



Measuring online learning strategies during the covid-19 pandemic: instrument validity and reliability

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Informasi artikel	ABSTRAK
Article history: Submit 10 November 2021 Revision 1 April 2022 Accepted 12 April 2022 Publish 30 April 2022	Penelitian ini bertujuan untuk mendeskripsikan validitas dan reliabilitas instrumen angket strategi pembelajaran yang digunakan selama pandemi Covid-19 dan setelahnya. Dengan menggunakan pendekatan kuantitatif dilakukan pengukuran terhadap angket strategi pembelajaran yang dikembangkan berdasarkan enam strategi pembelajaran bahasa, yaitu: strategi kognitif, strategi memori, strategi kompensasi, strategi metakognitif, strategi afektif, dan strategi sosial. Sebanyak 17 orang mahasiswa dipilih secara acak untuk dijadikan subjek uji coba instrumen strategi pembelajaran. Dengan menggunakan SPSS 23 digunakan uji correlate bivariate product moment untuk mengetahui validitas butir angket dan uji Alpha Cronbach untuk mengetahui reliabilitas angket. Hasil penelitian menunjukkan bahwa sebanyak 124 butir angket yang diujicobakan kepada responden diperoleh 92 butir angket dinyatakan valid dan secara keseluruhan butir angket dinyatakan reliabel atau konsisten. Dengan demikian, sebanyak 92 butir pernyataan angket strategi pembelajaran ini dapat digunakan untuk mengukur jenis strategi belajar bahasa yang digunakan oleh mahasiswa, baik untuk pembelajaran online maupun pembelajaran tatap muka.
Kata kunci: Pengukuran Strategi pembelajaran Validitas Reliabilitas	ABSTRACT This study aims to describe the validity and reliability of the learning strategy questionnaire instrument used during the Covid-19 pandemic. By using a quantitative approach, measurement of the learning strategy questionnaire was developed based on six language learning strategies, namely: cognitive strategies, memory strategies, compensation strategies, metacognitive strategies, affective strategies, and social strategies. A total of 17 students were randomly selected to be the test subjects of the learning strategy instrument. By using SPSS 23, the bivariate product moment correlate test was used to determine the validity of the questionnaire items and Cronbach's Alpha test to determine the reliability of the questionnaire. The results showed that as many as 124 questionnaire items were tested on respondents, it was found that 92 questionnaire items were declared valid and overall the questionnaire items were declared reliable or consistent. Thus, as many as 92 items of this learning strategy questionnaire statement can be used to measure the types of language learning strategies used by students, both for online learning and face-to-face learning.
Keyword: Measuring Learning strategies Validity Reliability	

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Introduction

Measurement of the validity and reliability of research instruments in addition to realizing measurable research results is also to obtain valid research results. To get valid research results, researchers need valid and reliable measuring tools. The use of valid and reliable measuring instruments to measure abstract concepts is an important factor in determining the quality of research. If the researcher pays attention to the validity and reliability throughout his research, the research findings will be valid and reliable. In the measurement of Learning Outcomes Tests, validity and reliability are also the main requirements to get good test results, in addition to the difficulty index and discrimination index (Wenno, Tuhurima, & Manoppo, 2021). Validity relates to the ability to test learning outcomes to measure the circumstances to be measured. Validity testing can be grouped into three, namely: content validity, criterion validity, and construct validity. Content validity testing can be done by examining the

items, asking for expert judgment, and calculating the correlation of items with the total. Testing the validity of the criteria in the form of congruent and predictive validity. The construct validity test was conducted by examining the items, asking for expert judgment, convergence and discriminability, multitrait-multimethod, and factor analysis. Meanwhile, reliability is a coefficient that shows the ability of learning outcomes tests to provide relatively fixed and consistent measurement results. Reliability is seen as internal stability or internal consistency. Reliability decisions are made by confirming the reliability coefficient of the calculation results with certain limit criteria (Purwanto, 2011). Validity and reliability are concepts used to evaluate the nature of psychometric scales in research. Reliability is related to reproducibility while validity is related to scale accuracy (Mikaberidze, 2007)

The measurement of the instrument accurately without any doubt with other features is defined as validity. Validity is the degree to which it serves the intended use of the scale. Reliability is a measurement instrument that provides consistent results under the same conditions. Validity and reliability are two critical characteristics that must exist in every measurement instrument. Conducting evaluations or research with a scale that does not have valid and reliable conditions is considered incorrect and unethical and the results of the research will be scientifically controversial (Sürücü & Maslakçı, 2020). Validity is the product of validation. Validation is a process carried out by the compiler or instrument user to collect empirical data to support the conclusions generated by the instrument score. Meanwhile, validity is the ability of a measuring instrument to measure its measuring target. A measuring instrument is said to have validity if the measuring instrument is suitable for measuring the object that should be measured and in accordance with certain criteria. This means that there is a match between the measuring instrument and the measurement function and the measurement target. Reliability is the state of the instrument that shows reliable measurement results (not changing, consistent). A reliable instrument is an instrument that, when used to measure the same subject or object at different times and measurements made by different people, the results remain the same (Amiriono & Daryanto, 2016). Reliability testing using Alpha Cronbach (Purwanto, 2011). Cronbach's alpha is seen as evidence of instrument quality and is widely used by researchers to show that tests and scales are fit for purpose (Taber, 2018). Reliability concerns often arise due to external factors that can affect the strength and significance of the test. The external factors in question are: respondent's age, gender, education level, religion, rural/urban living environment, type of survey, and the relevance of the subject to the survey conducted (Ursachi, Horodnic, & Zait, 2015).

Several studies were conducted for the purpose of testing research instruments, namely: writing skills assessment instruments (Moses & Yamat, 2021), teacher-made test instrument (Agung Setiabudi, Mulyadi, 2019), 2013 Curriculum BSE evaluation instrument (Safi'i & Salamah, 2021), an instrument for measuring the level of satisfaction of health profession students with online learning during the Covid-19 pandemic (Kulsum & Suryadi, 2021), instrument for measuring the level of fear of the people of South Korea against Covid-19 (Han, Park, & Lee, 2021), and instruments for measuring student perceptions of the implementation of the 2013 Curriculum for Indonesian subjects (Oktavia, Irwandi, Rajibussalim, Mentari, & Mulia, 2018). Other studies were also conducted to test the validity of educational products, for example, genre-based text-writing teaching materials (Sari & Nurgiyantoro, 2020), short story writing learning module (Ramadhanti & Basri, 2014), and problem-based learning syntactic learning tools (Helda & Ramadhanti, 2019).

However, the development of instruments related to learning strategies used by students during online learning during the Covid-19 pandemic has not yet been carried out. Learning strategies are one of the important aspects of achieving learning objectives. To find out the achievement of learning objectives, it is necessary to measure the learning strategies used. To measure the instruments used both prior research and research to be conducted using the measurement of validity and reliability. Therefore, it is very important to check validity and reliability when using scales or questionnaires (Mikaberidze, 2007).

Similar to previous research, to determine the learning strategies used by students, a measuring instrument in the form of a questionnaire was used. The questionnaire is a list of questions given to other people who are willing to respond according to user requests. The questionnaire aims to collect complete information about a problem from respondents without feeling worried if respondents give answers that are not in accordance with reality in filling out the list of questions. In this study, the questionnaire used was a closed questionnaire. Through this closed questionnaire, respondents are asked to choose one answer that suits their characteristics by putting a checklist on the answer choices (Riduwan, 2007).

The answer choices were developed using a Likert scale. The Likert scale is used to measure attitudes, opinions, and perceptions of a person or group about social events or phenomena (Riduwan, 2007). The social phenomenon referred to in this study is the learning strategy used during online learning during the Covid-19 pandemic. By using a Likert scale, the variables to be measured are translated into dimensions, dimensions are translated into sub-variables, then the sub-variables are translated into indicators that can be measured. This

measurable indicator is used as a starting point for making instrument items in the form of questions or statements that need to be answered by respondents. Each answer is associated with a form of a statement or attitude support expressed in words in the form of the respondent's answer.

Based on the things mentioned above, this study aims to explain two research formulations. *First*, how is the preparation of the learning strategy questionnaire? *Second*, how are the results of testing the validity and reliability of the learning strategy questionnaire instrument?

Method

This study was a quantitative study that aims to test the validity and reliability of language learning strategy research instruments used by students during online learning during the Covid-19 pandemic. A total of 17 students Institut Agama Islam Negeri (IAIN) Imam Bonjol Padang were randomly selected to respond to a learning strategy questionnaire. The instrument used in the form of a questionnaire compiled based on the theory of language learning strategies proposed by Oxford (1990). The data of this research are in the form of test scores of learning strategy questionnaires. Data collection is done online via a Google Forms. A total of 124 questionnaire items were given to the selected respondents. Respondents were given time to respond according to their learning experience.

After the data was collected, data analysis was carried out to determine the validity and reliability of the learning strategy questionnaire instrument. Testing the validity and reliability of the questionnaire instrument using Statistical Package Social Science (SPSS)-23. The validity of the questionnaire items was determined by performing a bivariate product-moment correlate test. The basis for making a valid questionnaire item decision is done by comparing the value of sig. (2-tailed) with a probability of 0.05. If the value of Sig. (2-tailed) < 0.05 and the Pearson Correlation is positive, the questionnaire item is declared valid. If the value of Sig. (2-tailed) $<$ and the Pearson Correlation are negative, the questionnaire item is declared invalid. If the value of Sig. (2-tailed) > 0.05 , it means that the questionnaire item is declared invalid. The reliability of the questionnaire was determined by performing Cronbach's Alpha test. The basis for making Cronbach's Alpha reliability test decisions, namely: if Cronbach's Alpha value > 0.60 , it means that the questionnaire is declared reliable or consistent. Meanwhile, if Cronbach's Alpha value < 0.60 means that the questionnaire is declared unreliable or inconsistent. The basis for making Cronbach's Alpha reliability test decisions, namely: if Cronbach's Alpha value > 0.60 , it means that the questionnaire/questionnaire is declared reliable or consistent. Meanwhile, if Cronbach's Alpha value < 0.60 means that the questionnaire is declared unreliable or inconsistent. The items of the learning strategy questionnaire statements that have been declared valid and reliable are presented in the appendix section.

Result and Discussion

In this section, two research formulations are described, namely: the preparation of a learning strategy questionnaire instrument and testing the validity and reliability of the learning strategy questionnaire.

Preparation of Learning Strategy Questionnaire Instruments

The preparation of the questionnaire instrument was carried out with the following steps, namely: identifying the research variables, describing the variables into sub-variables, looking for indicators/aspects of each sub variable, arranging the descriptors of each indicator, formulating each descriptor into instrument items, and completing the instrument. with filling instructions and preface (Riduwan, 2007). In accordance with the statement, the variables referred to in this study are learning strategies. The subvariables of the learning strategy variable consist of six, namely: cognitive strategies, memory strategies, compensation strategies, metacognitive strategies, affective strategies, and social strategies. (Oxford, 1990). Cognitive strategy sub variable indicators consist of four, namely: practicing, receiving and sending messages, analyzing and reasoning, and creating structure for input and output. The memory strategy sub-variable indicators consist of four, namely: creating mental linkages, applying images and sounds, reviewing well, and employing action. The compensation strategy sub-variable indicators consist of two, namely: guessing intelligently and overcoming limitations in speaking and writing. The indicator of the metacognitive strategy sub variable consist of three, namely: centering your learning, arranging and planning your learning, and evaluating your learning. The indicators of the affective strategy sub-variable consist of three, namely: lowering your anxiety, encouraging yourself, and taking your emotional temperature. The indicators of the social strategy sub-variable consist of three, namely: asking questions, cooperating with others, and empathizing with others. Each item is designed with a positive type of question (favorable) with a Likert scale, where each question has five answer choices with a score, namely: strongly disagree (score 1), disagree (score 2),

unsure (score 3), agree. (score 4), and strongly agree (score 5) (Sugiyono, 2009). The details of the learning strategy questionnaire instrument grid according to the description are visualized in Table I below.

Table I. Grid of Learning Strategy Questionnaire Instruments

No	Learning Strategies	Indicators	Total of Item	Item Number
1	Cognitive Strategies	a. Practicing	30	1—10
		b. Receiving and sending message		11—14
		c. Analyzing and reasoning		15—24
		d. Creating structure for input and output		25—30
2	Memory Strategies	a. Creating mental linkages	20	31—36
		b. Applying images and sounds		37—44
		c. Reviewing well		45—46
		d. Employing action		47—50
3	Compensation strategies	a. Guessing intelligently	20	51—54
		b. Overcoming limitations in speaking and writing		55—70
4	Metacognitive Strategies	a. Centering your learning	22	71—76
		b. Arranging and planning your learning		77—88
		c. Evaluating your learning		89—92
5	Affective Strategies	a. Lowering your anxiety	20	93—98
		b. Encouraging yourself		99—104
		c. Taking your emotional temperature		105—112
6	Social Strategies	a. Asking question	12	113—116
		b. Cooperating with others		117—120
		c. Empathizing with others		121—124
Total			124	

Testing the Validity and Reliability of the Learning Strategy Questionnaire

The validity of the questionnaire was tested using SPSS-23. The test is called the Correlate Bivariate Product Moment Test. The Pearson correlation product-moment validity test uses the principle of correlating or connecting each item or question score with the total score obtained from the respondents' answers. The basis for making product-moment validity test decisions is done by comparing the value of sig. (2-tailed) with a probability of 0.05. If the value of Sig. (2-tailed) < 0.05 and the Pearson Correlation is positive, the questionnaire item is declared valid. If the value of Sig. (2-tailed) < and the Pearson Correlation are negative, the questionnaire item is declared invalid. If the value of Sig. (2-tailed) > 0.05, it means that the questionnaire item is declared invalid. The results of the questionnaire item validity test for each sub variable, namely: cognitive strategies, memory strategies, compensation strategies, metacognitive strategies, affective strategies, and social strategies.

Cognitive Strategies

Cognitive strategy sub variable indicators consist of four, namely: practicing, receiving and sending messages, analyzing and reasoning, and creating structure for input and output. The number of items for this sub variable is 30 items. The sub-indicators of practicing consist of five, namely: repeating, formally practicing with sounds and writing systems, recognizing and using formulas and patterns, recombining, and practicing naturalistically. The number of items for this sub-indicator is 10 items. Of the 10 items, 6 items were used, one item was revised, and the other three items were eliminated. The results of the validation of the sub-indicator items are visualized in Table 2 below.

Table 2. Validation Results of Sub Indicator Sub variable 1 Cognitive Strategies

Item	Test Results			Description	
	Pearson Correlation	Sig. (2-tailed)	N		
Item_1	.002	.994	17	Invalid	Eliminated
Item_2	.427	.087	17	Invalid	Revised
Item_3	.446	.073	17	Invalid	Eliminated
Item_4	.664	.004	17	Valid	Used
Item_5	.561	.019	17	Valid	Used
Item_6	.580	.015	17	Valid	Used
Item_7	.658	.004	17	Valid	Used
Item_8	.476	.053	17	Invalid	Eliminated
Item_9	.699	.002	17	Valid	Used
Item_10	.694	.002	17	Valid	Used

The sub indicators of receiving and sending message consist of two, namely: getting the idea quickly and using resources for receiving and sending messages. The number of items for this sub indicators is 4 items. Of the 4 items, 2 items were used and 2 items were eliminated. The results of the validation of the sub indicator items are visualized in Table 3 below.

Table 3. Validation Results of Sub Indicator Sub Variable 2 Cognitive Strategies

Item	Test Results			Description	
	Pearson Correlation	Sig. (2-tailed)	N		
Item_11	-.142	.587	17	Invalid	Eliminated
Item_12	.834	.000	17	Valid	Used
Item_13	.825	.000	17	Valid	Used
Item_14	.415	.098	17	Invalid	Eliminated

The sub indicators of analyzing and reasoning consist of five, namely: reasoning deductively, analyzing expressions, analyzing contrastively (across languages), translating, and transferring. The number of items for this sub indicators is 10 items. Of the 10 items, 6 items were used, 3 items were eliminated, and one item was revised. The results of the validation of the sub indicator items are visualized in Table 4 below.

Table 4. Validation Results of Sub Indicator Sub Variable 3 Cognitive Strategies

Item	Test Results			Description	
	Pearson Correlation	Sig. (2-tailed)	N		
Item_15	.828	.000	17	Valid	Used
Item_16	.627	.007	17	Valid	Used
Item_17	.373	.140	17	Invalid	Revised
Item_18	.413	.100	17	Invalid	Eliminated
Item_19	.567	.018	17	Valid	Used
Item_20	.630	.007	17	Valid	Used
Item_21	.753	.000	17	Valid	Used
Item_22	.387	.125	17	Invalid	Eliminated
Item_23	.370	.143	17	Invalid	Eliminated
Item_24	.602	.011	17	Valid	Used

The sub indicators of creating structure for input and output consist of three, namely: taking note, summarizing, and highlighting. The number of items for this sub indicators is 6 items. Of the 6 items, 5 items were used and one item was eliminated. The results of the validation of the sub indicator items are visualized in Table 5 below.

Table 5. Validation Results of Sub Indicator Sub Variable 4 Cognitive Strategies

Item	Test Results			Description	
	Pearson Correlation	Sig. (2-tailed)	N		
Item_25	.663	.004	17	Valid	Used
Item_26	.718	.001	17	Valid	Used
Item_27	.762	.000	17	Valid	Used
Item_28	.793	.000	17	Valid	Used
Item_29	.733	.001	17	Valid	Used
Item_30	-.041	.877	17	Invalid	Eliminated

Memory Strategies

Memory strategy sub variable indicators consist of four, namely: creating mental linkages, applying images and sounds, reviewing well, and employing action. The number of items for this sub variable is 20 items. The sub indicators of creating mental linkages consist of three, namely: grouping, associating/elaborating, and placing new words into a context. The number of items for this sub indicators is 6 items. Of the 6 items, 5 items were used and one item was eliminated. The results of the validation of the sub indicator items are visualized in Table 6 below.

Table 6. Validation Results of Sub Indicator Sub Variable 1 Memory Strategies

Item	Test Results			Description	
	Pearson Correlation	Sig. (2-tailed)	N		
Item_31	.781	.000	17	Valid	Used
Item_32	.263	.309	17	Invalid	Eliminated
Item_33	.860	.000	17	Valid	Used
Item_34	.752	.000	17	Valid	Used
Item_35	.779	.000	17	Valid	Used
Item_36	.815	.000	17	Valid	Used

The sub indicators of applying images and sounds consist of four, namely: using imagery, semantic mapping, using keywords, and representing sounds in memory. The number of items for this indicators is 8 items. Of the 8 items, 6 items were used and 2 items were eliminated. The results of the validation of the sub indicator items are visualized in Table 7 below.

Table 7. Validation Results of Sub Indicator Sub Variable 2 Memory Strategies

Item	Test Results			Description	
	Pearson Correlation	Sig. (2-tailed)	N		
Item_37	.116	.657	17	Invalid	Eliminated
Item_38	.672	.003	17	Valid	Used
Item_39	.596	.012	17	Valid	Used
Item_40	.288	.262	17	Invalid	Eliminated
Item_41	.556	.021	17	Valid	Used
Item_42	.772	.000	17	Valid	Used
Item_43	.591	.012	17	Valid	Used
Item_44	.723	.001	17	Valid	Used

The sub indicator of reviewing well consists of one, namely structured reviewing. The number of items for this indicator is 2 items. Of the 2 items, one item was used and one item was eliminated. The results of the validation of the sub indicator items are visualized in Table 8 below.

Table 8. Validation Results of Sub Indicator Sub Variable 3 Memory Strategies

Item	Test Results			Description	
	Pearson Correlation	Sig. (2-tailed)	N		
Item_45	.686	.002	17	Valid	Used
Item_46	.402	.110	17	Invalid	Eliminated

The sub indicators of employing action consist of two, namely: using physical response or sensation and using mechanical techniques. The number of items for this indicators is 4 items. Of the 4 items, 3 items were used and one item was eliminated. The results of the validation of the sub indicator items are visualized in Table 9 below.

Table 9. Validation Results Sub Indicator Sub Variable 4 Memory Strategies

Item	Test Results			Description	
	Pearson Correlation	Sig. (2-tailed)	N		
Item_47	.652	.005	17	Valid	Used
Item_48	.462	.062	17	Invalid	Eliminated
Item_49	.522	.032	17	Valid	Used
Item_50	.645	.005	17	Valid	Used

Compensation Strategies

Compensation strategy sub variable indicators consist of two, namely: guessing intelligently and overcoming limitations in speaking and writing. The number of items for this sub variable is 20 items. The sub indicators of guessing intelligently consist of two, namely: using linguistic clues and using other clues. The number of items for this indicators is 4 items. Of the 4 items, 2 items were used and 2 items were eliminated. The results of the validation of the sub indicator items are visualized in Table 10 below.

Table 10. Validation Results Sub Indicator Sub Variable 1 Compensation Strategies

Item	Test Results			Description	
	Pearson Correlation	Sig. (2-tailed)	N		
Item_51	.802	.000	17	Valid	Used
Item_52	.288	.262	17	Invalid	Eliminated
Item_53	.495	.043	17	Valid	Used
Item_54	-.359	.157	17	Invalid	Eliminated

The sub indicators of overcoming limitations in speaking and writing consist of eight, namely: switching to the mother tongue, getting help, using mime or gesture, avoiding communication partially or totally, selecting the topic, adjusting or approximating the message, coining words, and using a circumlocution or synonym. The number of items for this indicators is 16 items. Of the 16 items, 10 items were used, 2 items were revised, and 4 items were eliminated. The results of the validation of the sub indicator items are visualized in Table 11 below.

Table 11. Validation Results Sub Indicator Sub Variable 2 Compensation Strategies

Item	Test Results			Description	
	Pearson Correlation	Sig. (2-tailed)	N		
Item_55	-.272	.291	17	Invalid	Eliminated
Item_56	-.333	.191	17	Invalid	Revised
Item_57	.782	.000	17	Valid	Used
Item_58	.866	.000	17	Valid	Used
Item_59	.584	.014	17	Valid	Used
Item_60	.616	.008	17	Valid	Used
Item_61	.232	.369	17	Invalid	Revised
Item_62	.008	.977	17	Invalid	Eliminated
Item_63	.444	.074	17	Invalid	Eliminated
Item_64	.724	.001	17	Valid	Used
Item_65	.630	.007	17	Valid	Used
Item_66	.682	.003	17	Valid	Used
Item_67	.644	.005	17	Valid	Used
Item_68	.771	.000	17	Valid	Used
Item_69	.210	.418	17	Invalid	Eliminated
Item_70	.611	.009	17	Valid	Used

Metacognitive Strategies

Metacognitive strategy sub variable indicators consist of three, namely: centering your learning, arranging and planning your learning, and evaluating your learning. The number of items for this sub variable is 22 items. The sub indicators of centering your learning consist of three, namely: overviewing and linking with already know material, paying attention, and delaying speech production to focus on listening. The number of items for this indicators is 6 items. Of the 6 items, all items were used. The results of the validation of the sub indicator items are visualized in Table 12 below.

Table 12. Validation Results Sub Indicator Sub Variable 1 Metacognitive Strategies

Item	Test Results			Description	
	Pearson Correlation	Sig. (2-tailed)	N		
Item_71	.781	.000	17	Valid	Used
Item_72	.861	.000	17	Valid	Used
Item_73	.734	.001	17	Valid	Used
Item_74	.696	.002	17	Valid	Used
Item_75	.632	.007	17	Valid	Used
Item_76	.513	.035	17	Valid	Used

The sub indicators of arranging and planning your learning consist of six, namely: finding out about language learning, organizing, setting goals and objectives, identifying the purpose of a language task (purposeful listening/reading/speaking/writing), planning for a language task, and seeking practice opportunities. The number of items for this indicators is 12 items. Of the 12 items, 8 items were used, 3 items were eliminated, and one item was revised. The results of the validation of the sub indicator items are visualized in Table 13 below.

Table 13. Validation Results Sub Indicator Sub Variable 2 Metacognitive Strategies

Item	Test Results			Description	
	Pearson Correlation	Sig. (2-tailed)	N		
Item_77	.696	.002	17	Valid	Used
Item_78	.657	.004	17	Valid	Used
Item_79	.724	.001	17	Valid	Used
Item_80	.770	.000	17	Valid	Used
Item_81	.633	.006	17	Valid	Used
Item_82	.401	.110	17	Invalid	Eliminated
Item_83	.646	.005	17	Valid	Used
Item_84	.598	.011	17	Valid	Used
Item_85	.275	.286	17	Invalid	Eliminated
Item_86	.593	.012	17	Valid	Used
Item_87	.361	.154	17	Invalid	Eliminated
Item_88	.445	.073	17	Invalid	Revised

The sub indicators of evaluating your learning consist of two, namely: self-monitoring and self-evaluating. The number of items for this indicators is 4 items. Of the 4 items, all item were used. The results of the validation of the sub indicator items are visualized in Table 14 below.

Table 14. Validation Results Sub Indicator Sub Variable 3 Metacognitive Strategies

Item	Test Results			Description	
	Pearson Correlation	Sig. (2-tailed)	N		
Item_89	.598	.011	17	Valid	Used
Item_90	.772	.000	17	Valid	Used
Item_91	.597	.011	17	Valid	Used
Item_92	.798	.000	17	Valid	Used

Affective Strategies

Affective strategy sub variable indicators consist of three, namely: lowering your anxiety, encouraging yourself, and taking your emotional temperature. The number of items for this sub variable is 20 items. The sub indicators of lowering your anxiety consist of three, namely: using progressive relaxation, deep breathing, or mediation, using music, and using laughter. The number of items for this indicators is 6 items. Of the 6 items, 2 items were used, 2 items were revised, and 2 items were eliminated. The results of the validation of the sub indicator items are visualized in Table 15 below.

Table 15. Validation Results Sub Indicator Sub Variable I Affective Strategies

Item	Test Results			Description	
	Pearson Correlation	Sig. (2-tailed)	N		
Item_93	.362	.153	17	Invalid	Revised
Item_94	.186	.475	17	Invalid	Eliminated
Item_95	-.075	.776	17	Invalid	Eliminated
Item_96	.114	.664	17	Invalid	Revised
Item_97	.607	.010	17	Valid	Used
Item_98	.659	.004	17	Valid	Used

The sub indicators of encouraging yourself consist of three, namely: making positive statements, taking risks wisely, and rewarding yourself. The number of items for this indicators is 6 items. Of the 6 items, 5 items were used and one items was eliminated. The results of the validation of the sub indicator items are visualized in Table 16 below.

Table 16. Validation Results Sub Indicator Sub Variable 2 Affective Strategies

Item	Test Results			Description	
	Pearson Correlation	Sig. (2-tailed)	N		
Item_99	.775	.000	17	Valid	Used
Item_100	.202	.438	17	Invalid	Eliminated
Item_101	.802	.000	17	Valid	Used
Item_102	.885	.000	17	Valid	Used
Item_103	.617	.008	17	Valid	Used
Item_104	.718	.001	17	Valid	Used

The sub indicators of taking your emotional temperature consist of four, namely: listening to your body, using a checklist, writing a language learning diary, and discussing your feeling with someone else. The number of items for this indicators is 8 items. Of the 8 items, 4 items were used and 4 items were eliminated. The results of the validation of the sub indicator items are visualized in Table 17 below.

Table 17. Validation Results Sub Indicator Sub Variable 3 Affective Strategies

Item	Test Results			Description	
	Pearson Correlation	Sig. (2-tailed)	N		
Item_105	.413	.099	17	Invalid	Eliminated
Item_106	.730	.001	17	Valid	Used
Item_107	.530	.029	17	Valid	Used
Item_108	.367	.147	17	Invalid	Eliminated
Item_109	.388	.124	17	Invalid	Eliminated
Item_110	.599	.011	17	Valid	Used
Item_111	.480	.051	17	Invalid	Eliminated
Item_112	.616	.008	17	Valid	Used

Social Strategies

Social strategy sub variable indicators consist of three, namely: asking questions, cooperating with others, and empathizing with others. The number of items for this sub variable is 12 items. The sub indicators of asking questions consist of two, namely: asking for clarification or verification and asking for correction. The number of items for this indicators is 4 items. Of the 4 items, all item were used. The results of the validation of the sub indicator items are visualized in Table 18 below.

Table 18. Validation Results Sub Indicator Sub Variable I Social Strategies

Item	Test Results			Description	
	Pearson Correlation	Sig. (2-tailed)	N		
Item_113	.715	.001	17	Valid	Used
Item_114	.640	.006	17	Valid	Used
Item_115	.887	.000	17	Valid	Used
Item_116	.668	.003	17	Valid	Used

The sub indicators of cooperating with others consist of two, namely: cooperating with peers and cooperating with proficient users of the new language. The number of items for this indicators is 4 items. Of the 4 items, 3 items were used and one item was eliminated. The results of the validation of the sub indicator items are visualized in Table 19 below.

Table 19. Validation Results Sub Indicator Sub Variable 2 Social Strategies

Item	Test Results			Description	
	Pearson Correlation	Sig. (2-tailed)	N		
Item_117	.857	.000	17	Valid	Used
Item_118	.800	.000	17	Valid	Used
Item_119	.744	.001	17	Valid	Used
Item_120	.420	.093	17	Invalid	Eliminated

The sub indicators of empathizing with others consist of two, namely: developing cultural understanding and becoming aware of others' thoughts and feelings. The number of items for this indicators is 4 items. Of the 4 items, 3 items were used and one item was eliminated. The results of the validation of the sub indicator items are visualized in Table 20 below.

Table 20. Validation Results Sub Indicator Sub Variable 3 Social Strategies

Item	Test Results			Description	
	Pearson Correlation	Sig. (2-tailed)	N		
Item_121	.666	.004	17	Valid	Used
Item_122	.420	.094	17	Invalid	Eliminated
Item_123	.587	.013	17	Valid	Used
Item_124	.700	.002	17	Valid	Used

The reliability test of the questionnaire was carried out with SPSS-23. The test carried out is called Cronbach's Alpha Test. The reliability test in this case refers to the Alpha value contained in the SPSS output table. The basis for making Cronbach's Alpha reliability test decisions, namely: if Cronbach's Alpha value > 0.60, it means that the questionnaire/questionnaire is declared reliable or consistent. Meanwhile, if Cronbach's Alpha value < 0.60 means that the questionnaire/questionnaire is declared unreliable or inconsistent. The results of the questionnaire reliability test using Cronbach's Alpha Test are visualized in Tables 21 and 22 below.

Table 21. Case Processing Summary

		N	%
Cases	Valid	17	100.0
	Excluded ^a	0	.0
	Total	17	100.0

a. Listwise deletion based on all variables in the procedure.

Table 21 Case Processing Summary informs about the number of samples or respondents (N) analyzed in the SPSS program, namely N as many as 17 students. Because there is no empty data (in the sense that all respondents' answers are filled in) then the number of valid answers is 100%.

Table 22. Reliability Statistics

Cronbach's Alpha	N of Items
.954	124

Table 22 Reliability Statistics inform the results of reliability statistics. N of Items (number of items or questionnaire questions) is 124 with Cronbach's Alpha value of 0.954. Cronbach's Alpha value is 0.954 > 0.60. as the basis for decision making in the reliability test, it can be concluded that the 124 or all questionnaire statement items for the 'Learning Strategy' variable are reliable or consistent.

Thus, a learning strategy questionnaire that is declared valid and reliable can be used to measure the learning strategies used by students.

Conclusion

Valid and reliable research instruments are needed to obtain valid data about the object under study. Measurement of the validity and reliability of learning strategy instruments used by students during online learning during the Covid-19 pandemic. The learning strategy in question consists of direct and indirect learning strategies, namely: cognitive strategies, memory strategies, compensation strategies, metacognitive strategies, affective strategies, and social strategies. A total of 124 questionnaire items were tested on 17 research subjects. A total of 92 questionnaire statements were declared valid and reliable so that they could be used to collect data about the learning strategy.

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Appendices

APPENDIX I LANGUAGE LEARNING STRATEGY MEASUREMENT INSTRUMENTS

A. Introduction

This questionnaire aims to collect learning strategies used by students during online distance learning. This questionnaire was compiled based on six types of learning strategies, namely: cognitive strategies, memory strategies, compensation strategies, metacognitive strategies, affective strategies, and social strategies. This questionnaire is given to those of you who take part in online learning in order to provide answers about the learning strategies that you use during the learning process.

The researcher expects your awareness to give honest answers by filling out each item in the questionnaire statement based on the available choices according to the actual situation. Thank you for your attention..

B. Instructions for Filling Out Questionnaire

The following are instructions for filling out the questionnaire.

1. Through this questionnaire, you are asked to provide answers about the learning strategies used during online learning.
2. The answers you give will be very useful in describing the learning strategies that you use.
3. Please put a checkmark (✓) in the column Strongly Agree, Agree, Doubtful, Disagree, Strongly Disagree according to your answer.

C. Items of Questionnaire

No	Items	Strongly Agree	Agree	Doubtful	Disagree	Strongly Disagree
A. Cognitive Strategies						
1	I usually pay attention or listen to something carefully repeatedly, then I practice and I imitate.					
2	I'm used to writing down everything I think before it's communicated.					
3	I recognize the formulas and patterns I use to digest each piece of information.					
4	I am aware of every good information before I communicate it.					
5	I combine elements of knowledge in new ways to produce new knowledge.					
6	I always actively participate in learning activities and try to follow the lessons well.					
7	I always read books and articles to supplement the learning material.					
8	I try to quickly understand what I hear or read.					
9	I usually use printed and non-printed materials to understand the messages I receive.					
10	I am used to obeying general rules and applying those rules according to situations and conditions.					
11	I used to think from the general to the specific.					
12	I can understand other people by watching their expressions.					
13	I compare one piece of information with another to determine the similarities and differences.					
14	I compare information based on what I hear and read.					
15	I try to translate every information I receive.					
16	I immediately apply the knowledge and concepts I receive when discussing the subject matter.					
17	I am used to taking notes according to the subject matter.					
18	I take lesson notes in various formats so that it is easy for me to understand the subject matter.					
19	I am used to summarizing every part of the subject matter.					
20	I summarize every information I receive according to the subject matter from discussions with teachers and peers.					
21	When reading books/articles, I am used to underlining or coding the parts that I think are important.					
B. Memory Strategies		Strongly Agree	Agree	Doubtful	Disagree	Strongly Disagree

22	I classify subject matter into meaningful units for easy recall.					
23	I associate new information with concepts that are already in my memory according to the subject matter.					
24	I relate one information to another to get complete information about my subject matter.					
25	I enter new information to add to the information stored in my mind.					
26	I have a certain way of recalling information stored in my memory.					
27	Visual images/pictures make it easier for me to remember information.					
28	I am used to mapping concepts using a concept map/mind mapping to make it easy to remember.					
29	I remember information only from the keywords used.					
30	I'm used to using keywords to remember something concrete.					
31	I can remember information just by listening carefully.					
32	I am used to listening to information directly from the lecturer or listening to information directly to understand the subject matter.					
33	I study the subject matter in a structured and repetitive way so that I am familiar with the material.					
34	I practice the subject matter I learn to make it easier to remember.					
35	I change the learning materials that are concrete to things that are easy to remember.					
36	I copied important parts of the study material from the book into my notebook for easy recall.					
C. Compensation Strategies		Strongly Agree	Agree	Doubtful	Disagree	Strongly Disagree
37	I can understand learning material well if it is presented in good language.					
38	I can understand something I read or hear based on the context.					
39	I always talk and communicate something in class using everyday language.					
40	I ask my peers for help if I have trouble understanding something.					
41	I asked the lecturer directly if there was something I didn't understand.					
42	I can understand something by watching a practice video.					
43	I can understand things from expressions and gestures.					
44	I tend to leave out certain communications that have nothing to do with my learning.					
45	I tend to communicate by choosing topics that match the interests of the other person.					
46	I am used to using my own words to convey what I understand.					
47	I simplify the ideas I read or hear to make them easier to understand.					
48	I use keywords to convey meaning.					
49	I use presentation slides that present information points that I will convey in the discussion.					
50	I paraphrase the main idea according to the concept so that it is easy for me to understand and convey meaning.					
D. Metcognitive Strategies		Strongly Agree	Agree	Doubtful	Disagree	Strongly Disagree
51	I connect the material I learn with the concepts I already know.					
52	I review the material that I have learned by rereading it and finding out the importance of certain concepts I have learned.					
53	I pay close attention to my study assignments and ignore distractions.					
54	I select concepts that support my learning tasks.					
55	I always listen carefully to any useful information to support my learning.					
56	I talk less and listen more for my learning effectiveness.					
57	I make various efforts for my learning, including reading many sources and finding a comfortable environment to support my learning.					
58	I use a lot of information to improve my learning.					
59	I organize my learning to be more optimal by setting a schedule, a comfortable study environment, and a diary to record my learning activities.					
60	I can't study to the fullest if I don't manage my schedule well.					
61	I set long term goals and short term goals for my learning.					
62	I listen to all the information and read various sources to increase my knowledge.					

63	I also regularly discuss with my friends to exchange ideas about learning materials.					
64	I even provided the necessary additional equipment and materials to support my learning.					
65	I join and actively participate in academic discussions with friends to expand my knowledge.					
66	I always identify the mistakes that I make while working on assignments and try to fix them well.					
67	I am trying to trace the source of my error and trying to get rid of the error.					
68	I try to be independent in learning and constantly evaluate my progress.					
69	I use checklists or notes to record my learning progress.					
E. Affective Strategies		Strongly Agree	Agree	Doubtful	Disagree	Strongly Disagree
70	I always exercise to maintain my health, relax my muscles, keep my focus and concentration.					
71	I listen to music to keep my mood and learning comfortable.					
72	When I start to feel bored with my studies, I watch television or listen to jokes to keep my mind from stressing out with the lessons I'm taking.					
73	I read funny stories to relax my mind and heart.					
74	I always motivate myself with positive thinking.					
75	I push myself to study hard and take risks.					
76	I take every opportunity that supports my learning.					
77	I am grateful for whatever results I receive and try to be better in the future.					
78	I respect myself by trying to give the best for myself so as not to regret later.					
79	I know very well when my body needs to rest, when to study, and when to exercise.					
80	I use checklists to identify attitudes, feelings, and motivations for learning.					
81	I make a diary a learning experience and try to learn from that experience to be better.					
82	I try to be open with other people I trust and not keep the difficulties I'm going through to myself.					
F. Social Strategies		Strongly Agree	Agree	Doubtful	Disagree	Strongly Disagree
83	I always ask if there is something I don't understand in the lesson.					
84	I always give feedback when learning and get satisfactory feedback from my teachers and friends.					
85	I am always open to input and corrections given by my lecturers and friends.					
86	I improve my assignments according to suggestions and input from my lecturers and friends.					
87	I always work with friends to discuss lessons.					
88	I involve friends in my learning to share experiences and knowledge.					
89	I read the original source or ask the original source of the learning material that I am studying.					
90	I develop my cultural understanding by always incorporating cultural elements in my assignments.					
91	I respect other people's thoughts and feelings in any case.					
92	I respect the opinions of my friends when carrying out discussions.					