

Planning CPD

What professional development do Facilitators need?

Many survey participants valued the creative nature of science in science education, but also recognised the restraints. This was often about knowing how to teach it, fit it into the curriculum, and find time and resources. To help develop the CREATIONS vision and put it in to practice, our results show that we need high-impact professional development in teaching for creativity in science and in dialogic pedagogy.

We found that teachers had often been involved in learning about inquiry-based science education (IBSE) and using technology, but that learning about teaching for creativity in science and/or in dialogic pedagogies was much less common. Both Primary and Secondary teachers felt this; although Primary teachers said they had fewer training opportunities. We think that additional science teacher education in teaching for creativity and dialogic pedagogy would help teachers put their ideas about creativity in science into practice. Please have a look at the CREATIONS Demonstrators, as they are also useful resources to help teacher educators achieve this.

Another challenge we identified for teacher educators is making sure that professional development does have high impact – our survey showed that professional development for teaching for creativity did not always have a strong impact on practice.

What does good professional development look like?

Teachers told us that a high quality-learning environment is crucial. They are looking for:

- Opportunities to participate in courses (either face to face or through online study)
- Evidence-based teaching suggestions
- A non-judgemental and supportive learning environment so that they feel able to take risks and try out new ideas
- Autonomy over their learning, with individualised learning that allows for self-direction
- The chances to network with peers, collaborate, reflect on and share good practice.

At CREATIONS, we aim to engage with teachers by providing a suite of resource materials, please see the Resources page. These materials will enable you to explore teaching for creativity in your lessons with support and independence. Good professional development also includes opportunities for educators to network with peers, collaborate, reflect on and share good practice. In this way, teacher *agency and empowerment*, and *individual, collaborative and communal activity for change* are embedded in the professional development process as well as in the CREATIONS pedagogy itself. To support professional development, we welcome Facilitators and teacher educators to join the CREATIONS discussion, <http://portal.opendiscoveryspace.eu/creations>

Previous projects and the wider literature have all identified that participating in Action Research, Lesson Study or Study Groups can all be highly effective ways of engaging teachers in developing professional practice. Some resources to support these approaches with examples of how they have been used in previous EU projects into IBSE and Creativity, please see the Resources page.

Suggestions for Teacher Educators

How can you help teachers engage students with creativity in science? The CREATIONS Features, Demonstrators, Framework, Planning template are all useful resources to support teacher educators in doing this, please see the Resources page. We also identified some suggestions for planning training provision that might use and share the CREATIONS vision for creativity in science education.

These include:

- Include explicit teaching for creativity in science in their courses
- Openly address different conceptions of creativity inside and outside science
- Consider how teaching knowledge and teaching for creativity can be mutually supportive— some ideas from cognitive science are helpful here.
- Modelling good practice in generating scientific questions
- Enable new teachers to access creative pedagogies through experience and modelling
- Help make links between disciplines (see the *interdisciplinarity* feature) by exploring and using different vocabularies and terminologies
- Make links with other University and School departments for interdisciplinary projects
- Offer support with assessment of student outcomes of creative pedagogies for some suggestions from previous projects that might be useful.
- Facilitating new teacher networking and reflection (e.g. In the UK, #ASEChat and #UKEdChat on Twitter).