses information and communication technology to increase efficiency, effectiveness, transparency, accountability, and learning comfort with its object is a better, more

interesting, interactive, and attractive learning service.

Based on these benefits, this study is interested in applying the Marzano Digital Assessment in learning assessment activities. This study applies the Marzano Digital Assessment to obtain metacognitive values and self-systems to know the impact of these two values on students' cognitive values.

Concerning the previous findings and the explanation above, the research hypothesis is that there is a positive relationship between metacognitive and self systems to student cognitive behavior. On this basis, it is deemed necessary to demonstrate the relationship between metacognitive and self-systems with students' cognitive abilities in utilizing classroom learning. The benefits of the results of this study may be information for educators to apply adequate Indonesian language learning, which can not only improve cognitive learning outcomes but also strengthen students' metacognitive and self systems (see Anum & Apriyanto, 2019; Apriyanto, 2019; Apriyanto & Nurhayaty, 2019; Dalman et al., 2020; Hidayat et al., 2019).

METHOD

Only one post-test design for one group was used in this study. In this study, there was an experimental class but no control class. This study's population is an assessment of the learning outcomes at Al Azhar 16 Senior School at Semarang. Sampling with a special sampling technique. Using targeted sampling techniques is based on certain considerations, namely sampling criteria based on the category of schools that have implemented digital learning. The students have a wide range of skills, and the students receive complete facilities and infrastructure. The sample of this research is the students of the Al Azhar 16 Senior School at Semarang.

Analysis of the efficacy test data using scoring guidelines was processed using the correlation test using the SPSS version 21.

RESULT AND DISCUSSION

The results of the validity test show that all questioning instruments used are valid. Based on the reliability test, it is shown that all questioning instruments are reliable. Based on the difficulty of the questioning tool for cognitive multiple-choice questions, it was 55% easy and 45% moderate. The descriptions were all moderate for the cognitive questions, while the metacognitive questions and self-system were all simple categories. When testing the difference force, all questioning instruments used in the study were rated as good in cognitive, metacognitive, and self-system-related aspects.

Based on this analysis results, the use of technology in the implementation of the Marzano Digital Assessment shows that the metacognitive assessment and the self-system can be carried out validly and reliably. This is in line with Syaifudin (2012) opinion that with the support of technology, information systems, and communication systems (ICT), learning activities are no longer difficult, boring, strenuous, and stressful, so the use of technology in learning activities increases. The number of students can increase the interest in conducting activities. Study well. Consistent with this opinion, according to Nadziroh (2017), internet technology-based learning is effective in improving the quality of learning, and learning activities are non-classic, so they can provide a different atmosphere for students to do abnormal activities. They were done outside of the classroom.

After the instrument was valid and reliable, it was tested on a limited scale on Indonesian students at Al Azhar 16 Islamic High School Semarang. The data obtained were then analyzed to determine the relationship between metacognitive and self-systems with the students' cognitive scores. The results of the correlation test using regression analysis are shown in Tables 1 to 6 below.

Table 1. Regression Summary between Metacognitive and Cognitive in Indonesian Language Learning

Model Summary [b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.763[a]	.582	.554	8.021

Table 2. Anova Summary between Metacognitive and Cognitive in Indonesian Language Learning

ANOVA [a]

	Model	Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1341.632	1	1341.632	20.855	.000[b]
	Residual	964.985	15	64.332		
	Total	2306.618	16			

Table 3. Regression Coefficients of Metacognitive and Cognitive Relationships in Indonesian Language Learning

Coefficients [a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	28.208	12.174		2.317	.035
	Cognitive	.700	.153	.763	4.567	.000

a. Dependent Variable: Metacognitive

Based on the results of data analysis in tables 1 to 3, it can be seen that the significance value of the metacognitive relationship with cognitive learning outcomes is 0.000 <0.05. Thus the null hypothesis is rejected and the research hypothesis is accepted, which means that there is a positive relationship between metacognitive and cognitive learning outcomes of students in Indonesian language learning. The regression equation based on the results of the data analysis is y = 28,208 + 0.700 X with a reliability value of 0.582 which means that the metacognitive contribution to the students' cognitive learning outcomes is 58.2%.

Table 4. Regression Summary between Self System and Cognitive in Indonesian Language Learning

Model Summary [b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.646[a]	.418	.379	8.837

Table 5. Anova Summary between Self System and Cognitive in Indonesian Language Learning

ANOVA [a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	840.945	1	840.945	10.769	.005[b]
	Residual	1171.291	15	78.086		
	Total	2012.235	16			

Table 6. Regression Coefficients of Self System and Cognitive Relationships in Indonesian Language Learning

Coefficients [a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	39.080	13.412		2.914	.011
	Cognitive	.554	.169	.646	3.282	.005

a. Dependent Variable: self-system

Based on the results of data analysis in Tables 4 to 6, it can be seen that the significance value of the relationship between self-system and cognitive learning outcomes is 0.005 <0.05. Thus the null hypothesis is rejected. The research hypothesis is accepted, which means a positive relationship between the self-system and the cognitive learning outcomes of students in Indonesian language learning. The regression equation based on the data analysis results is y = 39.080 + 0.554 X with a reliability value of 0.418, which means that the metacognitive contribution to the students' cognitive learning outcomes is 41.8%.

Assessment activities are part of the learning system which has the aim of knowing the description of the learning development of students, explaining and interpreting the results of the measurements, describing the information about the extent to which students 'learning outcomes or the achievement of students' competencies (series of abilities). Based on the results of the data analysis, it shows that there is a positive relationship between metacognitive and independent systems with cognitive learning in Indonesian. Based on the data analysis results, the higher the increase in metacognitive values and self-systems, the higher the cognitive learning outcomes of students. In line with the results of research, Maghfiroh (2014) states that the desire to learn from students to understand themselves can significantly improve learning outcomes due to students' enthusiasm in participating in learning activities.

Based on the data analysis results, this study shows that by knowing the metacognitive and self-systems of students, educators can identify the existing constraints so that learning runs effectively and efficiently. This is in line with the opinion of Riya, Mayasari, and Sasono (2021). They state that the implementation of cognitive, metacognitive, and self-system assessments in Marzano's taxonomy can improve students 'reasoning. If they encounter difficult material, it can be immediately known to what extent students' reasoning is.

This study shows that the contribution of metacognitive and self-systems to cognitive learning outcomes when learning the Indonesian language is high. According to Zulfikar and Thamrin (2019), knowledge of metacognitive and self-systems can increase students' independence from learning. Another opinion from Yasir and Widodo (2015) with metacognitive and self-systems can improve students' reflective thinking skills, which are important for self-assessment related to the learning process. According to Cahyaningsih (2020), he also argues that metacognitive can improve students 'skills faster because metacognitive strategies directly affect students' mental learning.

The benefits of this research can make it easier to resolve problems associated with educators' efforts to improve teaching and learning activities. Using the Marzano Digital Assessment can make it easier for educators to carry out assessment activities. Besides, educators can use the results to discover the relationship between attitudes, learning processes, and insights so that they can be used as materials to improve the quality of the implementation of learning programs.

CONCLUSION

Based on the results of research, instrument testing, and testing of research data, it can be concluded that through the Marzano Digital Assessment, educators can find out students' cognitive, metacognitive, and self-system skills. After testing for correlation, these results show that there is a significant relationship between metacognitive and self-systems of students with cognitive skills in learning the Indonesian language.

Based on the above conclusions, it is recommended and recommended that similar research be carried out on the use of Indonesian language learning and other learning included in the 2013 curriculum.

ACKNOWLEDGEMENT

Thanks and highest appreciation to Prof. Dr. Subyantoro, M.Hum. He has chosen to dedicate his knowledge and experience, patiently providing guidance and encouragement to researchers. Also, Semarang State University's academic community has provided opportunities and direction during their education, research, and article writing. Then the Director of the Postgraduate Program, Chair of the Study Program, and Secretary of the Post-Graduate Indonesian Language Study Program of UNNES provided opportunities and directions during this article's writing.

References

B Aeni, N., Prihatin, T., & Utanto, Y. (2017). Pengembangan Model Blended Learning Berbasis Masalah pada Mata Pelajaran Sistem Komputer. Innovative Journal of Curriculum and Educational Technology, 6(2), 27-38. https://journal.unnes.ac.id/sju/index.php/ujet/article/view/15642

Anderson, Mark dan Kathy Anderson. (2003). Type Text In English 1. Australia: Macmillan Education Australia RTY LTD.

Anum, A., & Apriyanto, S. (2019). Detecting Gender'S Strategies in Learning Speaking. Premise: Journal of English Education, 8(1), 57. https://doi.org/10.24127/pj.v8i1.1932.

Amalina, E. (2014). Pengembangan perangkat pembelajaran guided discovery bersuplemen digital beserta assessment for learning untuk mengoptimalkan penguasaan konsep fisika (Doctoral dissertation, Universitas Negeri Malang). http://repository.um.ac.id/id/eprint/18538.

Apriyanto, S. (2019). Gender Strategies in Learning English (Junaidi (ed.); 1st ed., Vol. 73). Sulur Pustaka. www.sulur.co.id

Apriyanto, S., & Nurhayaty, A. (2019). Born In Social Media Culture: Personality Features Impact In Communication Context. In Y. Nasucha (Ed.), icollit (pp. 167–175). UMS Press. icollit.ums.ac.id/2018

Bundsgaard, J., & Hansen, T. I. (2011). Evaluation of learning materials: A holistic framework. Journal of Learning Design, 4(4), 31–45. https://doi.org/10.5204/jld.v4i4.87

Cahyaningsih, R. D. (2020). PENGEMBANGAN INSTRUMEN PENILAIAN AUTENTIK KETERAMPILAN MEMBACA BAHASA INGGRIS MELALUI STRATEGI METAKOGNITIF (Doctoral dissertation, Universitas Negeri Semarang). https://lib.unnes.ac.id/35134/

Dalman, Hesti, & Apriyanto, S. (2020). Conversational implicature: A pragmatic study

of “our conversation” in learning at university. International Journal of Psychosocial Rehabilitation, 24(8), 4332–4340. https://doi.org/10.37200/IJPR/V24I8/PR280450.

Feng, Liyia, et al. (2013). How the Teacher E-Evaluation System Enhances the Professional Development ff K-12 Teachers : The Case of Taiwan. Procedia – Social and Behavioral Sciences. Vol 106, Hal 1357-1367. https://www.sciencedirect.com/science/article/pii/S1877042813047745

Göksu, İ., & Atici, B. (2013). Need for Mobile Learning: Technologies and Opportunities. Procedia - Social and Behavioral Sciences, 103, 685–694. https://doi.org/10.1016/j.sbspro.2013.10.388

Haolader, F. A., Ali, M. R., & Foysol, K. M. (2015). The Taxonomy for Learning, Teaching and Assessing: Current Practices at Polytechnics in Bangladesh and Its Effects in Developing Students' Competences. International journal for research in vocational education and training, 2(2), 99-118. https://www.ssoar.info/ssoar/handle/document/44866

Hidayat, O., Apriyanto, S., Program, P., Science, A., Tun, U., & Onn, H. (2019). Drama Excerpt : Tool in Enhancing Speaking Ability for Junior High School. 2(3), 1–9.

Maghfiroh, N. S. (2014). Kemampuan Menulis Teks Berita pada Peserta Didik Kelas VIII MTs DDI Basseang. PEPATUDZU: Media Pendidikan dan Sosial Kemasyarakatan Universitas Al Asyariah Mandar, 7(1), 27-38. https://journal.lppm-unasman.ac.id/index.php/pepatudzu/article/view/12

Marzano, R. J. (2013). Seni dan Ilmu Pengajaran. Jakarta : Indeks.

Mindayani, N. (2019). Pengembangan Perangkat Penilaian Berbasis Taksonomi Solo pada Teks Laporan Hasil Observasi Siswa Kelas X SMA Negeri 1 NA. IX-X (Doctoral dissertation, UNIMED). http://digilib.unimed.ac.id/id/eprint/39009

Mulyani, Mimi. (2008). Evaluasi Keterampilan Menulis yang Dibuat Guru SD di Kota Magelang. Lembaran Ilmu Kependidikan, 37(2). https://journal.unnes.ac.id/nju/index.php/LIK/article/view/506

Nadziroh, F. (2017). Analisa Efektifitas Sistem Pembelajaran Berbasis E-Learning. Jurnal Ilmu Komputer dan Desain Komunikasi Visual, 2(1).

Nakyam, J., Kwangsawad, T., & Sriampai, P. (2013). The Development of Foreign Language Substance Group Curriculum Based on Marzano’s Taxonomy. Educational Research and Reviews, 8(14), 1109–1116. https://doi.org/10.5897/ERR12.195.

Nayef, E. G., Yaacob, N. R. N., & Ismail, H. N. (2013). Taxonomies of Educational Objective Domain. International Journal of Academic Research in Business and Social Sciences, 3(9), 165–175. https://doi.org/10.6007/ijarbss/v3-i9/199

Piaw, C. Y. (2012). Replacing paper-based testing with computer-based testing in assessment: Are we doing wrong?. Procedia-Social and Behavioral Sciences, 64, 655-664. https://www.sciencedirect.com/science/article/pii/S1877042812050549

Prasetya, Y. R., Mulyono, M., & Rochmad, R. (2018). Difficulty Analysis of Mathematical Problem Solving in Accordance with Student Dependent Fields Based on Marzano Taxonomy for Grade VIII Students. Unnes Journal of Mathematics Education Research, 7(2). https://journal.unnes.ac.id/sju/index.php/ujmer/article/view/24815

Riya, C., Mayasari, T., & Sasono, M. (2021). Pengembangan Instrumen Evaluasi Berbasis Taksonomi Marzano Untuk Menentukan Profil Kemampuan Penalaran Pada Materi Gerak Lurus. COMPTON: Jurnal Ilmiah Pendidikan Fisika, 7(2), 44-49. https://jurnal.ustjogja.ac.id/index.php/COMPTON/article/view/9092

Subyantoro. (2014). Pengembangan Evaluasi Pembelajaran Bahasa Indonesia Berbasis Taksonomi Structure of Observed Learning Outcome. Litera. Vol. 13, No. 1. https://journal.uny.ac.id/index.php/litera/article/view/1880

Syah, T. A., Nurhayaty, A., & Apriyanto, S. (2021). Computerized Text Analysis on Self-Description Text to Get Student’s Prevailing, Confidence, and Drives. Journal of Physics: Conference Series, 1764(1). https://doi.org/10.1088/1742-6596/1764/1/012056

Syaifudin, Ahmad. (2012). Pengembangan Model Pembelajaran Menulis Argumentasi Siswa SMA melalui Dukungan ICT. Seloka: Jurnal

Pendidikan Bahasa dan Sastra Indonesia, 1(1). https://journal.unnes.ac.id/sju/index.php/seloka/article/view/120

Yasir, M., Ibrahim, M., & Widodo, W. (2015). Pengembangan perangkat pembelajaran biologi berbasis metakognitif untuk melatihkan keterampilan berpikir reflektif siswa SMA. Jurnal Pengajaran MIPA, 20(2), 163-176. https://core.ac.uk/download/pdf/207106464.pdf

Zulfikar, R. N., & Tamrin, M. (2019). Pengembangan Modul Matematika dengan Pendekatan Metakognitif untuk Memfasilitasi Kemandirian Belajar Siswa SMK Muhammadiyah Kupang. ANARGYA: Jurnal Ilmiah Pendidikan Matematika, 2(2), 70-74. https://jurnal.umk.ac.id/index.php/anargya/article/view/3887