



GE_Class_Fermi1_CreatInqLA

Teacher Education Design Principle + code:	8. Teacher education should enable teachers to design and assess creativity-enabling inquiry-based activities which are child-friendly and include both guided and open inquiries. TE: CreatInqLA
Specific Teacher Outcome(s):	8.1 Teachers should be able to design and assess open-ended learning activities.
Factors linked with:	T: Ped; LA: Plan; P: Agency; A: Evid
Type of material (image – interview (int) – classroom extract (class):	Classroom extract (class)
Originating from:	
Country report :	D4.3 Germany
Case:	GE case 4
Episode:	Fermi1
Teacher:	Andrea
Age Group:	7
Selected episode from D4.4 Appendix	Yes



Use of “Fermi questions” to promote non-traditional problem solving strategies.

Fermi questions encourage multiple approaches and emphasize process rather than the answer/result. They seek a rough estimate of quantity which is either difficult or impossible to measure directly. Example here: “Use a piece of chalk and draw a 1m-line, a 10-cm-line, and a 1-cm-line on the board. Three lines. Without ruler.”

Classroom extract (class)

Children working in small groups. They estimate : How long is one meter?

As a team, the children make a guess and then discuss their estimations: they ask for the other’s opinion and - based on their everyday experiences - find innovative methods in order to check their estimates.

C5 “I jumped down from a 1-m-board in the swimming bath on Saturday” [*shows the distance between board and water surface with his hands*]

C6 “I’d say a meter is more or less as long as a leg”

C7 “Till here, right? Or till here?” [*using C5’s body to demonstrate it*]

C5 tries to maintain the distance between his hands while moving them to the board. Holds them close to the board, **C7** draws a line between **C5**’s hands.

C7 “T-h-a-t long?”

C6 “No. This long” [...]

C7 “I don’t think that this is one meter” [*laughing*]

C6 “I don’t think that either”

C5 “Right. Much too short”

C6 draws a longer line.

[...]

The teacher walked around in class, observed the children during group work, using formative ways of assessment (e.g. “How does a child behave in the group?, What does it contribute to the group work?, How does it interact with others?, How does it approach such a task?”, teacher interview). She occasionally gives advice or answers questions. However, her advice exclusively referred to the working approach, methods, and relevant question, but never to the solution itself.

At the end, children write down how they had proceeded. Then they present the working process as well as the result to their class members.

Teacher: ... children get into interaction and they have to think on their own about questions like: “How can I approach this?”, “What am I doing here right now?”, “How can we solve such a task?” And they just have to talk to each other a lot and to think about “How does this actually work?” and not only to solve a ready-made maths problem.



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