

# PSYCHOMETRIC ANALYSIS OF AN INSTRUMENT EVALUATING ONLINE TEACHING READINESS

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## PSYCHOMETRIC ANALYSIS OF AN INSTRUMENT EVALUATING ONLINE TEACHING READINESS

### Abstract

The present study purposed to investigate the psychometric characteristic used in evaluating pre-service teachers' readiness to teach online adapted from the previous study by Paliwal and Singh. There are 88 participants of pre-service teachers who took part in this study, spread from various levels of schools in Indonesia. The Rasch analysis was carried out to confirm the adapted questionnaire, consist of unidimensionality, person-item reliability, item statistics, person-item measure, and item-person map. The findings showed that 9-items of OTR developed by Paliwal and Singh questionnaire are valid with pre-service teachers in Indonesia. The Rasch analysis of Online Teaching Readiness revealed that the use of Rasch model to analyze this scale was suitable and produced a high level of reliability both for person and item. This study also included implications and recommendations in future use to be discussed.

**Keywords:** Online teaching readiness, pre-service teachers, Rasch statistical

### Introduction

In the field of education, there are several aspects that need to be considered towards online teaching readiness, such as online teaching competencies, obstacles, and strategies. Badiozaman (2021) argue that teachers' readiness can be included several competencies in conveying particular aspects related to teachers' work and job. Early research has identified several aspects and proficiencies involved in online teaching: the procedure of coordinator, instructor, evaluator, researcher, content organizer, content technologist, planner, and supervisor organizer (Goodyear et al., 2001, p. 5). The following study continued the content specialist, educational planner, and material builder aspect (Aydin, 2005, p. 1). Other research also identified wider classification, such as didactive, cordial, directorial, and mechanical (Berge, 2008, p. 4). Since schooling in the virtual condition is dissimilar than those regularly enforced in conventional classrooms, the teachers' proficiencies to teach online feel necessity for them to adapt their attitude concerning teaching. For instance, teachers are required to have basic skills in using ICT devices, creating online learning designs, and making innovative teaching materials utilizing technology. In addition, Davis et al., (2019) revealed three

obstacles that particularly online teachers' will face. Teachers must be overcome the challenges and continue to carry out their duties to provide knowledge to the students in any situation. For example, teachers must provide feedback to students on time, approach students who have learning difficulties, and provide sufficient and balanced information in giving guidance.

Meanwhile, a study by Alston, et al., (2017) also explored online teaching strategies to meet students learning needs. Teachers need to investigate some of the existing models in conventional learning to be adapted into virtual learning. For example, the flipped classroom learning model is currently implemented in Indonesia as a learning solution for the Covid-19 emergency. To conclude, online teaching requires a lot of preparation so that the teaching and learning process runs effectively and remains innovative. Therefore, teachers are expected to pay attention to plans, strategies, competencies, and the challenges teachers might face when online learning is carried out.

By so, it is important to observe who should be ready to prepare those aspects in implementing online teaching. A study by Martin et al., (2019) stated that the readiness to teach online can be understood as the state of faculty to prepare virtual teaching. Faculty must take part to create well-developed materials, assessments, interactions, and courses in dealing with online teaching. Therefore, faculty could not stand alone to prepare online teaching, but it needs deliberations with teacher's individually (Howard et al., 2021, p. 4). Several studies have evidenced that good deliberation between teachers and their institutions will produce good readiness in online teaching. For examples, Hung (2015, p. 18) has found that institutional support is the most influences online teaching readiness for teachers. Study by Scherer et al., (2021, p. 15) revealed that online teaching readiness can be success depends on the institutional, cultural, and innovation context. Findings by (Howard et al., 2021, p. 16) stated that consideration to both teachers and their faculty can produce a better understanding of teachers' experiences, and the support from institutions towards online teaching.

Several scales have been developed to measure the readiness to teach online. For instance, the FRTO (Faculty Readiness to Teach Online) instrument have been reviewed and developed by Martin (2019) by referring to previous literature (Downing & Dymont, 2013; Gay, 2016; Lichoro, 2016) to determine the framework and instrument that can be carried out to assess faculty readiness in online teaching. Martin (2019) then developed Faculty Readiness to Teach Online (FRTO) instrument, including four competencies; course design, course

communication, time management, and technical competencies. The instrument by Martin further has been conceptualized by Paliwal and Singh (2021) for analyzing the most influential competencies and needed to prepare for online teaching during pandemic. This study used confirmatory factor analysis (CFA) to see the model presented the data, and structural equation modeling (SEM) to do the examination. It can be understood that the reliability of the instrument was using Cronbach alpha ( $>0.70$ ) for all the constructs. Moreover, it can be concluded that this instrument fit with SEM since it met all the validity issues. Unfortunately, this study only focused on Higher Education Institution (HEI) in India, and further research on teacher competencies in online teaching at primary and secondary school levels needs to be carried out. A framework for handling online education can spread evenly. The present study is necessary to conduct as it will adopt an online teaching readiness scale instrument from Paliwal & Singh (2021) and focus on pre-service teachers' readiness in online teaching in all levels.

The current study will examine the instrument assessment using Rasch modeling, which has been done previously, adopting a similar setting. The Rasch analysis will be conducted through WINSTEP 4.4.1 to explore the Rasch assumptions such as unidimensionality, person and item reliability, wright map, and person and item measure. According to Wright (1977) as cited in S. W. Chan et al., (2014), there are several advantages using Rasch model as item's measurement. First of all, Rasch model can classify whether the item is match or biased. Secondly, the sample's ability is free and not influenced its item calibration. Thirdly, the Rasch calibration can be used to test the accuracy of the item. Fourthly, the item difficulties into a common scale from many samples can be estimated. Fifthly, the Rasch model can compare two people's abilities by converting them into a common scale. Sixthly, Chi-square can be used to detect the measurement quality. At last, the instrument assessment can be more easily set up and well-constructed by using Rasch model. Additionally, according to Rasch model, item inquiry also can perform as an introductory examination that show the difficulty of item and bias, that is attended by distractor analysis (M. Chan & Subramaniam, 2020). Therefore, in the present research, a study adopting Rasch analysis to validate Online Teaching Readiness scale has not been found anywhere. The present study will provide empirical evidence to the Psychometric assessment using Rasch analysis. Mainly, this study will provide new investigation in the literature about the readiness to teach online within pre-service teachers in the Indonesian context.

## **Purposes of Analyzing Pre-Service Teachers Assessment Data**

There are two perspectives on which pre-service teachers can get the value based on the assessment result to carry out online teaching. First, from assessing pre-service experience, and second, from evaluating the items being tested.

The current assessment evaluates the individual performance of pre-service teachers when conducting online teaching internships, and the item difficulty of the test. Additionally, the test results can help pre-service teachers equip and prepare what things need to be considered when doing online teaching. For instance, course design such as preparing materials, activities, assessment, clear assignment, and predicting unexpected questions from students (Martin et al., 2019). However, according to Downing & Dymont (2013) in the area of accessibility, online learning also suggests student-centered learning (Barker, 2003; Gilly et al., 2003; Pedersen & Liu, 2003). Therefore, pre-service teachers should better understand the approach taken so that online learning can run effectively in improving the learning process to achieve optimal student learning outcomes.

In the present study, Rasch analysis was carried out to test the appropriateness of items and pre-service teachers perspective to improve teaching during online learning. One of the functions of Rasch analysis is that it can show and evaluate the items and display the result at the same time.

## **Methods**

### **Participants**

A non-probability sampling was used to collect the participants. The method of the study was a survey of OTR that was propagated to all pre-service teachers studying in education department using Google form. There were 88 participants who are currently implementing and have done online internships at schools in Indonesia agreed and filled out the questionnaire. Pre-service teachers cover the age of less than 22 years and more than 25 years. Participants also included pre-service teachers with varying levels of school taught and technology skills. Thus, data collection is taken according to the participants' consent. The female respondents were 86% (n=76) whereas the male respondents were 14% (n=12). The respondents who were currently doing internship at schools were 27% (n=24), and who had done internship at schools were 73% (n=64).

## Instrument

The quantitative data for the current study was collected using a survey. A survey questionnaire was adapted from the previous research by Paliwal & Singh (2021) instrument and it was distributed to the target participants. A 5-point Likert scale was used to state how much the respondents agree or disagree with a specific statement: Strongly Disagree (1); Disagree (2); Neutral (3); Agree (4); Strongly Agree (5) for all items (9 items). The original questionnaire was revealed high reliability of the OTR scale (Cronbach alpha = .91).

## Data Analysis

Quantitative data is evaluated using Rasch analysis with the WINSTEP application version 4.4.1. Moreover, the analysis of an individual item and person fit through mean square (Mnsq) and through Outfit before Infit (Ling Lee et al., 2021) were also assessed. The criteria of Mnsq are ( $< 0.5$  or  $> 2.0$ ). In full, this research also includes several assessments of an item, and person fit which will be carried out to overcome outliers; dimensionality; reliability of separation of goods and people; scoring scale; mapping of goods and people; and item bias (M. Chan & Subramaniam, 2020; Huang et al., 2019). First, the questionnaire was made in the form of a Google form link to facilitate the dissemination of the research through social media, such as Instagram, Whatsapp, and Twitter. Prior to filling out the questionnaire, participants will be asked with several demographic information or personal data questions (age, gender, school level, technology skills, and internship status). Then, the data which is the answer from the respondent is converted into excel form. A total of 263 pre-service teachers from all levels, and experienced (whether they have not, are currently, or have) conducted and conducted internships. After that, we filtered the incoming data again by only taking data from respondents who are currently and have had online internships at schools. In total, there are 116 pre-service teachers who currently have and have conducted online internships at school.

Acceptable Apparel statistic values range between 0.5 and 2.0 for MNSQ. Dimensional assessment is carried out by assessing Rasch Principal Component Analysis (PCA), and bias items are carried out by assessing Item Differential function (DIF) with DIF criteria: (DIF contrast  $> 0.5$ ) and (probability value  $< 0.05$ ). Lastly, the misfit analysis was conducted on the data set to eliminate data which indicated as outlier. It is known that from 116 samples, 28

samples were proven to be outliers, so the remaining 88 samples could be analyzed in the second round using the WINSTEP application.

### **The Rasch Model**

The Rasch model was expanded by Rasch to identify person's ability and item difficulty that can be known from the same unidimensionality scale (Bond & Fox, 2015) Unidimensionality was carried out by assessing the Rasch Principal Component Analysis (PCA) for all subscales. Unidimensionality is used to find out the items in the instrument only measure one construct. The WINSTEP application is used to convert raw data into logit values. This logit value will be analyzed in two rounds. The first analysis is used to eliminate outlier data or data obtained from participants who are not severe in answering questions, so that the answers are not valid for analysis in the second round. Data are considered outliers if the MNSQ ( $< 0.5$  or  $> 2.0$ ) values are known. It is known that from 116 samples, 28 samples were proven to be outliers, therefore they should be removed from the samples. Moreover, the remaining 88 samples could be analyzed in the second round. In this second round, we can find out the value of unidimensionality, item reliability, person separation, rating scale, item difficulty, person ability, and item bias test with item differential function (DIF).

### **Findings**

The result of the Rasch inquiry can serve two conditions. Firstly, the aspect of item's characteristics. The first criteria are to examine the extent of the assessment will fit with Rasch model. Additionally, the separation of person and item and reliability of person and item will be further examined. Secondly, information about the pre-service teachers results. Regarding the pre-service teachers' information, the test and item difficulty measure also included in this position.

The Rasch analysis findings will be summarized below, more detail will be followed of discussion of the results.

**Table 1. Response types for the subscale questionnaire items**

Subscale	Total Items	Type of responses to the items
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Online Teaching Readiness	9	15 Strongly disagree (1) to Strongly agree (5)
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**Table 2. Summary of Rasch measurement model on Online Teaching Readiness**

Parameter (with quality criteria)	Online Teaching Readiness
<b>1</b> <i>Model fit: Summary of items</i>	
Item mean in logits (criteria: 0.0 logits)	.00, SD = .58
Item reliability	.91
Item separation reliability (criteria: good, 0.81-0.90; very good, 0.91-0.94; excellent, >0.94)	.91
<b>3</b> Item model fit MNSQ range extremes (criteria: good, 0.5-1.5; very good, 0.71-1.4; excellent, 0.77-1.3)	Infit .74 – 1.98 Outfit .72 – 2.00
<b>1</b> Item separation index (criteria > 3)	3.21
Separate item strata = [(4 x separation index) + 1]/3 (criteria: fair, 2-3; good, 3-4; very good, 4-5; excellent, >5)	4.61 ≈ 5 levels
<b>1</b> <i>Model fit: Summary of persons</i>	
Person mean in logits (criteria: 0.0 logits)	1.02, SD = 2.03
Person reliability	.90
Person separation reliability (criteria: good, 0.81-0.90; very good, 0.91-0.94; excellent, >0.94)	.90
<b>1</b> Person separation index (criteria > 2)	3.03
Separate Person strata = [(4 x separation index) + 1]/3 (criteria: fair, 2-3; good, 3-4; very good, 4-5; excellent, >5)	4.37 ≈ 4 levels
<b>3</b> <i>Dimensionality</i>	
Raw variance in data explained by measure (criteria: > 20%)	54.2%
<b>5</b> PCA eigenvalue for first contrast (criteria: > 2.0 indicates presence of another dimension; ≤ 2 supports unidimensional scale)	2.2
Unexplained variance in 1 <sup>st</sup> -5 <sup>th</sup> contrast of PCA of residuals (criteria: good, 5-10%; very good, 3-5%; excellent, <3%)	4.7% - 11.4%

SD: standard deviation; PCA: principal components analysis; DIF: differential item functioning; MNSQ: mean square

### Unidimensionality of the Items

Unidimensionality is used to find out the items in the instrument only estimate one construct. Unidimensionality was carried out by assessing the Rasch Principal Component Analysis (PCA) for the global scale and all subscales. The criteria of PCA eigenvalue for first contrast is  $> 2$  logits if it indicates the existence another dimension, and  $< 2$  if it supports unidimensional scale. In table 2, the PCA eigenvalues for the first contrast showed the OTR scale is 2.2 logit. Thus, the findings have indicated that Paliwal & Singh (Paliwal & Singh, 2021) questionnaire fitted to the Rasch model, and depicting the existence of another dimensions in the questionnaire.

### Person and Item Reliabilities

In table 2, it can be understood that the reliability of item separation for Online Teaching Readiness scale at .91 logit (very good). It is also known that the reliability of person separation on the global scale is at logit at .90 (good). In this discovery, it can be seen that the respondents' answers are quite good while filling out the questionnaire. In addition, it is known that the index of item separation was 3.21 logit on OTR. Moreover, the person separation index showed at 3.03 logit (fit the criteria). Therefore, the items on the instrument can be classified into three levels of item difficulty, and the respondents who filled the questionnaire also can be classified into 3 levels.

### Item Statistics

Table 3 showed the statistics of all items individually. In this table, it can be viewed several information presented, such as item measure, standard error of measurement, fit statistics, and point-measure correlation. The statistics in this table showed that all items match, and the range if from 0.5 to 1.5. Globally, item difficulty levels are appropriate with the levels of pre-service teachers' ability. The statistics below showed 9 items of Online Teaching Readiness had good psychometric equity and fit the Rasch model.

Table 3. Item measure, standard error, fit, and point-measure correlation

Item	Measure	Standard error	Infit		Outfit		PTME corr.
			MnSq	ZStd	MnSq	ZStd	
1	-.54	.17	.98	-.08	1.01	.09	.76
2	-.88	.18	.85	-.97	.98	-.11	.77

3	.53	.17	1.98	5.26	2.00	5.38	.62
4	-.21	.17	.96	-.25	.95	-.29	.78
5	-.16	.17	.74	-1.90	.72	-2.07	.81
6	.96	.17	.78	-1.56	.79	-1.52	.76
7	.51	.17	.74	-1.89	.74	-1.95	.80
8	.48	.17	.92	-.51	.93	-.41	.76
9	-.69	.17	.89	-.69	.93	-.39	.76
Mean	.00	.17	.98	-.3	1.00	-.1	
SD	.60	.00	.36	2.1	.37	2.1	

### Person - Item Measures

Table 3 displays the item difficulty level range from -.88 logits to .96 logits. The lower the logit, the easier the item is, and the higher the logit, the more difficult the item level. The hardest item was Q6 that has shown at .96 logits whereas the easiest item was Q2 that indicated -.88 logits. Meanwhile, the standard error of measurement mostly shown at .17 for all items except Q2 (.18).

The statement of Q6 “I believe teaching online will offer me more job satisfaction) is the most difficult item to choose to agree by the respondents. Q6 can be the most difficult item to agree because most respondents do not agree the statement. In other words, many respondents chose not to agree with the statement. Additionally, there are a total of 48 respondents (54%) who answered disagree according to this item.

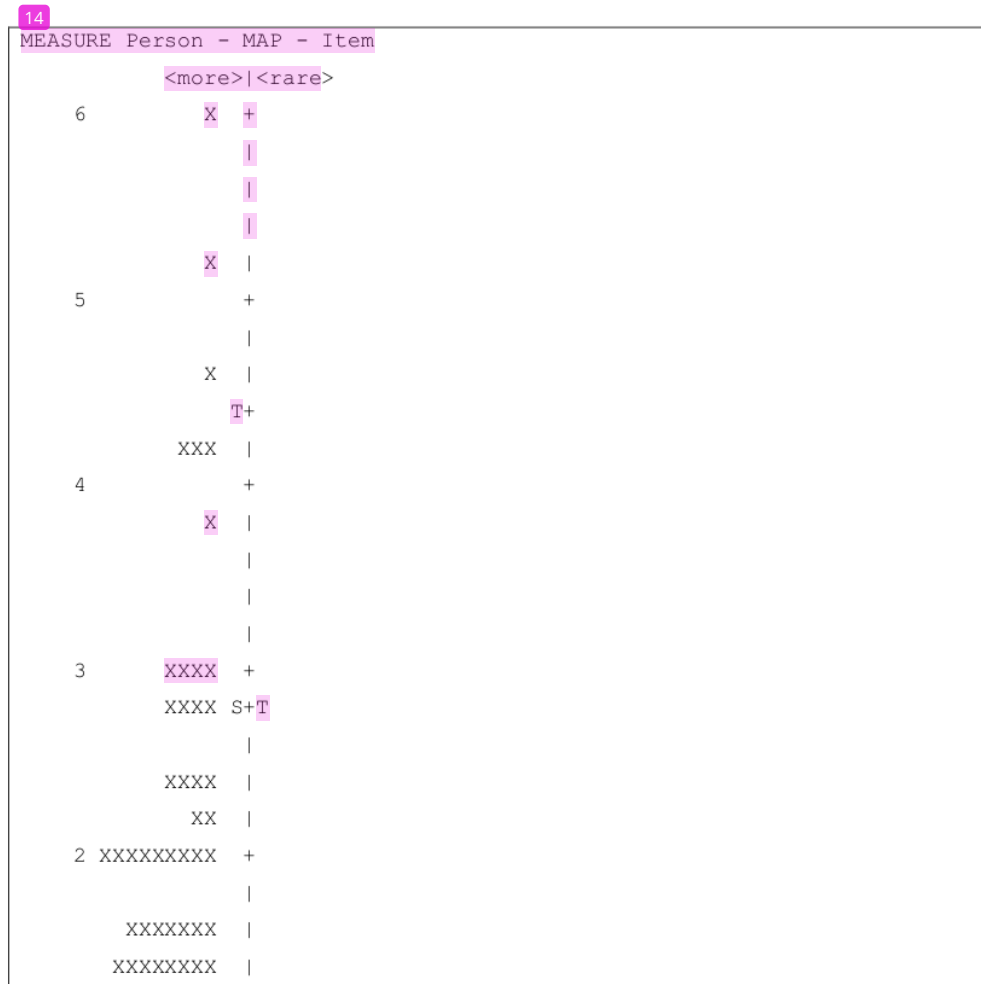
The other items which were also shown as difficult item such as Q3, Q7, and Q8. Specially, related with the most difficult item (Q6) these items were seen to be difficult to approve because many respondents do not agree with the statement of the items.

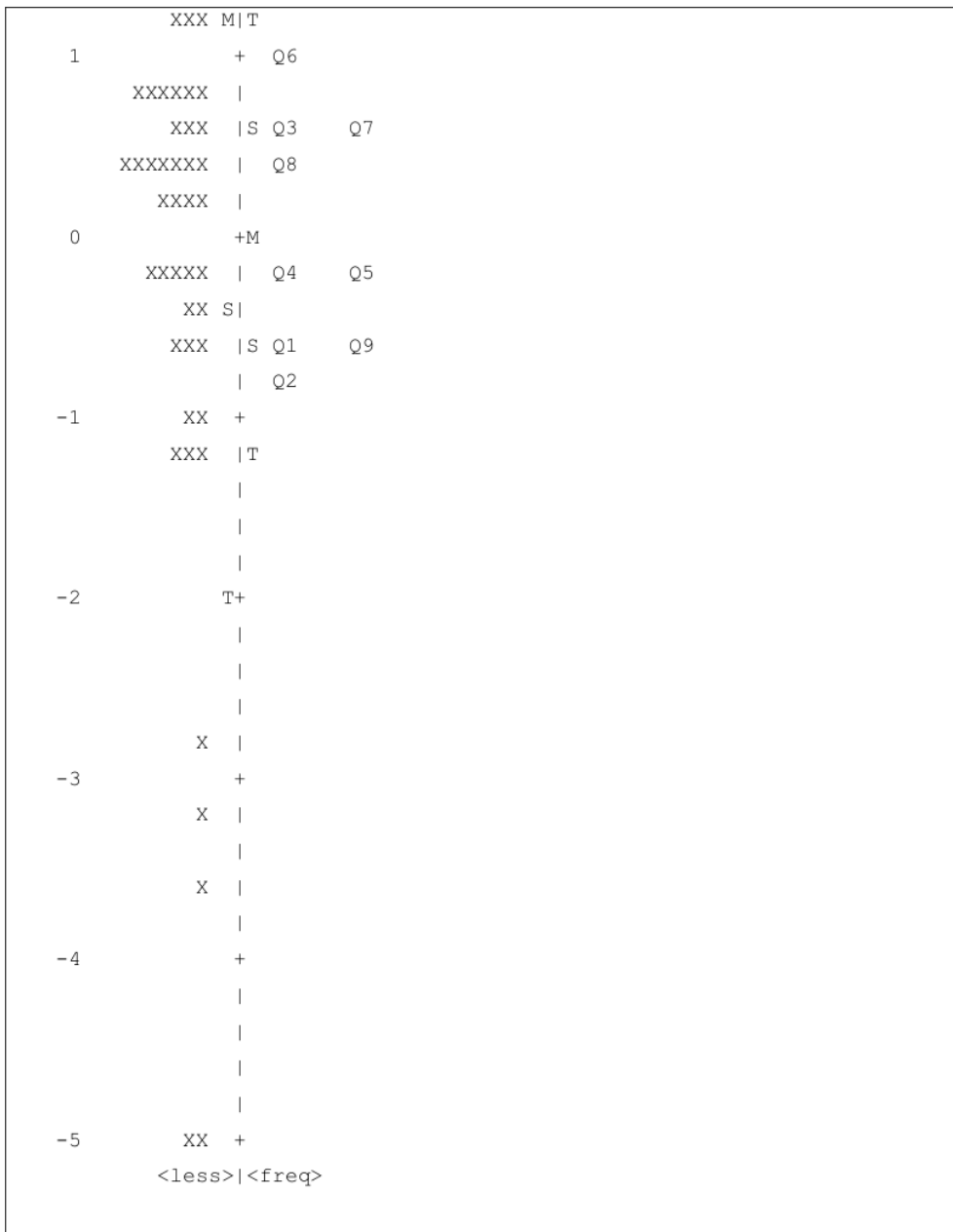
On the contrary, the result viewed that pre-service teacher executed best in Q2. Overall, the item difficulty levels compatible well with pre-service teachers’ ability in the distribution of item and person measure.

As condensed in Table 3, the mean of item (0.00 logits), and the mean of the pre-service teacher’s ability guess was 1.00 logits. It can be described that pre-service teachers had high level of readiness compared to the item.

## Wright Map

Wright Maps are used to determine the distribution of people's levels and item adversity levels on the same gauge. In figure 1, the distribution of measured level of the person is shown on the left side of the map, while the distribution of item adversity levels is shown on the right side of the map. The items that are the most challenging for respondents to agree with are at the highest level, while the items that are the easiest for respondents to agree are at the lowest level. Globally, this instrument is easy to use to measure online teaching readiness by pre-service teachers. Research showed that the easiest and most difficult items range from -1.08 to 1.62 logits.





It can be seen in Figure 1, for items Q6 = .96 logit, Q3 = .53 logit, Q7 = .51 logit, and of Online Teaching Readiness scale were displayed as the most difficult items or the least chosen item to agree by respondents. Online Teaching Readiness (OTR) subscale is shown as the most difficult item or the least chosen by only few respondents to agree. For example, item Q6 (1

believe teaching online will offer me more work pleasure) is the most difficult item to choose to agree by the respondents. It indicated that most respondents feel they didn't get job satisfaction while doing online teaching, and there are a total of 48 respondents (particularly female) who answered disagree according to this item. Another instance can be seen in item Q3 (I believe teaching online takes less time than teaching face to face). It reflected that most respondents do not agree that online teaching takes a short time, because in reality they spend more time compared to direct teaching.

Meanwhile, item Q2 (-.88 logit), Q1 (-.54 logit), and Q9 (-.69 logit) were displayed as the easiest items or the most chosen to agree by respondents. For example, item Q2 "I am open to learning more ways in using technology in teaching online" is the most chosen to agree by the respondents. It indicated that most respondents don't mind or willing to learn different ways of using technology to implement when teaching online. It showed that most respondents are confident and have a willingness to learn the use of technology.

### **Item Fit**

The analytical of item fit can be shown at infit and outfit mean square (MnSq) that demonstrated assemble validity to separate pre-service teachers with varying readiness levels in teaching online. The infit and outfit analysis of overall items were shown <2.0 which implied no mismatch, except Q3. The Rasch analysis also informed the point measure correlation, which was used to measure the correlation between respondents towards a single item. Moreover, the positive values (logits) can affect the internal coherence of the item. In this study, pt. measure values were all positive and not close to zero (0.00). It indicated that all items were internally coherent in the test and understood the whole item well.

### **Discussion**

#### **Implications for the Pre-Service Teachers' Practice**

The present study informed an investigation of pre-service teachers' valuation using Rasch model, which assesses item level in measuring pre-service teacher ability in preparing online learning.

The results provided the pre-service teachers with factual assessment information to deeply comprehend what factors support online teaching readiness based on their experience of those who have already done internship and are currently still interns. Moreover, this study also equipped a difference between the item difficulty levels and the respondent's readiness levels. Therefore, pre-service teachers can objectively see the dissimilarity between virtual and in-face teaching. Therefore, they can estimate what course design is appropriate for online teaching, what technology are suitable for online teaching, and what they expect from students' performance.

Mainly, pre-service teachers found some difficult items to agree which meant they do not agree with the statement of the item. For instance, item Q6 is seen as the **most difficult item** to answer as shown on the wright map, and was most reacted contradict by respondents (54%). It provides prospective teachers with actionable information to identify things they can improve to gain job satisfaction in online teaching. Several factors have been recognized that influence teacher work pleasure; such as leadership (Hui et al., 2013; Menon, 2014), teacher independence (Skaalvik & Skaalvik, 2014), and students' attitude (Perrachione et al., 2008). Further, teachers' self-confident also related to their work pleasure. Teachers who had high self-confident toward their skill feel can involve students with more interactive and they can be more enjoy in teaching and increase their job satisfaction. For example, a finding by Chaprara et al., (2003) revealed that teachers of high-school students in Italia who were confident that they could complete their teaching assignments and overcome difficulties in the classroom had a high level of job satisfaction.

This finding emphasizes that respondents still disagree on several items when doing online teaching because of their unpreparedness and misconception about online teaching among pre-service teachers. Further use of the results can be utilized for pre-service teachers to improve their ability in online teaching practice before they become real teachers.

### **Implications and Recommendations in Future Research**

The findings of the study were revealed that pre-service teachers are viewed open and do not hesitate to learn and improve their technical skills to do online teaching, but they do not believe in being able to teach online, mainly because they admit teaching in virtual environment will not provide work pleasure and take a longer time compared to in-person teaching. However, the study was limited to the number of participants. Therefore, the participants are expected to be widely spread across Indonesia. Moreover, the factor contributing online teaching readiness should be further evaluated. For future research, online teaching needs to be considered importantly by individual pre-service teachers and their institution so that they can better understand what kind of experiences that pre-service teachers have had during and after internship at schools, what support they need, and further understanding of online learning so that they can be better prepared to undertake online teaching when they have actually become a real teacher.

### **Conclusion**

The current study used the Rasch model to examine a 9-item relating to Online Teaching Readiness for pre-service teachers in Indonesia. Based on the pre-service teachers' answer through the questionnaire, the psychometric assessment presented a beneficial judgement to classify the item's value to survey the readiness in teaching online by pre-service teachers. The result of the evaluation for the validity and reliability tests contained in the item are suitable and acceptable using Rasch modeling.

### **References**

- Aldridge, J. M., & Fraser, B. J. (2016). Teachers' views of their school climate and its relationship with teacher self-efficacy and job satisfaction. *Learning Environments Research, 19*(2), 291–307. <https://doi.org/10.1007/s10984-015-9198-x>
- Alston, S. T., Moore, C. S., & Thomas, M. (2017). Strategies for enhancing online teaching in social work education. *Journal of Human Behavior in the Social Environment, 27*(5), 412–423. <https://doi.org/10.1080/10911359.2017.1311817>
- Aydin, C. H. (2005). Turkish Mentors' Perception of roles, competencies and resources for online teaching. *Turkish Online Journal of Distance Education, 6*(3), 58–80. <https://doi.org/10.17718/tojde.78416>
- Badiozaman, I. F. A. (2021). Exploring online readiness in the context of the COVID 19 pandemic. *Teaching in Higher Education, 0*(0), 1–19. <https://doi.org/10.1080/13562517.2021.1943654>
- Barker, A. (2003). Faculty development for teaching online: educational and technological issues. *The Journal of Continuing Education in Nursing, 34*(6), 273–278. <https://doi.org/10.3928/0022-0124-20031101-10>
- Berge, Z. L. (2008). Changing instructor's roles in virtual worlds. *Quarterly Review of Distance Education, 9*(4), 407–414. <http://eric.ed.gov/?id=EJ875111>
- Bond, T. G., & Fox, C. M. (2015). *Applying The Rasch Model: Fundamental Measurement in the Human Science*.
- Caprara, G. V., Barbaranelli, C., Borgogni, L., Petitta, L., & Rubinacci, A. (2003). Teachers', school staffs and parents' efficacy beliefs as determinants of attitudes toward school. *European Journal of Psychology of Education, 18*(1), 15–31. <https://doi.org/10.1007/BF03173601>
- Chan, M., & Subramaniam, R. (2020). Validation of a Science Concept Inventory by Rasch Analysis. *Rasch Measurement: Applications in Quantitative Educational Research (2020, Pp. 159-178), July*, 1–281. <https://doi.org/10.1007/978-981-15-1800-3>
- Chan, S. W., Ismail, Z., & Sumintono, B. (2014). A rasch model analysis on secondary students' statistical reasoning ability in descriptive statistics. *Procedia - Social and Behavioral Sciences, 129*, 133–139. <https://doi.org/10.1016/j.sbspro.2014.03.658>
- Davis, N. L., Gough, M., & Taylor, L. L. (2019). Online teaching: advantages, obstacles and

tools for getting it right. *Journal of Teaching in Travel and Tourism*, 19(3), 256–263.  
<https://doi.org/10.1080/15313220.2019.1612313>

Downing, J. J., & Dymont, J. E. (2013). Teacher educators' readiness, preparation, and perceptions of preparing preservice teachers in a fully online environment: an exploratory study. *Teacher Educator*, 48(2), 96–109.  
<https://doi.org/10.1080/08878730.2012.760023>

Gay, G. H. E. (2016). An assessment of online instructor e-learning readiness before, during, and after course delivery. *Journal of Computing in Higher Education*, 28(2), 199–220.  
<https://doi.org/10.1007/s12528-016-9115-z>

Gilly, A., The, S. E., & Page, K. (2003). E-tivities: the key to active online learning. *On the Horizon*, 11(1), 33–34. <https://doi.org/10.1108/oth.2003.11.1.33.1>

Goodyear, P., Salmon, G., Spector, J. M., Steeples, C., & Tickner, S. (2001). Competences for online teaching: A special report. *Educational Technology Research and Development*, 49(1), 65–72. <https://doi.org/10.1007/BF02504508>

Howard, S. K., Tondeur, J., Siddiq, F., & Scherer, R. (2021). Ready, set, go! Profiling teachers' readiness for online teaching in secondary education. *Technology, Pedagogy and Education*, 30(1), 141–158. <https://doi.org/10.1080/1475939X.2020.1839543>

Huang, L., Huang, F., Oon, P. T., & Mak, M. C. K. (2019). Constructs evaluation of student attitudes towards science. *Eurasia Journal of Mathematics, Science and Technology Education*, 15(12). <https://doi.org/10.29333/ejmste/109168>

Hui, H., Jenatabadi, H., Ismail, N. A., & Radzi, C. W. J. W. M. (2013). Principal's Leadership Style and Teacher Job Satisfaction: A Case Study in China. *Interdisciplinary Journal of Contemporary Research In Business*, 5(4), 175–184.

Hung, M. (2015). Teacher readiness for online learning: scale development and teacher perception. *Computers & Education*, 94, 120–133.  
<https://doi.org/10.1016/j.compedu.2015.11.012>

Lichoro, D. M. (2016). *Faculty preparedness for transition to teaching online courses in the Iowa Community*. 4(1), 1–23.

Ling Lee, W., Chinna, K., & Sumintono, B. (2021). Psychometrics assessment of HeartQoL questionnaire: A Rasch analysis. *European Journal of Preventive Cardiology*, 28(12),

E1–E5. <https://doi.org/10.1177/2047487320902322>

Martin, F., Budhrani, K., & Wang, C. (2019). Examining faculty perception of their readiness to teach online. *Online Learning Journal*, 23(3), 97–119.

<https://doi.org/10.24059/olj.v23i3.1555>

Menon, M. E. (2014). The relationship between transformational leadership, perceived leader effectiveness and teachers' job satisfaction. *Journal of Educational Administration*, 52(4), 509–528. <https://doi.org/10.1108/JEA-01-2013-0014>

Paliwal, M., & Singh, A. (2021). Teacher readiness for online teaching-learning during COVID –19 outbreak: a study of Indian institutions of higher education. *Interactive Technology and Smart Education*. <https://doi.org/10.1108/itse-07-2020-0118>

Pedersen, S., & Liu, M. (2003). Teachers' beliefs about issues in the implementation of a student-centered learning environment. *Educational Technology Research and Development*, 51(2), 57–76. <https://doi.org/10.1007/BF02504526>

Perrachione, B. A., Rosser, V. J., & Petersen, G. J. (2008). Why do they stay? elementary teachers' perceptions of job satisfaction and retention. *The Professional Educator*, 32(2), 25–41.

[http://www.auburn.edu/academic/societies/professional\\_educator/articles/combined\\_fall\\_08.pdf](http://www.auburn.edu/academic/societies/professional_educator/articles/combined_fall_08.pdf)

Scherer, R., Howard, S. K., Tondeur, J., & Siddiq, F. (2021). Profiling teachers' readiness for online teaching and learning in higher education: Who's ready? *Computers in Human Behavior*, 118(December), 106675. <https://doi.org/10.1016/j.chb.2020.106675>

Skaalvik, E. M., & Skaalvik, S. (2014). Teacher self-efficacy and perceived autonomy: Relations with teacher engagement, job satisfaction, and emotional exhaustion. *Psychological Reports*, 114(1), 68–77. <https://doi.org/10.2466/14.02.PR0.114k14w0>

WRIGHT, B. D. (1977). Solving measurement problems with the rasch model. *Journal of Educational Measurement*, 14(2), 97–116. <https://doi.org/10.1111/j.1745-3984.1977.tb00031.x>

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