

Making of Cards as Teaching Material for Spatial Figures

Kazumi Yamada and Takaaki Kihara

A static figure is used in the learning of plane figures. In contrast, it is important to present three-dimensional shapes and dynamic movements, when a teacher teaches spatial figures. There are the following advantages in using pop-up card creation as teaching material. When making a card, a three-dimensional card is completed by trial and error, making a cut in a plane (card) plan, and opening and closing a card repeatedly. In this process, the instruction that connected the plane figures and the spatial figures is attained. In particular, a pop-up card called “origami architecture” is effective as teaching material from this respect. When you open a card that is folded in two to 90° , the three-dimensional spatial object appears. When you fold this card, this card is returned to its original state (Figs. 1–3).

When people see a pop-up card, they often wonder how a solid is made from one sheet of plane paper. Students can observe the spatial motion of the work first and understand that a three-dimensional work can be made from a card by opening and closing it repeatedly. They will want to make an original pop-up card. They will consider how to write a plan on a flat card while imagining the state a card will be in while opening and shutting it. They will infer how a line on a plane changes into a solid edge. They may come to observe opening and shutting of a card from the front, then view it from various directions and observe. In particular, they will notice that it is important that they observe the state of the transformation of the section of the card from the side. They can learn to understand projection view through this activity.

K. Yamada (✉)
Niigata University, Niigata, Japan
e-mail: mathexpnet@hotmail.com



Figs. 1–3 Making of cards

Making a card stimulates the intellectual curiosity of students and they become excited and interested in solving the problem. Thus, pop-up cards are attractive teaching materials (<http://www.maroon.dti.ne.jp/kihara/home.htm>).

Open Access Except where otherwise noted, this chapter is licensed under a Creative Commons Attribution 4.0 International License. To view a copy of this license, visit <http://creativecommons.org/licenses/by/4.0/>.

