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Institute of Metallurgy and Ore Beneficiation, Satbayev University, Almaty, Kazakhstan

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Rugaya Tuanaya

Graduate School

Universitas Negeri Yogyakarta, Indonesia

E-mail: rugayatuanaya.2021@student.uny.ac.id

ORCID ID 0000-0002-1010-7026

Widihastuti

Graduate School

Universitas Negeri Yogyakarta, Indonesia

E-mail: widihastuti@uny.ac.id

ORCID ID 0000-0001-8242-658X

Edi Istiyono

Graduate School

Universitas Negeri Yogyakarta, Indonesia

E-mail: edi_istiyono@uny.ac.id

ORCID ID 0000-0001-6034-142X

Haryanto

Graduate School

Universitas Negeri Yogyakarta, Indonesia

E-mail: haryanto@uny.ac.id

ORCID ID 0000-0003-3322-904X

Validity and Reliability Analysis of Character Instruments for High School Students in Coastal Areas of Maluku

Abstract: The research is a development of character assessment instrument for high school students in coastal areas in Maluku. This study aims to test the quality of character assessment instrument of high school students in coastal areas of Maluku which consists of content validity, construct validity and reliability. The sample in this study amounted to 56 students with the sampling technique using random sampling technique. Content validity used is Aiken's V, while Confirmatory Factory Analysis is used to prove construct validity. Reliability analysis using Cronbach Alpha. The results of the analysis show that the content validity of the character assessment instrument of coastal high school students in Maluku all items have met the valid criteria, construct validity with CFA provides evidence that there are 18 items that do not fit, while the reliability coefficient is 0.9 with a very high category.

Keywords: Character education, Character of coastal students, Instrument quality.

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Introduction

Value education, moral education, character education, and character education are several interpretations of character education (Arifudin, 2022). A distinctive quality or attribute that is unique is called character. Following childhood, an individual develops a personality, which is correlated with the actions of those around them in a predictable manner (Kevin Ryan, 1999: 5). Character education is crucial for all people (Sudrajat, 2011; Manaf et al, 2020 & Irawati et al, 2022). Applied in school, home, and community environments, character education aims to form positive attitudes, foster the development of social competence, address student behavior (Gable et al., 2013), improve skills (Helterbran & Strahler, 2013), and improve good attitudes (Napitupulu, 2019).

This is consistent with Ferdiansyah's (2022) message, which is that character education essentially seeks to promote the conception of decent people with appealing, moral, modest, honest, clever, compassionate, and resilient personalities. Students that exhibit strong character will be inspired to improve in their ability and dedication to accomplish the best things, do everything properly, and have a purpose in life. In order to have a good and tough character, one must maximize one's potential while also being conscious, motivated, and feeling something for everyone and everything, including God Almighty, himself, others, the environment, nation, state, and the global community at large. Sofyan (2020) asserts that education serves a dual purpose of improving an individual's character and preparing them for the real world. Education also helps people become more skilled and ethically and aesthetically aware, and most importantly, it shapes how people

behave in daily life. As stated by Par (2017), the primary objective of character education is to instill the value of goodness. Children who live in coastal areas have a different level of character strength than children who live in agrarian, rural, or mountainous settings. The environmental factors in the occupied region are the reason for the discrepancy. The findings of Freeks (2015), Handayani & Brodjonegoro (2015), and Jennings, Mitchell, & Hannah (2014) indicated that character development is greatly influenced by the environment.

The world's largest archipelago is Indonesia. With the second-longest coastline in the world and almost two-thirds of its land covered by water, it is home to the fifth-largest population in the world, 60% of whom reside in coastal regions (Brotosusilo et al., 2016). Kinship, reciprocal collaboration, and well-established family trust are traits of Indonesian coastal communities, according to research by (Cahaya, 2015; Wekke & Cahaya, 2015). Fatalism (respect for God, people, nature, and life) is a belief held by some (Hakim, 2019). People who live near the coast follow the advice of local knowledge while making decisions. Noble values are applicable according to local wisdom, and as a result, youngsters living near the coast should abide by these principles.

Character education ought to be tailored to the needs of students' everyday situations (local knowledge) in order to help them overcome obstacles in life. In coastal regions, "local wisdom" describes actions that develop into a way of life. All people who live along the coast have an obligation to cultivate character values. Teachers will find it easier to provide assessments in the classroom that are focused on learning success because of the values that students have been assigned. Students that possess high standards of morality and integrity will help them succeed academically. Furthermore, one of the goals of the Pancasila Student Profile is that this can be a strength in overcoming the problems of 21st-century living.

Research Methods

Participants. This research is development research with the aim to produce products in the form of non-cognitive instruments, namely character assessment instruments for high school students in the coastal areas of Maluku. The development stages follow the steps of instrument development from Istiyono (2020), namely: (1) Determination of objectives, (2) Determination of competencies and materials to be tested, (3) Preparation of item distribution matrix, (4) Preparation of grids, (5) Writing and assembling test items, (6) Preparation of scoring rubrics, (7) Validity of test items, (8) Revision to improve test items, (9) Instrument assembly and (10) Test trials. The sample in this study were high school students who lived in the coastal areas of Maluku, totaling 56 people. Sampling in this study using random sampling technique.

Measurement. The instrument used in this study is a character assessment instrument for high school students in Maluku coastal areas. Based on the number of answer options, this instrument consists of 56 items and uses a Likert model scale with five answer options, namely: "very appropriate", "Always/Strongly", "Agree Often/Agree", "Sometimes/Doubt", "Rarely/Disagree", "Never/Strongly Disagree". The use of the middle option is intended to facilitate participants who have a moderate attitude towards the statements given (Klopfers & Madden, 1980). It is feared that not providing a middle option will cause participants to feel "forced" to choose bipolar answer choices.

In this study, the content validity was analyzed using Siken's V index. The construct validity of the character assessment instrument of high school students in Maluku coastal area was analyzed by Confirmatory Factor Analysis (CFA) with the help of LISREL software (Jöreskog & Sörbom, 2006). CFA is part of factor analysis used to test the extent to which each indicator reflects the dimensions of a construct (Pedhazur, 1997). In this case, the extent to which the items of a research instrument are valid in measuring what is to be measured. Reliability analysis uses crocbach alpha which is analyzed using the help of R Studio software.

Instrument Characteristics. The product developed in this research is a non-cognitive instrument, namely a character assessment instrument for high school students in the Maluku coastal area which is a questionnaire instrument for students. The initial design of the questionnaire instrument is shown in Table 1.

Table 1. Draft character assessment instrument for high school students in Maluku coastal area

No.	Character	Number of Item
1	Religious	10
2	Be friendly	13
3	Work-hard	6
4	Caring for Parents	9

5	Independent	7
6	Discipline	11
Total		56

The developed instrument contains 6 character values, each of which is represented by items that have been tested valid. The instrument consists of a grid and a questionnaire instrument.

Results and Discussion

The research results display and discuss the content validity, construct validity, and reliability of the character assessment instrument for high school students in the coastal areas of Maluku.

Content Validity. The design of the character assessment instrument for high school students in Maluku coastal areas was analyzed by experts to determine content validity. There were seven experts who became validators so that the minimum value of the v index that must be achieved based on Siken's V index is 0.75 (Aiken, 1985). The results of expert validation showed that all items on the character assessment instrument of high school students in the coastal area of Maluku had met the criteria of "valid". Overall, the content validity of all items on the character assessment instrument of high school students in the coastal areas of Maluku is in the very valid category or has high validity, because the lowest index is 0.75 and the highest is 0.93 which is a high validity category (Istiyono, 2020: 350). The results of the Aiken index calculation are presented in table 2.

Table 2. Aiken index calculation results

No	Expert								S1	S2	S3	S4	S5	S6	S7	Sigma S	V	Criteria
	1	2	3	4	5	6	8											
Bt1	4	5	4	5	5	4	5	3	4	3	4	4	3	4	25	0,89	Valid	
Bt2	3	5	4	4	5	3	5	2	4	3	3	4	2	4	22	0,79	Valid	
Bt3	5	5	5	4	5	5	5	4	4	4	3	4	4	4	27	0,96	Valid	
Bt4	5	5	3	4	3	5	3	4	4	2	3	2	4	2	21	0,75	Valid	
Bt5	3	4	4	4	4	5	4	2	3	3	3	3	4	3	21	0,75	Valid	
Bt6	5	5	5	5	4	4	5	4	4	4	4	3	3	4	26	0,93	Valid	
Bt7	5	5	5	5	5	4	5	4	4	4	4	4	3	4	27	0,96	Valid	
Bt8	5	4	5	5	4	4	5	4	3	4	4	3	3	4	25	0,89	Valid	
Bt9	4	3	4	5	5	4	3	3	2	3	4	4	3	2	21	0,75	Valid	
Bt10	5	5	5	5	4	4	5	4	4	4	4	3	3	4	26	0,93	Valid	
Bt11	5	5	5	4	5	4	4	4	4	4	3	4	3	3	25	0,89	Valid	
Bt12	3	4	3	5	5	4	4	2	3	2	4	4	3	3	21	0,75	Valid	
Bt13	3	4	4	5	5	4	4	2	3	3	4	4	3	3	22	0,79	Valid	
Bt14	5	3	4	4	5	4	4	4	2	3	3	4	3	3	22	0,79	Valid	
Bt15	5	4	5	5	4	4	5	4	3	4	4	3	3	4	25	0,89	Valid	
Bt16	5	4	4	5	5	4	5	4	3	3	4	4	3	4	25	0,89	Valid	
Bt17	3	4	4	4	4	4	5	2	3	3	3	3	3	4	21	0,75	Valid	
Bt18	4	5	5	5	5	4	3	3	4	4	4	4	3	2	24	0,86	Valid	
Bt19	4	5	4	5	4	2	5	3	4	3	4	3	1	4	22	0,79	Valid	
Bt20	4	4	4	5	4	4	5	3	3	3	4	3	3	4	23	0,82	Valid	
Bt21	5	5	4	5	3	4	5	4	4	3	4	2	3	4	24	0,86	Valid	
Bt22	4	4	4	5	5	4	5	3	3	3	4	4	3	4	24	0,86	Valid	
Bt23	4	4	3	5	5	4	5	3	3	2	4	4	3	4	23	0,82	Valid	
Bt24	5	5	5	5	5	4	5	4	4	4	4	4	3	4	27	0,96	Valid	
Bt25	5	4	5	5	5	3	4	4	3	4	4	4	2	3	24	0,86	Valid	
Bt26	4	4	5	5	4	3	5	3	3	4	4	3	2	4	23	0,82	Valid	
Bt27	4	4	5	5	4	3	5	3	3	4	4	3	2	4	23	0,82	Valid	
Bt28	5	5	5	5	4	2	4	4	4	4	4	3	1	3	23	0,82	Valid	

No	Expert								S1	S2	S3	S4	S5	S6	S7	Sigma S	V	Criteria
	1	2	3	4	5	6	8											
Bt29	5	5	4	5	5	3	4	4	4	3	4	4	2	3	24	0,86	Valid	
Bt30	5	4	4	5	4	3	5	4	3	3	4	3	2	4	23	0,82	Valid	
Bt31	5	4	4	5	5	3	5	4	3	3	4	4	2	4	24	0,86	Valid	
Bt32	5	3	4	5	4	3	5	4	2	3	4	3	2	4	22	0,79	Valid	
Bt33	5	4	4	5	4	4	5	4	3	3	4	3	3	4	24	0,86	Valid	
Bt34	5	4	4	5	4	3	5	4	3	3	4	3	2	4	23	0,82	Valid	
Bt35	5	5	4	5	5	3	4	4	4	3	4	4	2	3	24	0,86	Valid	
Bt36	5	5	3	5	5	5	5	4	4	2	4	4	4	4	26	0,93	Valid	
Bt37	4	3	4	5	4	5	3	3	2	3	4	3	4	2	21	0,75	Valid	
Bt38	5	5	4	5	3	4	5	4	4	3	4	2	3	4	24	0,86	Valid	
Bt39	4	5	5	5	5	4	5	3	4	4	4	4	3	4	26	0,93	Valid	
Bt40	5	5	4	5	5	4	5	4	4	3	4	4	3	4	26	0,93	Valid	
Bt41	5	2	4	5	4	4	5	4	1	3	4	3	3	4	22	0,79	Valid	
Bt42	5	4	3	5	5	3	5	4	3	2	4	4	2	4	23	0,82	Valid	
Bt43	3	3	4	5	4	5	4	2	2	3	4	3	4	3	21	0,75	Valid	
Bt44	5	3	4	5	4	4	5	4	2	3	4	3	3	4	23	0,82	Valid	
Bt45	5	5	3	5	3	4	5	4	4	2	4	2	3	4	23	0,82	Valid	
Bt46	3	4	5	5	3	4	4	2	3	4	4	2	3	3	21	0,75	Valid	
Bt47	5	4	4	5	4	4	5	4	3	3	4	3	3	4	24	0,86	Valid	
Bt48	5	5	4	4	5	4	5	4	4	3	3	4	3	4	25	0,89	Valid	
Bt49	5	4	4	5	5	4	5	4	3	3	4	4	3	4	25	0,89	Valid	
Bt50	5	4	5	5	5	4	5	4	3	4	4	4	3	4	26	0,93	Valid	
Bt51	5	5	4	5	4	4	5	4	4	3	4	3	3	4	25	0,89	Valid	
Bt52	5	4	4	5	5	5	5	4	3	3	4	4	4	4	26	0,93	Valid	
Bt53	5	5	3	5	3	5	4	4	4	2	4	2	4	3	23	0,82	Valid	
Bt54	5	5	4	5	5	4	5	4	4	3	4	4	3	4	26	0,93	Valid	
Bt55	5	4	4	5	5	3	5	4	3	3	4	4	2	4	24	0,86	Valid	
Bt56	5	4	4	5	5	4	5	4	3	3	4	4	3	4	25	0,89	Valid	

Construct Validity. Then the instrument was tested on 56 students. The results of the trial were subjected to classical item analysis and proof of construct validity and reliability analysis. instrument to determine item validity and instrument reliability. Proof of construct validity using Confirmatory Factor Analysis with Goodness of Fit criteria that must be met to declare a fit construct refers to the opinion of Schermelleh-Engel, Moosbrugger & Mueler (2003: 52) and Hair, Black, Babin et al. (2014: 578-581) which states, there are three types of Goodness of Fit measures, namely Absolute Fit Indices, Incremental Fit Indices and Persimonus. The three types are explained by Latan (2013: 53) as presented in table 3.

Table 3. Goodness of Fit Summary

Types of goodness of fit measure	Types	Cut-off value
Absolute fit indices	1. Chi-Square (X^2)	≤ 0
	2. Goodness-of-Fit Index (GFI)	$>0,9$
	3. Root Mean Square Error of Approximation (RMSEA)	0,05-0,08
Incremental Fit	1. Goodness of Fit Index (AGFI)	$\geq 0,9$
	2. Normed Fit Index (NFI)	$> 0,90; > 0,95$
	3. Comparative Fit Index (CFI)	$> 0,90; > 0,95$
	4. Incremental Fit Index (IFI)	$> 0,90; > 0,95$
	5. Relative Fit Index (RFI)	$> 0,90; > 0,95$

Persimonius	1. Parsimonius Normed Fit Index (PNFI)	0,06-0,09
	2.Parsimonius Goodness of Fit Index (PGFI)	>0,60

The results of the analysis in order to prove construct validity using Lisler software show that the model does not fit because it only meets three values, namely Chi-Square (χ^2) 0.000, RMSEA 0.14 and PNFI 0.29. The analysis results are presented in table 4.

Table 4. Confirmatory Factor Analysis Results Second Order Analysis

Size type goodness of fit	Types	Value	Information
Absolute fit indices	1. Chi-Square (χ^2)	0,000	Meet
	Goodness-of-Fit Index (GFI)	0,35	Does not meet
	Root Mean Square Error of Approximation (RMSEA)	0,14	Meet
	Adjusted Goodness of Fit Index (AGFI)	0,29	Does not meet
	Normed Fit Index (NFI)	0,30	Does not meet
	Comparative Fit Index (CFI)	0,39	Does not meet
Incremental Fit	Incremental Fit Index (IFI)	0,40	Does not meet
	Relative Fit Index (RFI)	0,27	Does not meet
	Parsimonius Normed Fit Index (PNFI)	0,29	Meets Not
Persimonius	Parsimonius Goodness of Fit Index (PGFI)	0,32	meets

The results of the model fit analysis using second order conducted on R Studio software are presented in Figure 1 in the form of a path diagram. Figure 1 shows that the results of the trial data analysis for each item that has a factor weight value of more than 0.5 are 38 items and items that have a weight value of <0.5 are 18 items. The factor weight value of each item shows adequate validity. The criteria used to declare the factor weight acceptable or valid refers to the opinion (Ghozali & Fuat, 2014: 158). Because there are 18 items that have a factor weight of less than 0.5, they can be accepted or valid. It was concluded that in the development of character instruments for high school students in Maluku coastal areas, there were 18 items that were not valid according to the construct. This then requires follow-up whether the item will be removed or corrected and retested.

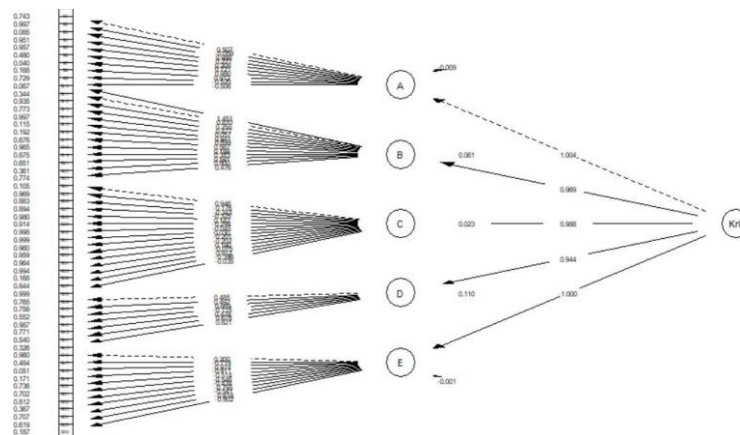


Figure 1. Standardized Solution of Second Order Approach

Reliability. Reliability analysis was carried out on 56 items of character instruments for high school students in Maluku coastal areas. The analysis was carried out using the Cronbach Alpha method performed on the R Studio software, which provided information on the Cronbach alpha value of 0.9 with a very high level of reliability (Istiyono: 2020). This value also shows that the reliability of the instrument has been met, which is more than 0.7 so that the instrument for assessing the character of high school students in the Maluku coastal area can be used by teachers and students (Wells, C.S., & Wollack, 2003). The results of the analysis are presented in Figure 2.

```
> print(rangkum_0, digits = 1)
      [,1]
nItem   55.0
nPerson  56.0
alpha    0.9
scaleMean 178.0
scaleSD   35.6
```

Figure 2. Cronbach alpha analysis results

Conclusion

The content validity test on the character assessment instrument for high school students in the Maluku coastal area shows that all items are categorized as valid, while the construct validity shows that the results of the trial data analysis for each item that has a factor weight value of more than 0.5 are 38 items and items that have a weight value <0.5 are 18 items, and the reliability value is 0.9 with a very high reliability level category. Future research is expected to perfect the process of proving construct validity, namely by fixing 18 items that have not met the criteria for goodness of fit.

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