

# Decision Support Systems for Assessing the Teaching Materials Quality in e-Learning and Designing Teaching Materials Management using Learning Style and High Technology Spiritual Communication Methods

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## ABSTRACT

High Technology Spiritual Communications is a communication system first introduced by a doctor who graduated from Harvard University, Indrawan Hatoguan Siregar, Ph.D., a permanent lecturer at Panca Budi Development University. One of his studies explains how we value other people by understanding their thinking patterns because basically, all humans have four types of thought patterns, and one of them is more dominant. Respect others' mindset, meaning that we also have empathy for them, and communication will also be established and information will be conveyed well and easily understood. In the teaching and learning process, this is very important during the face-to-face learning process and online learning. Students and lecturers do not face each other in online learning but use the internet and LMS (Learning Management System) as the communication media. Implementing HTSC (Hight Technology Spiritual Communications) and Learning Style into lecturer teaching materials packaged as attractive as possible can be a solution in conveying learning objectives to students. Students can understand teaching materials according to their character, mindset and learning style.

**Keywords :** DSS, HTSC, SAW, Decision, Teaching, Learning, Lecturer

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## I. INTRODUCTION

In face-to-face lectures and online lectures, both must be able to measure the level of student understanding of the courses given, which are usually outlined in the semester learning plan [1]. However, in e-Learning-based lectures, a lecturer must understand several

differences, namely the method/technique/pattern of teaching. There must be a modification, concept development, difficulty level, and changing patterns from simple patterns to moderate patterns and more complex patterns to change the learning pattern from Teacher Lead-Learning to Student-Infatuated Learning. The facts and facts found in the field are

that the interaction only exists with the lecturers without any students' feedback; teaching materials are only limited to power points and .pdf files. After evaluating the cause is because students do not understand what is conveyed on the lecturer PowerPoint slides, and students are not interested in the material given / monotonous [2].

It means that the teaching materials presented have not been translated according to students' different thinking patterns, so that learning outcomes will also not be achieved. With this research, the author will provide solutions on how to manage teaching materials and how to delivery system techniques [3] e-Learning-based learning that is attractive and able to be understood by students by understanding student thinking patterns and student Learning Styles and then translated into [4] teaching materials using HTSC (High Technology Spiritual Communications) as the method. This research is fundamental to be implemented in permanent lecturers in all study programs within the Panca Budi Development University to support the Distance Lecture and Accreditation program at the point of developing learning techniques [5]. Many state and private universities have moved to improve infrastructure and change the system to support the teaching and learning process by utilizing technology as a learning medium, and it is known as e-Learning [6]. E-Learning itself is a learning system that utilizes information and communication technology that allows students and lecturers to interact without facing each other by relying on the internet network and LMS (Learning Management System) as intermediate media [7].

## II. METHOD

The Five Thinking Process can be done in face-to-face learning systems in class, and it can also be in e-Learning based learning. In e-learning based learning, five thinking processes and learning styles are

implemented into teaching materials [8]. Teaching materials are arranged using five patterns according to their respective characteristics. The following are the results of the analysis of the readiness of teaching materials in e-Learning based learning using three learning styles, such as [9] :

1. The study program which is the target of the analysis/respondent is the Computer System
2. The number of respondents is 63 people
3. Subjects that are targeted for analysis are Decision Support Systems, Research Methodology, Professional Ethics.
4. The system used is a Decision Support System (DSS)
5. The data analysis method used is HTSC.
6. The data processing method used is Simple Additive Weighting (SAW) [10]

### Simple Additive Weighting

The following are the stages of a decision support system using the SAW method [11]:

1. Determine alternatives
2. Determine the assessment criteria
3. Determine the weight of preference or level of importance ( $W$ ) of each criterion. Formula:

$$W = [ W_1 , W_2 , W_3, \dots, W_j ]$$

4. Creating a rating table of the suitability of each alternative on each criterion
5. Make a decision matrix ( $X$ ) which is formed from the suitability rating table of each alternative on each criterion.
6. Perform normalization. Formula:

$$r_{ij} = \frac{x_{ij}}{\begin{cases} \text{Max } x_{ij} \\ i \\ \text{Min } x_{ij} \\ i \\ x_{ij} \end{cases}}$$

Description:

$r_{ij}$  = normalized performance rating value

$x_{ij}$  = attribute value owned by each criterion

$Max_{xij}$ = the greatest value of each criterion i

$Min_{xij}$ = the smallest value of each criterion i

$$v_i = \sum_{j=1}^n w_j r_{ij}$$

$r_{ij}$  is the normalized performance rating of the alternatives  $A_i$  on the  $C_i$  attribute;  $i = 1, 2, \dots, n$  and  $j = 1, 2, \dots, n$ . The preference value for each alternative ( $V_i$ ) is given the following formula:

Description:

$V_i$  = ranking for each alternative

$W_j$  = weight value of each criterion

$r_{ij}$  = normalized performance rating value

### III. RESULT AND ANALYSIS

After experimenting, there are several calculation results obtained. A complete explanation of the SAW calculation results is described in tables 1 and 2.

Table 1. The Ability of Lecturers to Teach E-Learning

	Lecturer readiness	Length of lecture time	Lecturer ability	Lecturer ability	Lecturer clarity	Lecturer ability	Structured assignments	Special time provided by the lecturer	Provide feedback on assignments	Evaluation	Value conformity	Suitability of the exam material
MK 1	4,10	4,10	4,30	4,25	4,05	4,15	4,15	4,05	4,10	4,00	4,25	4,15
MK 2	3,00	2,60	2,00	2,50	2,55	2,40	2,80	2,25	2,60	2,25	2,85	2,45
MK 3	4,15	4,05	4,10	4,15	4,00	4,10	4,25	4,10	4,10	4,05	4,15	4,30
Weight	2	1	5	3	4	4	3	2	2	2	1	4
Max	4,15	4,10	4,30	4,25	4,05	4,15	4,25	4,10	4,10	4,05	4,25	4,30
Decision Matrix	4,10	4,10	4,30	4,25	4,05	4,15	4,15	4,05	4,10	4,00	4,25	4,15
	3,00	2,60	2,00	2,50	2,55	2,40	2,80	2,25	2,60	2,25	2,85	2,45

4,15 4,05 4,10 4,15 4,00 4,10 4,25 4,10 4,10 4,05 4,15 4,30

**Table 2.** Auditory

Decisi on Matrix	Teaching materials	Teaching materials	Easy to absorb learning	listening to the lecturer voice	Always download teaching materials di	Can repeat the material presented	Likes to do assignments in groups	Likes to discuss in discussion forums
	4,30	4,25	4,50	4,10	4,40	4,15	4,50	4,35
2,25	2,75	2,60	2,70	3,15	2,35	2,50	2,50	
4,20	3,80	4,25	4,00	4,30	4,00	4,25	4,20	
2	5	4	3	3	5	2	2	
4,30	4,25	4,50	4,10	4,40	4,15	4,50	4,35	
4,30	4,25	4,50	4,10	4,40	4,15	4,50	4,35	
2,25	2,75	2,60	2,70	3,15	2,35	2,50	2,50	
4,20	3,80	4,25	4,00	4,30	4,00	4,25	4,20	
	Decisi on Matrix	4,25	4,25	4,35		4,30		4,10
		2,60	1,95	2,90		2,15		2,40
		4,10	4,40	4,15		4,25		4,30

**Table 3.** Kinesthetic

Decisi on Matrix	Like it when lecturers' teaching materials are in the form of attractive images and good tones	ble to understand teaching materials if are explained slowly	teaching if teaching explained	Lecturer teaching materials are made using direct examples in the form of teaching videos/simulation videos	Able to absorb teaching material if it is explained in actual form and the learning video has sound
	4,20	4,35		4,35	4,45
2,80	2,80		2,75	2,30	
4,15	4,40		4,45	4,25	
4	2		5	3	
4,20	4,40		4,45	4,45	
4,20	4,35		4,35	4,45	
2,80	2,80		2,75	2,30	
4,15	4,40		4,45	4,25	

**IV. CONCLUSION**

From the above research, it can be concluded that the teaching materials in each e-Learning-based learning course must be in the form of a video and pay attention to the learning style elements. The students can absorb the teaching materials presented because

the e-Learning-based learning process is only learning on the internet and LMS network between students and lecturers. The advantage is that students can watch videos of teaching materials anytime, anywhere without having to spend unforgettable time reading; even students can listen to them while working.

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