



LAUREA
UNIVERSITY OF APPLIED SCIENCES



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LbD4All Guidebook Series

Research-Oriented Approach



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This publication has been funded by the European Commission.
The Commission accepts no responsibility for the contents of the publication.

Cover picture: Päivi Mantere

ISBN 978-951-799-353-1

Laurea Julkaisut | Laurea Publications

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LbD4 All Guidebook Series

*Research-Oriented
Approach*

RESEARCH-ORIENTED APPROACH

This guidebook is a part of a series of guidebooks concentrating on the LbD4All action model. The series of guidebooks consists of eight guidebooks that introduce the five dimensions of the LbD4All action model. The dimensions are authenticity, research-oriented approach, partnership, experiential nature and creativity. Furthermore, assessment, project and teamwork, as well as e-learning are introduced. In addition, the series of guidebooks includes five videos on the five dimensions.

The guidebook describes the LbD4All action model. The LbD4All action model is based on the action model Learning by Developing (LbD) that has been developed by Laurea University of Applied Sciences. LbD4All is an action model developed in the LeTeEm (Learners, Teachers and

Employers) project by Laurea University of Applied Sciences for comprehensive schools and secondary education. The guidebooks and videos have been created as part of the LeTeEm project.

This guidebook concentrates on **research-oriented approach**. Research-oriented approach is one of the dimensions of LbD4All (Learning by Developing for All). The dimension is defined on a general level and also from the perspective of a possible practical example of the making of salt licorice. The aim of this guidebook is to describe the nature of the dimension in practice and give concrete examples of how to implement the LbD4All methodology in secondary education.



Figure 1. The LbD4All model adapted for comprehensive schools.

Description:

Research-oriented approach refers to the exploitation of researched knowledge in activities and in developing one's own knowledge. To grow into a thinking citizen requires discussion skills and critical thinking. Research-oriented approach enables the recognition of effectiveness. Cooperation can consist of research, teaching, cooperation activities, and development and innovation tasks.

Research-oriented learning takes place with the help of learning projects. Pupils are responsible for project planning and implementation with guidance provided by the teacher. In research-oriented learning the student is encouraged to create new and to deepen the study of phenomena.

In the center of the components of research-oriented learning is shared expertise. The aim is to make the pupils generate new ideas and thoughts. The whole learning community is responsible for the development of knowledge in the research-oriented learning process.

How is it visible?

- Reasons
- Evidence
- Argumentation

Whom does it influence?

- Pupils
- Problems/case/solutions
- Co-operative organization

Who does what, when, where, why?

- Pupils
- With the help of teachers
- New ICT will be used to facilitate research orientation
- Teachers encourage pupils (help the learners develop into researchers)
- Workshop style working outside of the classroom
- Various sources
- Various tools

What does it generate/produce?

- Research data
- Knowledge of how to study with a research-oriented approach
- Argument-produced knowledge

Realization:

- Information acquisition and critical thinking are essential
- Planning and logic are related to the research-oriented approach
- To perceive entities
- The research objects should be close to the world of the comprehensive school-aged pupils
- To learn the nature of project work and create new knowledge

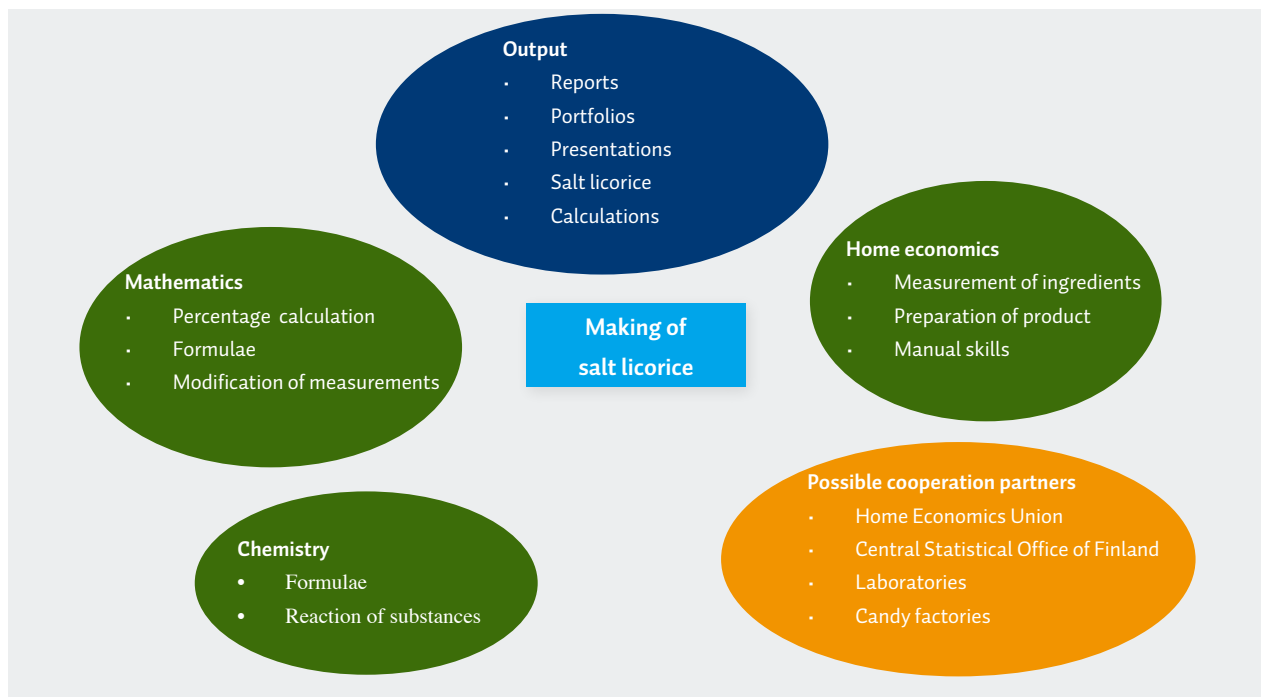


Figure 2. Example of a practical implementation, the making of salt licorice.

The study subjects mathematics, chemistry and home economics are combined in this project. The partners in the project are the Home Economics Union, the Central Statistical Office, laboratories and candy factories.

In the subject of mathematics, the topics that are studied are percentage calculation, formulae and modification of measurements. In the subject of chemistry, the topics to be studied are formulae and reaction of substances. Home economics focus on the measuring of ingredients, preparation of product and manual skills.

The project lasts for two weeks, and the teachers plan in advance how and when to launch it. The project has 15 pupils involved between the ages of 13 and 14. In the preparation phase, the teachers work closely together when planning the project. The partners, the working schedule and the contents need to meet the learning requirements, and are also planned by the teachers. They contact the organizations and agree on certain principles for carrying out the project with the pupils. Furthermore, the teachers make sure that the organizational partners are committed to the project.

The project begins with an introduction held by the teachers, where they explain the main content and aims of the project. The first task for the pupils is to create a project plan. For these purposes, the pupils work together as one team. The teachers need to approve the plan prepared by the pupils.

At the beginning of the project, the teachers lecture on certain basic focus points for the study subjects chemistry and mathematics, such as formulae and calculations. Also, a communal workshop on how and where to find appropriate information is held. Each pupil searches for information on these focus points individually and writes a learning diary to reflect on their findings. The pupils' team then decides which pupils are responsible for implementing specific areas of the project. Seven of the pupils take the responsibility for studying the reaction of substances and eight of the pupils study the preparation of salt licorice. Both teams give a presentation to other pupils concerning their responsibility

area to ensure that all pupils have learned the basic research theories to carry out the project successfully.

During the project, the pupils visit a candy factory where they have a chance to experience the preparation of salt licorice and to learn the effect of the modifications to the features of salt licorice. Also, a visit to the Central Statistical Office of Finland is made for the pupils to hear a presentation on statistics and percentage calculations. The representatives of the Home Economics Union work together with the pupils in laboratories to demonstrate the connection between chemistry and home economics. The laboratories also provide a safe environment for the pupils to experiment with different formulae and modifications. The cooperation partners work as sponsors in the project.

The main output of the project is salt licorice, which can then be sampled by the cooperation partners. In addition to learning diaries and presentations to other pupils, the pupils involved in the project make reports and visual portfolios including calculations and the preparation phases of salt licorice to support their learning.

The teachers' responsibility is to ensure that all pupils learn the basics of searching and finding information from different sources. They must also ensure that the pupils learn to consider the information search critically. The teachers have the responsibility to provide the tools and facilities needed for the project.

The pupils have the opportunity to learn how theoretical calculations and formulae can be used in real life. They also learn to search for information and analyze it critically. The pupils have a chance to see how that information can be applied to different needs. They work with different professionals from a variety of fields, which helps them understand the importance of the study subjects.

The project described above is an example that can be adapted to fit different needs and contents.

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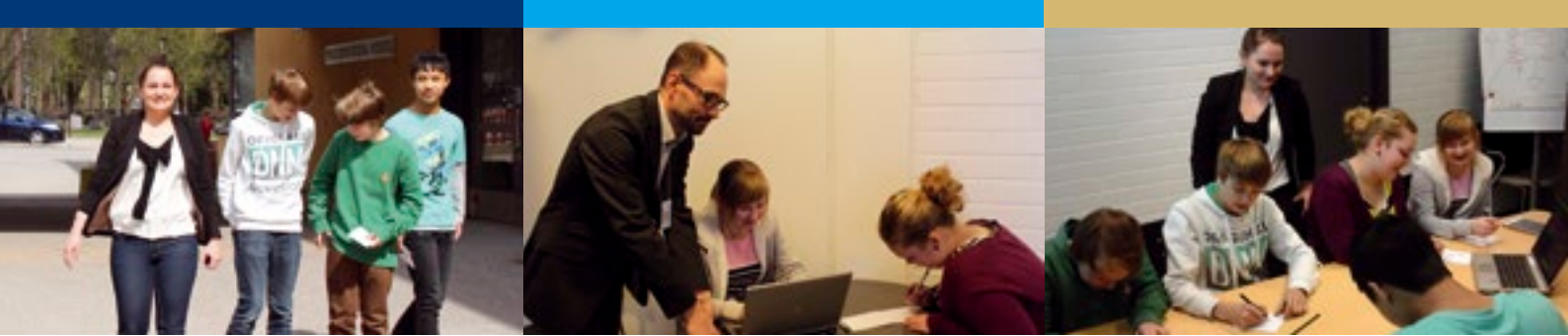
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