SMILE Learning Model for Telecommunication Engineering Course

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Abstract

— This dissertation aims to give the development of SMILE Learning Model for Telecommunication Engineering Course. The SMILE Model base on STEM education consists of Search, Motivation, Information, Learning, and Evaluation. The research instruments were the manual of SMILE Model, Learning plan, The Simulation tool, The Experimental set, and rating scale questionnaires for contentment. Samples were 20 students who registered in electronic circuits design courses of Chitralada Technology College. The research results were as follows. 1) The degree of the opinions on the SMILE Model was high level. 2) The degree of the research instrument was high level 3) The efficiency of The SMILE Model was higher than the standard criteria of meguigans's formula (1.19) 4) The mean of satisfaction of the sampling group was high level. Therefore, in conclusion, The SMILE learning model can be can be applied and developed for learning in electronic and telecommunication engineering course and related.

Index Terms—STEM Education, SMILE Learning Model, Telecommunication Engineering Course.

SMILE Learning Model Development

— The development of learning model based on STEM education [1-2]. The research methodology of learning model development following.

A. The study of teaching and learning condition of telecommunication engineering education**.** We found that the most student set bored, lacked motivation and cannot imagine the abstract theory on telecommunication course clearly [3-4].

B. The SMILE learning model consists of 5 steps as following. Step1, Search is a step to prepare the students ready to study before classroom. Step 2, Motivation is process to convince the students interested in classroom. Step 3, Information is a process of teaching in lessons plane. Step4, Learning is a process that students using various appropriate materials. Step 5, Evaluation is an assessment of students' learning outcomes after attending in classroom, as shown in Fig.1 (a).

C. The development research tools, we selected the modulation topic in telecommunication engineering course [5] to fabricate. The research tools include, 1) Simulation tool using GUI function of MATLAB software, 2) lesson plane, 3) teaching media, 4) Experimental set and 5) questionnaires for satisfying evaluation, as shown if Fig 1(b).

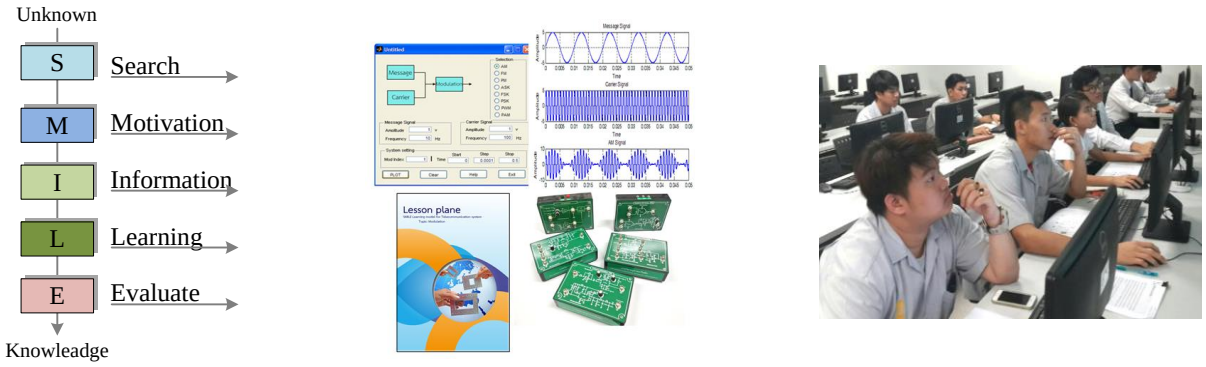
D. The quality of the developed SMISEA learning model was evaluate by 7 expert, we found that found that the SMILE learning model with the mean value between 4.09 - 4.37. Then, the learning model and the research tools was implementing with 20 students who registered in electronics circuit design course at Chitralada technology college, as shown in Fig 1(c).

Table 1, The results of evaluation of the REPEA learning model

Topic	7 experts			20 students		
	Mean	S.D.	Interpret	Mean	S.D.	Interpret
1. The development of Learning Model	4.26	0.22	high	4.29	0.34	high
2. The activities teaching	4.09	0.40	high	4.38	0.35	high
3. The instructional Media	4.37	0.45	high	4.45	0.25	high
4. The measurement and evaluation	4.26	0.32	high	4.07	0.26	high
Average	4.23	0.25	high	4.30	0.24	high

E. After that the suitability of the SMILE learning model and the evaluation of satisfaction[6], it is seen that the results of satisfied evaluation of students by using the developed SMILE learning model that mean value was between 4.07- 4.38, as shown in Table 1.

F. The efficiency of SMILE Learning model was evaluated using Meguigans's formula [7]. We found that the developed SMILE learning model is efficient in according standard critical to Meguigans's formula (1.19), as shown in Table 2.



(a) SMILE learning model (b) Research tools (c) Implementations with students

Figure 1, The SMILE Learning Model Development

Table 2, The results of evaluation of the REPEA learning model

Test	Full score	Maximum score	Minimum score	Mean	Meguigans
Pre-test	20	7	2	5.5	1.19
Post-test	20	18	8	15.5	

Summary

This research is to present the development of new learning model (SMILE) for Telecommunication engineering course applied to Modulation in Communication System. The conclusion of the findings are as follows : 1) the quality of developed SMILE learning model was suitable in high level 2) the efficiency of the SMILE model is at the standard criteria of Meguigans's formula (1.19), and 3) The student's satisfaction was at high level. Overall, the developed SMILE learning model received a maximum evaluation for efficiency and operates correctly according to engineering standards; therefore it may be used in Telecommunication teaching.

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