Jurnal Penelitian dan Evaluasi Pendidikan
Volume 27, No 2, December 2023 (216-225)
Online: http://journal.uny.ac.id/index.php/jpep

Assessment of geography learning process standards in the indonesian curriculum: Instrument development and quality

Tuti Amalia[1]*; Muhammad Nursa'ban[1]
[1]Yogyakarta State University, Indonesia
*Corresponding Author. E-mail: tutiamalia.2021@student.uny.ac.id

ARTICLE INFO

Article History
Submitted:
13 November 2023
Revised:
5 December 2023
Accepted:
26 December 2023

Keywords
process standards;
geography learning;
instrument development

Scan Me:

ABSTRACT

The need for mapping the achievement of geography learning process standards in the Indonesian curriculum can provide recommendations in accordance with the conditions in the field. This study aims to determine and describe the quality of geography learning process standard instruments in the Indonesian curriculum, namely: 1) content validity 2) construct validity 3) reliability. This research is instrument development research. The development stage used is the development stage of the instrument test by Heri Retnawati. The process of preparing the instrument, namely: determining the purpose of instrument preparation, searching for relevant theories, compiling indicators of instrument items, compiling instrument items, content validation, revising based on expert input, conducting trials to respondents, conducting reliability analysis, and assembling instruments by considering certain characteristics. The data analysis used was content validity with the Aiken method, construct validity with Exploratory Factor Analysis (EFA), and reliability with the Cronbach Alpha formula. The results of this study showed that: 1) The standard instrument of geography learning process in Indonesian curriculum based on Aiken's V index value of 0.92 is categorized as high. 2) The standard geography learning process instrument in the Indonesian curriculum using EFA formed into eight factors can explain the variance of 73.452%. 3) Reliability estimation results on the standard instrument of geography learning process in the Indonesian curriculum amounted to 0.913 very high category. This research is expected to be an appropriate recommendation for the follow-up of geography learning process standards in the Indonesian curriculum.

To cite this article (in APA style):
Amalia, T., & Nursa'ban M. (2023). Assessment of geography learning process standards in the indonesian curriculum: Instrument development and quality. *Jurnal Penelitian dan Evaluasi Pendidikan, 27*(2), 216-225. doi:https://doi.org/10.21831/pep.v27i2.67434

INTRODUCTION

Curriculum is important in education. It serves as a guide to the boundaries of the teaching process and determines how the teaching process takes place (Görür & Babadoğan, 2021). The curriculum emphasizes learning activities, land-based and organic materials tailored to meet specific learning objectives and standards (Khan & Law, 2015; Maude, 2020). The curriculum consists of all instructional materials used by schools to provide students with learning experiences (Steven et al., 2017; Tholappan, 2015). The education curriculum in Indonesia has undergone development and even changes tailored to the needs of students. The Indonesian curriculum referred to in this study is the independent curriculum. The diverse intracurricular learning of the independent curriculum gives learners ample time to grasp ideas and strengthen skills (Kemendikbud. RI, 2022).

Geography is a subject that studies the relationship between the physical environment and humans in a place (Kadhim, 2020). Geography is a subject that can develop character and skills in facing global competition and the industrial revolution 4.0. Skills in geography learning teach students to have geography literacy, map literacy, and spatial intelligence (Prasojo et al., 2018; Rahayu et al., 2019; Sugiyanto et al., 2018; Utami et al., 2018). The advantage in learning

10.21831/pep.v27i2.67434

geography is the ability to think spatially (Nurcahyo & Winanti, 2021). Geography at the practical level has a great opportunity to become an applied science that contributes importantly to development (Mukminan, 2018). The geography learning process at the upper secondary level is guided by the learning process standards in accordance with Permendikbud Number 16 of 2022. Process standards serve as guidelines in implementing the learning process to achieve Graduate Competency Standards (Permendikbudriset, 2022). Standards are used to assess how effectively and efficiently the implementation of learning process components such as teaching methods, materials, activities, and content in order to ensure the quality of education (Bahadir & Tuncer, 2020). In addition, educational standards help teachers and students not only have only the knowledge and skills needed for success but also focus on the objectives they should learn.

Geography learning in senior high schools has not been running optimally. The problem of differences in understanding and readiness to implement the learning process in educational units. Geography teachers still have difficulties in integrating geography learning objectives in the Indonesian curriculum into teaching modules that include learning steps, learning strategies, media, teaching materials, and assessment systems. Research findings show that curriculum disorientation, teacher performance, learning process barriers and geography learning outcomes are still a challenge at the stages of learning activities and assessment (Mukminan, 2011; Nursa'ban, 2019; Yusof et al., 2018). Learning process assessment is an assessment of how students complete learning activities by examining the quality of learning. Process assessment should include all types of learning activities, including reading assigned materials, completing exercises, and participating in group or class discussions (Mustafa et al., 2021). Therefore, the development of instrument quality can be applied to measure the achievement of geography learning implementation in the Indonesian curriculum based on validity and reliability estimation.

The existence of this geography learning process standards instrument as a measurement tool to measure the achievement of learning process standards in the Indonesian curriculum. In this case, the main objective of this research is to develop an instrument of learning process standards in the Indonesian curriculum. The main purpose of this research is to develop an instrument contained in the Regulation of the Minister of Education, Culture, Research, Research and Technology Number 16 of 2022 concerning learning process standards. Therefore, in this research determining indicators related to geography learning process standards and developing measurement tools.

RESEARCH METHOD

This research is developmental research where validity and reliability analysis are conducted.

Working Groups

The subjects of this study consisted of 351 grade XI students from 4 public high schools in Yogyakarta City, namely SMA Negeri 4 Yogyakarta, SMA Negeri 6 Yogyakarta, SMA Negeri 7 Yogyakarta, and SMA Negeri 8 Yogyakarta in the academic year 2023/2024. The sampling technique for students was carried out by purposive sampling, namely class XI students who received geography subjects. The subjects of this study were divided into two different groups at the data collection stage. The first group consisted of 64 students who participated in filling out the instrument. The filling data from the first group aims to determine and describe whether the standard instrument of geography learning process in the Indonesian curriculum can be formed into factors based on the results of analysis using EFA. The second group consisted of 287 students who participated in filling out the instrument. The data obtained from the second group were used for reliability calculations

ISSN (print) 2685-7111 | ISSN (online) 2338-6061

10.21831/pep.v27i2.67434

in terms of internal consistency. Information about the participants in the second group is presented in Table 1.

Table 1: Number of Students based on School

No	Name of School	Gender	Number of Student
1	SMAN 4 Yogyakarta	Male	31
		Female	41
2	SMAN 6 Yogyakarta	Male	25
		Female	47
3	SMAN 8 Yogyakarta	Male	22
		Female	49
4	SMAN 9 Yogyakarta	Male	25
		Female	47
Total			287

Process

The development of this research instrument consists of nine steps of the development of the instrumen test dan non-tes (Retnawati, 2017). The first step is to determine the purpose of the instrument development by adjusting it to the research objectives. The purpose of preparing the instrument helps in constructing the scoring instrument and understanding the results of the scoring on the instrument made. The second step is to find the relevant theory used to build the construct. In this study, indicators in the geography learning process standards were used, such as learning strategies, learning steps, interactive learning, inspirational learning, fun learning, learning process assessment, and learning constraints. The third step is to develop indicators for each component of the instrument. In this step, the elements measured by the indicators are made in the form of instrument grids to facilitate the preparation of instrument items using non-test instruments, namely questionnaires with Likert scales (1-4). Step Five is to provide experts with grids, instrument components, and assessment sheets for content validation. This study uses five experts who are competent in their fields. The data obtained from the expert assessment were then analyzed using the Aiken formula (Azwar, 2021; Kartowagiran & Jaedun, 2016). After that, reviewing expert input by improving the instrument, the seventh step collected data on participants' responses to obtain empirical evidence. Eighth step, namely reliability analysis, this trial was conducted on 64 students who were not included in the sample. This study used Cronbach Alpha reliability estimation. Mardapi (2018) states that the Cronbach Alpha formula can be used to estimate the reliability of questionnaire instruments. The last step, assembling the instrument by considering certain features, allows the tool to be used for data collection.

Data Analysis

According to Kayes (2005), the validity test is used to determine how accurately a scale structure of an instrument can be distinguished from each other and to what extent the structure explains the variance found in the sample. Twycross & Powls (2006)considered validity in quantitative research, which means whether a tool can measure what is desired. Validity Instruments in this study use content validity and construction validity. One of the psychometric procedures for determining the validity of the test or the ability to measure what is measured is known as content validation (Cheng et al., 2016). This process, consisting of experts in the field of study materials, is tasked with determining whether the element of the instrument falls into one of three categories: "essential," "useful, but not essential," or "not necessary" after which the element that does not meet the standard will be removed (Ayre & Scally, 2014). Validation of content can be done through consideration of the judgment of experts using the Aiken method (Rusijono et al., 2020). The validators of this study consisted of five people who were competent, including two

ISSN (print) 2685-7111 | ISSN (online) 2338-6061

10.21831/pep.v27i2.67434

experts in geography and three experts in measurement and evaluation. The data obtained from the rater assessment was analyzed using the formula Aiken (Azwar, 2021; Kartowagiran & Jaedun, 2016).

$$V = \frac{\sum s}{n(c-1)} \quad (1)$$

Description:

V : Expert agreement index regarding item validity
s : expert assessment score minus the lowest score in the alternative answer
n : number of experts
c : number of alternative answer choices

Constructive validity is one type of rational internal validity of an instrument that reveals a trait or theoretical construction to be measured. Constructive validity is used to prove that the detail of the particle gives the variable value measured (Istiyono, 2020). Validity of the construction to evaluate the lifting instrument using factor analysis or Exploratory Factor Analysis (EFA). The criteria used in determining the success of the EFA are as follows:

1) The Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy value has a value of more than 0.5. KMO values between 0.5 to 0.7 are called mediocre, 0.7-0.8 are good, between 0.8-0.9 are great and values of 0.9 and above are super (Field, 2013).
2) Barlett's Test of Sphericity value <0.05 (Field, 2013)
3) Anti-image > 0.5 (Retnawati, 2017)
4) Eigen Value on Total Variances Explained > 1.0 (Retnawati, 2017)
5) Rotated Component Matrix > 0.4 and the loading value on the factor is greater than the other factors with a difference of at least 0.10 to determine the items belonging to the factors formed (Retnawati, 2017)

Kaiser-Meyer-Olkin (KMO) is used to measure sample completeness. Bartlle's Test of Sphericity is used to determine whether a correlation matrix is an identity matrix. Anti-Image Corelation matrix of items is used to determine the MSA (Mensuare of Sampling) value, so it can be concluded whether the analysis is continued or not. Variables Communalities values are used to show the correlation of each variable with each extracted factor. The Loading Factor value is used to indicate the magnitude of the initial variable's contribution to the co-factor. The Eigen Factor values are used to specify a particular measure of the variance value of a variable so that it can be constructed into a factor. Percentage variance is used to describe the percentage of structural variance of several factors formed. The results of analysis with the Cronbach Alpha formula show a reliable instrument when it has a minimum coefficient of 0.7 (Hair et al., 2017). As for (Istiyono, 2020), the results of the reliability analysis are interpreted into criteria according to Table 2.

Table 2. Criteria for Reliability of Questionnaire Instruments

No	Koefisien Reliabilitas	Category
1	r < 0,2	Very Low
2	0,2 ≤ r < 0,4	Low
3	0,4 ≤ r < 0,6	Medium
4	0,6 ≤ r < 0,8	High
5	0,8 ≤ r < 1,0	Very High

ISSN (print) 2685-7111 | ISSN (online) 2338-6061

10.21831/pep.v27i2.67434

FINDINGS AND DISCUSSION

Findings

The findings of the calculation of Aiken's V index of an instrument item can be categorized based on its index, namely less (≤ 0.4), medium (0.4- 0.8) and high (≥ 0.8). The results of the assessment of experts or validators on items on the standard instrument of the geography learning process in the Indonesian curriculum for students consisting of 26 items are declared valid because the resulting v-value> 0.6. The results of the validity of the questionnaire content for students using the Aiken formula can be seen in Table 3.

Table 3. Results of Proving the Content Validity of Questionnaires for Learners

Item	V-Value	Description	Item	V-Value	Description
1	0,93	High	14	1,0	High
2	0,93	High	15	0,93	High
3	0,93	High	16	0,93	High
4	0,80	Medium	17	1,0	High
5	0,80	High	18	0,93	High
6	0,93	High	19	1,0	High
7	1,0	High	20	1,0	High
8	1,0	High	21	0,87	High
9	1,0	High	22	0,87	High
10	1,0	High	23	0,87	High
11	0,80	Medium	24	0,67	Medium
12	1,0	High	25	0,87	High
13	1,0	High	26	0,87	High

Before an EFA analysis is carried out, the first step is to perform a prerequisite test, namely, to calculate the Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy.

Tabel 4. Kaiser-Meyer-Oklin Results (KMO) Sample Satisfaction Measurement

Kaiser-Meyer-Oklin Measure of Sampling Adequaty		0.764
Bartlett's Test of Sphericity	Approx. Chi-Square	1049.018
	df	378
	Sig	0.000

From Table 4, it can be found that the sample size of 64 used in factor analysis has been sufficiently proven with KMO of 0.764 greater than 0.5. It shows that the EFA analysis can be continued. The anti-image calculation of 28 angket instruments showed that the anglet has an anti-imagery value above 0.5 so that a valid angket instrument can be stated constructively. The detailed anti-imagery values can be seen in Table 5.

Tabel 5. Anti-Image Value

Butir	Anti-Image	Description	Item	Anti-Image	Description
1	0.831	Valid	15	0.720	Valid
2	0.889	Valid	16	0.838	Valid
3	0.841	Valid	17	0.832	Valid
4	0.837	Valid	18	0.839	Valid
5	0.698	Valid	19	0.790	Valid
6	0.852	Valid	20	0.520	Valid
7	0.726	Valid	21	0.871	Valid

ISSN (print) 2685-7111 | ISSN (online) 2338-6061

10.21831/pep.v27i2.67434

Butir	Anti-Image	Description	Item	Anti-Image	Description
8	0.577	Valid	22	0.736	Valid
9	0.690	Valid	23	0.664	Valid
10	0.695	Valid	24	0.800	Valid
11	0.785	Valid	25	0.526	Valid
12	0.782	Valid	26	0.606	Valid
13	0.801	Valid	27	0.853	Valid
14	0.754	Valid	28	0.573	Valid

Eigen Value on Total Variance Explained is used as a condition for the formation of a factor when the value is > 1,0 (Retnawati, 2017). The results of Eigen Values and Component of Variance can be seen in Table 16. Based on Table 6, it can be known that the factor formed as 8 factors with a value of eigen > 0,1. It shows that grouping the grain into eight main factors can explain a variance of 73,452%.

Table 6. Eigen Values and Component of Variance

Component nummber	Eigen Value	Proportation	Cumulative
1	9.906	35.379	35.379
2	2.228	7.956	43.335
3	1.821	6.502	49.837
4	1.632	5.827	55.664
5	1.538	5.491	61.155
6	1.281	4.575	65.730
7	1.151	4.110	69.840
8	1.012	3.613	73.452

The way to make sure an element enters a factor can be determined by looking at the correlation values in Table 7 of the loading factor on each factor. Exploratory factor analysis is based on the principle that each item can be correlated with all factors, but a good item only has the highest factor load on the measured factor.

Tabel 7. Rotated Component Matrix and Loading Factor

Indikator	F1	F2	F3	F4	F5	F6	F7	F8
Learning Activities	0,616							
Learning Strategy		0,738						
Interactive			0,801					
Inspired				0,679				
Delightful					0,627			
Accommodation and Facilitation						0,530		
Process Evaluation							0.425	
Kendala								0.837

Table 7 shows that the Rotated Component Matrix value on 8 indicators is > 0.4 and the indicator that has the highest Rotated Component Matrix is the constraint indicator while the lowest is the process assessment indicator.

Discussion

The importance of mapping the achievement of geography learning process standards in the Indonesian curriculum so that researchers and practitioners need a valid and reliable instrument to evaluate the implementation of geography learning process standards in the

ISSN (print) 2685-7111 | ISSN (online) 2338-6061

10.21831/pep.v27i2.67434

Indonesian curriculum. This study consisted of 351 students; it was found that the students' questionnaire instrument to measure the achievement of geography learning process standards was reliable using a theory-based scale. Experts involved to review the items on the instrument proved that the test items were valid and usable. In addition, quantitative evidence showed that the questionnaire instrument produced a good and acceptable reliability coefficient.

Rotated Component Matrix and loading factors form 8 indicators namely Learning Activities Introduction, Learning Strategy, Interactive, Inspiring, Fun, Mentoring and facilitation, Process Assessment, and Obstacles. The highest indicator is the obstacle indicator while the lowest is the process assessment indicator. The constraint indicator is an indicator with a lading factor value of 0.837. Geography learning in the Indonesian curriculum at SMAN Yogyakarta has obstacles in the implementation of learning experienced by students related to technical constraints such as unstable internet networks. Demaidi et al. (2019); Fargher (2018); Hastuti et al. (2021) explain in their research that unstable internet network access hinders students from learning smoothly because internet network facilities are very important for the smooth learning process and explain that internet network availability is needed for students to access and benefit from information from technology. The application of technology in geography learning at school aims to improve students' geography skills related to the ability to make maps. This is in accordance with phase f learning outcomes in the process skills element, namely producing products in the form of maps or learning tools. High school students can utilize technology in geography learning such as google maps or google earth, virtual globe, dan Web GIS (De Miguel González & De Lázaro Torres, 2020; Febrianto & Irawan, 2021; Metoyer & Bednarz, 2017; Oktavianto et al., 2017; Perugini & Bodzin, 2020; Rahayu et al., 2019; Ridha & Kamil, 2021; Xiang & Liu, 2018).

The process assessment indicator is the indicator that has the lowest lading factor value of 0.425. The learning process assessment referred to in this study is an assessment conducted by students who are taught directly by the teacher concerned for the implementation of learning carried out by the teacher. One of the objectives of the assessment carried out by students is to build a participatory learning atmosphere and provide feedback to teachers and students. Assessment of the learning process through self-reflection is useful to provide opportunities for learners to clarify understanding through action and adjust ways to achieve effective learning goals. Self-reflection is an important competency to direct one's learning process in an effective way by identifying individual abilities and needs (Thurner et al., 2020). Baba & Abdullah (2017) showed that reflection can encourage self-regulation of learning habits that enhance the growth of intelligence and professional identity. Teaching and learning activities help learners to recognize, understand, appreciate, and reflect on learners' personal, and social development.

CONCLUSION

The findings can be concluded that the items are valid to measure the achievement of the implementation of the learning process standards in the Indonesian curriculum. Some items were developed in good condition based on content validity, construct validity and overall reliability. In addition, this study also concluded that the quality of the instrument developed has very good quality seen from the results of validity and reliability with high categories so that it can measure the achievement of the implementation of geography learning in the Indonesian curriculum that the indicators of learning process assessment need to be improved.

REFERENCES

Ayre, C., & Scally, A. J. (2014). Critical values for Lawshe's content validity ratio: Revisiting the original methods of calculation. *Measurement and Evaluation in Counseling and Development*, *47*(1), 79–86. https://doi.org/10.1177/0748175613513808

ISSN (print) 2685-7111 | ISSN (online) 2338-6061

10.21831/pep.v27i2.65739

Azwar, S. (2021). *Penyusunan Skala Psikologi Edisi 3*. Pustaka Pelajar.

Baba, J., & Abdullah, N. (2017). Reflective Learning and the Growth of Intellect and Identity. In N. Alias & J. Luaran (Eds.). *Student-Driven Learning Strategies for the 21st Century Classroom*, *IGI Global*, 26–43. https://doi.org/10.4018/978-1-5225-1689-7.ch003

Bahadir, F., & Tuncer, M. (2020). Determining the Standards of Teaching and Learning Process as a Component of Curriculum. *International Journal of Progressive Education*, *16*(3), 34–52. https://doi.org/10.29329/ijpe.2020.248.3

Cheng, P. G. F., Ramos, R. M., Bitsch, J. Á., Jonas, S. M., Ix, T., See, P. L. Q., & Wehrle, K. (2016). Psychologist in a pocket: Lexicon development and content validation of a mobile-based app for depression screening. *JMIR mHealth and uHealth*, *4*(3). https://doi.org/10.2196/mhealth.5284

De Miguel González, R., & De Lázaro Torres, M. L. (2020). WebGIS Implementation and Effectiveness in Secondary Education Using the Digital Atlas for Schools. *Journal of Geography*, *119*(2), 74–85. https://doi.org/10.1080/00221341.2020.1726991

Demaidi, M. N., Qamhieh, M., & Afeefi, A. (2019). Applying blended learning in programming courses. *IEEE Access*, *7*, 156824–156833. https://doi.org/10.1109/ACCESS.2019.2949927

Fargher, M. (2018). WebGIS for geography education: Towards a GeoCapabilities approach. *ISPRS International Journal of Geo-Information*, *7*(3). https://doi.org/10.3390/ijgi7030111

Febrianto, A. D., Purwanto, & Irawan, L. Y. (2021). *Pengaruh penggunaan media Webgis Inarisk terhadap kemampuan berpikir spasial siswa pada materi mitigasi dan adaptasi bencana Profil Articles : Jurnal Pendidikan Geografi : berkembangnya teknologi . Hal tersebut berakibat pada semakin bervariasinya jenis -*. *9251*, 73–84. https://doi.org/10.17977/um017v26i22021p073

Field, A. (2013). *Discovering Statistics Using SPSS. 4th Edition*. SAGE Publications Ltd.

Görür, D. Z., & Babadoğan, M. C. (2021). What Are the Curriculum Implementation Difficulties by Teachers of Syrian Students? *International Education Studies*, *14*(12), 13. https://doi.org/10.5539/ies.v14n12p13

Hair, J. F., Hult, G. T. M., & Ringle, C. M. (2017). *A primer on partial least squares structural equation modeling (PLS-SEM)*.

Hastuti, K. P., Angriani, P., Alviawati, E., & Arisanty, D. (2021). The perspective of geography education students on the implementation of online learning during covid-19 pandemic. *IOP Conference Series: Earth and Environmental Science*, *747*(1). https://doi.org/10.1088/1755-1315/747/1/012012

Istiyono, E. (2020). *Pengembangan Instrumen Penilaian dan Analisis Hasil Belajar Fisika dengan Teori Tes Klasik dan Modern (Edisi Kedua)*. UNY Press.

Kadhim, A. J. (2020). Effective Use of ICT for Learning and Teaching Geography. *Aalborg Academy Journal of Human and Social Sciences*, *1*(1), 15–42. https://www.researchgate.net/publication/347849381

Kartowagiran, B., & Jaedun, A. (2016). Model asesmen autentik untuk menilai hasil belajar siswa sekolah menengah pertama (SMP): implementasi asesmen autentik di SMP. *Jurnal Penelitian dan Evaluasi Pendidikan*, *20*(2), 131–141. https://doi.org/10.21831/pep.v20i2.10063

Kayes, D. C. (2005). Internal validity and reliability of Kolb's learning style inventory version 3 (1999). *Journal of Business and Psychology*, *20*(2), 249–257. https://doi.org/10.1007/s10869-005-8262-4

ISSN (print) 2685-7111 | ISSN (online) 2338-6061

10.21831/pep.v27i2.65739

Kemendikbud. RI. (2022). Buku Saku: Tanya Jawab Kurikulum Merdeka. *Kementerian Pendidikan, Kebudayaan, Riset dan Teknologi, Kementerian Pendidikan, Kebudayaan, Riset dan Teknologi*, 9–46. http://repositori.kemdikbud.go.id/id/eprint/25344

Khan, M. A., & Law, L. S. (2015). An integrative approach to curriculum development in higher education in the USA: A theoretical framework. *International Education Studies*, *8*(3), 66–76. https://doi.org/10.5539/ies.v8n3p66

Mardapi, D. (2018). *Teknik Penyusunan Instrumen Tes dan Nontes*. Parama Publishing.

Maude, A. (2020). The role of geography's concepts and powerful knowledge in a future 3 curriculum. *International Research in Geographical and Environmental Education*, *29*(3), 232–243. https://doi.org/10.1080/10382046.2020.1749771

Metoyer, S., & Bednarz, R. (2017). Spatial Thinking Assists Geographic Thinking: Evidence from a Study Exploring the Effects of Geospatial Technology. *Journal of Geography*, *116*(1), 20–33. https://doi.org/10.1080/00221341.2016.1175495

Mukminan. (2011). Evaluasi Implementasi KTSP Pada Pembelajaran Geografi SMA di Kota Yogyakarta. *Cakrawala Pendiidkan*, 363.

Mukminan. (2018). Dimensions and factors of contemporary geography learning climate at senior high school. *Indonesian Journal of Geography*, *50*(1), 78–86. https://doi.org/10.22146/ijg.34567

Mustafa, F., Raisha, S., & Mahlil. (2021). Rubric for assessment of learning process in efl online classrooms: Validation and revision. *Mextesol Journal*, *45*(3), 1–15.

Nurcahyo, A. D., & Winanti, E. T. (2021). Pengaruh model Problem Based Learning terintegrasi pendekatan induktif terhadap kemampuan berpikir spasial dan pengetahuan siswa pada materi mitigasi bencana. *Jurnal Pendidikan Geografi*, *26*(1), 41–47. https://doi.org/10.17977/um017v26i12021p041

Nursa'ban, M. (2019). *Model Evaluasi Pembelajaran Geografi Berperspektif Spatial Thinking*. [Disertasi, Tidak diterbitkan]. Universitas Negeri Yogyakarta

Oktavianto, D. A., Sumarmi, & Handoyo, B. (2017). the Effect of Project-Based Learning Assisted Google Earth To Spatial Thinking Skills. *Jurnal Teknodik*, *21*(1), 1–15. https://jurnalteknodik.kemdikbud.go.id/index.php/jurnalteknodik/article/view/227

Permendikbudriset. (2022). *Permendikbudriset Nomor 16 Tahun 2022 tentang Standar Proses pada Pendidikan Anak Usia Dini, Jenjang Pendidikan Dasar, dan Jenjang Pendidikan Menengah*.

Perugini, S., & Bodzin, A. M. (2020). Using Web-Based GIS to Assess Students' Geospatial Knowledge of Hurricanes and Spatial Habits of Mind. *Journal of Geography*, *119*(2), 63–73. https://doi.org/10.1080/00221341.2019.1710764

Prasojo, L. D., Kande, F. A., & Mukminin, A. (2018). Evaluasi pelaksanaan standar proses pendidikan pada SMP Negeri di Kabupaten Sleman. *Jurnal Penelitian dan Evaluasi Pendidikan*, *22*(1), 61–69. https://doi.org/10.21831/pep.v22i1.19018

Rahayu, S., Murjainah, M., & Idris, M. (2019). The Effect of Google Earth Utilization on Students' Spatial Thinking Ability. *Geosfera Indonesia*, *4*(3), 291. https://doi.org/10.19184/geosi.v4i3.13350

Retnawati, H. (2017). *Validitas Reliabilitas & Karakteristik Butir (Panduan untuk Peneliti, Mahasiswa, dan Psikometrika)*. Parama Publishing.

Ridha, S., & Kamil, P. A. (2021). The Problems of Teaching Geospatial Technology in

ISSN (print) 2685-7111 | ISSN (online) 2338-6061

10.21831/pep.v27i2.65739

Developing Countries: Concepts, Curriculum, and Implementation in Indonesia. *Journal of Geography*, *120*(2), 72–82. https://doi.org/10.1080/00221341.2021.1872681

Rusijono, R., Jaedun, A., Kartowagiran, B., Ahman, A., Laliyo, L. A. R., & Mam, S. (2020). Developing the teacher's social competency assessment instrument in the fourth industrial revolution era. *Jurnal Penelitian dan Evaluasi Pendidikan*, *24*(2), 125–135. https://doi.org/10.21831/pep.v24i2.29482

Steven, R. A., Mires, G. J., Lloyd, S. K. W., & McAleer, S. (2017). An undergraduate Otolaryngology curriculum comparison in the United Kingdom using a curriculum evaluation framework. *Clinical Otolaryngology*, *42*(5), 963–968. https://doi.org/10.1111/coa.12824

Sugiyanto, S., Maryani, E., & Ruhimat, M. (2018). A Preliminary Study on Developing Geography Literacy Based on Social Studies Learning Model to Improve Teachers 21st Century Skills. *IOP Conference Series: Earth and Environmental Science*, *145*(1). https://doi.org/10.1088/1755-1315/145/1/012062

Tholappan, A. (2015). Knowledge and Curriculum. *Zbornik Instituta za pedagoska istrazivanja*, *34*, 65–78. https://doi.org/10.2298/zipi0204065s

Thurner, V., Hammer, S., Ottinger, S., & Waldleitner, M. (2020). Development and evaluation of an assessment tool for self-reflection. *IEEE Global Engineering Education Conference, EDUCON*, *2020-April*, 605–612. https://doi.org/10.1109/EDUCON45650.2020.9125185

Twycross, A., & Powls, L. (2006). How do children's nurses make clinical decisions? Two preliminary studies. *Journal of Clinical Nursing*, *15*(10), 1324–1335. https://doi.org/10.1111/j.1365-2702.2006.01453.x

Utami, W. S., Zain, I. M., & Sumarmi. (2018). Geography literacy can develop Geography skills for high school students: Is it true? *IOP Conference Series: Materials Science and Engineering*, *296*(1). https://doi.org/10.1088/1757-899X/296/1/012032

Xiang, X., & Liu, Y. (2018). Exploring and enhancing spatial thinking skills: Learning differences of university students within a web-based GIS mapping environment. *British Journal of Educational Technology*, 0–2. https://doi.org/10.1111/bjet.12677

Yusof, R., Yin, K. Y., Norwani, N. M., & Jaafar, H. (2018). Conceptualizing Curriculum Evaluation in Education Degree Programmes in Higher Education Institutions. *International Journal of Academic Research in Business and Social Sciences*, *8*(6), 1020–1033. https://doi.org/10.6007/ijarbss/v8-i6/4299

ISSN (print) 2685-7111 | ISSN (online) 2338-6061