

# Demonstration of Multimedia Instructional Media for Teaching Robot

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## Introduction

These years, robotics has become a hot topic (Liu, 2010; Liu, Lin, & Chang, 2010). This study focused on the design and development of multimedia material for teaching LEGO MINDSTORMS NXT robotics. The multimedia material would guide the learners how to build a farm planning robot, and how to control the robot to draw lines via a sound sensor.

## Methods

### *1.1 Multimedia instructional material of farm planning robot*

The instructional material included five elements: story, design journal, assembly, and programming. The story element would be used to attract students' motivation, and present the task they have to complete. The story of this learning content was about the immigration in a whole new plant, and the students have to design a robot to arrange and plan how to use the farm of the plant. In this material, the students learn how to design a robot which can draw lines on a poster, and students learn how to use sound sensor to control their robots. The design journal would guide the students to brainstorm and design their robots. The assembly element would help students to construct their robot, and the program element would guide the students how to write a program to control their robots. In this instructional material, the students have to design their own farm planning robots. The learning objectives included: 1. understanding how to use sound sensor to control their robot. 2. Learning how to control and use the motors on the robots.

### *1.2 Participants*

19 students rolled in the course participated in this study. All the students were pre-service teachers. Six were undergraduate students, thirteen were graduate students. 9 were male, and 10 were female.

### *1.3 Instruments*

The evaluation form was adapted from the evaluation form of instructional material of robotics developed by (Liu, Kou, Lin, Cheng, & Chen, 2008). This evaluation form was used to collect students' perception about the necessity, importance and satisfaction of the instructional material. This evaluation form was designed in six-point style (6 means very agree, and 1 means very disagree).

## Results

The result showed that the mean of necessity, importance, and satisfaction of all elements (story, design journal, assembly, and programming) were higher than 4.5 (Table 1), and it

showed that the students considered the material were important and necessary for them to learn robotics, and they felt satisfied with the learning material.

Table 1. Necessity, importance, and satisfaction of multimedia instructional material

	Necessity	Importance	Satisfaction
	M (SD)	M (SD)	M (SD)
Story	4.64 (.59)	4.91 (.45)	5.38 (1.86)
Design journal	4.76 (.54)	4.95 (.59)	4.64 (.73)
Assembly	5.11 (.49)	5.19 (.50)	5.04 (.63)
Programming	5.12 (.54)	5.16 (.54)	4.86 (.64)

## Conclusion

In this study, we design a multimedia instructional material for teaching robotics. The instructional material included four elements: story, design journal, assembly, and programming. This material could use to teach students how to assemble a farm planning robot and use the sound sensor to control their robots. The student considered that the material was important and necessary for them to learn robotics, and they felt satisfied with the learning material.

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