Switzerland (Bern)

Primarschule Geristein: Education for sustainable development in a multi grade class

This small primary school has one mixed-age class for students from grade 1 to 4 (age 6.5 to 11). There is an emphasis on self-organisation and regulation, with learning contents being treated in an increasingly deep way by different learners, depending on their skill level. Learners have a say in the choice of topics and are involved as much as possible in the formulation of learning aims. Students are also trained to formulate learning aims that are specific, measurable, and realistic enough. They take responsibility for classroom practice, for example in a leadership team of learners from the highest grade that negotiates tasks with the teacher and the group. The older students each act as a mentor for one younger student, and there is peer-teaching with students passing on self-acquired subject matters to other learners, using different presentation techniques (PowerPoint etc). Assessments by the teacher are complemented by student self-evaluations and lead to the definition of new learning aims.

Main Focus of Innovation: LEARNERS, TEACHERS, ORGANISATION

General Information

Name of the ILE: Primarschule Geristein: Education for sustainable development in a multi grade class

Location/Address: CH-3065 Bolligen BE

Website: www.bolligen.ch/de/dienstleistungen/Bildung/Primarschule.php

Rationale

Why do you suggest that it should be included in the project? How does it respond to 21st century learning challenges?

- Age 6 ½ to 11 in one class
- Cross-grade learning enables individual fostering in every area. The learning contents are not age related. The learners learn following the "principle of spiral"[1] in accordance with the existing capabilities.
- The learners develop knowledge and skills whilst simultaneously their social competence is fostered. Mixed-age learning requires intensive debate/interaction with the counterpart. Emotional relationships emerge from common learning success and mutual companionship and assistance.
- Education for sustainable development is characterized by the application of specific didactic principles. A comprehensive education is intended by:
  a) Networking
  b) Reflection
  c) Participation
  d) Vision
     – are under the umbrella of the social, economical and ecological dimension.

  Aim: networked learning individually adjusted

Evidence

Is there any evidence or indications showing that this initiative achieves the outcomes that it is aiming at?

- The learners work independently.
- The learners automatically network/connect learning contents.
- The learners are highly motivated.
- The learners are interested in interrelations.
- The learners have a positive critical mind and are ready to challenge/question things.
- The learners have a high social competence. This becomes apparent in the daily contacts amongst each other and towards strangers/unknown persons.
- The learners have a method competence (e.g. in group work).
- The learners are not interested in lessons, which are built up in a linear sequence. They link contents with their own knowledge and like to participate in the process (participation).
- The learners like to develop new ideas and look into the future (vision).
- The learners question their actions without difficulty and are able to take and accept criticism (reflection).
- The learners are able to consider situations from an economical, ecological and social perspective and to put them into relation to each other.

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[1] Meaning: A topic is first encountered on a basic level, later on it is again treated in a deeper way, then again in a more sophisticated approach …

Learning Aims / Intended Learning Outcomes of the ILE
What are the core learning aims and which knowledge, skills or attitudes are to be acquired? (These may include outcomes related to learners' social, interpersonal, or meta-cognitive development)

- Subject-specific competence
- Social competence
- Self competence
- Method competence: The learners acquire methods for independent learning in groups and for presentations. They are able to choose and use tools independently (internet, libraries, …)

Learners
Which group(s) of learners is it aiming at? Who is eligible to take part? How many learners are there? What are their ages?

24 children between 6 ½ and 11 years
The school has only one class with students from 1st to 4rd grade including an integrated introductory class ("Einführungsklasse[2], 1st grade spread over 2 years)

Facilitators
Who are the teachers/facilitators? Who are the leaders? What are their professional backgrounds? What are their roles?

A head of the school and at the same time teacher of the class
One additional subject teacher

Organization of the ILE
How is learning organised? How do learners and facilitators interact? What kind of pedagogy do they follow? What curriculum is used?

- Guidelines for teaching:
  - Education for sustainable development (BINEU[3] of the University of Berne)
  - Curriculum of the Canton of Berne
- Diverse teaching materials/aids

The following explanations should deliver insight into the practice of our school; illuminate the areas of strategy, structure and culture of instruction as well as the learning processes. Firstly, a strategy of teaching a multi-grade class is presented. Secondly, two examples of practice illustrate the strategy for two different areas. The first description refers to general class organisation in the area *support*. The second description presents the design of the organisation of instruction and the resulting learning processes.

Strategy for multi-grade classes
Multi-grade classes can be assigned to complex systems and correspond to own laws and qualities.
They show corresponding behaviour patterns, be it in class or teaching organisation or by using the synergies of grade diversity.

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[2] "Einschulungsklasse" is a special class of elementary school, following kindergarten and preparing the enrolment in ordinary school classes. Children who are not ready for school are individually fostered. "Einschulungsklasse" lasts normally two years and deals the subjects of 1st grade in two instead of one year.
[3] See http://www.ikaoe.unibe.ch/forschung/bineu/

The variety is many times higher than in one-grade classes. This is attributable to the age difference, the varying social, emotional and cognitive developments. They do not proceed linearly with age. The amount of learning contents within a class is multiplied with the number of school years or with the individually tiered programs of the learners.

This matters since slow learners who do not follow ordinary school classes are integrated in our classes.

In addition there are environmental impacts like students changing school and the yearly changing composition of the class as well as school policy on higher levels.

Managing a multi-grade class calls for a strategy which complies with this situation. It requires a special arrangement of the management that allows learning through self- organisation and regulation. Without considering this, the complexity cannot be managed.

Strategic factors of success

Following strategic success factors form the basis for our strategic school management. They allow the self-regulation of the teaching organisation and the learning processes.

- Functionality of the operation (organisation)
- Goal orientation
- Clear perception of task and responsibility
- Results of evaluations
- Strengths of the learners
- Pedagogical principles for education for sustainable development

The structure of multi-grade classes is used to arrange self-regulating and self- organising learning processes. The pedagogical principals for education for sustainable development are setting the guidelines for the learning processes (vision orientation, networking, reflection, participation).

**Class organisation concerning support**
Aims:
The learners accept responsibility through participation. **The learners** have a clear perception of task and responsibility. According to their strength t**he learners** accept tasks and responsibility in the school operation during the classroom time of a quarter. **The organisation** works self-regulating in the learning area, without direct guidance of the teacher. **The learners** (leader of the class council) are aware of the knowledge of working methods and communication techniques (Meta cognition) and are able to apply it in a concrete example.

Area		
Support of the school operation during the classroom time of a quarter: ➢ Issue of material ➢ Library ➢ Computer ➢ Order ➢ ……………..	Strategy:	• Functionality • Goal orientation • Task and responsibility • Strength of the learners • Viability of the organisation
	Competence:	• Social competence • Self- competence • Subject specific competence • Method competence
	Education for sustainable development:	• Participation • Reflection • Action orientation

Form:	Class council: whole class Leadership: team of the highest grade (2-3 learners) Monitoring of the leadership: teacher
Mandate (definition of result to be reached in own responsibility)/Reporting	The leading team receives the mandate from the teacher. The teacher discusses the mandate with the leading team and gives advice during the process of realization. During the process the leading team gives feedback to the teacher in oral form.

Realization:	• The leading team receives the mandate in oral or written form from the teacher.
	• The leading team prepares and chooses the appropriate working methods.
	• In the class council the leading team develops the range of topics of the area *support*:
	   ➢ Announcement of aim and procedure of the group task
	   ➢ Team constitution (criteria are determined by the leading team)
	   ➢ Method "the quick shoe" (Teamwork in 4 parallel teams, whereby learner of the highest grade in each team is rotating from time to time. In this way perspectives are transmitted.)
	   ➢ Group posters are discussed in class and a consensus on the necessity of the task is found. Afterwards the distribution of the particular tasks is negotiated.
	
	   ➢ In a further teamwork the particular tasks are described closely.
	   ➢ The leading team assumes the completion of a written form (survey sheet).

Example of mandate/task	Task and aims in area *library*:
	   ➢ Issue of books takes place on Monday afternoon 14h00.
	   ➢ The titles of the returned books are deleted on the computer.
	   ➢ On the computer the new borrowed books are recorded with title under the name of the borrowing person.
	   ➢ Entry in the study diary

Controlling	➢ Self-evaluation of the learners at the end of the quarter (target on the blackboard or individually on a sheet, cf. appendix). ➢ Control, evaluation, feedback by teacher in form of a discussion at the end of the quarter
Mixed-age learning	The younger learners become acquainted with the application of different working methods by being involved themselves. Throughout it can be observed that they are emulating students of higher grades. Although younger learners are still lacking in subject specific competence (insufficient reading or writing skills) they can participate in the teams. The social learning environment is natural.

Organisation of instruction: Learning processes

Instruction is organised according to the following schema and learning processes run usually always in the same way, so that learners get confidence and practice.
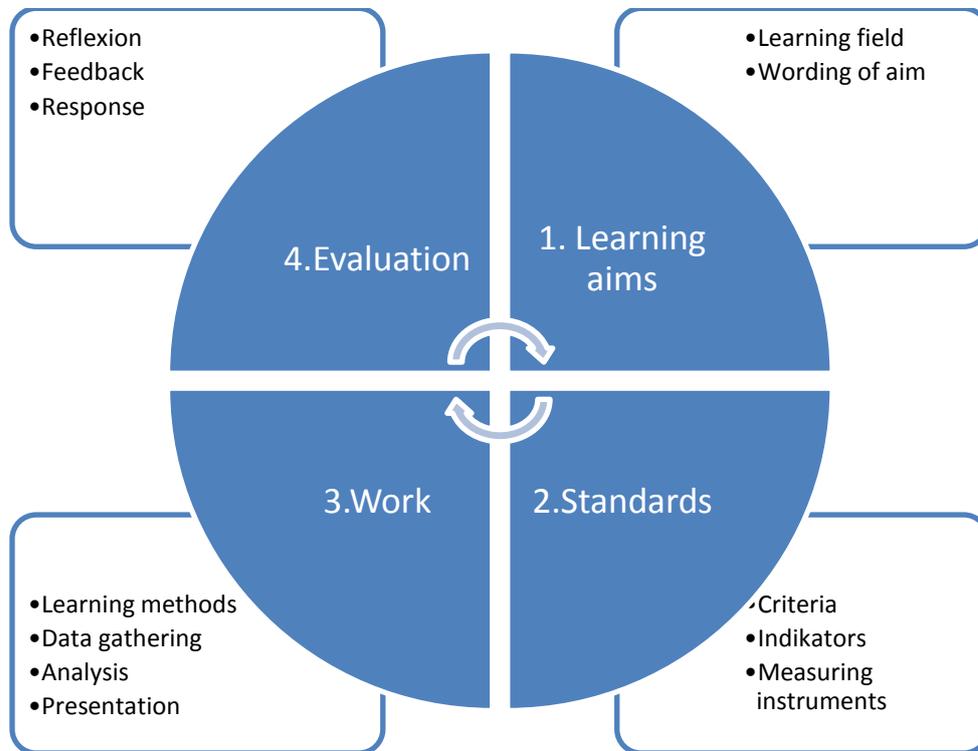
Learning aims

The learning field is prescribed by the curriculum. But since there is not everything fixed and there exists fairly much individual freedom, it is possible to respond to the interests of the learners. For each quarter of a school year, the learners decide together on the topic treated in the subject "nature-man-environment". This is done similar to the procedure described above for support.

The teacher transparently presents **the learning aims** to the learners. But the learners participate in the wording of learning aims as often as possible. Thus an increase of motivation can clearly be seen. The learners always approach the wording/formulation of learning aims in a same manner:

- To acquire knowledge of the learning field
- Wording of the learning aims with the same start of the sentence: I can…
- Definition of the learning aims (new contents, measures based on the last evaluation)
- To test the learning aims for feasibility (SMART[4])

Since technical terms are not suited for learners of lower grade, terms are transformed into pictures (The pictures were selected together with the class):

Specific   ⛴ (I can get an idea of it.)
Measurable   ∿ (I can control the achievement of the aim.)
Attractive   ☺ (I am learning something and progressing.)
Realistic   **1+1=2** (It is achievable/ feasible.)
Timed   ☽ (It is limited in time and well-arranged.)

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[4] The acronym SMART stands for **s**pecific-**m**easurable-**a**ttractive-**r**ealistic-**t**imed.

The learners have all symbols on little cards. In that way they can express aims correctly at any time. They are aware that they know how to frame an aim (metacognition). This is accomplished by maintaining the procedure always in the same manner.

Examples from the practice

Aim: In one week I can write 20 words of the basic vocabulary without error.

Controlling: ⚒   I see the 20 words in my mind's eye without error on my learning aim control sheet.

           ☞   There is a test and I get an evaluation.

           ☺   I can write more words without error.

           1+1=2 The quantity of 20 words is not too much. I can do it.

           🕐   The time to learn is limited and I know how much time I have.

Standards

The teacher normally determines the criteria, indicators and measurement instruments because he/she is accountable to external parties. These are areas of regulation and monitoring.

Work

During work we take advantage of the synergies of the multi-grade class. We seek for self-regulation and self-organisation. This is the only way to optimally cope with the complexity.

Following principles are valid in our class in order that the phase of work is successful during the learning process:

Tasks and responsibility are clear.

The learning aims are clearly defined.

The standards are clear.

The learning environment is organised and well-arranged.

The rules of behaviour are clear.

The strength of the learners is exploited.

Learning methods

The learning methods are varied, but the following are particularly present in our class.

Mind-map

The application of the mind-map is part of everyday teaching. The learners have this method present. We introduce it amongst the youngest learners with pictures.

It is proper for treatment of information and we use it for the following:

- Text drafting
- Collection of thoughts for forthcoming text composition
- Teamwork: "World–café" (Teams mutually complement their mindmaps)
- Summary of subject areas
- Preparation of evaluations/tests
- To understand how data and folders work in the computer
- Vision orientation (Education of sustainable development)
- Participation (Education of sustainable development)

Venn-Diagram in mathematics

The Venn-Diagram is employed if overlapping relations should be illustrated.

- Networking (Education of sustainable development)
- Reflection (Education of sustainable development)

Learning with class mentor

The younger learners have a student from a higher degree as a mentor from whom they can ask advice at any time, who also helps and assists in learning matters. As a result the mentor is challenged himself/herself. Without its own competence, nothing can be passed on.

Learners as teacher

Learners pass the self-acquired subject matters on to other learners. This can also occur independently from age.

Data gathering / analysis

Data are gathered and analysed in various ways. The learners learn to deal with media so that they can work independently. This happens in team- and individual work or in plenary.

- Research in the internet
- Books, newspaper, …
- Surveys
- Input of the teacher
- Obtaining information from persons

Presentation

The learners of the highest grade can apply different presentation techniques. This is important because they often have to pass acquired learning content to younger learners.

- Graphic explanations on the blackboard or flipchart (pictograms)
- Care of writing
- PowerPoint presentation
- Involvement/participation of the audience during a presentation

Evaluation

Evaluation takes place in three steps:

Self-evaluation

- By means of learning results, learning diary, feedback during work

Teacher-directed evaluation of learning aims

- written or oral

Definition of new aims

- Counselling and eventual definition by the teacher

Examples

See two examples of worksheets concerning task definition and self-evaluation within the learning unit "pets" in the appendix at the end of the description.

Learning Context
In which context does learning take place? What does the physical learning environment look like? Are community resources used to facilitate learning and how?

Learning materials/aids
Excursions (interviews…)
Internet
Medias
The rural position of the school allows direct access to the natural environment and integrating experience of nature into instruction.

History of ILE
Who initiated it? For what reasons was it started and with what purpose? Have these changed since?

The multi grade class with integrated introductory class has existed since the school year 1999/2000. Education for sustainable development began with the participation at the research project BINEU in 2004. The results convinced us.

Funding of the ILE
How is it funded?

Public school financed as usual by canton and municipality with no special budget

Learning Outcomes
What are the learning outcomes achieved by the ILE, including academic, social, interpersonal and meta-cognitive outcomes? How is learning assessed?

Learning outcomes: see point 3.
Learning is comprehensive and sustainable. The learners are agile in thinking.
Assessment of learning, including self-evaluation, formative evaluation and feedback, is described in the rubric "7 Organisation of learning".

Documentation describing or evaluating the ILE
Is there documentation on this learning environment? Is there a website? Films? Research reports or evaluations? Other forms of documentation? (please supply references or links)

Documents of Catarina Jost (head teacher):
- Presentation ("Education for sustainable development: Practical experiences")
- Workshop ("Education for sustainable development: Practical experiences")
- Paper for obtaining the certificate of advanced studies CAS at the PH[5] Bern: "Implementation of education for sustainable development at elementary school level".

All papers in German.

Other information you consider to be relevant to describe the ILE

The primary school Geristein is part of a network of small schools with mixed-grade classes in the canton of Bern. Originally, these schools have classes including students of several grades because they serve a very small catchment area. They intentionally use the heterogeneity of their students as a pedagogical basis for an individualized education aiming for integration and autonomous learning. Other members of the network are e.g. the comprehensive schools Lindental and Schüpberg (both grade 1-9).

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[5] PH = Pädagogische Hochschule (tertiary Teacher Training College)