



- between theory and practice in good science teaching

The Mind the Gap project started an important conversation in Europe about the need to implement school based science teacher professional development. In all of our countries, political leaders and science educators are now working together with classroom teachers to change the way science is being taught. The inquiry based approach to science teaching is making its way from theory into classroom practice as we continue to MIND the GAP!



The members of the Mind the Gap project continue to work together, now as a part of the S-TEAM consortium. Visit the S-TEAM project webpage for more information.

<https://www.ntnu.no/wiki/display/steam/SCIENCE-TEACHER+EDUCATION+ADVANCED+METHODS>



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Ideas of good practice in science teaching are abundant throughout Europe, including those which support the use of Inquiry Based Science Teaching (IBST). The Mind the Gap project has gathered many of these ideas together for exchange and dissemination in seven European countries: England, France, Germany, Norway, Spain, Denmark and Norway.

Looking into classroom in Europe through video analysis, we found that many science lessons seemed to lack repertoire of teaching activities promoting IBST. Inquiry based science teaching is at the heart of the scientific method – it is what scientists do to understand the natural world by asking questions, by collecting data, making predictions, testing out ideas and making conclusions. Teaching science that demonstrates how science really works, rather than just telling what we know is not impossible to achieve in school science, but it requires that teachers accept ideas of inquiry and scientific thinking when framing their lessons.



Generally, inquiry based science teaching (IBST) may be characterized by activities that pay attention to engaging students in:

- Authentic and problem based learning activities where there may not be a correct answer
- A certain amount of experimental procedures, experiments and “hands-on” activities, including searching for information
- Self regulated learning sequences where student autonomy is emphasized
- Discursive argumentation and communication with peers (“talking science”)



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The Mind the Gap project recognized the importance of working directly with teachers and teacher educators for implementing change in science teaching. Based on the successful SINUS project for teacher professional development in Germany, we have further developed modules for teachers to use in school based programs of development.

Following is a small representation of some of our work. Please visit our webpage for all products and for additional information.

<http://www.uv.uio.no/english/research/projects/mindingthegap/Deliverables/index.html>

✓ **The role of information technology in science teaching**

What do we know about successful criteria for choice and use of ICT based materials?



Viten.no

A web-based science curriculum designed to promote scientific literacy through the use of relevant scientific controversies (socio-scientific issues).

<http://www.viten.no/eng/>

✓ **Dissemination and professional development**

What do we know about conditions for dissemination of TPD models across MtG countries?

A report on existing models of teacher professional development on IBST in seven European countries is available at our webpage.

✓ **The role of communication and argumentation in learning science**

Minding Gaps in Argument



An argumentation workbook to be used as a teaching resource is available at our webpage.

✓ **Inquiry based science teaching as a means of acquiring scientific literacy**

Teaching scientific literacy using IBST

<http://www1.ind.ku.dk/mtg/wp3/scientificliteracy/maps/2>



A comparative study of IBST for scientific literacy in Denmark, The United Kingdom and Hungary with the collection of examples of good practice. Weighted concept maps are available at the webpage.