Research on the Development of Teaching Materials of Micronutrient Metabolism based on KKNI Curriculum and Contextual Content

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Abstract. The Higher Education Curriculum oriented to the KKNI (Kerangka Kualifikasi Nasional Indonesia) is mandate for institution to make educators present professional learning to produce qualified graduates. Research on the development of teaching materials of Micronutrient Metabolism based on KKNI curriculum and contextual content has been done to improve the quality of learning in the Nutrition Study Program. Research and development method consist of initial analysis, development, validation and implementation (trial) was used in this research. Validation results based on the National Education Standards Agency (BSNP) showed that teaching material that has been developed was categorized as very feasible in content (3,39), language (3,50) and contextualy based (3,50), while considered feasible in presentation (3,25).

Keywords: Teaching materials, micronutrient metabolism, KKNI, study program of nutrition, contextual

1 Introduction

The Indonesian National Qualification Framework Curricullum (KKNI) that have been regulated in Permenristekdikti stated, curriculum is a set of plans and adjustment about learning outcome, study material, process and evaluation that used as a guidance for High Education study program implementation. High Education Curriculum oriented to KKNI is an obligation for institution that must show spirit, earnestness and responsibility of an educator to perform professional education as a way to produce high quality alumnus.

Any forms of materials or materials that are arranged sistematically to assist both teachers and instructur in implementing teaching and learning activities to establish good environment for students learning are called teaching material [1]. Book as one of teaching materials is a source of learning and plays an important role as a source of learning in classroom [2].

Contextual learning can be used to improve students understanding in basic concepts of courses. Contextual leraning is a lesson that emphasizes the linkage between subject matter and daily life [3]. Contextual learning will introduce learning content using various active learning techniques designed to help students connect what they already know to what they expect in learning and build new knowledge from the analysis and synthesis of the learning

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process [4]. Contextual learning model consist of several components, constructivisme, inquiri, questioning, learning community, modelling, reflection, and authentic assesment.

Micronutrient Metabolism is one of courses in study program of Nutient. This course learn metabolism process of water soluble vitamin, fat soluble vitamin, macro mineral and micro mineral, and their effect to body health.

According to the description stated before, it is important to develop teaching material of micronutrient metabolism course.

2 Methodology

2.1 Location and Time of Research

This research was conducted in the study program of Nutrition, Department of Welfare Education, Faculty of Engineering, Universitas Negeri Medan, in July until October 2018.

2.2 Population and Sample of Research

Population in this study were (1) all textbooks, both print and electronic used as references in learning Micronutrient Metabolism in study programs of Nutrition, (2) lecturers of study program of Nutrition at the State University of Medan.

Sample selection was done using a purposive sampling technique, i.e. 3 student handbooks, both printed and electronic, which was used as a reference in the learning of micronutrient metabolism in study program of Nutrition, and 2 lecturers of study program of Nutrition at the State University of Medan.

2.3 Research Instrument

Research instrument used to collect data in this study were, first, analysis format of teaching material requirements according to curriculum content standard oriented KKNI and contextual based in study program of Nutrition at Micronutrient Metabolism course (Semester Learning Plan). Second, validation questionnaire of the feasibility of Micronutrient Metabolism teaching materials that has been developed based on the standards of the National Education Standards Agency (BSNP), consisting of content feasibility, language feasibility, feasibility of presentation with contextual approaches and KKNI-oriented.

2.4 Research Procedure

R&D (Research and Development) method that has been modified from [5][6] used in this study. The method consists of preliminary step (analysis), development, and the last evaluation of developed Micronutrient Metabolism textbook oriented KKNI and contextual based in study program of Nutrition.

2.5 Data Analysis

Feasibility analysis of developed teaching material according to BNSP criteria involving content feasibility aspect, language feasibility, presentation feasibility, and contextual based in agreement to KKNI oriented curriculum conducted descriptively correspondence to criteria of teaching material feasibility (Table 1).

Tabel 1. Feasibility of teaching material based on BSNP standar

No	Assessed component	Expert Lecturer Validator
1	Aspect of eligibility of content	
	a. Material coverage according to KKNI	
	b. Material accuracy	
	c. Updates	
	d. Stimulate curiosity	
	e. Develop life skills	
	Average	
2	Aspect of language eligibility	
	a. In accordance with the development of learners	
	b. Communicative	
	c. Straightforward	
	d. Coherence and sequence of thought lines	
	e. Compatibility with correct Indonesian rules	
	Average	
3	Aspect of feasibility presentation	
	a. Presentation technique	
	b. Supporting presentation	
	c. Presentation of learning	
	Average	
4	Contextual based	
	a. Contextual principle	
	b. Contextual chracteristic	
	Average	

Each component is scaled 1 to 4
3.26 – 4,00 : Very feasible (very valid)
2.40 – 3.25 : Feasible (valid)
1.76 – 2.39 : Less feasible (less valid)
1.00 – 1.75 : Unfeasible (not valid)
Source: Arikunto, 2002.

3 Result and Discussion

Validation result of developed Micronutrient Metabolism teching material based on eligibility of content, language eligibility, feasibility presentation, and contextual based on KKNI oriented showed in Table 2.

Table 2. Lecturer validation result on developed Micronutrient Metabolism teaching material

No	Assessed component	Rata-rata nilai	Kriteria
1	Aspect of eligibility of content		
	a. Material coverage according to KKNI	3.75	Very feasible
	b. Material accuracy	3.63	Very feasible
	c. Updates	3.33	Very feasible
	d. Stimulate curiosity	3	Feasible
	e. Develop life skills	3.17	Feasible

	Average	3.39	Very feasible
2	Aspect of language eligibility		
	a. In accordance with the development of learners	3.75	Very feasible
	b. Communicative	3	Feasible
	c. Straightforward	3.25	Feasible
	d. Coherence and sequence of thought lines	3.67	Very feasible
	e. Compatibility with correct Indonesian rules	3.5	Very feasible
	Average	3.5	Very feasible
3	Aspect of feasibility presentation		
	a. Presentation technique	3.21	Feasible
	b. Supporting presentation	3.25	Feasible
	c. Presentation of learning	3.30	Very feasible
	Average	3.25	Feasible
4	Contextual based		
	a. Contextual principle	3.5	Very feasible
	b. Contextual chracteristic	3.5	Very feasible
	Average	3.5	Very feasible

3.1 Eligibility of Content

The average value of eligibility of contents of developed teaching materials was 3.39 (very feasible). Teaching material that have been developed was very feasible in terms of material coverage according to KKNI, material accuracy, updates, stimulate curiosity and develop life skills.

Validation result of average feasibility of content depicted in Figure 1.

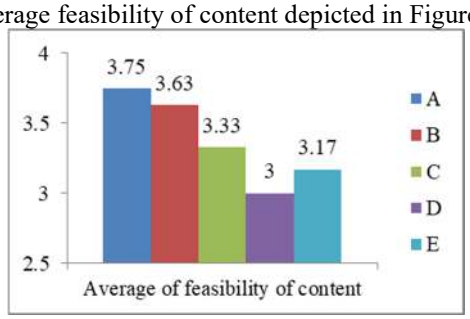

Fig. 1. Average feasibility of content

Note:
A: Material coverage according to KKNI
B: Material accuracy
C: Updates
D: Stimulate curiosity
E: Develop life skills

3.2 Languange Feasibility

Validation result of average feasibility of languange illustrated in Figure 2.

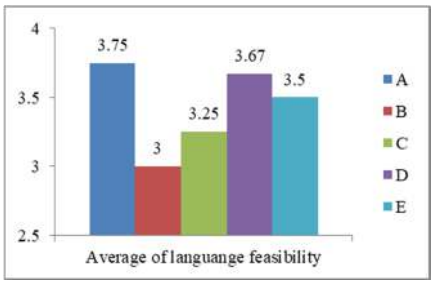

Fig. 2. Average of language feasibility

Note:
A: In accordance with the development of learners
B: Communicative
C: Straightforward
D: Coherence and sequence of thought lines
E: Compatibility with correct Indonesian rules

The average value of language eligibility of developed teaching materials was 3.50 (very feasible). Teaching material that have been developed was very feasible in terms of in accordance with the development of learners, communicative, straightforward, coherence and sequence of thought lines, and last compatibility with correct Indonesian rules aspect.

3.3 Feasibility of Present

The average feasibility value of present of developed teaching materials was 3.35 (feasible). Teaching material that have been developed was feasible in terms of presentation technique, supporting presentation, and presentation of learning. Average of feasibility of present showed in Figure 3.

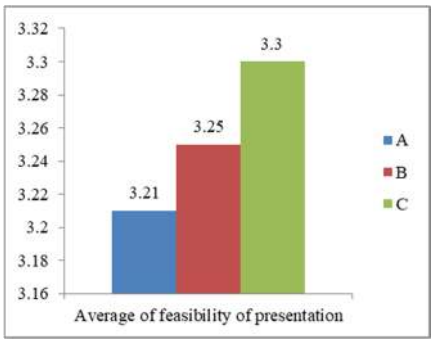

Fig. 3. Average of feasibility of present

Note:
A: Presentation technique
B: Supporting presentation
C: Presentation of learning

3.4 Contextual Based

Nilai rata-rata berbasis kontekstual bahan ajar Metabolisme Zat Gizi yan yang telah dikembangkan sebesar 3.50 (sangat layak). Bahan ajar yang telah dikembangkan sudah

berbasis kontekstual ditinjau dari hakikat kontekstual dan karakteristik kontekstual. Data penilaian rata-rata berbasis kontekstual dapat dilihat pada Gambar 4. The average feasibility value of present of contextual based was 3.50 (very feasible). Teaching material that have been developed was very feasible in terms of contextual principle and contextual characteristic. Average of feasibility of contextual based showed in Figure 4.

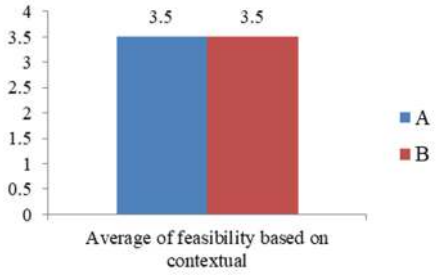

Fig. 4. Average of feasibility of contextual based

Note:
A: Contextual principle
B: Contextual characteristic

[7] showed that students' performance who were taught using teaching material based on contextual development resulting experienced a higher increase of 25% compare with undeveloped teaching material. Finally, developed teaching material expected increasing impact of learning to student on Micronutrient Metabolism course in study program of Nutrient UNIMED.

4 Conclusion

Teaching material of Micronutrient Metabolism course in study program of Nutirent UNIMED that has been developed was categorized as very feasible in content (3,39), language (3,50) and contextualy based (3,50), while considered feasible in presentation (3,25).

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