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Development and Validation of Emotional Learning in Online Classroom Environment Survey

Pengembangan dan Validasi Emosional Pembelajaran dalam Survei Lingkungan Kelas Daring

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Abstract

The purpose of this research is to produce an Indonesian version of the emotional learning online classroom environment survey instrument with a response category scale. Instruments from a modified Learning Environment Research Questionnaire on Classroom Emotional Climate. This research is a survey on 1494 responses of 7th grade and 8th grade junior high school students in four regions of DKI Jakarta Province. The sample was selected by simple random sampling and based on the considerations of schools implementing the 2013 curriculum. The modified instrument consisted of 43 items to be tested in obtaining validity based on the estimated difficulty of the items and the psychometric criteria with Rasch modelling. The results of this study indicate that the Andrich threshold test fulfils the monotonic nature and unconsciously the students' responses form an emotional culture that prioritizes self-awareness in online learning. Therefore, for the psychological scale compilers are expected to compile statement items that are easy to understand and build good interactions with respondent, so that the respondent feels not intervened. This trend may even increase when sensitive issues of concern statement appear in the instrument items. Characteristics of psychologically motivated instruments, written in the statement items intervene on sensitive issues in the learning environment.

Keywords

emotional learning; online classroom; psychometric validity

Abstrak

Tujuan penelitian ini adalah menghasilkan instrumen survei emosi pembelajaran pada lingkungan kelas online versi bahasa Indonesia dengan skala kategori respons. Instrumen dimodifikasi dari Learning Environment Research Questionnaire on Classroom Emotional Climate. Penelitian ini merupakan survei terhadap 1.494 respons siswa kelas VIII dan kelas VIII SMP di empat wilayah Provinsi DKI Jakarta. Sampel dipilih dengan cara random sampling dan berdasarkan pertimbangan sekolah yang menerapkan kurikulum 2013. Instrumen yang dimodifikasi terdiri dari 43 item yang akan diuji validitasnya berdasarkan estimasi kesukaran item dan kriteria psikometri dengan pemodelan Rasch. Hasil penelitian ini mengindikasikan bahwa nilai Andrich threshold memenuhi sifat monotonik dan tanpa disadari respons siswa membentuk budaya emosional yang mengutamakan kesadaran diri dalam pembelajaran online. Oleh karena itu bagi penyusun skala psikologi diharapkan untuk menyusun butir pernyataan yang mudah dipahami dan membangun interaksi yang baik dengan responden, sehingga responden merasa tidak terintervensi. Kecenderungan ini bahkan mungkin meningkat ketika isu-isu sensitif pernyataan perhatian muncul dalam item instrumen. Karakteristik instrumen yang termotivasi secara psikologis, tertulis dalam item pernyataan mengintervensi isu-isu sensitif dalam lingkungan pembelajaran.

Kata Kunci

emosi pembelajaran; kelas online; validitas psikometrika

1. Introduction

The importance of the learning environment affects student achievement and attitudes (Solari et al., 2014), the learning environment in the classroom embodies the relationship of the teacher, students, and student attitudes (Chen, 2019). Teachers 'or students' subjective perceptions are perceived with a variety of important outcomes regarding achievement (Beard, 2016), emotional and social (Abry et al., 2015). Student emotion is important as students' effective response to the learning environment (Liu & Huang, 2017), Students 'perceptions of the classroom environment have established a consistent relationship between the nature of the classroom environment and students' cognitive and affective outcomes (Gläser-Zikuda et al., 2018).

Emotions in the learning environment are formed from physical experiences and feelings so that learning can occur. This condition must take into account cognitive interest, aspirations and emotional life of students to develop (Woodhouse, 2017). Students' emotions in the learning process have a strong relationship between levels of motivation and task involvement (Seligman & Csikszentmihalyi, 2000). Learning that does not pay attention to emotional aspects will have an impact on not achieving learning objectives, the expected character cannot be found, does not cause a sense of comfort and a pleasant atmosphere (Lowe, 2014; Woodhouse, 2017).

Ghosh (2015), Koul et al. (2018), Marchesi and Cook (2012) reported that in the states in West Virginia nearly 5,100 students dropped out of high school due to attendance of less than 85-90%, a serious breach of discipline, and the occurrence of stress in learning. Another finding was that 32% of middle school students were bored on average from the total time in attending class. The progress of learning practices in schools can be designed with attention to the emotional condition of students (Jones & Doolittle, 2017; Taylor et al., 2017; Yeager, 2017), this becomes the basis as a basis for studying emotional learning environment.

Emotional learning in developed countries has been carried out, one in Central Indiana and across the United States in school learning (Melnick et al., 2017). In Indonesia, emotional learning is integrated into social emotional learning conducted by Rahmawati et al. (2014) and Virginanti et al. (2019) which combines learning methods to build social emotional learning competencies in students. This provides information that in fact emotional learning in Indonesia has been applied and combined with learning methods. The contribution of the results of this study is interesting to know how long the virtual emotional learning environment is happening during the current pandemic.

Some of the research on emotions in relation to perceived virtual classroom environments has mostly concentrated on student anxiety (Watt et al., 2017). The nature of emotional learning that affects how behavior is carried out leads to the learning environment, or behavioral responses that appear on a different time scale (Lowe, 2014). Emotional learning environment that includes emotions that are directly related to student learning, classroom teaching, and student achievement. Students experience a variety of emotions in the learning environment that affect perception and behavior. Learning emotions are significantly related to student motivation, learning strategies, cognitive resources, self-regulation, self-concept and achievement in learning (Gläser-Zikuda et al., 2018; Goetz et al., 2003; Valiente et al., 2012).

To get information about emotional learning environment, of course we need a standard instrument suitable for implementation in Indonesia. The previous research has been carried out by Rahmawati et al. (2014) relating to Involving Students in Social Emotional Learning: The Role of Dilemma Stories in Chemistry Learning. In this study, one of them tested the instrument to see students' perceptions in the chemistry class environment through a modification of the Values Learning Environment Survey instrument. The results show students' involvement in social and emotional learning in deep chemistry learning. This shows strong evidence that the application of emotional learning studies has been carried out in Indonesian culture. The importance of measurement through measuring instruments that are instrumental, to take emotional learning environment data using a survey. Emotional learning because of its latent nature which cannot be observed directly, but it must be concluded through a questionnaire form instrument that can represent latent traits (Baylor et al., 2011). The Learning Environment Research (LER) measurement scale is an option in modifying the instrument, this is on the recommendation of LER in Asia, that the practical benefits have not been realized in Asia. So, there is room for Asian researchers to modify, adaptation or create a new theoretical framework in the study of the learning environment. LER includes the study of the social, physical, psychological and pedagogical contexts in which learning occurs and affects student achievement and attitudes (Ghosh, 2015; Koul et al., 2018).

Many questionnaires have been designed and used successfully in many countries (Ogbuehi & Fraser, 2007), including Learning Environment Inventory (LEI), Classroom Environment Scale (CES), My Classroom Inventory (MCI), Science Laboratory Environment Inventory (SLEI), Surveillance Constructivist Learning Environment (CLES), What Happens in This Classroom? (WIHIC), Inventory of Learning Environments on Technology (TROFLEI) and Survey of Constructivist Oriented Learning Environments (COLES) (Ogbuehi & Fraser, 2007). A classroom environment instrument that is widely used in learning evaluation, teachers can adapt to students' practices and have a positive influence on performance and attitudes towards learning and cognitive outcomes (Fraser, 2012; Ogbuehi & Fraser, 2007; Turner et al., 2002).

More specifically, it shows that LER was chosen in this study because the scope of this field of educational research builds understanding of pre-primary, secondary, tertiary, and

lifelong learning environments regardless of field of study (Fraser, 2012). A hallmark of the LER field is the existence of a variety of economical, robust and widely validated questionnaires that measure the psychosocial dimensions of different classes tailored to the needs of Indonesian students from the perspective of the students who make up the class rather than the perspective of the teacher.

So that the basis of these various instruments is what makes the interest in adapting part of the LER Questionnaire on Classroom Emotional Climate scale more specifically studied on the seven dimensions, namely: care, control, clarify, challenge, captivate, confer, and consolidate. Classroom Emotional Climate is a reflection of students' opinions about students' academic experiences (Barr, 2016; Reid & Radhakrishnan, 2003). This includes students' perceptions of class rigidity, interactions with teachers and classmates, and student involvement in the classroom, so that the classroom climate is the general feeling of students and teachers in the classroom (Barr, 2016).

Student responses in Indonesia taking into account different cultural backgrounds affect student values, way of thinking, as well as teacher and student interactions (Rahmawati et al., 2020). The instrument is given to students who are at the secondary school level in the DKI Jakarta area. This is done more specifically, to demonstrate that a modified instrument of LER as a field of educational research can build understanding of student responses in secondary schools (Fraser, 2012).

Then the instrument was designed with a scale of five response categories. This is a novelty in following up research (Adelson & McCoach, 2010) that has not been investigated the effect of the number of response categories on student response stability and helps answer whether the five-category response scale psychometrically outperforms. The importance of this research being carried out, hopefully it will provide a lot of information about students' perceptions of responses. The psychometric validity of the modified instrument was emphasized to reveal a variety of information by means of the Rasch modelling analysis.

2. Methods

This type of research is quantitative with a survey using a questionnaire method via google form. Then the research sample is selected using the following steps:

1. Sampling was carried out using a cluster random sampling technique where the population was too large and geographically dispersed, technically the target population is divided into clusters then a random sample from the cluster is derived (Silalahi, 2015);
2. The population of SMP/MTs is clustered by region in DKI Jakarta, four sub-clusters are randomly selected;
3. Samples from each sub-cluster were randomly selected again based on the sub-district level;
4. The sample selected from each sub-cluster of the sub-district was randomized again, so that four schools were selected randomly representing each sub-district;
5. The next process is the selection of class samples at each selected school, using a proportional sampling technique where sampling takes into account the considerations of elements or categories in the research population (Silalahi, 2015);
6. The next step is determining student responses, aiming that the given instrument can be responded to with different student response abilities. The selection of the student response size withdrawal technique uses the Slovin formula with the formula (Silalahi, 2015):

$$n = \frac{N}{1 + Ne^2}$$

Where:
n : sample size
N : population size
e : error rate of 5% or 0.05

This research was conducted virtually at SMP / MTs in four regions of DKI Jakarta Province, even semester of the 2020/2021 school year, namely: SMP Labschool East Jakarta, SMP Negeri 216 Central Jakarta, SMP YPI Bintaro South Jakarta, and MTs Negeri 10 West Jakarta. This study uses a modified instrument from the Learning Environment Research (LER) scale Questionnaire on Classroom Emotional Climate with seven dimensions, namely: care, control, clarify, challenge, captivate, confer, and consolidate. The sample in this study used cluster random sampling and purposive sampling technique. Student responses were determined as many as 1,494 students.

Preparation of guidelines for translating and modifying psychological instruments based on standards for education and psychological testing (American Educational Research Association, American Psychological Association, and National Council on Measurement in Education) (Gudmundsson, 2009).

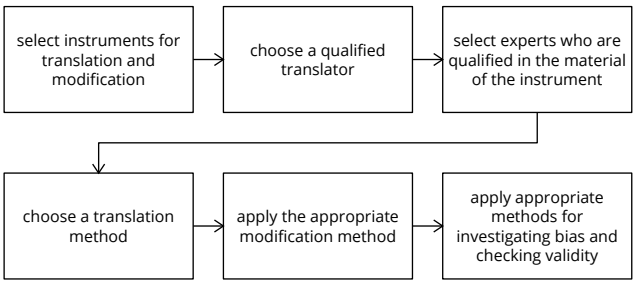


Figure 1. Guidelines for Translating and Adapting Psychological Instruments Emotional Learning

1. Choosing an instrument for translation, in this study using a modified instrument from the LER Questionnaire on

Classroom Emotional Climate scale with seven dimensions, namely: Care, Control, Clarify, Challenge, Captivate, Confer, and Consolidate.

2. Determine qualified translators at least two translators who have profiles with backgrounds appropriate to their fields in translating this instrument from the original language into Indonesian.
3. The translations are compared and translated step by step so that it can be seen where the more ambiguous words were in the original translation.
4. Choosing a qualified expert in the material of this instrument becomes important to consider in modification. One psychologist, one measurement expert, and one instrument development expert who are qualified and experienced help to test the instrument content so that it can be adapted to the climate of learning classes in Indonesia.
5. A translation method with back-translations in which two bilingual professionals produce two translations of the instrument. One translates the instrument from the original language into Indonesian, and the second translates the instrument back into the original language from Indonesian.
6. The instrument back-translation process can be repeated more than once. The criteria for translation quality are the similarity of the original version of the instrument with the back-translation version, this is done to produce correct grammar and syntax rather than context, meaning and understanding of the text.
7. Apply appropriate methods to investigate bias and check validity, the translator then re-translates the instrument into the original language. This is a validity checking process to ensure that the translated version reflects the same item content as the original version. To find out whether the instrument is feasible or not to use it qualitatively by member checking.
8. Retranslation is only one type of validity check, highlighting inconsistencies or conceptual errors in the translation. Instruments that are considered final. The final stage in the modification process is the submission of all reports and forms to the instrument developer.

3. Results and Discussion

3.1. Unidimensional

Unidimensional becomes important as an essence for determining parameter estimation in Rasch modelling (Sinnema et al., 2017). As evidence of internal consistency (Huberty et al., 2013).

Unidimensional criteria described at least 20%, the results obtained by 39.3% stated that the instrument met the unidimensional requirements (Hsiao et al., 2015; Shih et al., 2016). Eigenvalue units (Huberty et al., 2013; Kaliski et al., 2013), obtained sequentially, namely: 2.6, 2.3, 2.2, 2.0, and 1.7, The criteria for Eigenvalue units in the Observed column are less than 15% (Sinnema et al., 2017). Variant's that cannot be explained, namely: 4.0%, 3.6%, 3.5%, 3.1%, and 2.7%, the variance value is in the 3-5% category in the very strong category (Linacre, 2011) and establishes construct validity.

Table 1. Unidimensional

Table of STANDARDIZED RESIDUAL variance in Eigenvalue units = ITEM information units

	Eigenvalue	Observed	Expected
Total raw variance in observations =	64.2143	100.0%	100.0%
Raw variance explained by measures =	25.2143	39.3%	39.2%
Raw variance explained by persons =	8.3391	13.0%	13.0%
Raw Variance explained by items =	16.8751	26.3%	26.2%
Raw unexplained variance (total) =	39.0000	60.7%	100.0% 60.8%
Unexplned variance in 1st contrast =	2.5707	4.0%	6.6%
Unexplned variance in 2nd contrast =	2.3281	3.6%	6.0%
Unexplned variance in 3rd contrast =	2.2349	3.5%	5.7%
Unexplned variance in 4th contrast =	1.9747	3.1%	5.1%
Unexplned variance in 5th contrast =	1.7177	2.7%	4.4%

3.2. Monotonic

To test and verify answer preferences based on the emotional condition of the student's response, the column "Observed Average" is show below:

Table 2. Monotonic of Andrich threshold

SUMMARY OF CATEGORY STRUCTURE. Model="R"

CATEGORY LABEL	OBSERVED SCORE	COUNT	%	OBSVD AVRGE	SAMPLE EXPECT	INFIT MNSQ	OUTFIT MNSQ	ANDRICH THRESHOLD	CATEGORY MEASURE	
1	1	1227	3	-.83	-.77	.95	.97	NONE	(-3.39)	1
2	2	6716	19	-.15	-.19	1.04	1.06	-2.17	-1.40	2
3	3	10753	30	.33	.36	.95	.94	-.38	.07	3
4	4	11288	32	.94	.92	.97	.98	.59	1.43	4
5	5	5389	15	1.54	1.54	1.02	1.02	1.97	(3.23)	5

Andrich (2011) explains that successive threshold distances are not positively isolated and it is said that the response category can be interpreted as an ordinal scale. The analysis shows that there is an increase in the value in the Observed Average column from negative to positive. Shown the average observed value that is relevant to the Andrich threshold value (DiStefano & Morgan, 2010). The Andrich threshold value moves monotonically from NONE towards the negative logit direction (-2.17) and leads to a positive logit (1.97). The increase in the logit value indicates that student responses can distinguish between alternative answer choices and verify the level of response of students who agree based on a scale of five categories.

3.3. Fit Item

Checking the mismatch index seen in the Outfit Mean Square (MNSQ) value, Z Standard (ZSTD) Outfit Estimation, and Point Measure Correlation (DiStefano & Morgan, 2010; Sumintono, 2015). The criteria are determined that an item is declared fit, when the MNSQ value is at a value of 0.5 logit to 1.5 logit (Abd-El-Fattah, 2015; Gómez et al., 2012a; Seol, 2016). **ZSTD** between the values of -1.96 logit to +1.96 logit is indicated as "acceptable fit" (Gómez et al., 2012a; Seol, 2016). **Point Measure Correlation** to measure the identification of internal consistency in items and student responses. Items

Table 3. Item Fit and Item Misfit

Out Fit MNSQ (Item Fit)	PT-Measure Correlation (Item Fit)	Item Misfit	Item Fit
0,68 logit to 1,4 logit	0,24 logit to 0,60 logit	B9, B10, B11, B27	B1, B2, B3, B4, B5, B6, B7, B8, B12, B13, B14, B15, B16, B17, B18, B19, B20, B21, B22, B23, B24, B25, B26, B28, B29, B30, B31, B32, B33, B34, B35, B36, B37, B38, B39, B40, B41, B42, B43
Total		**4**	**39**

with a negative Point Measure Correlation (-) are misfit items, criteria in the range of 0.32 logit <x <0.8 logit (Abdullah et al., 2012; Karami, 2015).

Based on Table 3, the items are not fit, no repairs are made but are decided not to be used or drop out.

The highest average value falls on item B30 on the captivate dimension with the statement "I have interesting homework to do". The functionality of the middle value stands out on items with the captivates dimension. It shows that according Kupana (2015) Student responses assess students' feelings, interests, values, and strengths accurately to maintain reasonable self-confidence. This shows that the less intense student responses are more influenced by the presence or absence of an intermediate response category than the responses of students who feel strong in their stance.

Because this instrument is designed using a five-category response scale, in which alternative choices are being given. So that many students respond by choosing the answer towards the neutral point. the neutral point or the existence of the functioning of the middle value stands out in items with a captivate dimension. This shows that according to Kupana (2015) and Lapoint and Butty (2010), student responses accurately assess students' feelings, interests, values, and strengths to maintain reasonable self-confidence.

The Andrich threshold for each item is displayed with the quality of the nature of the movement from negative to positive. According to Andrich (2011) that successive threshold distances from negative to positive are not isolated and it is said that the response category can be interpreted as an ordinal scale. In Figure 2, it shows 39 items on a scale of five response categories, there are five items that do not meet the Andrich threshold requirements, namely: item B4, B5, B7, B12, and B15.

Thus, the five items have a positive increase in movement, but do not meet the Andrich threshold requirements. The five items that do not fit are isolated as an ordinal scale response category (Andrich, 2011). The results of the data provide

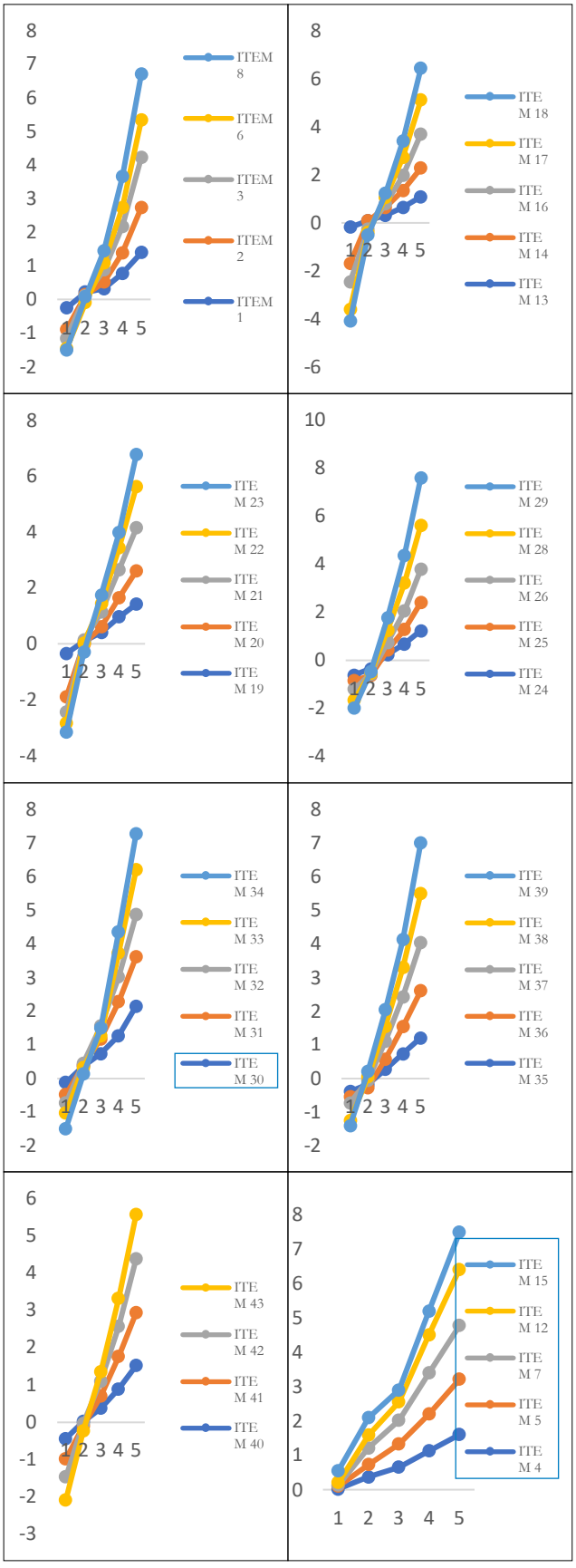


Figure 2. Graph of the monotonic Andrich threshold

Table 4. Summary Statistics

SUMMARY OF 907 MEASURED (EXTREME AND NON-EXTREME) PERSON

	TOTAL SCORE	COUNT	MEASURE	MODEL S.E.	INFIT MNSQ	INFIT ZSTD	OUTFIT MNSQ	OUTFIT ZSTD
MEAN	131.2	39.0	.58	.20				
P.SD	20.8	.0	.82	.06				
S.SD	20.8	.0	.82	.06				
MAX.	195.0	39.0	7.00	1.83				
MIN.	76.0	39.0	-1.55	.19				
REAL RMSE	.22	TRUE SD	.79	SEPARATION 3.63	PERSON RELIABILITY .93			
MODEL RMSE	.21	TRUE SD	.79	SEPARATION 3.85	PERSON RELIABILITY .94			
S.E. OF PERSON MEAN = .03								

PERSON RAW SCORE-TO-MEASURE CORRELATION = .98

CRONBACH ALPHA (KR-20) PERSON RAW SCORE "TEST" RELIABILITY = .94 SEM = 5.23

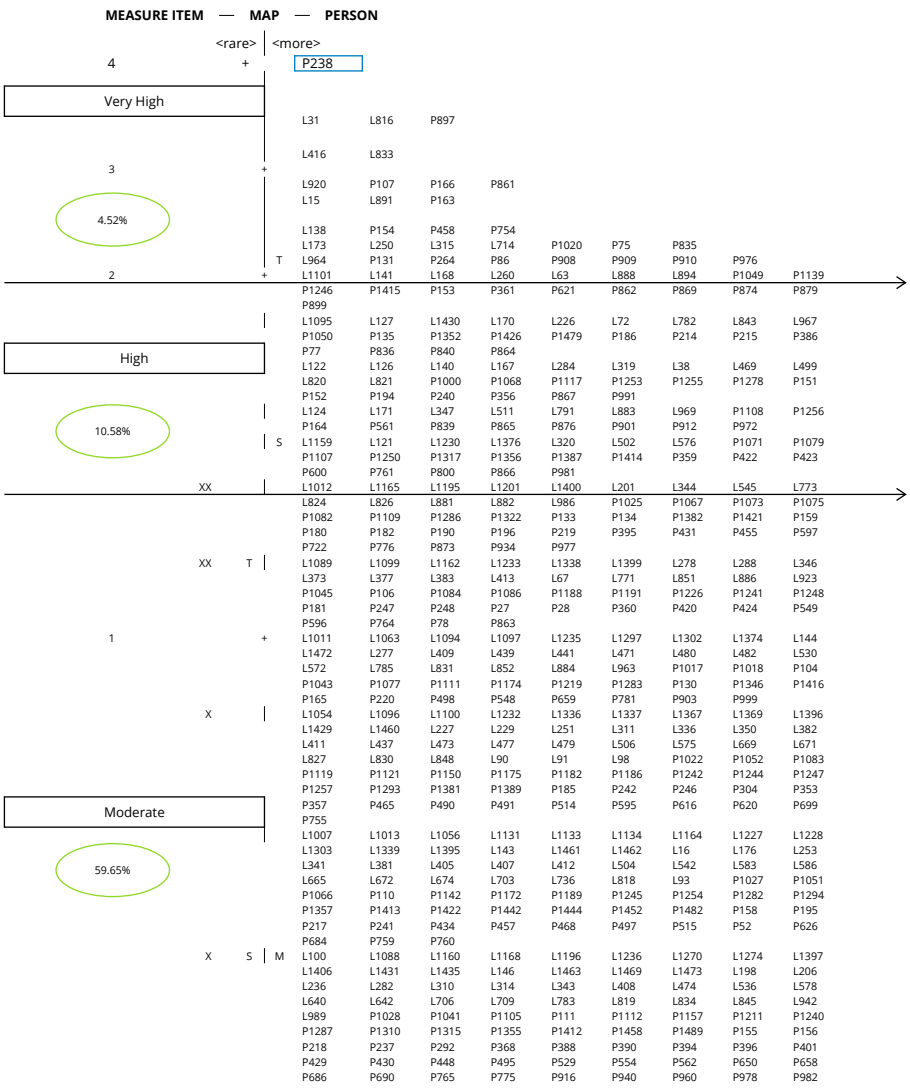
SUMMARY OF 39 MEASURED (NON-EXTREME) ITEM

	TOTAL SCORE	COUNT	MEASURE	MODEL S.E.	INFIT MNSQ	INFIT ZSTD	OUTFIT MNSQ	OUTFIT ZSTD
MEAN	3051.7	907.0	.00	.04	1.00	-.3	1.00	-.2
P.SD	360.5	.0	.57	.00	.19	4.2	.19	4.2
S.SD	365.2	.0	.58	.00	.19	4.2	.19	4.3
MAX.	3601.0	907.0	1.34	.04	1.55	9.9	1.53	9.9
MIN.	2207.0	907.0	-.90	.04	.67	-8.7	.67	-8.7
REAL RMSE	.04	TRUE SD	.57	SEPARATION 13.67	ITEM RELIABILITY .99			
MODEL RMSE	.04	TRUE SD	.57	SEPARATION 14.16	ITEM RELIABILITY 1.00			
S.E. OF ITEM MEAN = .09								

important information about the validity and reliability of the instrument. Data from 1,494 student responses to 43 instrument items, so that 907 student responses were obtained, and 39 fit items were obtained.

Table 4. the summary statistics provide information on the results of internal reliability. The reliability index through fit statistics measures the logit which describes the quality of the instrument.

Person and Item Reliability to check the stability of persons and items with a Rasch reliability value ranging from zero to one which is defined as Alpha Cronbach (Boone & Noltemeyer, 2017). Any reliability value close to one can be considered internally consistent (Kam et al., 2011; Maat & Rosli, 2016). Reliability is considered ideal if it is greater than 0.90. In the table, the person reliability index value is 0.93, the item reliability is 0.99, and the Cronbach Alpha coefficient is 0.94. The high estimate of reliability illustrates the interaction between student responses and items having ideal internal psychometric consistency and is considered a reliable instrument to use.



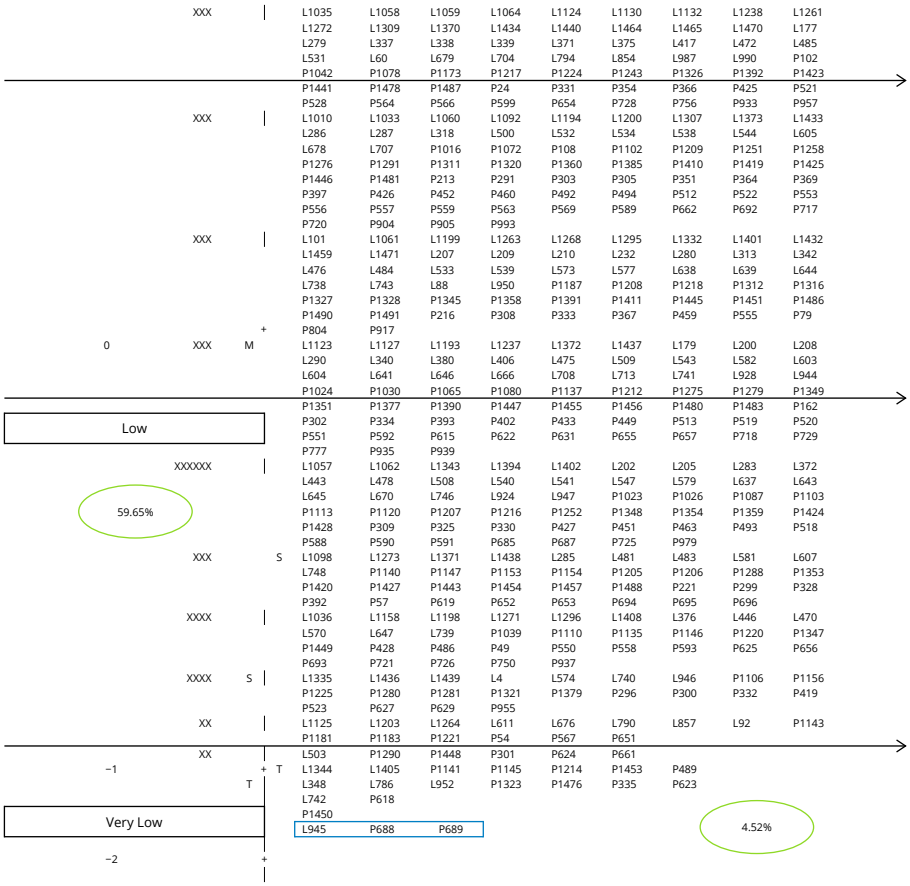


Figure 3. Person variable map

Person and Item Separation Index is an estimate on an instrument that can differentiate between students' abilities. The greater the person separation index and item separation index, which means that the probability of the distribution of students responding to items appropriately and how wide is the distribution of items from easy to difficult items (Gómez et al., 2012b; Perera et al., 2018). The separation index value of 3.63 and the item separation index of 13.67 which provide information about the level of emotional learning environment in the range of student distribution.

Precision of measurement is a strong reliance on the instrument and illustrates in making conclusions. Accurate and reliable measurements are essential for evaluating the reliability and strength of the instrument (Perera et al., 2018; Zagorsek et al., 2006). A good standard error in an instrument must be less than 0.5 (<0.5) (Perera et al., 2018). The estimated value of the items obtained based on Table 3. is shown in the column "Model S.E." amounting to 0.04 logit. This can be interpreted that the precision of measurement is in a reliable indication of fit items. Thus, the reliability level of the instrument with a five-category response scale is reliable and shows good measurement precession.

Person map details information from each student's response starting from high ability to low ability. As many as 907 student responses are fit person. The mean value was 0.55 logit and SD was 0.72 logit. Grouping student response abilities, where mean 0.55 logit + SD 0.72 logit = +1.27 logit (student response rate is moderate); from +1.27 logit to +1.99 logit (high student response rate); score level > +1.99 (student response rate is very high); whereas if the mean value is 0.55 logit - SD 0.72 logit = -0.17 logit (student response rate is moderate); from -0.17 to -0.89 logit (low student response rate); score level < -0.89 (student response rate is very low). An understanding of this can be seen in Figure 3.

The logit of each student response starts from the student's response ability with the highest frequency in agreeing to the statement item by (P238), towards very low response capabilities by (L945, P688, and P689). Initial P is the response of students with female gender while the initials L are the response of students who are male. A high logit value indicates

Table 5. Summary of students 'emotional learning environment levels based on students' response abilities

	Student Response Ability Level (%)				
	Very high	**High**	**Moderate**	**Low**	**Very low**
Total = 907 Mean = 0.55 SD = 0.72	4.52%	10.58%	59.65%	20.51%	3.53%

a high level of student response ability in terms of frequency in determining the appropriate choice of response categories on each statement item.

This percentage value will prove and help to review students' response ability in expressing their experiences during class learning. the form of the student's academic experience can be illustrated by the percentage number of alternative answer choices designed in the instrument. Student response ability is very high, there is 4.52%, which means that the level of student response ability is very high in frequency in determining the right choice of response categories on each statement item, 3.53% which means that the level of student response ability is very low in frequency in determining the right choice of response categories on each statement item. Person distribution like this illustrates that student response abilities are high compared to difficult items.

4. Conclusion

The characteristics of the Emotional Learning Online Classroom Environment instrument developed are psychologically motivated. The most dominant dimension is in the captivate dimension. This shows that students 'responses to emotional learning environment conditions accurately assess students' feelings, interests, values, and strengths to maintain reasonable self-confidence.

The assumption of a monotonic trait, in which items graphically move from a negative to a positive direction, increases the proportion of respondents expressing a neutral view. This tendency might even increase when intervening in sensitive issues of concern statements appearing in the instrument items.

The characteristics of the modified instrument are generally related to the emotions in the learning environment towards the interaction of teachers and students. The instrument was designed using a five-category response scale. Mean grade functioning is more appropriate as a choice response for secondary school level, given that the characteristics of the scale can provide maximum information retrieval.

Therefore, for the psychological scale compilers are expected to compile statement items that are easy to understand and build good interactions with respondents, so that the respondent feels not intervened. The diversity of the data also increases and the description of emotions in student responses is more effective as seen by the functioning of the middle value. Detailed information and proof of estimation, of course there is still an opportunity to carry out the analysis process with other statistical approaches, in order to be able to provide more complete and in-depth information.

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