

# Analysis of Student Response to E-content Needs in E-learning to Build Self-learning Awareness on Electrolyte and Nonelectrolyte Solution Materials

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## Abstract:

E-content is teaching materials provided in E-learning for the sake of the process of learning to teach remotely. Electrolyte and nonelectrolyte solution material is abstract material and emphasizes the concept to a symbolic and microscopic level, thus making students bored if the learning process is not attractive. Low awareness of students in learning has an impact on student learning outcomes. Therefore, it is necessary to anticipate that students are interested in taking distance learning. This research aims to know students' response to the need for E-content to build students' self-awareness in learning. The subject of the study was grade X SMAN 7 Padang, with a sample of 40 randomly selected students. Data is collected by sharing questionnaires through a google form. The results obtained from this study are : 1) The level of self-awareness of students on electrolyte and nonelectrolyte solution materials is still low; 2) Learning difficulties experienced by students are still high; 3) Students need interesting e-content and include systematic presentation of materials with a variety of media formats; 4) The unavailability of e-content based on scientific approaches to electrolyte and nonelectrolyte solution materials. This study is part of the initial study of e-content development in building students' self-learning awareness on electrolyte and nonelectrolyte solution material.

**Keywords** —E-learning, E-Content, Self-learning Awareness, Electrolyte and Nonelectrolyte Solution

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## I. INTRODUCTION

Science is evolving. The development of science supports the creation of new technologies that mark the progress of the times. Until now, evolving technology has entered the digital stage. Every field has started to utilize technology to facilitate work, including education [1]. Currently, education has used technology where the learning process is carried out face-to-face and can be carried out remotely through digital media.

Distance education describes the physical separation between students and teachers [2] or in other words E-learning. The application of teaching and learning using E-learning has increased rapidly in recent years [3]. Students use the e-learning system in remote education programs. Students can come from different geographical locations because they are separated from teachers in space and time [4]. E-learning's teaching and learning process impact students' learning outcomes, whether it is a

positive or negative impact. The positive effect of online learning is that it can make students more independent in learning, have self-awareness, and have exemplary learning achievements [5]. There is a positive relationship between self-awareness and student learning outcomes [6]. A person who has self-awareness in learning will be able to do lifelong learning. Students who have self-awareness in learning will feel that learning is one of their needs. In addition, there are also negative impacts of distance learning.

The negative impacts of distance learning include: A lack of student feedback in the teaching and learning process, Collecting assignments is often late, Students are having difficulty understanding the material taught by the teacher [7]. There is also a significant problem faced in the learning process, namely the ability of students to manage their learning and how they can maintain a desire to keep learning [8]. Therefore, the need for a high level of student self-awareness in learning.

Self-awareness is a situation in which a person can know and understand oneself appropriately, both in terms of perceived emotions and behaviors that they do [9]. Building self-awareness is essential. A student will train in understanding themselves through the learning process at school. Understanding of themselves will affect their decision-making for their future. Thus, developing a student's identity is one of the goals that teachers in the school must achieve [10]. The indicators of self-awareness in learning are: a) can recognize the behaviour and feelings of oneself; b) recognize the advantages and disadvantages; c) Have an independent attitude; d) Can make an informed decision; e) Can express thoughts, feelings, opinions, and beliefs; f) Can evaluate self-understanding [11]. In addition, the factor that influences students' lack of awareness in distance learning is the interest and motivation of the student himself to follow the learning.

Low student interest and motivation may be due to the content of learning in E-learning that makes students bored in understanding it. E-content is a collection of information containing text, images,

and audio designed in such a way as to be digital for a particular user and distributed through electronic media [12]. E-content is a product, while E-learning is a process. All E-content material focuses on (a) Cognitive perspective: it emphasizes cognitive processes in the teaching and learning process and involves how the brain processes receive and process stimuli; (b) Emotional perspective: it emphasizes the emotional aspects of learning, such as motivation, participation, and pleasure; (c) Behavioral perspective: it emphasizes on skills and how behaviour during learning takes place, role play, job arrangements and (d) Contextual perspectives: It emphasizes on a learning environment and social relationships that can improve the teaching and learning process. E-content development is generally to guide and stimulate learners in such a way to the individual teaching system. So e-content can increase students' level of knowledge that leads to creative and innovative thinking [13]. E-content design can be an important benchmark for student interaction and satisfaction in the learning process. Most students spend time reading and understanding the learning content in E-learning [14]. Thus, it will affect the motivation and self-awareness of students in learning.

The lack of awareness of students in learning will affect the learning outcomes of the students themselves. Therefore E-content needs to be designed creatively, innovatively, interestingly, and to be understood by students so that it can build self-awareness of learners to learn (self-learning awareness) [13]. By developing students' motivation to explore information that they can easily access, students also learn to create their thoughts and understanding of the same information that everyone has.

This study aims to find out students' responses about the need for e-content to build self-learning awareness. The results of this study are expected to provide preliminary information about E-content, whether it needs to be developed in order for students' awareness in learning to increase, and what needs to be developed in the E-content.

Furthermore, the next researcher can use the results of this study as a reference in the study.

## II. METHODOLOGY

This research is qualitative descriptive research with a survey method. This study aims to describe, explain, and answer in more detail the problems to be studied by studying as many individuals, groups or events as possible [15]. Researchers collected data in June 2021 at SMA 7 Padang. The population of this study was all X-graders with a sample of 40 randomly selected people. The data collection technique is to spread the questionnaire. A questionnaire is a data collection technique done by giving respondents a set of questions or written statements to be answered [15]. Researchers distribute questionnaires through google forms. Questionnaires serve to obtain data on students' responses about self-learning awareness levels and content needs in E-learning. The data of the research results were analysed descriptively qualitatively.

## III. RESULT AND DISCUSSION

### A. Result

Based on observations made by the dissemination of questionnaires, obtained as stated in table 1 contains data of questionnaire results on the level of self-learning awareness and content needs in E-learning, then in fig 1, contains Self-Learning Awareness Level Student Data Class X on Electrolyte and Nonelectrolite Solution Materials. In fig 2 contains Data on The Level of Learning Difficulty of Electrolyte and Nonelectrolite Solution Materials. In fig 3 contains E-content Requirement Level Data, and fig 4 contains Scientific Approach-Based E-content Data on Electrolyte and Nonelectrolite Solution Materials not yet available.

Based on observations made to 40 students of grade X SMAN 7 Padang, there are 59% of students have a low level of self-learning awareness, in addition, as many as 41% of students who have a high level of self-learning awareness in chemistry

subjects, especially electrolyte solution materials and nonelectrolyte.

TABLE I  
DATA OF QUESTIONNAIRE RESULTS ON THE LEVEL OF SELF-LEARNING AWARENESS AND CONTENT NEEDS IN E-LEARNING

No	Statement	Results (%)			
		1	2	3	4
<i>Self learning awareness</i>					
1	I always do the tasks given by the teacher to the electrolyte and nonelectrolyte solution material when the final deadline for the collection of tasks.	37	53	10	0
2	I rarely prepare myself before studying, so I cannot be actively involved during the chemical learning process, i.e. electrolyte and nonelectrolyte solution materials	0	35	60	5
3	I studied electrolyte and nonelectrolyte solution materials because there are tasks/instructions from teachers	12	73	15	0
4	I do not study electrolyte and nonelectrolyte solution materials independently if the teacher does not enter the classroom	7	30	53	10
5	I can make strategies in understanding the material about electrolyte and nonelectrolyte solutions independently	10	32	58	10
6	I know the extent of understanding the material based only on the teacher's test scores	17	57	23	3
<i>Content</i>					
7	I have a hard time studying chemicals.	18	55	20	7
8	I have difficulty studying electrolyte and nonelectrolyte solution materials.	3	45	47	5
9	I find it challenging to understand the material of electrolyte and nonelectrolyte solutions without the practicum	15	52	33	0
<i>E-learning</i>					
10	I am interested in learning to use electronic media.	23	73	2	2
11	I need to present interesting material in e-learning	33	55	12	0
12	I need a systematic presentation of material in e-learning	25	70	5	0
13	I need to present material with a variety of different media formats (video format, images, audio etc) in e-learning	38	60	2	0

Note : 1 = strongly agree  
2 = Agree  
3 = Disagree  
4 = Strongly disagree

Based on the table above displays the following figure:

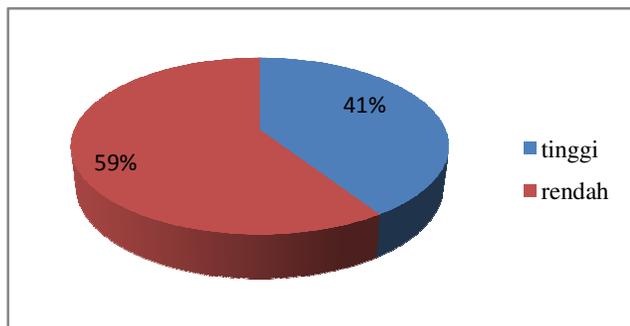


Fig. 1. Level of Self-learning awareness of Grade X Students in Electrolyte and Nonelectrolite Solution Materials

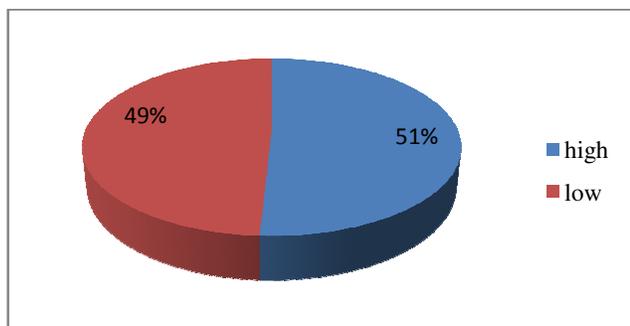


Fig. 2. Data On Learning Difficulty of Electrolyte and Nonelectrolite Solution Materials

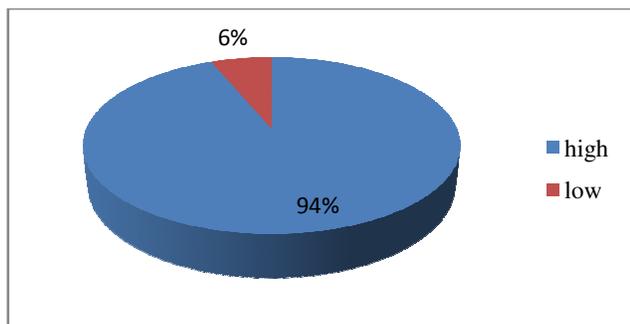


Fig. 3. Data needs e-content to support learning

### B. Discussion

Based on observations made to 40 students of grade X SMAN 7 Padang, 59% of students still have low levels of self-learning awareness in chemistry subjects, especially electrolyte solution and nonelectrolyte materials. the low level of self-awareness of students is because as many as 36

students have not realised their own needs, so many students do the work when the deadline is collected assignments. In addition, as many as 14 students rarely prepare before the learning begins. Therefore students cannot be actively involved during the learning process. Furthermore, as many as 34 students studied electrolyte solution material and nonelectrolyte because the teacher's duties/instructions were not of his desire or his own needs. In addition, as many as 15 students also did not study electrolyte and nonelectrolyte solution material independently in class if the teacher was unable to enter the classroom. Then, as many as 13 students have not been able to make a strategy in understanding the material about electrolyte and nonelectrolyte solutions independently. Lastly, as many as 30 students only know the extent of understanding of the material based on the test scores given by the teacher, not from his understanding.

The low level of self-awareness of students in learning is a challenge in distance education. Some students are still not motivated in the long learning process. Therefore, there is still the need to build students' self-awareness in learning. This will lead to students' desire to dig up more information that can be accessed easily. In addition, it also trains students in developing thoughts and understandings about the information. The greater the student's understanding and trust in himself, the more motivation they will have to overcome learning challenges [16].

One of the learning challenges that students must take is in overcoming the level of material difficulty. Based on the observation data obtained, some students felt a high level of learning difficulty in electrolyte and nonelectrolyte solution materials of 51%. As many as 29 students still find it challenging to understand chemical materials such as electrolyte solution materials and nonelectrolyte. The electrolyte solution and nonelectrolyte material is one of the chemistry lesson materials studied by students of grade X high school. Electrolyte and nonelectrolyte solution material can be abstract material and emphasise concepts at the microscopic

and symbolic levels. In addition, a total of 27 students also found it challenging to understand the material of electrolyte and nonelectrolyte solutions without the practicum.

The level of students' learning difficulties is still high because students are less able to motivate themselves to learn. In addition, distance learning systems require students to adapt to the development of technology immediately. Based on the observation data obtained, almost all students have a high E-content needs of 94% in chemistry subjects, especially electrolyte and nonelectrolyte solution materials. E-content needs are high because as many as 38 students are interested in learning to use electronic media. In addition, as many as 35 students need the presentation of exciting materials in E-learning, then as many as 38 students need systematic presentation of materials in E-learning. As many as 39 students need presentation of materials with various media formats (text formats, videos, and images) in E-learning.

Students need the availability of exciting e-content in e-learning. Students are very interested in using E-learning that can provide clear and structured learning content, support self-learning and information dissemination [3]. Interactive E-content in E-learning will make learning more enjoyable. In addition, E-learning also affects students' trust in their abilities, especially in improving their knowledge and skills. In addition, it will also develop stable and beneficial self-awareness to improve their self-learning skills in various fields [17]. In addition, learning using E-learning makes his knowledge more extensive [18].

#### IV. CONCLUSION

Based on the above research and discussion data, the obstacles students face in distance learning are students having difficulty understanding the materials available in e-learning, especially electrolyte solution materials and nonelectrolytes. Therefore, the need to develop E-content to build awareness of self-learning high school students class X. e-content is based on a scientific approach

with an attractive look and includes systematic presentation of materials with various media formats.

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