





PRODUCT DESIGN

Brief description: Students in the handcraft class can discover how algorithmic thinking can support the process of product design. In this example, the students design a hat based on geometrical modules. They use a hands-on modeling toolkit and they organize their product design and manufacturing process with the help of activity diagrams.

Target group: 6th grade
Subject: Crafts
Background: Computational Thinking
Duration: ~90min.
Diagram type: Activity diagram
Language: English

MODELING AT SCHOOL



Co-funded by the Erasmus+ Programme of the European Union "The European Commission support for the production of this publication does not constitute an endorsement of the contents which reflects the views only of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein."

CC BY-NC-SA 4.0 JKU COOL LAB .

03



"Promote the algorithmic thinking skills to your students! Have a recipe, a grammar rule, or a chemical experiment; students can easily represent individual steps of an activity, a process, or a rule with the activity diagram."

General processes are shown in an activity diagram. They indicate a series of activities that lead from an initial state to an end state. This example shows the action steps of the first aider in an emergency. The rectangles represent the individual activities, and the diamonds represent the socalled decision points. In this example, the first decision (marked with a diamond) depends on whether the person to be rescued is conscious or not. The second diamond shows a branch with a loop. The loop is included here if the first aider determines that the person does not breathe. When the situation changes positively, the first aider can finish chest compressions and leave the loop.



CC BY-NC-SA 4.0 JKU COOL LAB . INFORMATIK-WERKSTATT AAU

//

INTRODUCTION TO USING ACTIVITY DIAGRAMS

Introduction to **activity diagrams** was taking place with an example of following the guidelines of the proper handwash distributed generally in Finnish schools.

It was followed by another exercise, understanding the security protocol of what to do if someone suspects having COVID-19 infection.

If you suspect having Corona virus (CoVID 19)





Co-funded by the

CC BY-NC-SA 4.0 JKU COOL LAB

*The European Commission support for the production of this publication does not constitute an Erasmus+ Programme endorsement of the contents which reflects the views only of the authors, and the Commission of the European Union cannot be held responsible for any use which may be made of the information contained therein.



PRODUCT DESIGN AT CRAFTS CLASS

In the crafts class, the students decided to support their project with an **activity diagram** about the process of the design of a new product.

The task was to plan and describe the product design process from a starting idea to the final product, by determining the necessary steps of planning and manufacturing.

In our case, the goal was to **design a funny hat**, **based on geometric modules**.

University of Jyväskylä - Erasmus+ Modeling at School - http://computationalthinking.guru/



Co-funded by the Erasmus+ Programme of the European Union

CC BY-NC-SA 4.0 JKU COOL LAB

*The European Commission support for the production of this publication does not constitute an endorsement of the contents which reflects the views only of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein.



PRODUCT DESIGN AT CRAFTS CLASS



As part of the introduction, the teacher has shown and explained a simple activity diagram for product design. After the introduction, the students were busy and had great fun working in teams on diagrams of their unique product designs.

The teacher continuously walked around in the classroom and supported the students' discussions and helped them to implement the necessary elements of an activity diagram: Start, End, direction arrows, rectangles, and diamonds.



Co-funded by the

CC BY-NC-SA 4.0 JKU COOL LAB

*The European Commission support for the production of this publication does not constitute an Erasmus+ Programme endorsement of the contents which reflects the views only of the authors, and the Commission of the European Union cannot be held responsible for any use which may be made of the information contained therein.



PRODUCT DESIGN AT CRAFTS CLASS



The students were using **post-its**, **color markers**, **and largesized flip-chart papers** to speed up and support the collaborative diagram design process.



Co-funded by the The Eu Erasmus+ Programme endorse of the European Union

CC BY-NC-SA 4.0 JKU COOL LAB

*The European Commission support for the production of this publication does not constitute an endorsement of the contents which reflects the views only of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein.



PRODUCT DESIGN AT CRAFTS CLASS

Each student teams' activity diagram were studied and discussed together.





Co-funded by the Erasmus+ Programme of the European Union

CC BY-NC-SA 4.0 JKU COOL LAB

*The European Commission support for the production of this publication does not constitute an endorsement of the contents which reflects the views only of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein.



PRODUCT DESIGN AT CRAFTS CLASS

Each student teams' activity diagram were studied and discussed together.





Co-funded by the

CC BY-NC-SA 4.0 JKU COOL LAB

*The European Commission support for the production of this publication does not constitute an Erasmus+ Programme endorsement of the contents which reflects the views only of the authors, and the Commission of the European Union cannot be held responsible for any use which may be made of the information contained therein.



PRODUCT DESIGN AT CRAFTS CLASS

The ITSPHUN 3D modeling toolkit was used to test the product development diagrams in practice.





Co-funded by the Erasmus+ Programme of the European Union

CC BY-NC-SA 4.0 JKU COOL LAB

*The European Commission support for the production of this publication does not constitute an endorsement of the contents which reflects the views only of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein.



WOULD YOU LIKE TO Have more Guidance?

TAKE A LOOK AT OUR ONLINE TUTORIALS



VISIT OUR WEBSITE

www.computationalthinking.guru

FOLLOW US



ENT





@diagram.guru

Diagram_guru

diagram.guru

*The European Commission support for the production of this publication does not constitute an endorsement of the contents which reflects the views only of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein. CC BY-NC-SA 4.0 JKU COOL Lab . Informatik-Werkstatt AAU

HISTOR

Cast .

and a