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ANALYSIS OF STUDENT LEARNING INDEPENDENCE IN THE IMPLEMENTATION OF UKBM LEARNING CHEMISTRY HYDROCARBON MATERIAL

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Abstract
This study aims to determine the application of UKBM Chemistry and student learning independence in the application of UKBM. This research was conducted at MAN 2, Padang Lawas. This research is qualitative research with a quantitative approach method. The subjects in this study are class XI MIA 1, XI MIA 2, and XI MIA 3 where the three classes in chemistry learning have used UKBM Chemistry. Data collection techniques are done by interview, observation, and questionnaire. The results of the study were obtained: 1) Based on the results of interviews with the Deputy Head of Curriculum and chemistry subjects, it is concluded that the application of UKBM Chemistry is running well and has been by the technical instructions from the government. The application of UKBM Chemistry is going well as seen from the observation results of 70% and the results of the checklist sheet assessment of 85%. 2) Based on the results of interviews with chemistry teachers, students can learn independently according to the UKBM flow that has been prepared. Based on the results of the questionnaire, the level of student learning independence in learning chemistry is in a good category at 78.66%. From this data, it can be concluded that the independence of student learning in the application of UKBM in Chemistry Learning class XI MIA MAN 2 Padang Lawas can be said to be good.

1. Introduction

Education in the current century aims to encourage students to have skills that support them to be responsive to changes in the times (Sutrisna, 2021). The maximum educational process will produce quality and superior students (Mayada, et al., 2023). Education today is not just a teaching and learning process in the classroom that only provides material and assignments but must be able

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to form a good, creative, independent, and competitive personality in the future (Al-Azizi and Agung, 2021).

Indonesia provides education following the applicable curriculum. One of the curricula currently being implemented is the 2013 Curriculum (Aulia, et al., 2019). Based on the Regulation of the Minister of Education and Culture Number 59 of 2014 concerning the 2013 High School Curriculum, it is explained that the 2013 Curriculum was developed to prepare Indonesian people can live faithfully, productively, innovatively, creatively, effectively, and can contribute to the life of society, nation, state, and world civilization (Ningrum, and Retnani., 2019)

Based on the 2013 curriculum currently being implemented in schools, learning is required to make students active and prioritize student involvement in learning (Susilo and Makhful., 2020). The 2013 curriculum is designed to develop spiritual and social attitudes, whereas education in Indonesia does not only focus on the knowledge side but learning activities in schools are organized to develop students' attitudes, knowledge, and skills (Aulia, *et al.,* 2019).

Apart from strategies in efforts to develop the 2013 curriculum, some factors support this development, namely students attending school, the length of time students stay at school, active student learning based on competency, handbooks, and the role of teachers as the spearhead of implementing education (Susilo and Makhful, 2020). Apart from that, the government continues to make efforts to develop education by involving teachers, education staff, and parents. Various strategies are used in developing this education, including an independent learning approach (Akhmadi, 2020). One of the attitudes that are expected to develop through the implementation of education is independence (Aulia, *et al*., 2019).

Based on Government Regulation Number 19 in the previous paragraph of 2005, it is explained that learning must be held in a fun way, motivating students to be active, and independent according to their talents and interests. Next, it is necessary to create a Semester Credit System, hereinafter referred to as SKS, as support in the 2013 Curriculum, where this curriculum is designed to enable students to complete the entire learning load according to different talents, interests, and learning speeds. The implementation of the semester credit system will indirectly affect the pattern of students' teaching and learning activities in class, so the government provides a solution in the form of using Independent Learning Activity Units (UKBM) (Al-Azizi and Agung, 2021).

According to the Directorate of High School Development (2017:56), UKBM is a learning unit that is more oriented towards stimulating students for independence training and involving students to

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take an active part in learning to involve students in learning to think HOTS (High Order Thinking Skills). Independent Learning Activity Units (UKBM) are small learning units arranged sequentially from easy to difficult based on the student's level of mastery of the material. UKMB contains Core Competencies (KI) and Basic Competencies (KD) (Septiana, *et al*., 2020). Apart from that, UKBM is a learning unit of a system that facilitates student learning consisting of Textbooks (BTP), KI and KD, assignments and learning experiences, and self-evaluation tools (Aziziy, *et al*., 2019). With this UKBM, students are required to be able to evaluate themselves because students can measure the extent of their understanding of the material. Students also cannot continue the next KD if they have not yet completed it. With this system, students are required to study independently to complete their respective UKBM.

Student learning independence is highly demanded in UKBM because it will train students' abilities to do something and be responsible for it (Aulia, et al., 2019). Independent learning is a learning activity carried out by individuals with freedom without depending on the help of others as an increase in knowledge, skills, or achievement development, which includes; determining and managing their own teaching materials, time, and place, and utilizing various learning resources as needed (Hidayat, DR, et al. 2020). With this independence, students are more responsible for themselves so they can complete UKBM as a condition for continuing with the next UKBM.

This research is supported by previous researchers regarding the application of UKBM in the learning process according to Ningrum and Retnani (2019) stating that the implementation of UKBM is going well as seen from the observation results of 75% and the results of the checklist assessment sheet of 91.1% which is included in the category Very good. The results of the questionnaire on the level of student learning independence in learning Japanese were included in the good category at 70.43%. Al-Azizi, ZH, and Agung H (2021) stated that the use of UKBM in class X Social Sciences at SMA Negeri 1 Malang has gone well. Mayada, et al (2023) stated that the results of the analysis in their research were that the entire learning process in learning Indonesian at MAN 3 Kediri had implemented UKBM tools. The suitability of UKBM for students in learning Indonesian is in harmony. The readability level is right for students. The practicality of this device is quite practical and efficient. Septiana *et al.,* (2020) stated that the implementation of UKBM from the preparation, implementation, and evaluation stages is appropriate and meets the National Education Standards. The strength of implementing UKBM is that learning planning is appropriate meets the SNP and can increase students' learning motivation. The weakness of UKMB is that students with a slow learning speed feel that the time is too short.

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Meanwhile, MAN 2 Padang Lawas is one of the schools that implements chemistry learning using UKBM. So the author needs to conduct research analyzing student learning independence in the application of UKBM in learning chemistry on hydrocarbon materials.

2. Methods

This research is qualitative research with a quantitative approach method. The subjects in this research were classes XI MIA 1, XI MIA 2, and XI MIA MAN 2 Padang Lawas, where the three classes had implemented chemistry learning with UKBM. The instruments used in this research were interview guidelines, observation guidelines, questionnaires, checklists, and documentation. The interview guide is addressed to the Deputy Head of Curriculum and class XI MIA chemistry teachers. The interview, observation, and checklist instruments, and documentation are used to measure the application of UKBM in chemistry learning. Meanwhile, to measure student learning independence in implementing UKBM in chemistry learning, interview and questionnaire instruments were used.

Data analysis for qualitative data is done by reducing data, presenting data, and drawing conclusions. Qualitative data in the form of interview results. Meanwhile, quantitative data is in the form of questionnaire results, observations, and checklists. Data analysis for quantitative data namely, preparation, tabulation in a manner scoring, and data processing.

For results observation and data processing checklist by:

$$\text{Value} = (\text{score})/(\text{total score}) \times 100\%$$

From the data from the assessment using the formula above, the calculation results are then described. Meanwhile, for the questionnaire results, in data processing, the formula used is:

$$P = F/N \times 100\%$$

With description:

F= the frequency at the percentage being searched for

N= number of frequencies/number of individuals

P= percentage number

The results of the percentage of student learning independence are given the following score interpretation criteria:

81% - 100% is categorized as very good

61% - 80% categorized Good

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41% - 60% categorized Enough Good

21% - 40% categorized as not enough Good

0% - 20% categorized No Good

3. Results and Discussions

The instruments used to measure the application of UKBM in chemistry learning were interviews, observations, and checklists. In an interview with the Deputy Head of Curriculum, information was obtained that UKBM is a learning tool for students to achieve knowledge and skills competency in learning using the Semester Credit System (SKS). Apart from that, with UKBM it is hoped that students can be independent by learning using UKBM whose system is designed to complete each KD and according to the student's learning speed. Apart from that, UKBM is a small lesson unit that is arranged from easy to difficult material levels, its content prioritizes providing stimulus to develop students' independence and learning experience so that students are actively involved in a student-centered learning process, which encourages high-level thinking abilities (HOTS). Furthermore, with UKBM it is hoped that students can be independent by learning using UKBM whose system is designed to complete each KD and according to the student's learning speed. With this system, students who have completed a KD can ask the teacher to carry out an exam. However, students' low literacy is an obstacle to the UKBM learning process. Some students are forced to do UKBM, although there are students who read UKBM scenarios systematically. This low literacy has an impact on students' lack of independence. Furthermore, the results of interviews with class XI MIA chemistry teachers obtained information that learning chemistry using UKBM is more interesting and makes learning more varied, and students are required to learn independently from the main material discussed. Sending soft files to students can make it easier for students to study independently and are easier to understand than using learning textbooks because not all students have open learning texts. Furthermore, the implementation of UKBM is following government guidelines.

Based on the results of interviews with chemistry teachers for classes XI MIA 1, XI-MIA 2, and XI-MIA 3, it was stated that the implementation of UKBM was under government guidelines. Chemistry learning uses the inquiry method where the series of learning activities emphasizes thinking and critical processes, the aim of which is to seek and find the answer to a problem in question. Chemistry UKBM is created using a scientific approach, namely: observing, asking questions, collecting information/experiments, associating/processing information, and communicating. However, obstacles are providing UKBM to students. Some students objected to photocopying this

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UKBM. So the Deputy Head of Curriculum suggested giving soft files to students. This is not yet considered a solution because most students do not have laptops, and access via Android cellphones is still often hampered by the network or Android applications which are still inadequate. So a temporary alternative is to provide UKBM soft files to students sent via WhatsApp or email.

There are 4 aspects assessed in the observation assessment, including preparation of UKBM following KI and KD (seen from the content of the UKBM used by the teacher), UKBM by development guidelines, teachers teaching students according to scenarios in the UKBM, teachers teaching according to the time allocation in UKBM, inclusion of learning resources used by teachers in UKBM. The observation assessment has 4 scales, namely 4 points for the highest value and 1 point for the lowest. So from the 5 assessment aspects, the total score is 20. From the observation results, there are 4 observation aspects worth 3 and 1 aspect worth 2 (the teacher's aspect of teaching according to time allocation). Evaluation observation is as follows:

Evaluation Observation = (score)/(total score) x100%= 14/20 x100%= 70%

From the calculation above, the observation assessment is 70%, meaning the value is in the good category. This is because the application of UKBM in the classroom has been implemented following the 2017 UKBM Development Guidelines. Judging from the 4 aspects, each of which received a score of 3 (aspects of preparing UKBM that are by KI and KD (seen from the content of the UKBM used by teachers), UKBM is per development guidelines, teachers teach students according to scenarios in UKBM, the inclusion of learning resources used by teachers in UKBM), while teachers teach according to the time allocation in UKBM get a score of 3 because teachers sometimes miss the time allocation in UKBM.

Based on observational assessments of the preparation of chemical UKBMs, 15 points are used as assessments in the preparation of chemical UKBMs in this research. The point for compiling a complete/suitable UKBM is worth 4, for compiling an incomplete/inappropriate UKBM is worth 3, and a score of 2 for the incomplete/suitable category, and a score of 1 for the inappropriate category. From 15 assessment points, there are 8 points worth 4, 5 points worth 3, and 2 points value 2. From this data obtained percentage evaluation preparation of UKBM prepared by eye teachers lesson chemistry by 85% a very good category, meaning UKBM was prepared by guidelines from the Ministry of Education and Culture in 2017. The next preparation of this UKBM is already under UKBM principles, namely, there is a sheet containing formative in UKBM so that students evaluate themselves alone. From the results UKBM Chemistry material documentation compound hydrocarbons be equipped in the beginning load Identity, KI, KD, TP, and Concept Map from the material, in the core (material) part of the picture

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general material (image general, classification compound hydrocarbons, alkanes, alkenes, alkynes), there is instruction use of UKBM, activities learning, complete with questions and activities practicum, reflection self to understanding material, and lastly, exercise question evaluated and completed with an evaluation.

Students learning independence used questionnaires and interview instruments. The interview was only aimed at class XI MIA chemistry teachers. The questionnaire was distributed to 90 respondents. The results of the questionnaire obtained from 90 respondents with 10 statement items were calculated in percentages to determine the level of student learning independence. The student learning independence questionnaire consists of ten statement items. The following is a table of questionnaire results for statement items number 1-10 which explains the results of the analysis of student learning independence in implementing UKBM Chemistry:

Table 1. Results of Questionnaire Item Statement Number 1

(I always make a study plan first before studying the material that the teacher will give in class)

No	Category	Frequency	Percentage
1	Very suitable	20	22.22%
2	In accordance	49	54.44%
3	It is not in accordance with	17	18.89%
4	Very Inappropriate	4	4.44%
	Amount	90	

Table 2. Results of Questionnaire Item Statement Number 2

(I read hydrocarbon material according to the instructions in UKBM)

No	Category	Frequency	Percentage
1	Very suitable	25	27.78%
2	In accordance	45	50%
3	It is not in accordance with	15	16.67%
4	Very Inappropriate	5	5.56%
	Amount	90	

Table 3 . Questionnaire Results Statement Item Number 3

(I made a summary/digest regarding the hydrocarbon material that has been studied)

No	Category	Frequency	Percentage
1	Very suitable	30	33.33%
2	In accordance	47	52.22%
3	It is not in accordance with	10	11.11%
4	Very Inappropriate	3	3.33%
	Amount	90	

Table 4. Results of Questionnaire Item Statement Number 4

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(I did the practice questions according to the instructions in UKBM)

No	Category	Frequency	Percentage
1	Very suitable	28	31.11%
2	In accordance	50	55.56%
3	It is not in accordance with	7	7.78%
4	Very Inappropriate	5	5.56%
	Amount	90	

Table 5. Results of Questionnaire Item Statement Number 5
(Whenever there are difficulties in learning hydrocarbon material, I look for other sources apart from those in UKBM before asking other people)

No	Category	Frequency	Percentage
1	Very suitable	22	24.44%
2	In accordance	43	47.78%
3	It is not in accordance with	18	20%
4	Very Inappropriate	7	7.78%
	Amount	90	

Table 6. Questionnaire Results Statement Item Number 6
(I asked about material that I didn't understand from the hydrocarbon material in UKBM)

No	Category	Frequency	Percentage
1	Very suitable	26	28.89%
2	In accordance	44	48.88%
3	It is not in accordance with	16	17.78%
4	Very Inappropriate	4	4.44%
	Amount	90	

Table 7. Results of Questionnaire Item Statement Number 7
(I can do an independent practicum according to the instructions in UKBM)

No	Category	Frequency	Percentage
1	Very suitable	27	30%
2	In accordance	41	45.56%
3	It is not in accordance with	17	18.89%
4	Very Inappropriate	5	5.56%
	Amount	90	

Table 8. Results of Questionnaire Item Statement Number 8
(I can describe and differentiate the molecular structure of hydrocarbon compounds)

No	Category	Frequency	Percentage
1	Very suitable	22	22.22%
2	In accordance	52	57.78%
3	It is not in accordance with	13	14.44%
4	Very Inappropriate	3	3.33%

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	Amount	90

Table 9 . Questionnaire Results Statement Item Number 9
(I dare to show my abilities when discussing in class)

No	Category	Frequency	Percentage
1	Very suitable	25	27.78%
2	In accordance	37	41.11%
3	It is not in accordance with	23	25.56%
4	Very Inappropriate	5	5.56%
	Amount	90	

Table 10. Results of Questionnaire Item Statement Number 10
(I do the test questions independently)

No	Category	Frequency	Percentage
1	Very suitable	20	22.22%
2	In accordance	57	63.33%
3	It is not in accordance with	10	11.11%
4	Very Inappropriate	3	3.33%
	Amount	90	

Below are the results of the questionnaire depicted in graphical form.

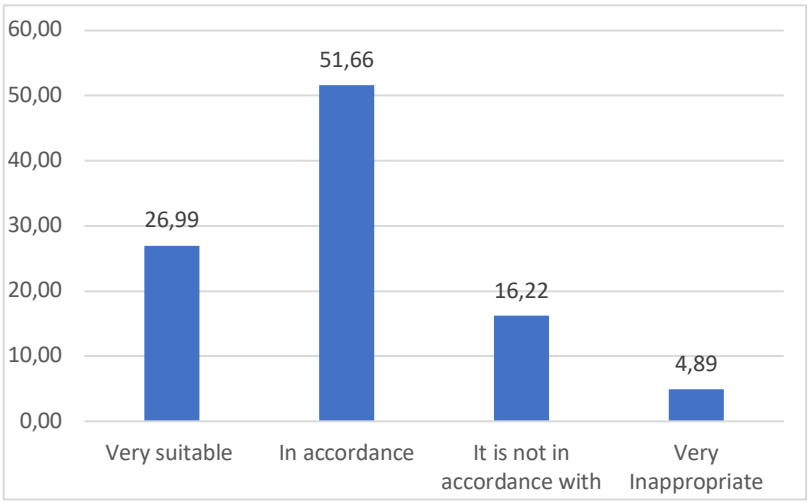

Figure 1. Results of the Student Learning Independence Questionnaire

Based on the data and graphs above, the level of student learning independence obtained on average was very suitable at 26.99%, suitable at 51.66%, not suitable at 16.22%, and very inappropriate at 4.89%. Furthermore, the average number is very suitable and suitable at 78.66% and is included in the good category. Meanwhile, the average number of inappropriate and very inappropriate was 21.11%. From this data, it can be concluded that the level of student learning independence in using UKBM Chemistry for hydrocarbon materials at MAN 2 Padang Lawas is in a good category. This UKBM has

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provided the opportunity to study chemistry learning material. Moreover, chemistry contains a lot of abstract material, so it is necessary to use UKBM because the language in UKBM is easier for students to understand compared to other chemistry learning textbooks.

This research is in line with the results of research by previous researchers. According to Ningrum, Y., and Retnani (2019) stated that the implementation of UKBM was going well as seen from the observation results of 75% and the results of the checklist sheet assessment of 91.1% which was included in the very good category. The results of the questionnaire on the level of student learning independence in learning Japanese were included in the good category at 70.43%. Al-Azizi, ZH, and Agung H (2021) stated that the use of UKBM in class X Social Sciences at SMA Negeri 1 Malang has gone well. Fitriah, H, et al (2020) stated that there were two variations of responses given by students, namely, very positive responses and positive responses. These two responses were obtained from 27 students who were used as samples. 11 (47.52%) students gave very positive responses and 16 (64.25%) other students gave positive responses. Therefore, the student's response to learning Indonesian using e-UKBM at Bali Mandara State High School was positive. Susilo, SDC, and Makhful (2020) concluded that there was no influence of the Independent Learning Activity Unit (UKBM) on the success of learning Islamic religious education and character subjects in Class XI students at SMA Negeri 3 Purwokerto in the 2019/2020 academic year. Maelani, G, et al (2021) in research results show that there are positive and significant differences in student learning outcomes when using the Project Based Learning (PBL) learning model which is superior to student learning outcomes using conventional methods in the final measurement through the use of Activity Unit Media. Independent Learning (UKBM) in class X MIPA SMA Negeri 1 Ciamis.

Apart from the application of UKBM in various learning processes from several subjects, it is further supported by research into the development of UKBM, according to Nirmalasari, et al (2022) in their research showing that the results of calculating the percentage of validity obtained a value of 81.37% (valid). Furthermore, e-UKBM Chemistry was declared suitable for use in the chemistry learning process based on the results of initial field trials and extensive field trials. The results of the initial field trial by students were 102.37 (good category) and educators were 105.00 (good category). In extensive field tests by students, the result was 129.05 (very good category), and by educators, it was 144.00 (very good category).

5. Conclusions

Based on the results that have been explained, the following conclusions the implementation of chemistry UKBM can be said to be going well seen from the results of the observation sheet which is

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70%. Apart from that, it can be seen from the results of the checklist for preparing UKBM that it is 85%, which means that UKBM was prepared according to the guidelines from the Ministry of Education and Culture in 2017. Based on the results of interviews with class XI MIA chemistry teachers, it is stated that the implementation of UKBM is by government guidelines. The level of student learning independence in hydrocarbon chemistry learning is 78.66%, which is included in the good category. The level of independence of 78.66% is supported by the statement of the class XI MIA chemistry teacher from the interview results, namely that students who learn quickly will be independent if they follow the learning flow in UKBM. The UKBM prepared is by the UKBM Development Guide.

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