4D Model on Assessing Psychomotor Aspect in Continental Food Processing Practice

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Abstract. This research aims to develop and find out the response of observers for the assessment instrument of student’s psychomotor aspect on continental food processing practice. This research belongs to development research with 4P model that confined till the definition, design, and development stages. The data that gained during the research is analyzed descriptively. Research’s product is assessment instrument rubric form that consists of performance’s aspect which should be assessed and performance’s quality which stated in gradation score with 0-4 level and performance description that completed with picture illustration in every single score. Product was validate and responded based on material, construction, language, objectively, systematic, and practicability aspects. The result show that assessment instrument of student’s psychomotor aspect on continental food processing practice which developed gain very good response with percentage of 84.47%.

1. Introduction
Education is a learning activity that aims to develop and actualize students' self-potential. Education as a standard establishes national standards as a minimum quality of citizens broken down into standard contents, process standards, graduate competency standards, educator standards and education personnel, and educational assessment standards [1]. In the implementation, the goal to be achieved in the learning activities is a form of student ability that occurs because of the interaction between teachers, students, and learning environment. Achievement of learning objectives can be known through assessment activities that are able to provide information about the ability of students who are divided into aspects of cognitive, affective, and psychomotor [2]. The assessment process is carried out by steps; planning assessment, gathering information through a number of evidence showing achievement of learning outcomes, reporting, and use of information about learning outcomes. Prior to carrying out an assessment of the learning process and outcomes, the teacher must first make the tools so that the assessment is done in accordance with the competence to be tested [3].

Permendikbud No. 66 of 2013 on Education Assessment Standards provides that "assessment of learners' learning outcomes includes competence of attitudes, knowledge, and skills performed on an equal basis ..." [4]. But in fact, the success of education has been measured more than the assessment of cognitive aspects related to knowledge competence. This is evidenced by the dominance of the implementation of formative tests, summative tests, and even the National Exam in the form of a written test that is only able to provide information about students' concept of understanding only.
Implementation of a judgment focused solely on one competency cannot describe the student's ability objectively, accurately, and comprehensively.

The assessment of skills competencies in the Curriculum 2013 is obtained through a performance assessment defined in Permendikbud Number 66 Year 2013 on Education Assessment Standards as "... an assessment that requires learners to demonstrate a particular competency by using practical tests, projects, and assessments portfolio ". Performance appraisal has the advantage of revealing the potential of students in solving problems, reasoning, and communication in written and oral form [5]. Performance appraisal is done by observing directly the performance shown by students during practicum activities. Quality assessment is one component in the organization of quality education system [6].

Several studies on the implementation of the assessment on practice activities gave results that the assessment on practice activities was mostly done by looking at the final product in the form of a practice report, while performance evaluation through observation was rare [7]. One way to assess skills competence is through direct observation of student performance during learning activities [8]. Psychomotor ability in practicum activity is shown in the form of student performance in the form of real action that can be observed during follow practice activity. Implementation of an assessment that only assesses the final product and does not observe the performance of students directly is not able to provide a description of the students' psychomotor aspects capabilities are valid and objective.

The previously described description forms the basis for the need to fulfill the needs of assessment instruments that can be reached by all education activists, especially teachers as the main subject in conducting the assessment in the learning activities. Thus, it is necessary to develop a psychomotor aspect assessment instrument on a continental food processing practice as an effort to achieve the objective of the assessment activity that is to provide students' ability information validly, objectively and comprehensively in every aspect of ability. The main problem arises from several discussion of the research is how to develop assessment instruments on the psychomotor aspects of the practice of continental food processing?

Based on the problems found, then conducted research on how the development of psychomotor aspects assessment instruments on the practice of continental food processing, so that the formulation of the problem can be formulated into:

- How is the development of psychomotor aspects assessment instruments on continental food processing practice?

2. Methods
The research method used is research and development method with 4D model, "This model consists of four development stages, namely define, design, develop, and disseminate, or adapted into 4P model, that is defining, designing, developing, and spreading". Based on the predetermined research objectives, the 4P model applied in this study is limited to the development stage because the activities undertaken to the development stage have been able to meet the objectives of the study.

The defining, designing, and developing phases are then described each by examining the activities, characteristics, changes, and relationships, both in terms of similarities and differences and the interlinking of the activity steps. In its implementation, each stage of the development research is always related to revision activities aimed at evaluating and improving the designs made based on the inputs and assessments obtained from the learning device validation activities. Validation activities are conducted by requesting an assessment and feedback on the accuracy of learning tools or in this study in the form of assessment instruments developed to experts. Assessment and input is then a reference for revision.

3. Results and Discussion
This research is oriented towards the development of products whose processes are described and the results are tested in a limited way to obtain user responses to the use of the product. Product
development is done through three stages, namely definition, design, and development. Based on the research that has been done, the data obtained in the form of interview results of teachers and students, suggestions validator during the development process and user response. The results of research on three stages of product development are as follows:

3.1. **Definition stage**
The defining stage is performed to establish the basic problem in learning so that it is necessary to develop the assessment instrument and the criteria as the reference in developing the assessment instrument. The defining stage is divided into 5 steps of activity that is the analysis of the front end through an interview with the teacher. The result of the interview shows that the psychomotor aspect assessment in the practicum activity is done in group with the assessment instrument that assess the psychomotor ability in general, not the detail, and does not differentiate the point of assessment between one practicum material with other material. Based on the results of interviews also note that the assessment instrument used is not equipped with the gradation of quality is expressed by the score and description of performance in each score. The next stage is the analysis of students, the results of student analysis through literature review indicates that the cognitive development of high school students included into formal-operational stage according to Piaget learning theory. The results of the interviews of the three XI students gave information about their experiences during practicum activities, which in their practicum activities were divided into preparation, implementation and closing. The next stage is the task analysis, the results of the literature review students' psychomotor skills acquired during practical activities that include manipulative skills in using practicum tools and procedural skills in doing the job in a particular order. Phase of concept analysis is divided into two namely the analysis of material and analysis of core competence and basic competence. From result of learning indicator, conducted instructional goal specification. The format of writing instructional objectives is composed of the concept and objectives of instructional products and processes.

3.2. **Design stage**
Some the design stage is done to prepare the initial prototype of the assessment instrument. The design phase is divided into 4 steps of activities, namely Standard Reference Test Preparation, Media Selection, Selection Formats and Preliminary Draft. In the step of preparing the benchmark reference test, the grid of the assessment instrument is prepared based on the instructional objective formula. After obtaining a grid of assessment instruments, then carried out the stage of media selection. Selected media are worksheets and tools and materials used. The next step is the selection of the format, the instrument format of assessment is divided into three stages of activity that is opening, execution and closing. In the last stage of the preliminary draft, was performed in preparation of worksheets practicum and assessment instruments text.

3.3. **Development stage**
At the development stage a revaluation instrument is generated and a revised user response questionnaire based on the suggestion of the validator for later use in the limited trial stage. The development stage is divided into Validation and Limited Trial Stages. Overall, the user's response to the developed assessment instrument got a percentage of 84.47% with very good category. This suggests that the developed assessment instrument is worthy of being used as an instrument of psychomotor aspects assessment in continental food practice.

4. **Conclusions**
This study aims to develop the students' psychomotor aspect assessment instrument on a continental food practice and to know the user's response to the developed assessment instrument. Based on these objectives, it is summarized as follows:
- Generated student psychomotor aspect assessment instrument on continental food practice through 4P development model covering definition, design and development stage. The
assessment instrument is an assessment rubric consisting of criteria and quality. The criteria show
the quality of performance expressed in the form of gradation scores with a range of 0-4 and a
performance description that has illustrated drawings in each score.

- Student psychomotor aspect assessment instrument on continental food practice gets user
percentage of 84.47% with very good category.

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