

Content validity and reliability of instruments for evaluating culinary skills teaching factory programs

Niza Niza ^{1,a*}, Ediyono Ediyono ^{1,b}, Farida Agus Setiawati ^{1,c}, Sumin Sumin ^{2,d}

¹ Universitas Negeri Yogyakarta. Jl. Colombo No. 1, Yogyakarta 55281, Indonesia

² Institut Agama Islam Negeri Pontianak. Jl. Letnan Jenderal Soeprapto No. 19, Pontianak, 78122 Indonesia

^a niza.nz19@gmail.com; ^b edi_istiyono@uny.ac.id; ^c faridaagus@uny.ac.id; ^d sumin0005pasca.2021@student.uny.ac.id

* Corresponding Author.

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Abstract: This research aims to develop an evaluation instrument for the teaching factory (TEFA) program for culinary expertise competence at SMKN 6 Yogyakarta. Instruments developed based on the CIPP evaluation model (Context, Input, Process, Product). Research methods using instrument development stages refer to test development procedures according to Oriondo & Dallo-Antonio: (1) test design, (2) trials, (3) determination of validity, and (4) determination of reliability. The sample used was 120 class XI Culinary students for the academic year 2023/2024 in the environment of SMKN 6 Yogyakarta. Polytome data were analyzed with the Partial Credit Model using the Quest program. The results showed that as many as ten items of evaluation instruments fit with the model. The reliability value of the instrument is 0.78. This means that the reliability of the instrument is in the high category. The results of content and construct validation state that all items (16 items) are suitable to be used to evaluate the culinary competence teaching factory (coffee shop) program at SMKN 6 Yogyakarta.

Keywords: Teaching factory, Quest, Coffee shop, CIPP, Kuliner

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INTRODUCTION

Human Resources are the main capital of a nation. Quality humans will be the strength of a country can compete in the competitive global era. Based on the UNDP report, in 2019 the position of Indonesia's Human Resources Development Index was 0.718 and occupied the 107th position out of 189 countries (UNDP, 2020). Increased Human Resource Development is supported by the education system. A good education system will produce quality graduates. Education is important to create intelligent, cultured and characterful citizens. Every citizen has the right to a proper education. The right to education is regulated in the 1945 Constitution Paragraphs (1) and (2). For this reason, the government organizes an education system that provides access to all citizens. This access is not limited to normal citizens, but citizens with disabilities also have the same rights (Bahri, 2022; Mardhiyah et al., 2021; Winaryo, 2020)

Every Indonesian citizen is required to take primary and secondary education for 12 years. At the secondary education level, there is a choice in the form of Vocational High School (SMK). Vocational High School or also known as vocational school, prepares graduates to enter the world of work after graduating from SMK. However, in reality there are still vocational school graduate students who are not accepted to work in the Business World or the Industrial World. SMK graduates who are not accepted in the company (world of work) are provided with entrepreneurial competencies. SMKN 6 Yogyakarta as one of the best Vocational High Schools in Yogyakarta City, opens culinary expertise competencies. In providing culinary entrepreneurship expertise, SMKN 6 Yogyakarta carries out learning with the *Teaching Factory* model. This *Teaching Factory* learning model is one of the advanced programs of the Production Unit that has been run earlier.

Results of an interview with the Vice Principal for Curriculum, on March 9, 2023, students who carried out deep learning *teaching factory* (coffee shop) is class XI. Class X has not conducted teaching factory

learning while class XII is preparing for industrial work practices (internships). Therefore, instrument testing is carried out in class XI, precisely in class XI.4 which is carrying out learning in a coffee shop

THEORETICAL STUDIES

Learning theory

Learning relates to changes in a person's behavior towards a particular situation caused by his repeated experiences (Hilgard and Bower, 1975 in . Children's behavior in learning varies from one another. The difference is related to the child's learning style. Based on Bruner's theory in accordance with the expression of Piaget which states that children must play an active role when learning in the classroom. The concept is learning by discovering or commonly referred to as the Discovery Learning learning model. Istiyono, 2020) (Abdurrahman & Kibtiyah, 2021; Princess et al., 2021)

According to Bruner, the cognitive growth of learners must go through three stages of learning (Purnomo in . The three stages according to Bruner are as follows. The Devil and Susdarwono, 2023)

- Enactive, giving children learning opportunities is a must. By using certain learning materials or tools in order to understand directly. In other words, children can learn to use real objects.
- Iconic, learning occurs using models and drawings as well as verbal visualizations. After the child goes through the enactive stage with real objects, then the child learns by visualization of an object.
- Symbolic, at this stage students can already think abstractly. Communication is conveyed through many symbol systems. Number letters and symbols are examples of symbol systems. The symbolic phase is the final stage in learning . (Bruner, 1960)

Teaching factory di SMK

Vocational High School (SMK) is a formal educational institution in Indonesia. One of the objectives of SMK is to plan its graduates to become useful people, ready to work, fill job opportunities in the industrial world, the business world and the world of work as central level specialists according to the skills and abilities programs they choose. Based on a survey conducted by Surgini (2014) in there are 61% of SMK graduates who say they want to work. To achieve this goal, various strategies and appropriate steps have been taken. One of the strategies used is to implement learning based on industrial facilities / (Mukhlason et al., 2020; Wulandari & Surjono, 2013; Anggia, 2020) *teaching factory* (Sari Miladiah et al., 2021). The concept of teaching factory has been discussed in the vocational world since 2000. Cahyaningrum & Hery (2020)

In general, the quantity and quality of education in Indonesia still has to be improved. Research reveals that the quality of student experience in fieldwork practice is still small, not touching the middle/medium industry. In fact, industry is very useful for student internship couples which can shape students' views into effective entrepreneurial attitudes so that graduates can compete in the business world and the industrial world (Mustari et al., 2017)

One of the programs designed to achieve the goal of establishing SMK is the *Teaching Factory* (Wibowo, 2016). *Teaching factory* integrates the learning process to produce marketable products and services to generate added value for the school. This means that the *teaching factory process* can instill an entrepreneurial spirit in students. In addition, the *teaching factory process* produces goods and services that have added value with quality that can be absorbed and accepted by the community. The production of goods and services includes: i) what products the market needs; ii) why the product was purchased; iii) who the buyer is; iv) how the purchase process is; v) how the quality and appearance of the product; vi) how is the model; vii) what is the brand, how is the service and warranty. The application of the *teaching factory* model integrates learning and work and no longer separates theoretical material. The successful application of *the teaching factory learning method* can be seen from two main indicators: utility and sustainable use of equipment. This can be seen through the application of block and continuous learning systems, as well as the integration of production processes or services into teaching materials. (Wahjusaputri & Bunyamin, 2022)

Various studies on teaching factories show the influence of teaching factories on the mastery of vocational students' competencies in accordance with the competencies of the chosen expertise. Some of the expertise competencies that have been studied related to the teaching factory include: mechanical

engineering; communication, problem-solving, and teamwork skills; automotive strengthening of work readiness; and fashion styling. In this article, what will be examined is the effectiveness of teaching factory learning culinary competence (gastronomy). (Diwangkoro & Soenarto, 2020; Putra et al., 2018; Subtract & Anna, 2018; Sulistyo et al., 2019; Prianto et al., 2020; Triyanto et al., 2019)

METHODS

This research is a development research. This research is designed to obtain products, namely the evaluation instrument of the teaching factory (TEFA) program for culinary competence. These development research steps refer to the test development procedure according to Oriondo & Dallo-Antonio, the stages in test development: (1) designing tests, (2) testing, (3) determining validity, and (4) determining reliability (Oriondo & Dallo, 1998)

The number of test instruments is 16 items in the description. The teaching factory program evaluation instrument is then validated by expert assessment through content validity, in addition to reliability measurement. Once the instrument is valid and reliable, it is proven by empirical validity through item analysis using the quest program. The subjects of this study were 120 class XI Culinary students for the 2023/2024 academic year at SMKN 6 Yogyakarta, consisting of 88% women and 12% men.

Data analysis of this study using Partial Credit Model 1 PL (PCMI-PL) using quest program. If the average value of MNSQ INFIT is close to 1.0 and the standard deviation is close to 0.0, then the whole test item corresponds to the model. An item is declared Fit with the model if the MNIQ INFIT value is in the range of 0.77 to 1.30. In this test, the results of testing fit items, and difficulty index are obtained (Setyawarno, 2017)

RESULTS AND DISCUSSION

Based on testing the validity of the culinary competency teaching factory (TEFA) program evaluation instrument through expert assessment, all test items that have been designed meet the relevance requirements. The instruments are compiled in the form of descriptions, then assessed and validated by five experts. The assessment process from experts aims to obtain information, criticism and suggestions so that the instrument becomes a material, constructive and linguistically feasible product to measure educational goals. The evaluation results of the four validators are presented in Table 1.

Table 1. Expert validation test results

No.	Aspect/Indicator	Rater				
		1	2	3	4	5
1.	The interrelation of indicators with objectives	Very decent	Very decent	Very decent	Very decent	Very decent
2.	Conformity of statements/questions with measured indicators	Very decent	Very decent	Very decent	Very decent	Very decent
3.	Compatibility between statements / questions with objectives	Very decent	Very decent	Very decent	Very decent	Very decent
4.	The language used is good and correct.	Very decent	Very decent	Very decent	Very decent	Very decent

Based on the Table 1, the results of the validation of the five assessors on the instrument stated that the Teaching Factory (TEFA) program evaluation instrument for culinary expertise competence is feasible to use with a little revision. Furthermore, the validity test of the contents of the instrument is carried out by measuring the expert agreement index based on the Aiken index (V). Use of this expert agreement index as done in research and development. The measurement results are presented in the following Table 2 (Fajaruddin et al., (2021; Raharjo et al., 2023).

Based on the Table 2, it can be concluded that all test items show valid, since the lowest index coefficient is 0.87 and the highest is 1.00. If the Aiken index is less than 0.4, the validity is low and if it is more than 0.8, the validity is very high.

Based on the results of measuring the characteristics of test instrument items, by analyzing the results of the Quest program, the results of the items obtained fit and the item difficulty index. The fit item testing criteria for this teaching factory program evaluation instrument is the mean square infit value. An item is

said to be fit if it has a mean value of square infit in the range of 0.77 to 1.30. The results show that most items are within the (Tom & Tom, 1996) *acceptable mean square range of the infit*. A total of 10 items meet the criteria for fit with the model, while 6 items have not fit the model. Full results are presented in Table 3.

Table 2. Aiken Index Coefficient Results Instruments

Item	Miss 1	Miss 2	Miss 3	Skip 4	Miss 5	$\sum s$	n(c-1)	V	Information
1	3	2	3	3	3	14	15	0.93	VALID
2	3	3	3	2	3	14	15	0.93	VALID
3	3	3	3	3	2	14	15	0.93	VALID
4	3	3	2	3	3	14	15	0.93	VALID
5	3	3	3	3	3	15	15	1.00	VALID
6	2	3	3	3	3	14	15	0.93	VALID
7	3	3	3	3	3	15	15	1.00	VALID
8	3	3	3	2	3	14	15	0.93	VALID
9	3	3	3	2	2	13	15	0.87	VALID
10	3	3	3	3	3	15	15	1.00	VALID
11	3	3	3	3	3	15	15	1.00	VALID
12	3	3	3	3	3	15	15	1.00	VALID
13	3	3	3	3	3	15	15	1.00	VALID
14	3	3	3	3	3	15	15	1.00	VALID
15	3	3	3	3	3	15	15	1.00	VALID
16	2	3	3	3	3	14	15	0.93	VALID

Table 3. Hasi uji item fit

Item	Infit mean square	Description
1	1.18	Item Fit
2	1.16	Item Fit
3	1.47	Item Not Fit
4	0.75	Item not fit
5	0.69	Item not fit
6	1.26	Item Fit
7	0.80	Item Fit
8	0.63	Item not fit
9	0.74	Item not fit
10	0.79	Item Fit
11	0.80	Item Fit
12	0.89	Item Fit
13	1.20	Item Fit
14	0.76	Item not fit
15	1.02	Item Fit
16	1.25	Item Fit
mean	0.96	
SD	0.26	

Based on Table 4, it is known that most of the items (10 items) of teaching factory program evaluation instruments are in the range *infit mean square* that is acceptable so that all items are *fit* It can be used in evaluating the success of the program *teaching factory*. In addition, there are still six items that do not fit the model so that the six items still require review or micro and macro revisions. Test reliability calculated based on estimation according to testes (*case estimate*) reaches 0.71 so that the reliability value is high. While the estimated reliability according to item estimates is 0.78 and is classified as high. The average value of the test item difficulty index is 0.00 ± 1.24 , so the instrument can be categorized as not too difficult (medium) (Wright & Masters, 1982)

CONCLUSION

Based on the results of data analysis and feasibility tests by expert validators on each item of measurement instruments, it shows that all (16) instrument items have good validity and reliability so that they are suitable to be used as instruments to measure the success of the *culinary competence teaching factory* program at SMKN 6 Yogyakarta.

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