

An Experimental Study on Methodology for the Use of Picture Comprehension of Sewing Technology: An Example of Course in Design and Technology

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Abstract

This study aims to design a methodological model to support students' skills to use picture comprehension of Sewing Technology. In analyzing how deeper and to what extent technological planning and sewing schemes have been integrated in the contents of the curriculum and textbook for secondary schools, we conducted research on how the second-year students of Design and Technology could comprehend the picture information; assessed their picture comprehension skills by giving tests suitable to each skill, and defined the level of skills: reading information shown in pictures, explaining schemes described in simple pictures, studying methodology of applying in the same situation, comprehending and applying information in pictures. As the theoretical and methodological basis of the study, we used modern theories on education studies and its general principles and developmental learning theory to assess students and teachers' skills that construct and develop knowledge. The results of the study have proved that it is possible to improve students' skills to comprehend and analyze sewing schemes and picture information have improved. Finally, the findings indicate that the students have possessed the skills to comprehend, perceive, imagine, express by imagination, simplify, apply, and transform picture information, its structure, components, and the order to draw it.

Keywords: Sewing Technology, Picture Information, Analyze

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Introduction

With the universally accepted need of the society, students must acquire design and technology education to learn how to access to services and products that will enable them to deliver excellent design and technology at every educational stage giving young learners the knowledge, skills, and personal attitudes needed when entering the workplace. Design and technology are our future so it must be one of the priorities of educational system. Thus, students need to develop their visual thinking in order to understand technological processes and to create knowledge using them.

This study aims to design a methodological model to support students' skills to use picture comprehension of Sewing Technology. To achieve the proposed aim, the study has accomplished the objectives such as (1) to revise the theoretical and methodological literature review; (2) to examine and define students' picture comprehension of Sewing Technology; (3) to design and test a practice-based methodological model of picture comprehension of Sewing Technology Course; and finally, based on the results of the study (4) to interpret the findings.

Research Design

As the theoretical and methodological basis of the study, we have accomplished the activities in what follows:

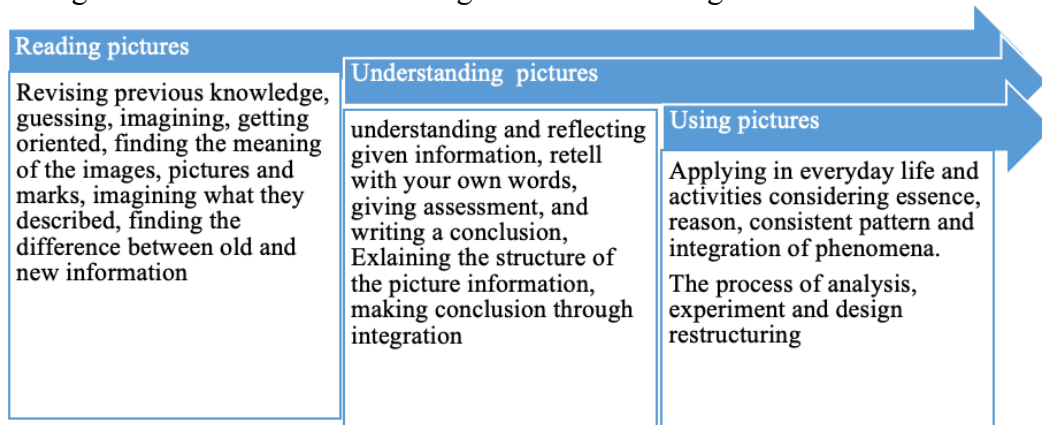
1. We compared teaching contents of cognitive and constructive theoretical concepts to acquire knowledge creatively and defined learning outcomes.
2. Jerome Bruner's concepts that construct knowledge through active experience and learning is the process of creating knowledge and thinking of modern theories and concepts about the cognitive process of education was taken as the theoretical basis of the test that develop students' skills of picture comprehension.
3. For theoretical and methodological basis, we used modern theories on education studies and its general principles and developmental learning theory to assess students and teachers' skills that construct and develop knowledge.

Research question: A methodological model and result of the test to support the picture comprehension skills.

In analyzing how deeper and to what extend technological planning and sewing schemes have been integrated in the contents of the curriculum and textbook for secondary schools, we conducted research on how the second-year students of Design and Technology could comprehend the picture information based on the analysis and we assessed their picture comprehension skills by giving tests suitable to each skill.

Picture comprehension is to describe the meaning of the object image through explanations so that knowledge construction principle through picture comprehension can be formulated by the following steps.

Diagram 1: The Nature of Reading and Understanding Illustrative Information



Experiment

Students learnt the basic understandings of “The basis of sewing technology” such as at the first-year imaginary geometry, material studies and national crafting and at the second year they are studying it as a main subject. We defined the level of skills: reading information shown in pictures, explaining schemes described in simple pictures, studying methodology of applying in the same situation, comprehending and applying information in pictures.

The aim of the study: To define the level of the skills to comprehend simple sewing schemes which reflected in the content of the technology course for the basic education before studying basic professional courses.

To define the level of learners’ knowledge we chose the following three criteria with the example of information in schemes of sewing technology course.

1. Tasks to define drawing and describing skills
2. Drawing simple sewing in schemes
3. Explaining schemes shown in pictures

It seems possible to assess students’ drawing skills while considering whether new students specialized in design technology took an exam of scheme drawing, whether they chose this profession on their interests and talents, whether they took the exam on sketch and technology. To design the test, we paid attention to how simple understandings about drawing schemes are implemented. Plain seam is not hidden visible, a single line of stitching inside the matched edges of one or two pieces of material so that we prepared test questions to define how they got knowledge about this sewing process. To explain given scheme in pictures, students need to think abstractly and imagine and it can be possible to describe how they comprehend given information in pictures. If they can explain schemes correctly and design another version, they can use and sew correctly. Within the objectives of the study, we revised the curricula for “The basis of sewing technology” course for teachers of design technology and improved methodologies year by year: (a) Traditional curriculum; (b) Newly integrated curriculum of STEAM methodology; and (c) Newly integrated curriculum of CDIO methodology.

Conclusion

In applying a newly designed methodological model to support students' skills to use picture comprehension of Sewing Technology, we have reached to the following conclusions:

1. The results of the study have proved that it is possible to develop students' sewing schemes and picture comprehension skills by designing and implementing an outcome-based methodology model of CDIO at the course of Basics of Sewing Technology as one of the professional courses of BA Program in Design and Technology Education.
2. The study has proved that it is possible to improve students' skills to comprehend and analyze sewing schemes and picture information have improved and this, in turn, support students to acquire important basic skills of 'professional sewing designer', for instance, to sew the items while strictly following schemes, to change the sewing technology, and to show the schemes in pictures.
3. The findings indicate that the students have possessed the skills to comprehend, perceive, imagine, express by imagination, simplify, apply, and transform picture information, its structure, components, and the order to draw it. This have positively influenced on student learning achievement and performance as well.
4. In adapting and applying the Bloom's Taxonomy, sample tests and assignments have been developed to identify the students' skills to use picture comprehension of Sewing Technology. The results have shown that students' skills to comprehend picture information was 76%; skills to analyze the picture information – 48%' skills to transform – 40%; and skills to make logical conclusion – 33.3%. This is the evidence of need to develop students' skills.
5. The experimental lessons have been conducted in mixed forms of teaching such as practice-based, peer-learning, flipped classroom, and apprentice learning. The results have shown that each criterion has improved from 7.7% to 15.3%. This simply tell that the hypothesis of the study has proved.
6. A newly designed methodological model which has included the related terms, concepts, and methodologies to manage cognitive actions to work on picture information, to decode marks, to find main ideas, to import social meanings, to express ideas using student-generated language, and to assess and analyze the information, can be seen that the novelty of the study.

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