

Day 2

28.10.2021

Thursday 28.10.2021 – Day 2

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Faculty of Educational Sciences and Viikki Teacher Training School of the University of Helsinki

14:00	Opening, Q & A
14:15	Concepts <i>pedagogy</i> and <i>didactics</i> and the distinction between them
incl. 15 min. break	Planning lessons and teaching sequences, choosing activating instructional methods
	Support for interest and motivation
	Lesson plan
18:00	End of the session

● ● Session 1

Day 2

Concepts pedagogy and
didactics and the distinction
between them



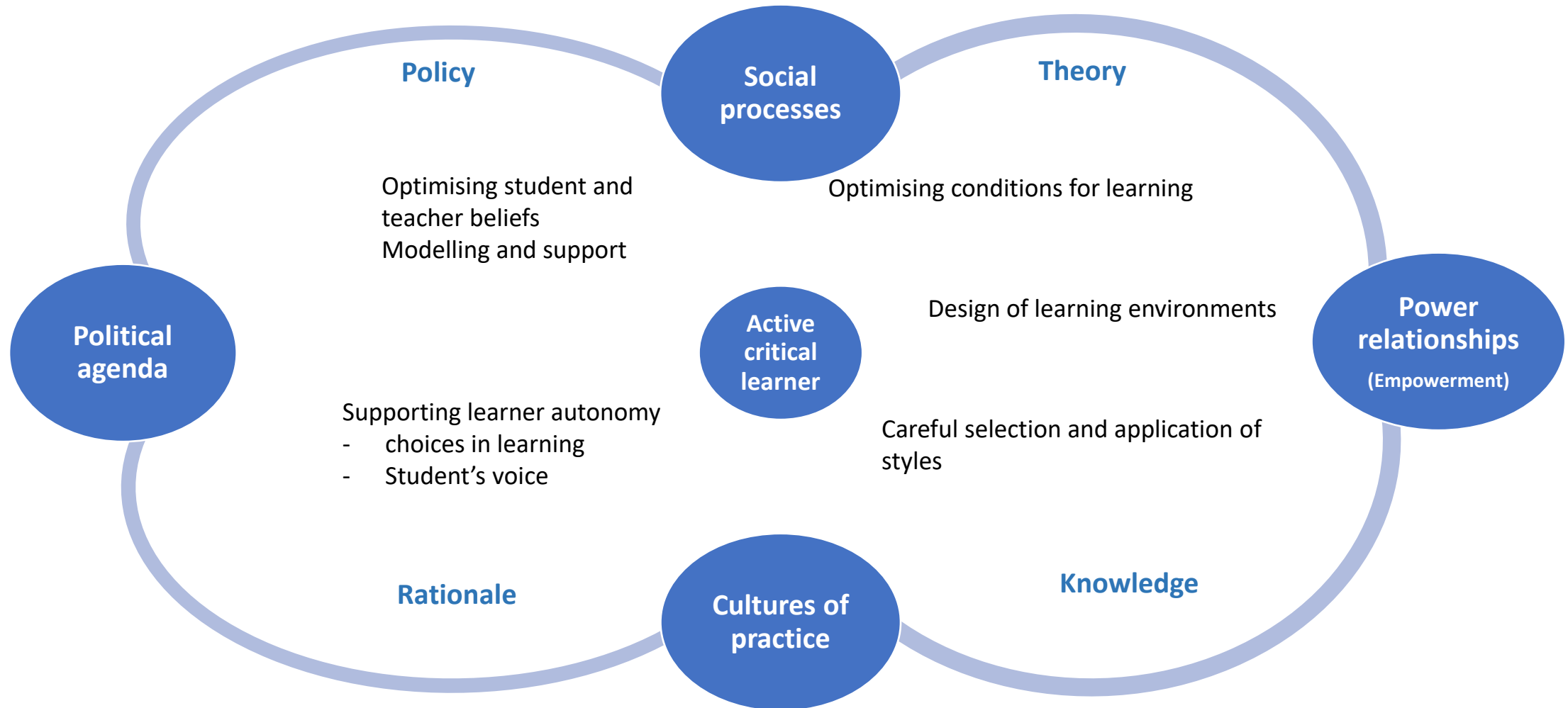
● ● Perspectives of pedagogy

1. *Pedagogy is an appropriate way to teach and learn.*
2. *Pedagogy is about enactment, i.e. how curriculum is enacted by teachers and students*
3. ***Pedagogy is about experience, i.e. how pedagogy is experienced by teachers and students.***

(Nind, M, Curtin, A & Hall, K. 2016. Research Methods for Pedagogy. London: Bloomsbury)

A holistic conceptualization of pedagogy

Waring & Evans (2015, 28)



● ● The role of didactics in a teacher training school

- Specialists in subject didactics (Faculty of Education)
- Student teachers conduct studies in subject didactics in each subjects
- The first teaching practice is based on developing student teachers' skills in subject didactics.

The concept of didactics in a teacher training school

- What should be taught?
- How to teach and learn?
- For what purpose something should be taught and learnt ?

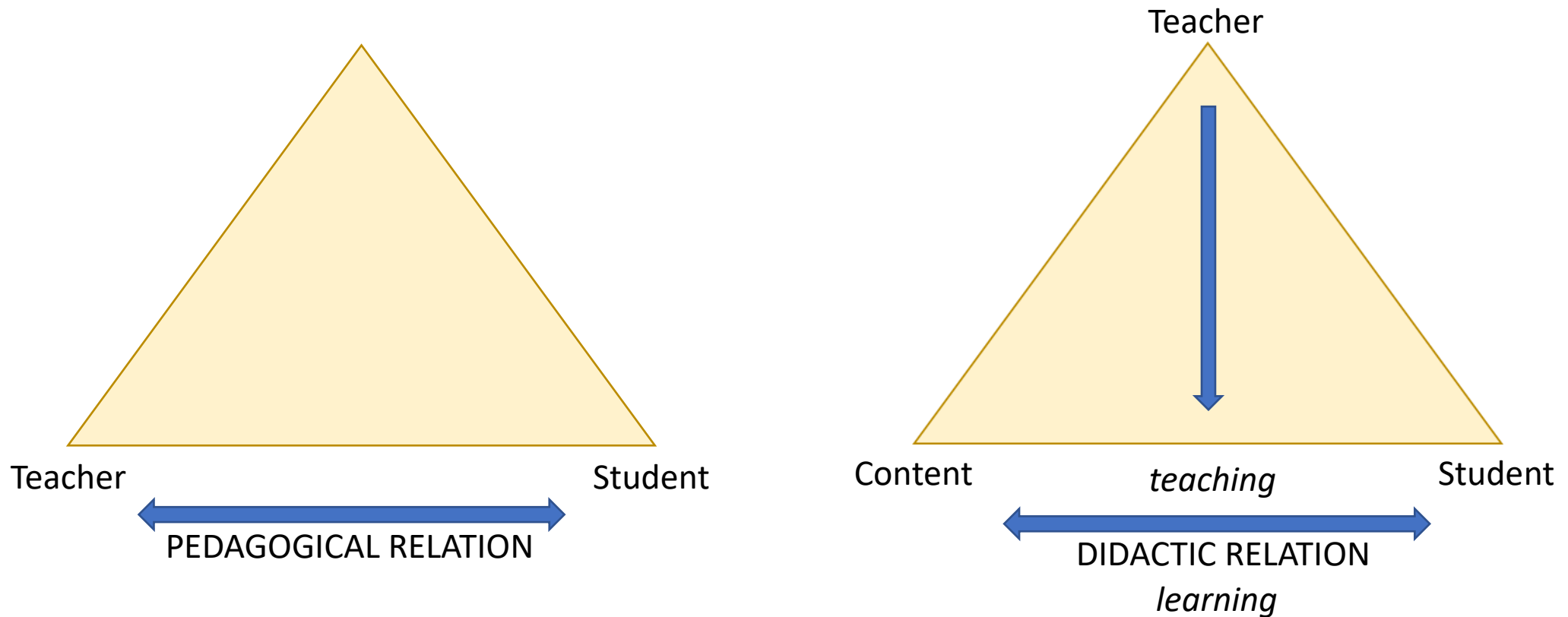
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- In other words, didactics generally means the relationship between the participants (the teacher and the pupils), often described according to the didactic triangle of Johann Friedrich Herbart

Note: Figures with details on the next slide

(e.g. Kansanen & Meri1999; Kansanen 2003; Klette 2007).

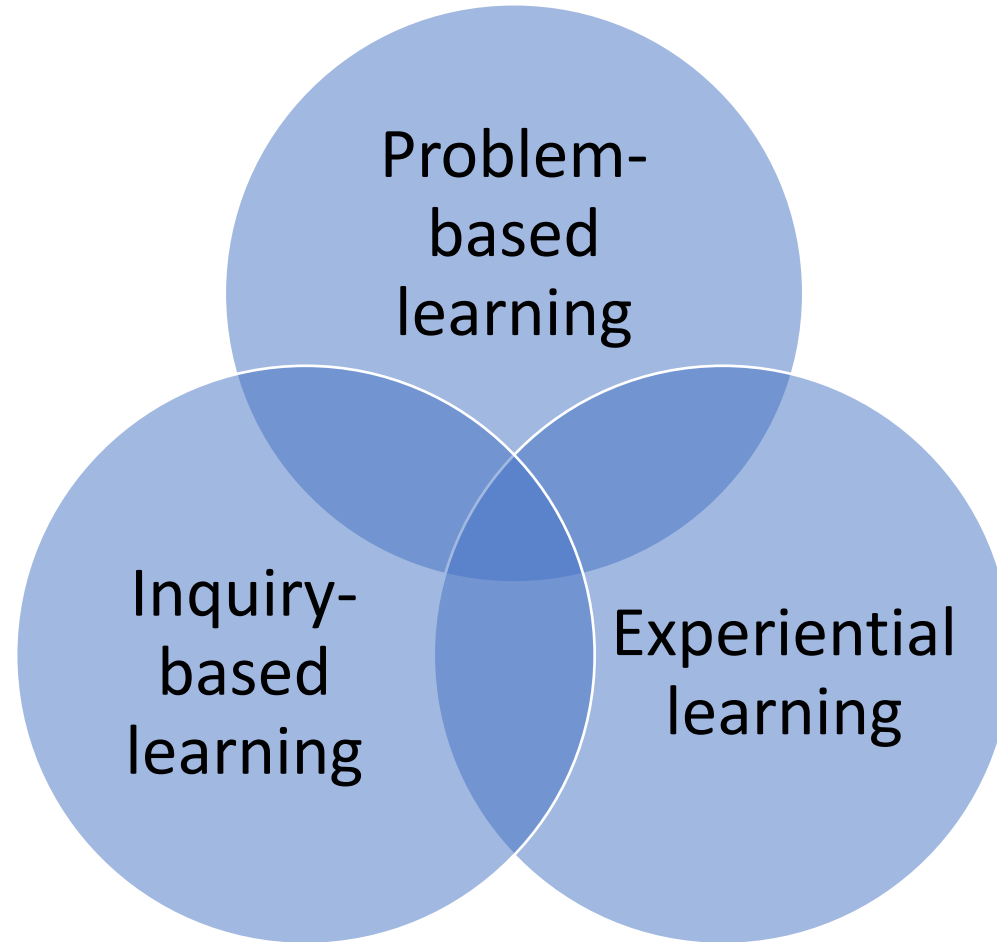
The concept of didactics in a teacher training school (figures)



● ● Connecting pedagogy to didactics – theory to practice

An example of how to connect the theory of problem based learning and experiential learning to stationary working among 1st graders

The “cousins” of the child centred teaching methods based on problem solving



The “cousins” of the child centred teaching methods based on problem solving

- Problem based learning, Inquiry based learning and experiential learning belong to the same family of child centered and active teaching methods. They all relate to sociocultural theories of education. The social nature of teaching and learning focuses on developing pupils’ skills for active, investigative, reflective and communicative learning. They also support pupils' motivational skills, learning to learn skills, skills for doing assessment from their own learning.
- In literature, there are certain specific emphasis between problem-based learning, experiential learning and inquiry based learning. In many cases, the limits between these three “cousins” are not clear and they mix with each other in real life learning situations when pupils start to solve problems.

Problem-based learning as a pedagogical approach

- Problem-based learning can also be used as a pedagogical approach without connecting it to phenomenon based learning. It can be incorporated into any learning situation. Lessons can relate, for example to following questions:
- How to compose a melody by using notes c, d, e f, g?
- How to measure accelerated motion?
- How to bake a cup cake?
- Who would be Socrates of today in terms of forcing people to think?

Duch, B. J., Groh, S. E, & Allen, D. E. (Eds.). (2001). *The power of problem-based learning*. Sterling, VA: Stylus.

● ● The basic assumptions behind of problem-based learning

- Learning is contextual.
- Learning is more effective if it is connected to real life settings.
- Learning is more effective when it is connected to previous knowledge.
- Learning takes place in groups of 3-5 participants.

e.g. Capon, N & Kuhn, D. 2004. What's So Good About Problem-Based Learning. *Cognition and Instruction* 22 (1), 61-79.

● ● The basic assumptions behind of problem-based learning

- Problems used in problem-based learning have to be structured.
- Problems have to be suitable for the age group: they should at the same time challenge and improve conceptual understanding, but be narrow enough to focus on one issue at the time.
- A teacher has to be sure that pupils or students have skills enough to solve the problem.

e.g. Capon, N & Kuhn, D. 2004. What's So Good About Problem-Based Learning. Cognition and Instruction 22 (1), 61-79.

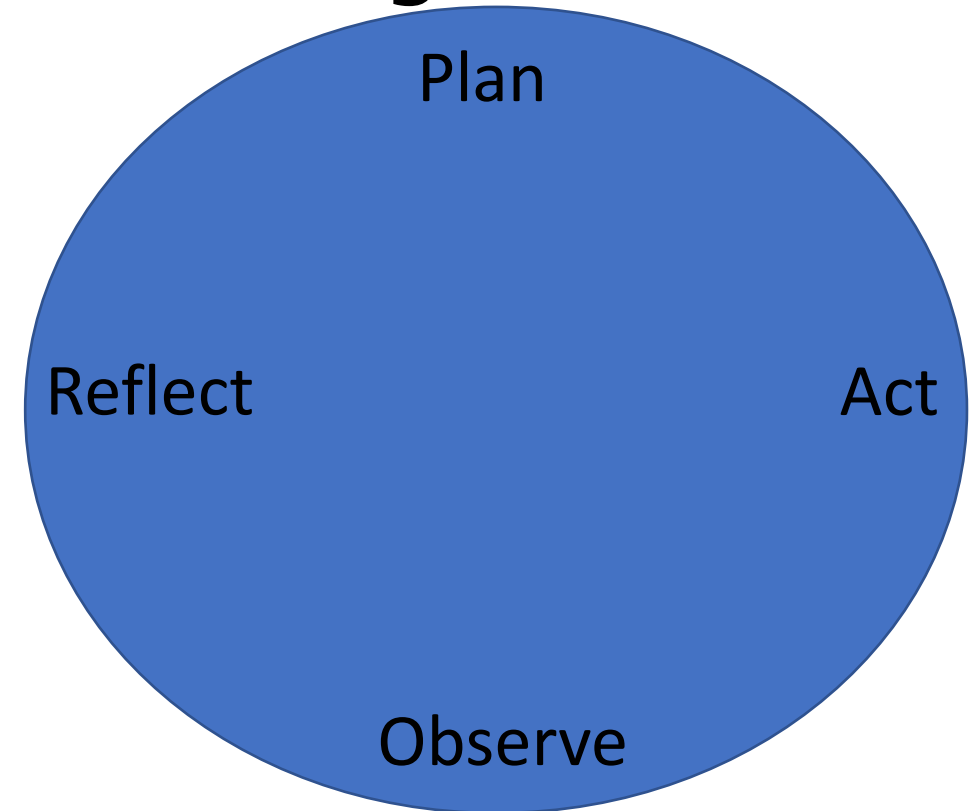
● ● The basic assumptions behind of problem-based learning

- Problem-based learning is often used as a pedagogical approach in science education and in programming.
- In those cases, problem-based learning often connects to experiential learning by using hands-on practices as a problem solving tool.

=> What model to use when implementing problem-based learning with younger pupils?

An action research cycle in describing the process of problem-based learning

- In literature, problem-based learning is often described in a form of cycle.
- Action research and problem-based learning share the same theoretical background: they focus on solving problems in real contexts and they provide knowledge that help people to improve their practices.
- Action research cycle makes it easy for a teacher to remember the steps of problem-based learning process



Carr, W., & Kemmis, S. (1986). *Becoming critical: Education, knowledge and action research*.

Two video examples – Problem-based learning (PBL)

An authentic 1st grade teaching session in Viikki Teacher Training School, Helsinki, October 2021

Video clips recorded with mobile phone by the class assistant and children

Video clip 1 “Composing a new melody”

Children have earlier learned to play a very familiar and simple children’s song in Finland. It includes only a few notes.

- Each child is instructed to create a new melody using only those same notes, no new notes are allowed.
- Now they have the goal and the elements of solution, and they start to practice and test.
- This is an individual task but children are encouraged to support each others.
- A new melody is developing through practice.

Pre-condition: Children have clear, structured instructions to enable practicing towards the expected goal.

PBL sävellys.MOV

Video examples – Problem-based learning (PBL)

An authentic 1st grade teaching session in Viikki Teacher Training School, Helsinki, October 2021

Video clips recorded with mobile phone by the class assistant and children

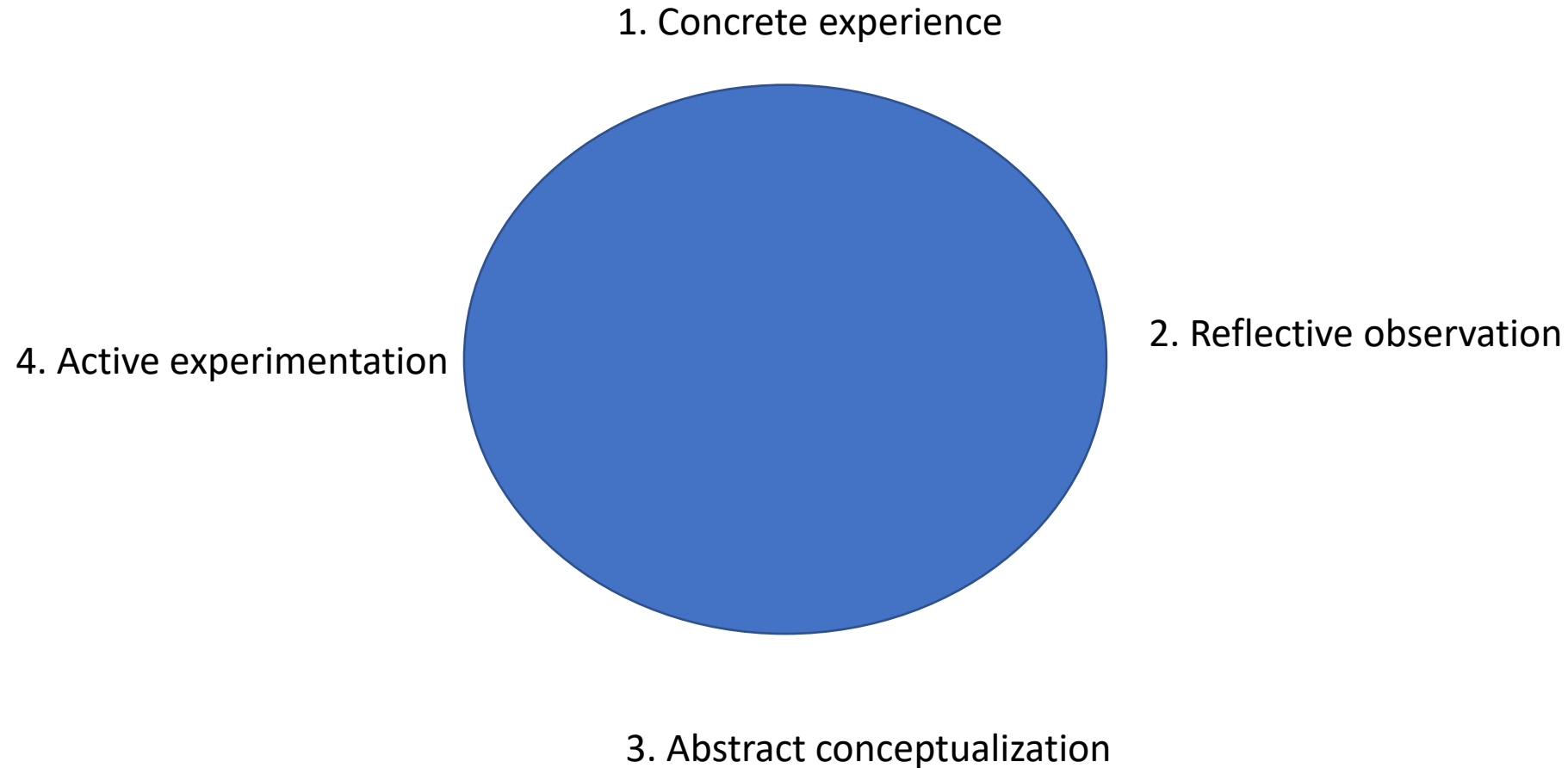
Video clip 2 “Ball game”

- Groups of children (2 groups in the video) are instructed to move the ball to the other end of the hall as fast as possible following the instructions:
 1. all the children in the group should touch the ball once, and only once, during the trip;
 2. the ball should not touch the floor;
 3. in the end the group members should stand together behind their ball;
 4. they should complete the task as soon as possible;
 5. each group should develop their own best way to complete the task.
- In the beginning of the video there is chaos. Children are confused of what to do. As individuals or pairs they try something and stop without result. Step by step they start to communicate with each others as a group and start to practice together. There is no way to complete the task as an individual.
- An efficient way to complete the task as a group is developing through collaborative practice.

Pre-condition: Children have clear, structured instructions to enable joint practicing towards the expected goal.

PBL palloilu.MOV

Experiential learning by Kolb 1984



Experiential learning by Kolb 1984

- The model is based on Dewey's ideas of learning by doing.
- It focuses on concrete experience.
- A concrete experience creates a grounding for learning.
- Reflective observation helps learners to conceptualize learning and to understand the phenomena on a more general level.
- Active experimentation means a new try that leads to new experiences, reflections and conceptualizations...

Experiential learning by Kolb 1984

- ● Experiential learning is often used in science education among young children. It is also used in artistic subjects like in music and art.

Stationary working

- ●
 - A tool for learning that can consist of different stations that follow different models of learning.
 - On stations learners solve problems actively, often in small groups.

Stationary working through PBL method and experiential learning

- ● Background information for the video (15 min.):

 - 1st grade students (n=22)

 - 1st time of implementing stationary working

 - 4 stations on the lesson

 - 1st and the 2nd stations created by using Kolbs' model

 - 3rd and 4th stations created by using PBL method

● ● Activity with the video

Before watching **the video of Stationary working on “Studying the nature of sound”**, be prepared for observations based on these questions:

1. How a teacher had organized the lesson before it started?
2. What was the difference in the teachers' instructions on stations 1 and 2 compared to stations 3 and 4?
3. How PBL method and Kolb's model was brought together at the end of the lesson?

Video example – Stationary working

Authentic 1st grade teaching session in Viikki Teacher Training School, Helsinki, October 2021

Recorded with mobile phones by the class assistant and children

Video on “Studying the nature of sound”, 15 minutes - *Engaging all learners to science lessons through materials prepared by the teacher and by collective answering*

Videoshop_2021_10_14_10-09-03.MOV

In the video the teacher repeats her words in Finnish and English. Detailed communication is also available in writing (pdf).

At each station, children study the different characteristics of sound following the teacher’s instructions and questions to be answered.

Methods: Group discussions, practice and testing, joint revision of the result in terms of practical testing

Scene 1.	Introduction: Teacher’s preliminary arrangements for the lessons
Scenes 2.-6. (1:30 – 7:00)	The teacher introduces the four workstations
Scene 7. (7:03)	Children start working in groups in the different stations according to the teacher’s instructions. The teacher starts to monitor and supervise the work
Scene 8.-11. (7:04 – 10:00)	Teacher supervising the groups at the four stations
Scene 12. (10:02)	What did we learn? (Wrap-up, learning discussion)

● ● Session 2

Day 2

Planning lessons and teaching sequences, choosing activating instructional methods



● ● Effective learning of new concepts

- Meeting the concept in various contexts, learning the meaning of the concept thoroughly.
- Revealing and building on pre-existing knowledge.
- Collaborative learning, dialogic approach.
- Scaffolded goal-setting, student in an active role.
- Cumulative learning, building a network of concepts.
- Hierarchy and relations of concepts.
- Emphasis on metacognition and self-regulation skills.

● ● Learning new concepts

- There may be a hierarchy between concepts related to a topic.
- Upper and lower level concepts.
- Concepts are learnt through use of examples
 - Examples belonging to the concept
 - Examples not belonging to the concept

● ● Metacognitive skills

- Awareness of one's actions related to learning.
- Choice and evaluation of learning and memorizing strategies.
- Regulation of behaviour related to emotions, attention and concentration.

Supporting higher order cognitive skills with appropriate instruction

- Taxonomy of cognitive skills (Anderson & Krathwohl, 2005)
- Categories of knowledge
- Tasks at all levels of the taxonomy for all pupils
- Emphasis on procedural and metacognitive skills

	1.Remember	2.Understand	3.Apply	4.Analyze	5.Evaluate	6.Create
A) Factual						
B) Conceptual						
C) Procedural						
D) Metacognitive						

Video example – Studying the categories of knowledge

An authentic 1st grade teaching session in Viikki Teacher Training School, October 2021

Recorded with mobile phone by the class assistant and children

Video clip “Classification of animals” [Videoshop_2021_10_14_14-48-34.MOV](#)

- Children study the fauna and which higher categories different animals, familiar to them, belong to. The prior knowledge of children is recognized and endorsed in this activity.
- In advance the teacher has drawn on the blackboard a table with separate columns for “mammals, birds, reptiles, fish, amphibians”. Under each title the teacher has in advance collected the pictures of animals which belong into this category.
- The teacher points out each animal picture and asks from children if the animal belong to this particular category. The characteristics of the animal and category are discussed. Under “mammals” there are the pictures of e.g. a pig, leopard, and a rabbit. The teacher asks, one by one, if they give birth to alive babies and feed their babies. If yes, they are mammals. Children confirm that they are mammals.
- Children are familiar with different birds and confirm their category of birds.
- The last topic is a turtle under “reptiles”. Children are not that sure in which category they belong to. The teacher starts to make guiding questions: Does a turtle give birth to alive babies and feed them? Children: No. Teacher: So it is not a mammal (video clip ends)

Instructional methods

- ● Methods should be:
 - Versatile
 - Active
 - Didactically appropriate

● ● Learning materials

- Learning materials are mostly produced by commercial publishers.
- The Finnish National Board of Education produces some materials.
- There are no official recommendations for the amount of homework.
- A teacher can choose not to use a textbook, but other materials instead.

The use of learning materials in terms of supporting equal learning opportunities

- Every child has a right to have an equal opportunity to study and learn in his or her own school nearby.
- Everyone is entitled to sufficient support for learning and school attendance.
- Each pupil receives instruction, guidance and support indicated by their level of development and needs.
- The idea of earliest possible support
- The organisation of support is based on the **strengths** as well as the **learning and development needs** of each pupil and teaching group.

● ● Activity with the videos (1/3)

After the videos, discuss in groups, how these actions supported learners' activity and engagement in lessons and provided each learner an equal possibility to join the lesson.

Video clips (in the same video) [Videoshop_2021_10_25_14-52-08.MOV](#)

Clips 1.+3. Teaching to read – *engaging all learners to same activity by working with their own skills*

Clip 2. Teaching to write – *engaging all learners equally to activity*

& Video on “the nature of sound” (15 min.) - *engaging all learners to science lessons through materials made by teacher and by collective answering.*

[Videoshop_2021_10_14_10-09-03.MOV](#)

Video example (2/3)

Authentic 1st grade teaching sessions in Viikki Teacher Training School, October 2021

Recorded with mobile phones by the class assistant and children

Video includes 3 video clips on "Teaching to read and write"

Videoshop_2021_10_25_14-52-08.MOV (the above 3 clips)

Clip 1. Teaching to read – *Engaging all learners to the same activity by working with their own skills*

- The teacher uses singing a songs to support the reading of Finnish language. There are many children who are not native Finnish speakers, and who benefit of this method.

Clip 2. (2:10) Teaching to write – *Engaging all learners equally to the same activity*

The teachers asks children to open their ABC books, a certain page and picture. She asks, which words starting with the letter "T" children can find in the picture.

- Child1: "Tiger". The teacher writes "Tiger" on a post-it and the child goes to write the same word on the blackboard. The children are asked to hyphenate the word "Tiger" together aloud. The teacher supports as the leading voice and clapping hands.
- Child2: "Trumpet" and "Taulu" (a Finnish word, means "a painting"). The teacher asks the child to choose just one. The child chooses "Taulu". Again, the teacher writes the word on a post-it and the child goes to write the same word on the blackboard. The children are asked to hyphenate the word together aloud. The teacher supports as the leading voice and clapping hands. - Another child goes to write the word "Trumpet" and the same steps follows.
- Child3: "Taskulamppu" (a Finnish word, means "a flashlight"). The same steps follows > continues >



● ● Video examples (3/3)

Authentic 1st grade teaching sessions in Viikki Teacher Training School, October 2021
Recorded with mobile phones by the class assistant and children

...

Clip 3. (4:0) Teaching to read – *Engaging all learners to the same activity by working with their own skills*

- Children read the same text one by one. The teacher ask one to help another. No other teacher intervention during this moment.

●● Session 3

Day 2

Support for interest and motivation



● ● Teacher is the expert in supporting engagement

- Aspects that are emphasised in the curriculum:
 - Right to grow as a human being
 - Becoming an active actor who sets goals for him or herself.
 - Learning should awaken positive emotional experiences
 - Activities should encourage to develop one's skills
 - Pupils should experience the taught topics personally significant
 - Basic education should strengthen the pupils' identity as human beings and learners

Motivation is worth considering

- High quality motivation is related with better learning outcomes and better well-being

(Guay, Ratelle, Chanal, 2008; Niemiec & Ryan, 2009; Reeve & Halusic, 2009; Vasalampi, Salmela-Aro & Nurmi, 2009; Tuominen-Soini, 2012)

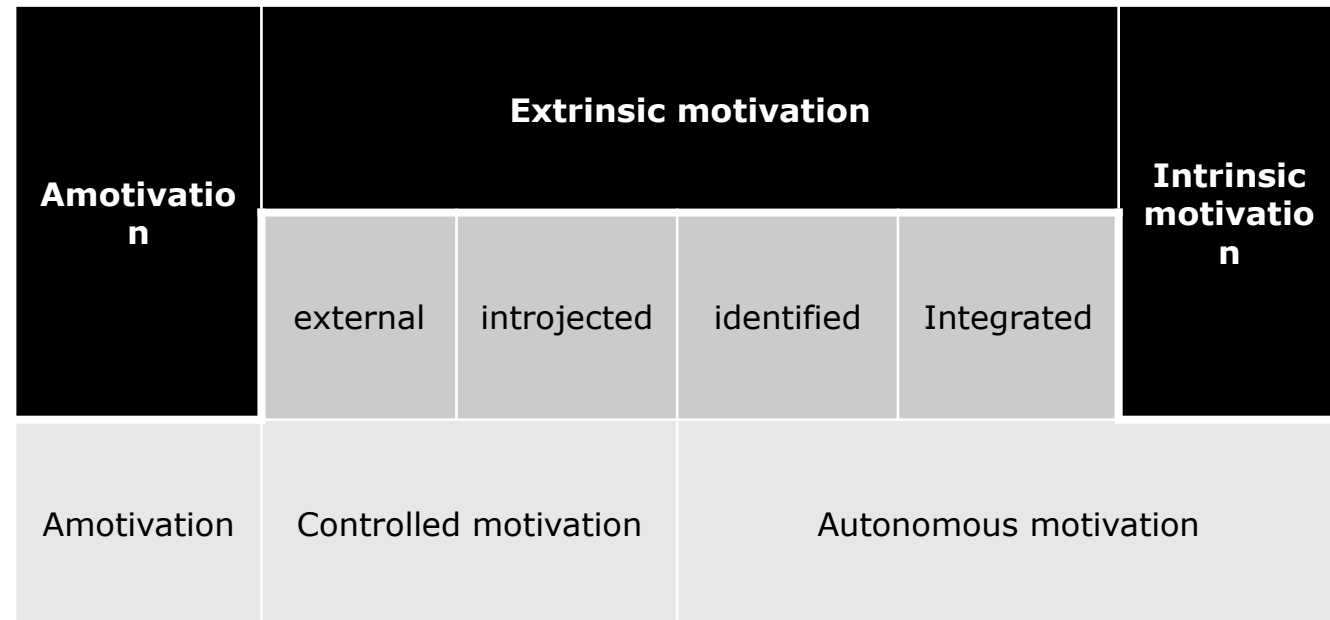
- The teacher has better conditions for working if the pupils are motivated to learn.
- Motivating the pupils requires understanding of the phenomenon
 - How motivation is generated
 - What challenges there are in getting motivated
 - Individual differences in the quality of motivation

Challenges in getting pupils motivated

- The curricular aims and the person's orientation don't always meet.
- The personal experience history may influence the preconditions of motivation development.
- The influence of negative self-perception on motivation
- The values of peer group and family, the possible controversy with the values in the curriculum
- Controlling teaching style
- Reduced resources to support motivational processes individually
- The misconception that motivation equals awakening situational interest, mechanistic approach to (Silvia, 2008; Palmer, 2009)

The quality of motivation

- This model is based on the Self-Determination Theory of Motivation (Deci & Ryan).
- Motivation takes place in a continuum from amotivation to intrinsic motivation.
- The quality of motivation develops as the regulation becomes more intrinsic
- Support for the basic needs
 - Autonomy
 - Relatedness
 - Feeling of competence
- Intrinsic and autonomous motivation styles are related with higher quality learning outcomes



● ● How to support autonomous motivation?

- Taking into account the pupils' perspective
- Having pupils' thoughts, emotions and suggestions as a starting point of the activities
- Recognising and supporting the pupils' ability to take responsibility and regulate their behaviour
- Nourishing the existing motivational resources
- Offering rationale for the activities
- Non-controlling interaction style
- Enough time for learning and identification
- Giving attention and accepting the negative emotional experiences



Structure vs. control

- The activities must be structured in an appropriate manner
 - The pupils should know what are the aims of an activity
 - The pupils should have instruction for the activities
 - The pupils should know what is expected of them
 - The pupils should be aware of the consequences of not doing what is expected
 - The work should be organised (for example group work)
- The structure makes the learning situation coherent and predictable.
- The amount of structure varies with respect to the quality of the pupils' self-regulation skills.
- Pupils whose motivational style is controlled motivation need a strong structure at first, but the pupil's responsibility can be increased as the self-regulation skills improve.
- Structure can be seen positive whereas control is related to negative aspects related to learning.



● ● Controlling teacher

- Teacher's perspective on activities
- Forcing the pupils to take the teacher's perspective
- External pressures (tests, evaluation)
- No rationale for activities, even if it seems un motivating for the pupils
- Using imperatives in instruction
- Hurry and impatience
- Neglecting the pupils' negative emotional expressions

Structure supporting instructional methods

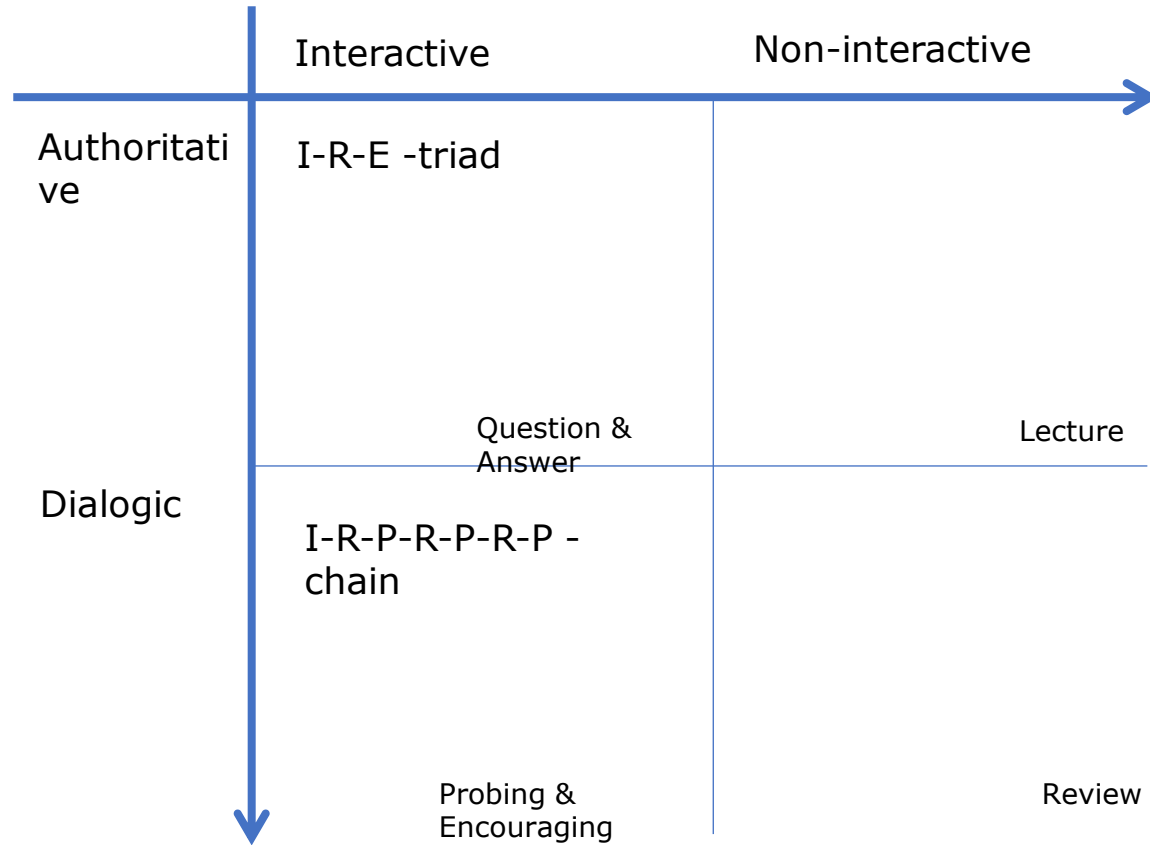
- Clear aims and sub-aims
- Scaffolding
- Continuous, feasible and constructive feedback
- Suggestions for changing the activities
- Structured schedule
- Appropriate length of the working periods & breaks
- Roles in the group tasks
- Rewards (the quality has to be considered carefully)



Supporting motivation through use of dialogic teaching

- Dialogic interaction style supports the development of argumentation and critical thinking skills.
- Pupils with controlled motivation orientation may feel themselves uncomfortable if the teacher employs dialogic style.
- Structured training of dialogic interaction skills
- The teacher must be aware of the type of her response

Patterns of Talk (Mortimer & Scott, 2003)



I=initiation (teacher), R=response (student),
E=evaluation (teacher), P=prompt (teacher)

● ● Activity

Concept game: connect concepts and determinations

●● Session 4

Day 2

Lesson plan



● ● Planning

- Long term plans must be completed and returned to the mentor.
- Daily planning and lesson planning takes place according student teachers preferences.

An example of a 90-minute lesson plan: jigsaw puzzle

General knowledge

Name: Reetta Niemi	Mentor(s)
Subject: Science	Grade:
Time: 90 minutes	Supervisor from the faculty of education:

Content knowledge

The goal of the lesson(s): To get the learners to understand the climate of Finland
The main concepts of the lesson: Four seasons, characteristics of each seasons

What the learners should know after the lesson

The goals related to the content The learners will know four seasons and how each season effects on people's lives.	The goals related to learners' social and learning to learn skills Improvement in knowledge constructions skills and co-operation skills
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Lesson plan

Time in minutes	What	Why	How	Materials needed	Assessment and differentiation
10 MUST	Getting to know activity	To create relationship to learners. To make them to trust me.	Be my friend- body percussion activity		Adjusting the speed of the activity according learners' skills.
5	Orientation for the lesson	According SDT theory it is important that the learners know what they are expected to do and what happens if they do not meet the goals.	I'll start by telling that they will become experts and they'll get a role of a teacher today. I will also emphasise the importance of everyone's engagement in the lesson activities and in teaching others.		
15	Launching the learners' pre-existing knowledge. And creating a hierarchy of the concepts	By launching pre-existing knowledge I can orientated the learners towards the lesson.	Each learner will get five piece of papers. Into each paper a learner can write one topic she/he knows from Finland. Then we collect the concepts to the chalk board. I try to engage every learner to lesson by making them to pay attention to their own notes.	Pieces of paper and pens.	It is also possible to draw the topic if a learner does not know the concept in English.
5	Dividing learners to expert groups and explaining how the system goes.	To support active learning and peer learning.	Each learner gets a coloured piece of paper.	Pieces of paper in 5 colours	

5	Going through each task and set each expert group to its own working place.	It is important that the teacher gives advises to the learners together in order to make sure that they all know what to do when they can actually start working. Setting a TIMELINE that structures learners working.	The learners sit on their own places and the teacher shown and explains how to fill out the work sheets.	Work sheets for the study groups. The tasks are divided to three categories: must, should and nice to do.	
15	Working in expert groups	Active knowledge constructions.	Reading material and filling out forms.	Work sheets	The learners help each other and make sure every group member have the same knowledge.
10	Teaching others	Peer learning. Also we know that when a learner has to teach others that also strengthens his / her own learning.	One learner at the time presents what they found out about Finnish climate.		This step can take place when every group have filled out 'must tasks' in work sheets.
10 SHOULD	Full filling pre-existing knowledge	It is important to come back to that and see if there were some false ideas in pre-existing knowledge and correct those ideas.	Comparing findings to what we see on a chalk board.		
10	Adjusting new knowledge to a comparison diagram	Previous actions have supported lower thinking skills by focusing remembering and understanding the concepts. This activity relates to higher thinking skills in which a learner has to apply knowledge	The teacher explains what is a comparison diagram. Then the learners fill out a diagram in groups.	Ready made diagrams.	

● ● Activity

10 NICE TO DO	Looking at a video made by my learners	Strengthening previous learning	Showing a video	A video	
5	Getting to know activity	Ending a lessons with a way that engages everyone	Doing the activity together		Adjusting the speed of the activity according learners' skills.
10	Reading a book	Strengthening previous learning	Reading a book	This is Finland	

SPRING - TEXT TO READ

The official spring months are March, April and May

In northern Finland temperature varies from -5 to 5 degrees Celsius. In southern Finland temperature varies from 0 to 15 degrees Celsius.

In April plants start to grow again after their winter hibernation. In April yellow daffodils and red tulips poke their heads through the ground

In May trees start to grow their leaves again and some flowers start to blossom. In May you can find white flowers called Lily of the valley.

In spring Finnish children can start cycling again.

In spring children also play Finnish baseball.



Get ready to teach others by filling out the form:
The official spring months in Finland are:

In spring the coldest temperature may be _____ degrees Celsius in Finland

In spring the warmest temperature may be _____ degrees Celsius in Finland

In spring plants

In spring there are three flowers you can pick up.
They are:

In spring children also play



Name the flowers you can find in Finland in spring



SUMMER - TEXT TO READ

The official summer months are June, July and August in Finland.

In northern Finland temperature varies from 10 to 20 degrees Celsius. In southern Finland the average temperature is around 20 degrees Celsius.

In Finland there are less than 20 days when the temperature is more than 25 degrees Celsius.

Because of long summer days and short nights berries get a lot of daylight and they are really sweet.

In Finland you can pick up wild strawberries, blueberries, raspberries and yellow cloudberries freely from forests.

In summer Finnish children go to swim every day, because there are thousands of lakes in Finland.



Get ready to teach others by filling out the form:
The official summer months in Finland are:

In summer the coldest temperature may be _____ degrees Celsius in Finland.

In summer the warmest temperature may be _____ degrees Celsius in Finland.

Because of long summer days and short nights:

In summer there are three berries you can pick up. They are:

In summer Finnish children

Name the berries you can pick up in Finland in summer



● ● Activity

Peer teaching the article content:

Create a lesson plan. Focus on following issues:

1. How to launch pre-existing knowledge?
2. What activity to use in terms of supporting active learning (e.g. stationary working, jigsaw puzzle, statement cards, Kahoot, concept game...)