

# Development of an Innovative E-book Integrated Learning Video to Improve Learning outcomes and Learning Motivation of Chemistry Education Student on Metabolic Biochemistry Topic

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**Abstract.** Education is very important role in the formation of quality human resource, because that educator must be creative and innovative. Innovation in learning can be in the form of developing teaching material using technology. The study aims to produce a ebooks assisted by Kvisoft Flipbook Maker as a learning media and learning resource in metabolic biochemistry learning so as to increase student motivation and learning outcomes, this research with the ADDIE models the data collection instrument used was validation questionnaire based on the National Education Standard Agency (BSNP). The data were analyzed by descriptive statistical analysis. The result showed the feasibility of innovative an e-book of Biochemistry metabolism integrated with learning videos, with an average score of 3.45 and include in the valid, limited trial use e-books show effectived result in improve learning outcomes with an N-gain score 0.74 and motivation with an average score of 85%

**Keywords:** e-book biochemistry metabolism, learning outcomes, learning motivation

## 1 Introduction

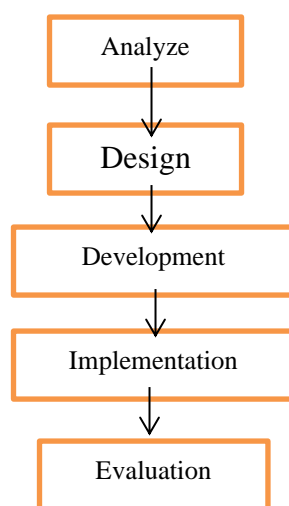
Education is very important role in the formation of quality human resources, to produce quality human resources, educator must be able to develop and innovative. Development of technology is curenly very rapid where technology is very important role in all fiels, especially education. During teh Covi-19 pandemic, the government required to force all levels of society to carry out learning and working online and this affects in the world of education continue to carry out learning process by using technological sophistication. The consequences of this pandemic require educator to innovative in creating learning resources or learning media<sup>[1]</sup> using technology so that learning outcomes can be achieved even though learning is done online. Innovative in education is development of teaching materials using technology so that the material contained in it becomes more interesting with the addition of video, animation and sound content<sup>[2]</sup>.

The chemistry has an important role in influencing the development and progress of science and innovation<sup>[3,4,5]</sup>. So, the teacher must try to innovative in chemistry learning, especially courses by designing a biochemistry metabolism book by using electronic media<sup>[6]</sup> with help of Kvisoft Flipbook Maker application which able to convert PDF documents into computerized book publishing page that make books more interesting so that the learning process becomes efficient<sup>[7,8]</sup>. E-books function as teaching materials designed by teacher and then used by students.

Based on these problems, it can be concluded that current learning requires innovative teaching materials, in the form of e-books which were developed with the help of Kvisoft Flipbook Maker application which assist in the learning process by adding content in the form of learning videos, which are expected to assist teacher in delivering learning materials so that students can understand the teaching material independently. Learning by using Kvisoft Flipbook Maker has an important effect on learning outcomes, learning motivation and understanding of student thinking in learning and gets positive reaction from students after using e-books developed using Kvisoft Flipbook Maker application<sup>[9,10,11,12]</sup>.

## 2 Method

The method in this research is research and development. Development in research will produce an electronic book (e-book). E-book development using Kvisoft Flipbook Maker software with research and development steps, namely analyze, design, development, implementation and evaluation. The overall research steps can be seen drawn as shown in figure



**Fig 1.** Steps of development book

The research was conducted at the faculty of Mathematics and Natural Sciences Universitas Negeri Medan, North Sumatera. The study was conducted from March to June 2022.

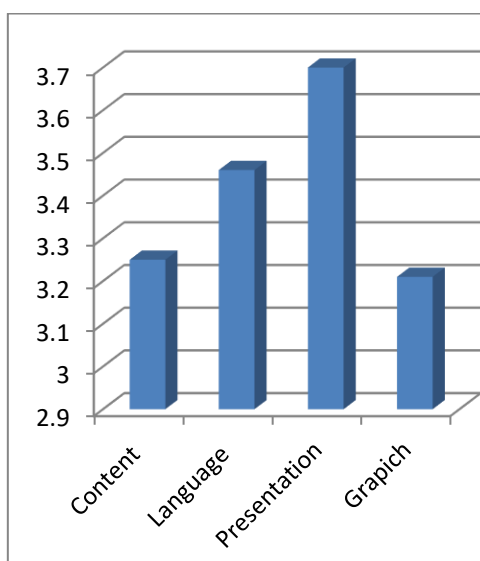
The population in this research was all students of chemistry education. The samples were students PSPK B 2019 with 27 students using random sampling data collection technique.

Research instrument are in e-book feasibility assessment based on BSNP, valid and reliable objective test and questionnaires of students motivations. The data analysis technique used one-group pretest-posttest design.

### 3 Result and Discussion

In this research begins at stage of analyzing the needs of teaching materials Biochemistry Metabolism. After the data is collected, the next stage is designing teaching material into e-book Biochemistry Metabolism using Kvisoft Flipbook Maker applications. The next stage is teaching material that have been designed into e-book Biochemistry Metabolism are validated by expert validators using a questionnaire of eligibility indicators according to BSNP agency.

Based on the validation results, the e-book feasibility value is 3,45 with valid category.



**Fig. 2.** Graph of Feasibility Analysis Result of E-book Biochemistry Metabolism.

After e-book Biochemistry Metabolism is declared valid and suitable for use, the next step is to try out (implementation) e-book Biochemistry Metbolism to students. Before learning begins, students are first given pretest. After that, the students are given an e-book Biochemistry Metabolism in learning process and before the learning ends, studens are given posttest to find out the improve in student learning outcomes. Improvement in learning outcomes can be seen in table 1.

**Tabel 1.** Data N-gain

Sample	Average		N-gain
	Pretest	Posttest	
27	40,56	83,70	0,74

The increase in students learning outcomes is measured by the value of N-gain with value 0,74 which includes the criteria for high N-Gain.

In this study, in addition to measuring the increase in learning outcomes, it also assesses student learning motivation after using e-book Biochemistry Metabolism. Based on data obtained using motivation questionnaire, the value of students learning motivation after using e-book Biochemistry metabolism is 85%. Data on the percentage of student motivation can be seen in figure 3.

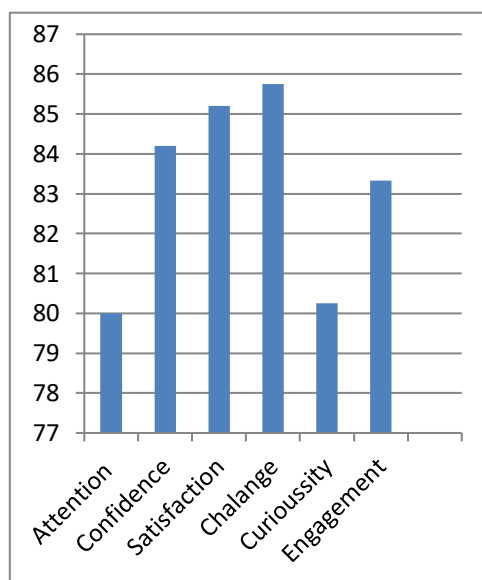


Fig 3. Percentage Learning Motivation

#### 4 Conclusion

The result showed that e-book Biochemistry metabolism developed using Kvisoft Flipbook Maker software was valid according to BSNP standard with a value of 3,45 and the e-book could be used in the learning process in an effort to improve learning outcomes and motivate students to study independently.

The result of increasing student learning after using an e-book Biochemistry Metabolism developed using the Kvisoft Flipbook Maker software reached 0,74 with a high category.

The result of motivation learning students is measured after using e-book Biochemistry Metabolism reached a value of 85% in the high motivation category.

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