Is there a need for an e-module focused on contextual teaching and learning to improve student critical thinking? A preliminary examination into needs assessment

Siska Pratama*
Een Yayah Haenilah
Muhammad Mona Adha

Faculty of Teacher Training and Education, Universitas Lampung, Bandar Lampung, Indonesia

ABSTRACT
The aim of this study was to analyze electronic modules in improving 21st century skills on the background of problems that exist at SDN 03 Negeri Batin in class III, namely the lack of use of teaching materials in the learning process which associated with daily life as learning resources, teachers merely used learning textbooks as the only learning resource. This study used descriptive qualitative research. Questionnaire data collection obtained through questionnaire and documentation. The data analysis method used was data reduction, data presentation and conclusion. Questionnaires were given to 13 teachers and calculated using the Likert scale formula. The results of the study indicated that creativity and innovation of 82.82% and it was considered as feasible, critical thinking and problem solving consisted of 81.41% which showed feasible, communication and collaboration consisted of 87.82% which considered as feasible.

INTRODUCTION
Education is a very necessary field for human life, because education will have an impact on increasing quality human resources. With quality resources, humans become better able to adapt to the environment and are able to anticipate various possibilities that will occur (Farida et al., 2017). To achieve learning objectives, teachers must apply learning models, methods and approaches that can motivate students and direct students to improve their critical thinking skills, to solve problems in the learning provided by the teacher “Students’ critical thinking skills can be improved by applying student-centered learning.”

Learning is a mental process carried out to obtain behavioral changes which as a whole are the result of interactions with the environment (Diana et al., 2015). Education is also important for the capital of a nation's development and national education goals. Educational goals which mean the ultimate goal to be achieved by all educational institutions, such as formal, non-formal and informal education. These things can be achieved through the learning process (Abadiyah et al., 2017). Electronic modules (e-modules) are almost the same as e-books. The difference is only in the content of the two. In the Encyclopedia Britannica Ultimate Reference Suit explains that an e-book is a digital file containing text and images suitable for electronic distribution and display on a monitor screen similar to a printed book. E-modules or electronic modules are modules in digital form, it consists of text, images, or both containing digital electronics material accompanied by simulations that can and are suitable for use in learning (Herawati & Muhtadi, 2018).

Teaching materials that facilitate the achievement of effective, efficient learning objectives and must be owned by teachers and students are e-modules (Kesya, 2021). The current teaching materials do not take advantage of existing technology. The content of the material contained in existing textbooks is general and not in accordance with environmental conditions and does not provide examples that are suitable for the environment around students (Susanti et al., 2020). The main aim of this activity is to arrange online learning modules so then teachers can improve the quality of learning based on contextual teaching learning for students’ critical thinking skills. Elementary school teachers must master these skills to produce skilled and competent graduates in the face of competition in the 21st century era.

The skills needed in the 21st century are known as 4C skills, namely Critical Thinking (critical thinking), Collaboration (collaboration), Communication (communication) and Creativity (creative). Creative thinking skills are individual's skills to produce new ideas, creative thinking skills consist of 4 indicators, namely: Fluency (ability to produce many ideas), Flexibility (ability to produce various ideas), Originality (ability to generate new ideas or ideas that were not previously available), exists), and Elaboration (the ability to develop ideas so that they can emerge ideas).
The four indicators are used as a benchmark for a person's creative thinking ability. Critical thinking skills are related to activities, such as analysis, synthesis, making judgments, creating and applying new knowledge in the real world that can be learned, trained and mastered (Hamida, 2021).

The CTL learning model can be asserted to be a learning model to recognize and carry out the natural state of knowledge. Through the internal and external relationships of the classroom, CTL makes experiences more relevant and meaningful for students in building knowledge that they will apply in their lives. Contextual teaching and learning presents the concept of document linking that will be used and linked to student learning (Elain B. Johnson, 2006). Contextual Teaching and Learning (CTL) is a learning concept that emphasizes the relationship between learning topics and the real world of student life, so that students can log in and register the capacity for learning outcomes in everyday life (Mulyasa, 2006). The characteristics of CTL learning according to (Hanafiah, 2009) include: 1) Cooperation between students and teachers (cooperative) 2) Mutual assistance between students and teachers (assist) 3) Learning with passion (enjoyable learning) 4) Contextually integrated learning 5) Using multimedia and learning resources 6) Active student learning methods (student active learning) 7) Sharing with friends (take and give) 8) Critical students and creative teachers 9) Class walls and or classroom hallways are full of works students 10) Student reports are not only report books, but also student work, practicum reports, student essays and so on. 1) The principle of CTL, namely Interdependence (Intedependence) This principle makes meaningful connections (making meaningful connections) between the learning process and the context of real life, so that students believe that learning is an essential aspect of life in the future. This principle teaches educators to recognize their interests with other teachers, students, stakeholders, and the environment.

Difference (differentiation) this differentiation principle is to encourage students to produce diversity, difference and uniqueness. The creation of independence in learning that can construct the interest of students to learn independently in the context of a team by correlating teaching materials with real life, in order to achieve meaningful goals. Self-regulation The self-regulation principle states that the learning process is regulated, maintained and realized by the students themselves in order to realize their full potential. 4) Authentic assessment the use of effective assessment is challenging students to be able to apply a variety of academic information, new skills into contextual situations significantly.

Modules are self-study packages that cover a series of learning experiences that are systematically designed to help student participants achieve their learning goals. Modules are software packages arranged in certain units and designed for students' interest in learning. The module package usually contains: teacher guide elements, student activity sheets, student worksheets, worksheet keys, test sheets and test sheets keys (Susilana & Cepi Riyana, 2008). According to (Nasution, 2013) the module is a complete unit that can stand alone and consists of a series of learning activities that are structured to help students achieve a number of goals that are formulated specifically and clearly. According to (Munadi, 2013), modules are learning materials that can be used by students to study independently with minimal assistance from others.

According to (Cepi & Rudi, 2008) to produce a module that increase the motivation and effectiveness of student learning outcomes, then in development must take into account the following characteristics: 1) Self Instructional Learners use modules to be able to learn independently so they do not depend on other parties. To fulfill the self-instructional character, the module must a) contain clear objectives. b) Contains learning materials that are packaged into specific small units so as to facilitate complete learning. c) Provide examples and illustrations that support the clarity of the presentation of learning materials. d) Displays practice questions, assignments and the like that allow users to respond and measure their level of mastery. e) Contextual, namely the materials presented related to the atmosphere or context of the task and the user's environment. f) Use simple and communicative language. g) There is a summary of learning materials. h) There is an assessment instrument. i) There is feedback on the assessment, so that users know the level of mastery of the material. j) There is information about references that support the learning materials in question. 2) Self-Contained Self-contained, namely all learning materials from one competency or sub-compentency being studied are contained in one complete module. The purpose of this concept is to provide opportunities for students to learn the learning material completely, because the material is packaged into a unified whole. 3) Stand Alone means that the module developed is not depending on other media or should not be used together with other learning media. By using the module, students do not dependent and have to use other media to learn and or work on tasks in the module. If it still uses and depends on other media other than the module used, then the media are not categorized as stand-alone media. 4) Adaptive means that the module can adapt to the development of science knowledge and technology, as well as flexible in use. With regard to acceleration of the development of science and technology development of multimedia modules should keep “up to date”. The adaptive module is if the content learning materials can be used up to a certain period of time. The module should be user friendly. Every instruction and information presentation that appears is helpful and friendly to its use, including the ease with which the user responds, accesses in accordance with the wishes. Use of simple, easy language understand and use commonly used terms is on of the forms of user friendly.

According to (Sudjana & Ahmad Rival, 2007), the components of the module includes: 1) Teacher's guide, contains instructions so that the teacher explains the types of activities that must be carried out by students, time to complete the module, learning tools that must be used, and evaluation guide. 2) Student activity sheets, contain lessons that must be mastered by students. The composition of the material with the instructional objectives to be achieved, arranged step by step to make it easier for participants learn to learn. The activity sheet lists the activities that must be done by students, for example conducting experiments, read the dictionary. 3) Worksheets,
accompanying student activity sheets that are used to answer or work on assignments or problems which must be solved. 4) Worksheet lock, serves to evaluate or self-correct the results of their work, students review their work. 5) The test sheet is an evaluation tool to measure the success of the objectives that have been formulated in the module. The test sheet contains questions to assess the success of students in studying the material used presented in the module. 6) The key to the test sheet is a correction tool for the assessment carried out by the students themselves. Dealing with the opinion of experts, it can be concluded that the materials of the module components are teacher’s guides, student activity sheets, worksheets, answer keys, worksheets, question sheets and multiple choice answer sheets. Let students really learn independently without being guided by a teacher.

Methods

Solutions to overcome problems related to never using electronic modules and the low critical thinking skills of students. Electronic module analysis can be designed with 21st century skills consisting of critical thinking, collaboration, communication, and creativity. The use of 21st century skills-oriented electronic modules can guide students to learn independently and provide students with experience so as to train students’ 21st century skills. This study aims to determine the needs analysis that drives the importance of e-module teaching materials based on a contextual teaching and learning approach, to train students’ critical thinking skills. The methods explain clearly how the author carried out the research. The method must describe the research design clearly, the replicable research procedures, describe how to summarize, and analyze the data. The type of research used was descriptive qualitative. Descriptive research is research conducted to find out the value of independent variables, either one or more variables (independent) without making comparisons or connecting with other variables. (Sejarah, 2020).

The aim of this study was to find out the description of the 21st century skill level of the teachers of SDN 03 Negeri Batin in facing the 21st century era. This study involved 13 teachers of SDN 03 Negeri Batin as respondents. Data collection was undertaken using a questionnaire.

This research approach used descriptive qualitative research methods based on the philosophy of postpositivism, it is used to examine the condition of natural objects, where the researcher is the key instrument, data collection techniques, research data can be clearly identified from descriptive analysis in the form of written or spoken words, of people and the behavior to be observed. This study used primary data, the data obtained from respondents, namely teachers at SDN 03 Negeri Batin.

Researcher distributed questionnaires to teachers at SDN 03 Negeri Batin. This research was all teachers of SDN 03 Negeri Batin, a total of 13 people. The instruments used in this study were questionnaires and documentation. The analysis used data reduction, data presentation and conclusions. The questionnaire was calculated using the Likert scale formula which can be seen in table 1 which was given to 13 respondents.

| Interpretation            | Score |
|---------------------------|-------|
| Strongly Agree (SS)       | 4     |
| Agree (S)                 | 3     |
| Disagree (TS)             | 2     |
| Strongly Disagree (STS)   | 1     |

(Sugiyono, 2016)

| Percentage | Interpretation    |
|------------|------------------|
| 80%-100%   | Strongly Agree   |
| 66%-79%    | Agree            |
| 56%-65%    | Less Agree       |
| 0%-55%     | Disagree         |

(Sugiyono, 2016)

Finding and Discussion

Dealing with the results of a questionnaire from 13 respondents in 1 school, namely the first aspect regarding creativity and innovation was 82.82%, it showed that they agreed with 12 questions: 1) understand the concept of creative thinking 2) Understand the importance of creative thinking 3) Apply creative thinking skills 4) Understand the concept of innovation 5) Realize the importance of innovation 6) Apply innovation capabilities. The second aspect regarding critical thinking and problem solving, the percentage of the questionnaire results was 81.41% 1) Understand the concept of critical thinking 2) Support critical thinking skills 3) Direct critical thinking skills 4) Understanding problem solving concepts 5) Realize the importance of problem solving skills 6) Direct problem solving skills. The third aspect regarding communication and collaboration, the percentage of the questionnaire results was 87.82% 1) Understand the concept of communication 2) Realize the importance of communication skills 3) Direct
communication skills 4) Understand the concept of collaboration 5) Support the collaboration process 6) Apply collaboration skills.

![Figure 1. Diagram of Questionnaire Result](image)

The results of the initial interview in the learning process have not used e-modules that are associated with everyday life. Educators only use learning textbooks as the only source of learning, thus causing less motivation for students to be able to freely carry out learning activities and lack of honing students’ critical thinking skills. SDN 03 Negeri Batin is one of the public elementary schools with sufficient grades in Way Kanan. The results of the interview with (Heni Sujana, 2022) as the Principal, it was found that there were still many teachers who did not understand the skills of the 21st century well, therefore the teachers at this school were still participating in trainings to improve the skills of the 21st century either by using printed or printed teaching materials, non-print, printed and electronic modules, schools are still trying to improve the understanding of skills for teachers in this school.

The results of an interview with (Sulastin, 2022) as a third grade homeroom teacher, it was found that he had a little understanding of 21st century skills, only that the school had never used electronic modules. The results of observations with students taken are class III Elementary School, learning was carried out by the lecture method. During learning, students are not given the opportunity to discuss so they tended to be passive and less able to explore thinking skills to build abilities. Students were less able to think deeply in making ideas without looking at books or notes. These results indicated that students’ critical thinking skills are low and have not been trained optimally.

The results of this study are relevant to the research conducted by (Prasrihamni et al., 2022) entitled “Development of Contextual Teaching-Based Emodules In Grade V Elementary School Learning” which indicates that in e-module teaching materials based on contextual teaching with an average 3.70 valid information, the linguists assessed are linguistic, straightforward, communicative and usage. The results of stage 1 validation by experts obtained a score of 36 with an average of 2.4, the score for the second expert was 52 with an average of 3.46, the third expert received a score of 39 with an average of 2.26. The results of the assessment of material, service and media validators obtained a total score in the second stage of 11.1 with an average of 3.70, it can be concluded that the development of contextual teaching-based e-modules in elementary school class V learning is included in the Valid category. This study shows that the level of creativity and innovation in SDN 03 Negeri Batin teachers obtained 82.82% properly. The level of critical thinking and problem solving obtained 81.41% results with proper criteria. The level of communication and collaboration obtained results of 87.82% very feasible criteria. This is due to most of the teachers of SDN 03 Negeri Batin have a good understanding of creative thinking skills and innovation, critical thinking and problem solving and have good communication and collaboration, besides that they also know the importance and have applied it in learning as a provision to create graduates who are skilled and competent in facing competition in the 21st century era.

**Conclusion**

Based on the descriptive analysis result concerning the level of 21st Century Skill on teachers of State Elementary School 03 Batin, then it can be concluded that the level of 21st century owned by teachers of State Elementary School 03 Batin obtained score 84.01% in strongly feasible category. It is because through learning skill and good innovation make teachers capable of fulfilling the challenge as 21st century teachers and it shows that they can produce students with skill and competence in order to face the competition in 21st century era.
References

Abadiyah, F., Juanengsih, N., & Fadlilah, D. R. (2017). The Effect of Contextual Teaching and Learning Combined with Peer Tutoring towards Learning Achievement on Human Digestive System Concept. Jurnal Penelitian Dan Pembelajaran IPA, 3(2), 101. https://doi.org/10.30870/jppl.v3i2.1959

Diana, N., Karyanto, P., Suciati, & Indriyati. (2015). Penerapan E-Module Berbasis Problem-Based Learning untuk Meningkatkan Kemampuan Berpikir Kritis dan Mengurangi Miskonsepsi pada Materi Ekologi Siswa Kelas X MIPA 1 SMA Negeri 5 Surakarta Tahun Pelajaran 2014/2015 The Application of E-Module Based on Pro. Seminar Nasional XII Pendidikan Biologi FKIP UNS, 396–401.

Elain, B. Johnson. (2006). Contextual Teaching & Learning Menjadikan Kegiatan Belajar MengajarMengasyikkan dan Bermakna. Bandung: Mizan Learning Center.

Hamida, S. (2021). The Validity of Contextual-Based Physics Learning Videos to Improve Students’ 4C Skills. International Journal of Progressive Sciences and Technologies (IJPSAT, 25(2), 175–184. http://ijpsat.ijsht-journals.org

Hanafiah, & Suhana, Cucu. (2009). Concept of Learning Strategy. Bandung: PT Refika aditama.

Herawati, N. S., & Muhtadi, A. (2018). Pengembangan modul elektronik (e-modul) interaktif pada mata pelajaran Kimia kelas XI SMA. Jurnal Inovasi Teknologi Pendidikan, 5(2), 180–191. https://doi.org/10.21831/jitp.v5i2.13424

Kesya, glory sitompul, & sutarno, dedy hamdani. (2021). Pengembangan E-Modul Berbasis Kontekstual Contextual Teaching and Learning (CTL) untuk melatihkan kemampuan berpikir analisis siswa pada materi gelombang bunyi. 2, 37–48.

Mulyasa, E. (2006). Kurikulum Yang Disempurnakan. Bandung: PT Remaja Rosdakarya.

Munadi, Yudhi. (2013). Media Pembelajaran (Sebuah Pendekatan Baru). Jakarta: Referensi.

Nasution. (2013). Berbagai Pendekatan dalam Proses Belajar Mengajar. Jakarta:Bumi Aksara.

Prasrihamni, M., Marini, A., & Jakarta, U. N. (2022). Development of Contextual Teaching-based Modules in Grade V Elementary School Learning. 7(2), 415–433.

Sudjana, Nana, & Rivai. Ahmad. (2007). Media Pengajaran. Bandung: Sinar Baru Algensindo

Sugiyono. (2016). Metode Penelitian Kuantitatif, Kualitatif dan R&D. Bandung: PT Alfabet.

Sejara, D. P. (2020). Studi Deskriptif Kuantitatif Tentang Aktivitas Belajar Mahasiswa Dengan Menggunakan Media Pembelajaran Edmodo Dalam Pembelajaran Sejarah. Jurnal Artekaf. 7(1), 13–20.

Susanti, N., Yenita, & Azzar. (2020). Development of Contextual Based Electronic Global Warming Modules Using Flipbook Applications as Physics Learning Media in High Schools. Journal of Educational Sciences. 4(3), 541–559.

Susilana, Rudi., & Riyana, Cepi. (2008). Media Pembelajaran. Bandung: CV WacanaPrima.