Development of Connected-Pjbl Model Book Validation Instruments

Ilwandri
Civil Engineering Lecturer, Academy of Adikarya Engineering

Article Info	ABSTRACT
	This research is a type of development research that aims to produce valid validation instrument products for the Connected-PjBL Model book to Improve Students' 21st Century Skills in Physics Learning. This validation instrument was assessed by 2 experts. With data collection techniques in the form of validation instrument assessment sheets and data analysis techniques using the Cohen's Kappa formula. From the results of data analysis, it was obtained that the average validation value was 0.85 in the valid category. From the analysis of the data, it can be concluded that the validation instrument for the Connected-PjBL Model book to Improve Students' 21st Century Skills in Physics Learning meets the valid criteria and can be used to validate the Connected-PjBL Model book. *This is an open access article under the [CC BY-SA](#) license.*

Corresponding Author:

Email: ilwandriunp@gmail.com

1. INTRODUCTION

Research Development or Research and Development (R & D) is one type of research that is widely carried out, to provide convenience for every learning carried out. Research and Development (R&D) is often interpreted as a process or steps to develop a new product or perfect an existing product (Sugiyono, 2010). Producing a new product in the development process requires validation.

Validation is a very important activity in the development research process. One of the things that needs to be done before doing validation is to prepare a validation instrument. A good validation instrument is the extent to which the accuracy and accuracy of a measuring instrument in performing its measuring function (Azwar (2003: 5). Validation is a concept related to the extent to which the test has measured what should be measured (Surapranata (2004: 50). Therefore, the ability of the Validation instrument to reveal the intended data is an important consideration.

An instrument is a tool used to measure phenomena, record information intended for judgment and decision making (Colton and Covert, 2007). Regarding the type of instrument to be developed, Colton and Covert suggest that researchers need to pay attention to its suitability with several things; (1) research objectives, (2) research design, (3) measurement objects, (4) data collection methods, and (5) resources owned.

The instrument developed in this study is the book validation instrument Model Connected-PjBL. This validation instrument was developed to measure the level of validity of the Connected-PjBL Model book. The development of this validation instrument is carried out in order to be able to measure what is to be measured. According to Festiyed (2019) Validity relates to the determination of the assessment tool against the concept being assessed, so it relates to the extent to which the test has measured what should be measured.

The advantage of this model book validation instrument that was developed is that it can provide careful and meticulous measurement results because before use, this validation instrument sheet has been assessed by experts. The feasibility of the instrument or the validity of the instrument indicates the extent to which the ability of a measuring instrument to measure what should be measured (Allen &; Yen, 1979).

2. METHOD

Explaining This research model is Development research. Developing the Connected-PjBL model book validation instrument. Analysis of the assessment of the Book validation instrument model is obtained from the assessment of the Book validation instrument. Validation instrument assessment sheets are assessed by validators using the Likert scale i.e.: with strongly agree (4), agree (3), disagree (2), and strongly disagree (1) answers. The results of the processing are in the form of qualitative data that describes the level of validity of the Validation instrument that has been designed. The final data calculation from the results of the validation instrument assessment is analyzed using Cohen's Kappa formula, where at the end of processing a kappa moment is obtained using the following equation:

3. RESULTS AND DISCUSSION

The developed connected-pjbl Model Book validation instrument, is first assessed by validators. Assessment of the validation instrument of the Connected-PjBL model book is carried out to obtain a valid data collection instrument. The assessment is carried out using the assessment sheet of the validation instrument. Validators consist of 3 lecturers. This is important so that the product validation data developed becomes feasible and valid. Once the instrument has been assessed by the validator, it can only be used to validate the Connected-PjBL model book model book. The results of the first assessment of the validation instrument of the Connected-PjBL model book are presented in Table 2.

Table 2. Results of the First Assessment of the *Connected-PjBL* model Book Validation Instrument

Research Instruments	V1	V2	V3	Average	Categories
Model Book Validation Instrument	0,74	0,80	0,80	0,78	Valid
Categories	Valid	Valid	Valid		

Table. 2 shows that in the first assessment, the model book validation instrument provided by the Validator is in the valid category. The results of the first assessment stated that the learning device validation instrument was in the valid category, improvements to this instrument were still made due to several suggestions from validators. Improvements are made to sentences or words on the validation instrument that can still be replaced with more appropriate sentences or words.

After improvements were made to the suggestions, a second assessment of the validation instrument was carried out. The assessment results of both validation instruments from the five validators are presented in Table3.

Table 3. Results of the Second Assessment of the *Connected-PjBL* model Book Validation Instrument

Research Instruments	V1	V2	V3	Average	Categories
Model Book Validation Instrument	0.91	0.86	0.91	0,78	Valid
Categories	Valid	Valid	Valid		

Table 3 shows that in the second assessment, the learning device validation instruments provided by validators are in the valid category with higher scores than in the first assessment. Before developing the model book validation sheet, a grid of connected-pjbl learning model book validation instruments is first compiled. The grid is arranged into two variables, namely book construction and the structure of the Connected-PjBL learning model. Both Valiabels are developed into subvariables. Subvariables are developed into indicators that have a number of questions. From the variables, subvariables and indicators developed are compiled into the Connected-PjBL model Book Validation Instrument. The Connected-PjBL model book validation instrument was developed to determine the validity of the product The Connected-PjBL model book was developed.

Instrument Development The Connected-PjBL Model Book Validation Sheet is expected to be used to validate the Connected-PjBL Model Book. So that the validity of a book is obtained. Based on Table 2 judging from the assessment results, this instrument has been declared Valid but cannot be used, because there are still improvements from validators so that they must be corrected and revalued.

The second assessment is carried out after the instrument is corrected with the results seen from table 2 have been declared valid and the validity value is higher than the first assessment. This explains that this instrument is feasible to use, in other words this validation sheet is feasible to measure what is to be measured. so it is concluded that the validation instrument of the Connected-PjBL model Book can be used to validate the developed Connected-PjBL model Book.

4. CONCLUSION

Based on the results of the assessment by experts and through the stages of data analysis on the assessment of the connected-pjbl model book validation instrument, it can be concluded that the validation instrument is feasible to be used to measure the level of validity of the connected-pjbl model book.

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