DOI: 10.20472/IAC.2015.017.068

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STATE AND NEEDS IN USING DIGITAL INSTRUCTION FOR ENVIRONMENTAL SUBJECT OF PRIMARY SCHOOLS IN SURAT THANI PROVINCE

Abstract:

Education can increase people's knowledge, raise awareness and attitude on environmental problem and environmental conservation by using appropriate technological education, tools and instruction. Therefore, the purpose of this research was to investigate the current state and needs in using digital instruction for environmental subject of primary schools in Surat Thani province, Thailand. The population was 492 primary schools in Surat Thani province. A total of 221 scientist teachers from 221 primary schools were collected by simple random sampling technique for survey research in 2015. The data collection tool was the closed-ended questionnaires. The frequency, percentage, mean, and standard deviation were used to analyze the data.

The results revealed that the state in using digital instruction for environmental subject of primary schools in Surat Thani province was at good level. Most of teacher used internet, video compact disk (vcd) and digital video disk (dvd) regarding environmental issues as tool and instruction in classroom. Their opinion on the state of digital instruction effectiveness in terms of content, structure, context, and learning achievement was at good level, and presentation format at moderate level. It found that teachers preferred multimedia instruction with cartoon animation, which has potential to improve students' understanding and knowledge about environment and energy conservation. Each story should take 10 – 11 minutes long, consist of pre- and post - test, and learning process should not be longer than 50 minutes in total.

According to the findings, it is recommended that appropriate and effective digital instruction related to environment and energy saving should be developed. It can be an effective tool for raising awareness of students regarding environmental issues.

Keywords:

digital instruction, environmental subject, state, needs

JEL Classification: Q56, I29

Introduction

Environmental situation over recent decades is becoming more severe and has become a global problem. Global warming is having a direct impact on climate change, which affects the fundamental Earth systems and human's way of living. Human activities of livelihood, lack of sufficient knowledge, understanding and care lead to environmental degradation. Education is an affective process and very important driver for sustainable environmental conservation. Thus, appropriate learning process and education approach can help increase people's knowledge and understanding regarding environmental problems, raise awareness and foster attitude on environmental conservation (Office of Natural Environmental Board, 2002; Praneetham et al., 2012; Praneetham and Thathong, 2012).

Nowadays, the world's society has been aware of the importance of the implementing technology to daily life (Ruengrong et al., 2014). Globalized world is the era of borderless world of information. The advancement of information technology makes it possible to exchange information and knowledge worldwide (Ruengwanich, 2012). The instruction is an important tool and process of human learning and development of human capital in the nation, while the medium of instruction reflects the potential and the readiness of teaching and learning. (Panchan, 2012; Thepnuan and Thongpoon, 2014). Sher (2 0 0 9) stated that, instructor can use technology to facilitate and enhance interaction among students and between instructor and students. The efficient and effective use of technology and interaction affect learning outcome and learning achievement.

Increasingly, education sector in Thailand accepts technology as one of an important instruction tool to contribute and facilitate leaning and education process. Technological media has been applied as teaching media in order to develop and enhance the students' knowledge, understanding and awareness of environmental issues. Teachers or instructors are more aware of the importance of teaching and learning by using digital instruction for environmental subject. Using of digital instruction can stimulate students' attention and learning in several subjects, especially in environmental subject. Therefore, the researcher is particularly interested in studying current state and needs in using digital instruction for environmental subject of primary schools in Surat Thani Province. The data and results obtained from this study can be used as guidelines for development of digital instruction for environment for Global Warming alleviation, which will help students gaining sufficient knowledge, raising awareness and better attitude. Self-learning from digital instruction can also lead changing the behaviors of students in order to prevent and solve environmental problems.

The Purpose of the Research

The objective of this research was to investigate the current state and needs in using digital instruction for environmental subject of primary schools in Surat Thani province, Thailand.

Methodology

1. The quantitative research was done by using questionnaire as tool for data collection. The population in this study was 492 primary schools in Surat Thani province, Thailand. The simple random sampling technique was employed to select 221 scientist teachers from 221 primary schools in Surat Thani province, Thailand.

2. The research instrument was the close-ended questionnaire with a five-level rating scales on state and problems in using digital instruction for environmental subject, which was distributed to 221 teachers in 2015. The content and structural validity were determined by Item Objective Congruent (IOC) with 3 experts in the aspects of technology education, psychology, social research methodology and environmental education. The reliability was done by collecting the sample group from 40 scientist teachers. The reliability was determined by the Cronbach's Alpha while the reliability test of the whole questionnaire was 0.941. The final questionnaire consisted of four parts and total number of questions was 44 items.

3. The mean, frequency, percentage, and standard deviation were used to analyze the data.

Results and Discussion

The sampled respondents of this study were 221 scientist teachers teaching in primary schools in Surat Thani province, Thailand. Most of them were female with 73.30%. The ages were between 21-30 years old with 23.5 %, between 31-40 years old with 38.5 %, between 41-50 years old with 22.6 %, between 51-60 years old with 15.4 %, and most had education at Bachelor level with 69.2% and Master degree with 30.8%.

The results of the study are shown in Tables 1-3 below.

Table 1: Using of digital instruction for environmental subject (n = 221)

Type of Digital Instruction	Frequency (n = 221)	Percent
Internet	148	67.0
VCD, DVD	103	46.6
Web site	82	37.1
CD-ROM	79	35.7
Computer Assisted Instruction (CAI)	62	28.1
Electronic Book (E-Book)	27	12.2
Computer Software	20	9.0

Table 1 shows that, for teaching in the classroom, most of scientist teachers used internet with 67 % and nearly 47 % of them used video compact disk (vcd) and digital video disk (dvd) regarding environmental issues as tool and instruction, followed by Web site with 37 %, CD-ROM with nearly 36 %, Computer Assisted Instruction (CAI) with 28 %, Electronic Book (E-Book) with 12 %, and Computer Software with 9 %.

Table 2: Satisfaction in using of digital instruction for environmental subject (n = 221)

Type of Digital Instruction	$(\bar{x})$	SD
Internet	3.75	0.63
Electronic Book (E-Book)	3.69	0.73
Web site	3.66	0.69
VCD, DVD	3.64	0.62
Computer Assisted Instruction (CAI)	3.63	0.61
CD-ROM	3.59	0.70
Computer Software	3.49	0.72
total	3.64	0.67

Table 2 shows that, overall, the teachers' satisfaction in using of digital instruction for environmental subject was at "good" level (Mean = 3.64). Based on data analysis, the teachers' satisfaction in using Internet was at the highest level (Mean = 3.75).

Table 3: Opinion on the state of digital instruction effectiveness (n = 221)

Topics	$(\bar{x})$	SD
Content	3.73	0.68
Presentation format	3.50	0.73
Structure	3.68	0.75
Context	3.67	0.75
Learning achievement	3.63	0.71
Total	3.66	0.65

Table 3 shows that, overall, the teachers' opinion on the state of digital instruction effectiveness was at "good" level (Mean = 3.66). The finding indicated that their opinion on the state of digital instruction effectiveness in terms of content, structure,

context, and learning achievement was at good level, and presentation format at moderate level. Cruthaka (2012) has found that students were satisfied with the teaching and learning content, teaching activities, teaching materials, measurement and evaluation, and others at high level. Students' satisfaction in instruction and perspective on using technology in knowledge management were at good level (Praneetham, 2015).

Guidance in Development of Digital Instruction for Environment for Global Warming Alleviation

The study revealed that first five recommended environmental topics related to environment for Global Warming alleviation for students in primary school were electricity equipment used in everyday life (27.6%), activities in daily life (24.4%), saving electricity energy and energy sources (10.9%), weather (9.5%), and use of vehicle and transportation (7.7%) and others (19.9%). Moreover, the findings indicated that teachers preferred multimedia instruction with cartoon animation, which has potential to improve students' understanding and knowledge about environment and energy conservation. Each story should take 10 – 11 minutes long, consist of pre- and post - test, and learning process should not be longer than 50 minutes in total. This is consistent with research of Cruthaka (2012) which found that teaching media can stimulate motivation and self-learning effectively. Most students learn more from media which helps them perceive actual information, understand, and develop knowledge and good attitude (Ruengwanich, 2012; Praneetham, 2015).

Conclusions

I conclude that as the digital instruction has become a big part of Thai education, proper and effective digital instruction related to environment and energy saving should be developed. It can be an effective tool for raising awareness of students regarding environmental issues. Perception of energy resources, pollution from using electricity and saving electricity energy by self-learning from digital instruction will help students gain sufficient knowledge about energy conservation and the seriousness of environmental problems, as well as, motivate and inspire them to participate and involve in environmentally-friendly actions.

Acknowledgement

The authors would like to acknowledge financial support from the National Research Council of Thailand and Suratthani Rajabhat University. Any errors are the responsibility of the author.

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