

## Development of Product Quality Control Instruments Student Learning Results in Practice Courses Wood Work at Universitas Negeri Padang

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### ABSTRACT

*The product of student learning outcomes in wood working practice courses currently does not have an instrument to determine its quality control. This is based on the discovery of several defects in the products of student learning outcomes in the Wood Work Practice course at the Department of Civil Engineering, Universitas Negeri Padang. This study aims to develop a quality control instrument on student learning products in wood working practice courses and find out how much validity the quality control instrument for student learning products in wood working practice courses. The research was conducted at the Department of Civil Engineering, Universitas Negeri Padang. The type of research used is Research and Development (research and development) or abbreviated as R & D. This is a type of research used to produce certain products, and test the effectiveness of the product. The research stages include (1) Decide, (2) Design, (3) Development, (4) Evaluate. The data collection technique used a questionnaire filled out by expert lecturers of the Wood Work Practice course. The resulting data is processed using the Microsoft Excel application to determine the validity of the product. The result of this research is a guidebook for filling in wooden furniture Quality Control instruments with a validity percentage of 87% so that the product is declared valid and suitable for use.*

**Keywords:** *Wood Working Practice; Research and Development; Quality Control.*

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### INTRODUCTION

Education is a conscious and planned effort to create a learning atmosphere and learning process so that students actively develop their potential to have religious spiritual strength, self-control, personality, intelligence, noble character and skills needed by themselves, society, nation and state [1]. Education is all efforts and all efforts to make society develop human potential in order to have religious spiritual strength, self-control, personality, intelligence, noble character, and have the skills needed as members of society and citizens. In addition, education is an effort to form a whole human being who is physically and mentally intelligent, healthy, and virtuous. [2]

Education is a means to advance all areas of human life, both in the economic, social, technological, security, skills, noble character, welfare, culture and national glory [3]. Based on this opinion, it can be concluded that education is a teaching and learning process carried out consciously by educators and students which aims to improve the quality of students. Higher education as an institution of higher education, in its activities are required to improve the quality that can be realized through the implementation of quality education. Education can be said to be of quality if it is made simply but importantly and meets standards. [4] Higher

education is a means to be continued after completing upper secondary education leading to higher education which includes diploma programs, undergraduate programs, master's programs, doctoral programs, and professional programs, as well as specialist programs, organized by universities based on the culture of the Indonesian nation. [5]

Universitas Negeri Padang (UNP) is one of the largest universities in Indonesia. One of the departments in the Faculty of Engineering is the Department of Civil Engineering. The Department of Civil Engineering at the Faculty of Engineering, Universitas Negeri Padang has two types of workshops, namely construction workshops covering concrete and wood materials, as well as plumbing and sanitation workshops [6]. The Wood Practice course is one type of course that focuses on providing practical skills to students in designing, realizing wood construction as a whole, including completion steps and producing products that can be used according to their function [7].

Based on the results of observations in the Wood Work Practice workshop, several product results were found as the final project of students whose functions were disrupted because there were defects / rejects. And based on the results of interviews with lecturers teaching wood working practice courses, it is conveyed that the results of practice from students are often found products that fail or defect because there is no quality control standard set on the selection of materials, the manufacturing process and student work.

Quality Control is a procedure to ensure that the procedures carried out are in accordance with predetermined standards [9]. The purpose of this Quality Control is to investigate the manufacturing process of a product so that corrective action can be taken before producing too many products that do not meet standards or cannot even be used properly. So the ultimate goal of Quality Control is to prevent rejects in the products produced [10]. Generally, quality control is carried out to ensure that each product meets the specified requirements. Quality control is a series of checks, studies, and tests used in the entire process of making a product whose function is to ensure that the products produced are in accordance with the needs and conditions that have been determined. [11]

## METHOD

The type of research to be used is Research and Development or R&D. research and development is a research method used to produce and prove the effectiveness of a particular product. [12] The development model used is using the DDD-E method which consists of 4 stages, namely decide, design, develop, & evaluate. [13]

Data analysis techniques in this study were carried out by testing the validity of the instrument. The validation questionnaire was given to expert lecturers in the Wood Work Practice course of the Civil Engineering Department, Faculty of Engineering, Universitas Negeri Padang, then the validation data was recapitulated and processed using the Aiken V formula as follows:

$$V = \frac{\sum s}{n(c-1)} \text{ Source: Retnawati, (2016)}$$

Explanation:

$S$  =  $r - Lo$

$Lo$  = Low validity assesment number (eg 1)

$c$  = Highest validity assesment number (eg 2 )

$r$  = The score given by the assessor

After obtaining the validity value, then adjusting the validity assessment with the validation category according to the categories in Table 1.

Table 1. Validity Assessment Categories

No	Achievement Score	Category
1	<0,4	Invalid
2	0,4-0,8	Valid
3	>0,8	Highly valid

## RESULTS AND DISCUSSION

This quality control instrument development research aims to produce a product, namely a guidebook for filling in valid wood furniture quality control instruments and is expected to be used during learning woodworking practices carried out in the civil engineering department of Universitas Negeri Padang and industries that require it. The development model applied in this research is the DDDE development model which consists of four stages, namely decide, design, develop and evaluate. [15]

### A. Decide

At this stage, the objectives of the product development were identified, namely:

- a. References / regulations that support research products refer to the Badan Standarisasi Nasional (BSN) Republik Indonesia No. 9 of 2019
- b. Product assessment indicators are divided into general indicators that can be used for all types of furniture and specific indicators used to assess products based on their type which aims to facilitate the quality control assessment process.

### B. Design

At the design stage, an instrument is designed that functions to control the quality of student products that refer to the Badan Standarisasi Nasional (BSN) RI No. 9 of 2019 with the results of the appearance of the resulting product, namely a book containing guidelines and quality control instruments that will be filled in.

### C. Development

At this stage the research product and the assessment questionnaire for the product have been completed. Furthermore, the questionnaire for the research product was validated first by 3 expert lecturers and then the data was processed using Aiken's formula using Microsoft Excel application with the results that can be seen in Table 2:

Table 2. Summary of Assessment Questionnaire Validation Results

Assessment Indicators	Expert Rating			S1	S2	S3	ΣS	v	%	Inf
	WN	NZ	JM							
Clarity (Points 1-2)	8	8	9	6	6	7	19	0,79	79%	V
Accuracy (Points 3-4)	9	9	9	7	7	7	21	0,88	88%	SV
Relevance (Points 5-6)	8	10	9	6	8	7	21	0,88	88%	SV
Contents Accuracy (Points 7-8)	10	10	10	8	8	8	24	1,00	100%	SV
No Bias (Points 9-10)	8	8	9	6	6	7	19	0,79	79%	V
Language Accuracy (Points 11-12)	10	10	10	8	8	8	24	1,00	100%	SV
<b>Total</b>	<b>53</b>	<b>55</b>	<b>56</b>	<b>41</b>	<b>43</b>	<b>44</b>	<b>128</b>	<b>0.89</b>	<b>89%</b>	<b>SV</b>

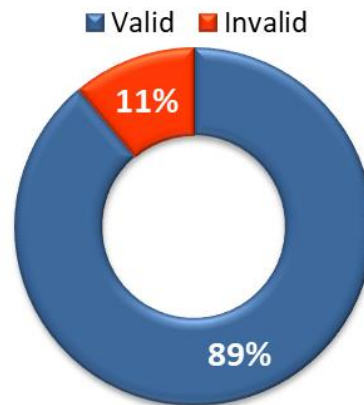


Figure 1. Validation of assessment questionnaires

Based on the results of the validation calculation using the Aiken's formula which is processed using the Microsoft Excel application summarized from the assessment of 3 expert lecturers, the average V value is 0.89. So it can be concluded that the assessment questionnaire for the research product produced is in a very valid category and is suitable for use.

#### D. Evaluation

At this stage, the assessment questionnaire for the research product, namely the Quality Control instrument filling guidebook that has been validated by expert lecturers, is given to 7 lecturers teaching the Wood Work Practice course to be given an assessment. At this stage the assessment questionnaire was filled in by 7 expert lecturers of wood working practice courses and the data was processed using Aiken's formula using Microsoft Excel application.

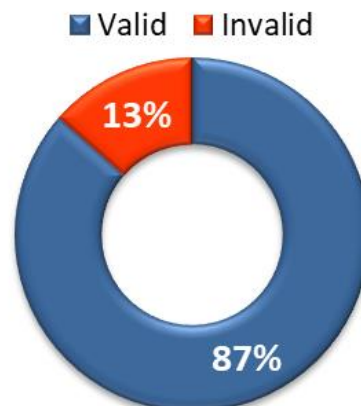


Figure 2. Validation of instrument QC

Based on the results of the validation calculation using the Aiken's formula which is processed using the Microsoft Excel application summarized from the assessment of 7 expert lecturers, the average V value is 0.87. So it can be concluded that the assessment questionnaire for the research product produced is in the category of very valid and feasible to use.

## CONCLUSION

The conclusion in this study is that it reveals that the procedure for developing this quality control instrument uses the DDD-E development model, namely Decide, Design, Development and Evaluate. The results of the validity test of the quality control instrument developed were obtained very valid results with a validity value of 0.87 or 87%.

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