Chapter 5

Teacher professional development plans

This chapter discusses the undertakings and experiences of the different teams taking part in the OECD-CERI project with regard to the development of teachers' ability to foster and assess creativity and critical thinking. Local team co-ordinators relied on three types of measures to design their professional development strategies: teacher training, individual follow-up, peer dialogue and collaboration. Seeking support from school and system leaders was also key to provide teachers with good conditions for professional learning. The extent to which teams relied on these measures varied as their relevance and effectiveness depended on the specificities of local contexts.

Introduction

Changing teaching practices requires some support. All country teams participating in the OECD-CERI project were requested to have a minimal professional development plan, and were encouraged to support teachers throughout the implementation of the project. Most of them seized this opportunity and documented how they supported the professional learning of the participating teachers.

This chapter presents and reflects on the strategies they have developed to enhance teachers' ability to foster and assess creativity and critical thinking in the classroom. Adapted to their context, those professional development strategies were very different from one team to the other. As participants had a large degree of freedom to design their strategies, the variability allows several preliminary lessons to be drawn.

This chapter builds on reports prepared by team co-ordinators to provide contextual information on their experience with the project as well as qualitative findings arising from their own observations and from participants' feedback (teachers, school and system leaders, or students). After discussing the professional development measures implemented by teams participating in the project, it highlights the main lessons from the teacher professional development plans implemented by the country teams to support participating teachers to foster their students' creativity and critical thinking.

Teacher professional development plans: the key ingredients

During the OECD-CERI project, country teams implemented strategies for the professional development of teachers to foster creativity and critical thinking in the classroom based on several measures. At a minimum, teams were required to introduce the project materials, objectives and suggested pedagogical approaches to teachers by organising a one-day induction training session at the beginning of the project. Apart from this common condition, co-ordinators were free to design the professional development plans of their choice depending on their interests, capacity and local context.

The large majority of local team co-ordinators opted for more extensive professional development plans than the minimum requirement. In addition to introducing the project's ideas and tools, they designed strategies to support teachers in implementing new pedagogical activities in the classroom and stimulate reflection on their professional practice.

As part of their professional development plans, local team co-ordinators relied on three types of professional development measures: training, individual follow-up, and peer dialogue. A fourth key element of their strategy was to seek support from school and system leaders, a favourable condition for the implementation of the three other measures.

The different aspects of the team professional development plans are discussed in the next sections. Illustrations of specific practices implemented by teams during the intervention complement the discussion with practical examples drawn from the experience of different teams with the project.

Training

The literature on teacher professional development emphasises that training programmes are useful to formally provide teachers with the knowledge necessary to enhance their professional skills (Hoban and Erickson, 2004[1]). Yet, this measure is also criticised for considering teachers as passive recipients of knowledge rather than active contributors to their own professional development, and for being too disconnected from teachers' everyday practices (Avalos, 2011[2]; Clarke and Hollingsworth, 2002[3]; Borko, 2007[4]). In that respect, critics call for the design of training programmes that are embedded in teachers' daily work and immediate context (Opfer, 2016[5]; Kraft, Blazar and Hogan, 2018[6]; OECD, 2019[7]).

In the frame of a project about changing one's teaching practice, teachers can immediately practice or try to implement the learning of the training, so that the training remains close to teachers' daily practice. Most teams develop training programmes that were closely connected to teachers' professional reality and useful to enhance their ability to foster creativity and critical thinking in the classroom. However, training programmes implemented by teams differed with regard to their format, their intensity and frequency, their approach to teachers' learning and their activities.

Different training formats for different contexts

Training programmes were a central component of all professional development plans implemented in the framework of the OECD-CERI project. However, the format of training programmes differed greatly between teams. Some relied on a unique induction session held before the start of the intervention, while others organised multiple training sessions during the project. The purpose of induction sessions was to introduce the project to teachers, raise their awareness of its goals and provide them with the information necessary to ensure a proper implementation of the intervention. Additional training sessions sought to further expand teachers' understanding of approaches or methods that could help them to translate the goals of the project in their teaching practices.

Induction sessions can be an appropriate solution for the professional development of teachers when they already have a strong motivation to change their teaching, as well as a solid knowledge base on the practices to implement. However, in practice induction sessions alone were seldom sufficient to fulfil the professional development needs of the project. The goals of the intervention were often new to teachers, as well as rubrics as a pedagogical tool and some of the related practices. A unique session could spark interest but would usually not lead to teachers taking

ownership of the ideas and use the rubrics, unless some other opportunities for learning were provided. Usually, teams that implemented a unique session on creativity and critical thinking were implementing a signature pedagogy for which teachers would be accompanied (see Chapter 3 for a more detailed discussion of signature pedagogies). However, training was most valuable when it consisted of several sessions held at regular intervals and continued to include a focus on the creativity, critical thinking and the project materials.

During the project, training programmes proved meaningful in two main respects. On the one hand, they were useful to introduce the ideas of creativity and critical thinking and the project materials to teachers. On the other hand, they provided teachers with opportunities to actively explore new pedagogical approaches and reflect on their teaching.

Taking ownership of the project's ideas and tools

In the majority of participating teams, the ideas of creativity and critical thinking were introduced to teachers using the OECD rubric and the set of pedagogical activities that were initially developed. In a few cases, the "five creative habits of mind" rubric (Lucas, Claxton and Spencer, 2013[8]) was used instead of the OECD rubric. Team co-ordinators also used different types of supplementary tools or approaches to guide teachers and make them envision a classroom in which students develop their creativity or their critical thinking, such as the "high functioning classroom" model (CCE, 2012[9]). Teams therefore trained and accompanied teachers to master the rubric (or the alternative tool) for various educational purposes: to adapt and design pedagogical activities, to make the concepts of creativity and critical thinking explicit for students, to undertake summative or formative assessments, etc. (see Chapter 2 for a more detailed discussion of the rubrics).

The process of acquainting teachers with the rubric and its implication for professional practice was challenging and often gradual. Several teams followed a systematic approach to foster teachers' acquisition of knowledge. At first, they introduced small changes in teachers' practices. In some teams, teachers worked on short pedagogical activities designed by external experts and tried out a range of new practices in the classroom to identify what worked best with their students. Other teams chose to start from school textbooks and progressively introduce changes into existing lessons. As teachers' understanding of the project improved, changes became increasingly substantial until they could design entirely new lesson plans. Although these mechanisms did not rapidly translate into a significant transformation of teaching practices, co-ordinators reported that they were helpful to secure participants' acquisition of new knowledge to innovate in their teaching. Gradual approaches to ensure teacher mastery of the new tools provided by or developed during the project are illustrated in Box 5.1, with examples of plans developed by teams in Brazil and the Netherlands.

Box 5.1. Plans and actions to introduce the project's ideas and tools to teachers in Brazil and the Netherlands

At the beginning of the project, most teachers in the Brazilian team had limited explicit reflection about how to foster students' creativity and critical thinking. The use of rubrics for teaching and assessment was also new to them. To address this challenge, co-ordinators chose to implement a professional development strategy inducing a slow-paced learning process, advancing step-by-step and starting with making minor changes to existing activities to get teachers accustomed with the innovative methods and secure their engagement.

Second, they developed a range of support material (booklets, video clips, etc.) to help teachers take ownership of the rubric and the innovative approaches promoted by the project. Third, since the principle of the rubric as a tool for formative assessment was new to teachers, they were invited to experiment with this method during training sessions through exercises on stylised rubrics specifically created for that purpose. Co-ordinators reported that this process proved very useful to build teachers' comprehension of the project's tools and methods.

In the Netherlands, although teachers already had some experience with the teaching approaches put forward by the project, the methods of the project and the rubrics were still new to them. Co-ordinators therefore planned the intervention as a system of steps intended to support teachers' acquisition of new knowledge and tools.

During the first training session, the rubric was introduced through an interactive workshop during which teachers engaged in discussions on some fundamental questions of the project such as: Are creativity and critical thinking complex skills? Can they be taught in school settings? Do they have levels of progression? etc. This discussion allowed teachers to start taking ownership of the goals of the project and question several preconceived ideas they had on creativity and critical thinking.

Thereafter, co-ordinators structured the intervention into three main stages to facilitate the progressive development of teachers' professional abilities to implement new practices. At first, teachers implemented lesson plans developed by education specialists. In a second stage, they designed new activities based on a common theme. The goal was to preserve some degree of comparability between activities to facilitate discussion and collective reflection during training sessions. In the third stage, teachers were invited to develop new activities with complete pedagogical freedom (i.e. theme not imposed). After each stage, teachers had the opportunity to reflect on their practices with the help of external experts.

Lectures and workshops

The type of training activities was a third important aspect of training programmes. Training sessions could either take the form of lecture courses or collaborative workshops. While the lecture-type instructional methods were sometimes preferred for induction sessions, follow up training sessions generally consisted of workshops.

Lecture courses were useful to transmit the project's ideas and tools to teachers. Yet, teams reported that most teachers had difficulties envisioning how these could translate into their teaching practices. In that respect, interactive workshops requiring teachers to engage in discussion and collaboration proved particularly useful. Besides encouraging engagement in learning, interactive workshops stimulated peer exchange and teachers' reflection on their teaching practices. In order to create the best conditions for dialogue, some teams divided participants into small working groups. This allowed everyone the opportunity to take part actively in the workshops and to work with peers teaching similar subjects at a similar educational level.

Several teams managed to trigger teachers' participation in their learning by designing appropriate training activities. The scheme implemented in Spain, described in Box 5.2, provides a good illustration of a training programme that fostered teachers' active exploration of new pedagogical approaches and reflection on their professional practice.

Box 5.2. Linking content to professional practice and collaborative workshops to foster teachers' active learning in Spain

The training programme implemented in Spain consisted of five training sessions spread throughout the intervention. Its central focus was the development of pedagogical activities and their implementation in the classroom. After each training session, teachers were given assignments to prepare at home and to experiment with their students. Once completed, the trainer used the results of assignments to design the next training session. The trainer thereby started each session by presenting the main problems encountered by teachers in their assignments as well as successful strategies to overcome them before introducing the next steps of the work. This way, training was embedded in teachers' professional practices and the successive stages allowed for a gradual improvement of their professional skills.

Furthermore, co-ordinators reported that an unanticipated shift occurred during the third training session when the trainer gave every teacher ten minutes to present their experience with the implementation of pedagogical activities to foster creativity and critical thinking in their classroom. After each presentation, other participant teachers gave feedback to the presenters, highlighted the successful accomplishments and suggested areas for improvement. This scheme encouraged teachers to share their views on effective practices and problems faced while getting inspiration from comparable experiences. The trainer subsequently observed an improvement in the quality of teachers' activities between those who attended the third training session and those who did not. In view of this result, the trainer decided to repeat the collaborative process during the following training sessions.

Individual follow-up

During the project, individual follow-up consisted of several mechanisms to support and mentor teachers in the delivery of new lessons making more space for students' creativity and critical thinking. Overall, the aims of individual follow-up measures were aligned with those of the training activities: to sustain teachers' awareness and motivation for the intervention on the one hand, and to extend their understanding of the goals of the project and the ways to reach them, on the other. Nonetheless, follow-up activities differed from training sessions, as they were continuous rather than occasional. Moreover, they focused on teachers individually, not as a group. In this regard, individual follow-up provided teachers with opportunities for continuous and personalised learning. Finally, they usually took place in teachers' schools, which was seldom the case of the trainings.

Different structures for teacher follow-up

The intensity and conditions of individual follow-up varied across teams. At a minimum, co ordinators communicated with teachers remotely and upon request. In the majority of teams, however, teacher follow-up was more structured. Some took advantage of the qualitative data collection protocol of the project to conduct interviews and classroom observations and provide teachers with guidance on their teaching. A number of teams also followed and supported teachers through online platforms.

A valuable measure implemented in teams comprising a large number of teachers was the recruitment of facilitators to follow-up with teachers. These facilitators were often teacher trainers or school-based pedagogical counsellors. They provided teachers with feedback and acted as intermediaries bridging the gap between teachers on the one hand and co ordinators and system authorities on the other.

The profile and background of professionals in charge of teacher follow-up was an important aspect of these measures. Individual follow-up was particularly beneficial when undertaken by stakeholders from outside the school context. With such external support, teachers not only conferred with colleagues sharing a similar mindset, but were also challenged to adopt new ways of working. Moreover, they had access to specialist expertise they would not have benefited from otherwise. Box 5.3 provides several examples of measures implemented by teams during the project for the follow-up of teachers by external stakeholders.

Box 5.3. The accompaniment of teachers in Hungary, India, the Netherlands and Wales

Several teams participating in the project provided individual follow-up to teachers. The Indian team, for example, collaborated with experts from the National Council of Educational Research and Training (NCERT). At first, these experts designed pedagogical activities for teachers to work with in the classroom. In the following stages, NCERT experts accompanied teachers individually in the development of new activities to foster student's creativity and critical thinking.

In the Netherlands, local team co-ordinators ensured that every teacher had two dedicated contact persons: a researcher from the co-ordinating team and an expert in didactics in their field (mathematics, sciences or visual arts). This mentoring scheme provided teachers with individual guidance on aspects related to both the specific goals and activities of the project, as well as to the appropriateness of their teaching practices as a whole.

In Wales and in Hungary, the accompaniment of teachers was at the core of the professional development strategy. The intervention was structured around the close collaboration between teachers and artists directly within the classroom to implement innovative pedagogical activities. External educational facilitators oversaw this collaboration and made sure that the intervention remained aligned with the fundamental purposes of instruction. The presence of artists allowed new ways of working to be introduced in participating schools and gave teachers the opportunity to develop their creative skills. The confrontation between the professional norms of teachers and artists also led to teachers' reflection on their professional practice and fostered learning. There was indeed a clear division of labour in the strategy adopted by these teams such that the artist remains an artist and does not act as a substitute for the teacher.

Responding to teachers' individual needs

Individual follow-up provided teachers with opportunities for personalised learning and guidance adapted to their own situation and needs. In some teams, individual follow-up allowed teachers to acquire additional knowledge and methods that were not directly part of the project's tools and approaches but that proved valuable to foster students' creativity and critical thinking. For example, a number of teams accompanied teachers in the improvement of their instructional and classroom management skills, which in turn enhanced their capacity to implement new teaching practices. As illustrated in Box 5.4, such methods can be useful to foster creativity and critical thinking in the classroom.

Box 5.4. Fostering instructional and classroom management skill in the Netherlands and Thailand

During the project, a number of teams built on the development of teachers' instructional and classroom management skills as a way to enhance their confidence and ability to try new teaching approaches. These skills gave teachers the capacity to set clear learning goals, establish a teaching strategy to reach them, recognise successes and failures, and identify areas for improvement. The examples of Thailand and the Netherlands are particularly interesting as local co-ordinators reported significant advances in teachers' professional ability to foster creativity and critical thinking after perfecting more generic teaching methods. In both countries, the resources of the pedagogical toolkit, namely the rubrics and pedagogical activities, were at the centre of this process.

The Thai team implemented an extensive training and follow-up plan to strengthen teachers' understanding of the meaning and potential uses of the rubric. Co-ordinators emphasised that this process ultimately provided teachers with more rules and procedures through which they developed the habit of setting learning goals with students and implementing a system of steps to reach these goals. In addition, participating teachers reported that experimenting with new teaching approaches using the rubrics enhanced their satisfaction and confidence with their work.

In the Netherlands, the development of teachers' instructional and classroom management skills occurred through the implementation of new activities designed by external experts in the classroom followed by subsequent reflection on their teaching. According to teachers, particularly those in the visual arts, the new activities were an "eye opener", as the tools and methods promoted to foster creativity and critical thinking equipped them with more knowledge to guide student learning, and increase the structure in their teaching. By putting the new approaches into practice, teachers enhanced their ability to set clear learning goals in advance, to provide students with specific milestones in their learning, and to connect these to relevant teaching methods and activities.

The benefits of strengthening instructional and classroom management skills extend beyond fostering students' creativity and critical thinking. By the end of the intervention, participating teachers in Thailand and the Netherlands reported that they had developed a better understanding of how to nurture the learning process by adopting these teaching techniques in all their practices.

Individual follow-up likely had a significant impact on the professional development of teachers. This was particularly emphasised by teams in which teachers were less familiar with the goals and practices promoted by the project. In such circumstances, co-ordinators often reported that teachers needed to be both motivated and mentored to assimilate the new concepts, handle the pedagogical toolkit of the project and implement new teaching practices. To that end, close accompaniment of teachers in their daily practices proved valuable as a supplement to training sessions that, by nature, could not ensure the same continuous development of their professional abilities.

Peer dialogue

The participation of teachers in professional networks through which they can discuss and share ideas with their peers has been identified in the literature as an innovative and highly effective form of professional development (Trust, Krutka and Carpenter, 2016[10]; Bolam et al., 2005[11]; OECD, 2019[7]). Within collaborative networks, peer dialogue allows teachers to collectively advance their knowledge, provide each other with support that is appropriate to their needs and collaborate to innovate in their practices (Paniagua and Istance, 2018[12]).

During the OECD-CERI project, the support teachers benefited from peer dialogue was similar to the one provided by individual follow-up as it was continuous and personalised. In contrast, this support did not come from stakeholders from outside the profession, but from teacher colleagues. It thus constituted a useful complement to follow up by external experts as it allowed teachers to share and acquire more tacit types of knowledge that were directly related to their professional practice and context.

Local teams relied on different means to promote peer dialogue. In all cases, these strategies proved useful to provide teachers with support and foster their engagement in the project.

Different ways to stimulate peer dialogue

Teams participating in the project encouraged peer dialogue in different ways. Some used training sessions as a forum for discussion allowing teachers to collaborate and exchange ideas. Others encouraged collaboration between teachers working in the same school or site through local meetings and workshops to design new pedagogical activities. In a few cases, intra-school peer dialogue emerged spontaneously as teachers collaborated to develop new teaching activities. This phenomenon even reached teachers who were not involved in the project through a contagion effect from the innovative practices of teachers participating in the intervention.

A number of teams also relied on virtual platforms as a tool for communication and collaboration among teachers. Web-based technologies offered new opportunities for peer dialogue, in particular when participants were geographically far apart from each other.

In advanced stages, peer dialogue and collaboration can lead to the emergence of professional learning communities. These are highly interactive communities where teachers meet or connect regularly to exchange ideas, solve problems and collaborate on teaching strategies. Box 5.5 describes measures implemented by the Brazilian team to promote the emergence of a professional learning community.

Box 5.5. Promoting the emergence of a professional learning community in Brazil

Peer dialogue and collaboration were systematically encouraged through most of the activities for professional development implemented by the Brazilian team. Training sessions, for example, were organised in the form of hands-on workshops during which teachers collaborated on adapting the rubric or designing pedagogical activities.

In addition, co-ordinators built up a network of facilitators, called "multipliers", to foster collaboration between teachers. At the beginning of the intervention, multipliers organised workshops within schools to disseminate information about the project. As teachers started to implement new practices, multipliers observed lessons, exchanged with teachers and principals, and took note of their actions. By visiting more and more schools, they became able to identify best practices and share them among teachers from different sites.

In the following stages, multipliers invited teachers to present their experience to their peers in other schools when they identified good opportunities for knowledge exchange. This exercise scaled-up the process as more and more teachers, after seeing examples of presentations, asked to present and discuss their own experiences. In the words of the project co-ordinators, teachers became "energised" and a "contagious growth mindset was spread among the group". According to co-ordinators, multipliers played a key role in the process of building a professional learning community across schools.

Lastly, co-ordinators developed an online platform to promote collaboration between participants. They invited teachers, school authorities and multipliers to post ideas, material and questions on the platform and to provide other users with answers, comments and feedback on their requests. At the beginning, co-ordinators and multipliers provided most of the user inputs on the online platform. As the intervention moved forward, teachers developed the habit of sharing practices and giving each other feedback, thereby diminishing the dependence of the platform on the co-ordinating team.

Supporting teachers and fostering engagement

In several teams, peer dialogue provided teachers with both practical and emotional support. From the practical point of view, peer dialogue allowed teachers to find solutions to common problems as well as to share knowledge, experience and best practices. It also helped to challenge preconceived ideas and negative assumptions by confronting teachers with evidence grounded in their professional reality. From the emotional point of view, peer dialogue enabled teachers to overcome natural fears or embarrassment when facing new approaches and adopting less familiar practices.

Peer dialogue also proved valuable to foster teacher learning and to facilitate reflection on their teaching. Box 5.6 illustrates the experience of the Vista District team (United States) where peer dialogue gave rise to an advanced process of collective reflection.

Box 5.6. Peer dialogue to foster collective reflection among teachers in the Vista District (United States)

Collective reflection on teaching practices was an important driver of teacher professional development in most of the teams participating in the project. To that end, co-ordinators often used the pedagogical toolkit – the rubrics and activities – to ask teachers to reconsider their teaching practices and challenge some of their professional routines. In this regard, the experience of the Vista District team was particularly interesting.

In the Vista District, teachers' reflection was originally stimulated by their hesitation to work with the international rubric, which they did not perceive as an operational framework with direct applicability in their teaching context. Interestingly, this situation did not translate into a low engagement in the project. Rather, it sparked discussion among teachers who ultimately designed their own set of rubrics, which they called "continuums". These locally adapted rubrics were then used to develop new teaching activities and to assess students. Once activities had been implemented in the classroom, student work was collected and reflected upon during meetings. The goal was to identify, within the lessons, the elements making student thinking concrete and visible and, thereby, to find ways to improve teaching practices. Subsequently, "continuums" were again discussed and refined based on the lessons learnt.

According to co-ordinators, the project gave rise to a gradual shift in teachers' mindset. The collective development and application of "continuums" drove their professional development by stimulating them to think and develop a deeper understanding of creativity and critical thinking, to relate this reflection to their own teaching practices, and to determine how to cultivate these skills with different learners.

Although measures stimulating peer dialogue can prove very interesting for the professional development of teachers, they often need to be closely monitored. Several team co-ordinators highlighted the necessity to take into account the emotional dimension of teachers' engagement in the intervention and paid much attention to providing teachers with a positive, respectful and caring environment. They pointed out the importance of preserving, throughout the intervention, teachers' inclination to share ideas and support each other by building a respectful model of interaction in which they can openly discuss without fear of being judged. Creating these conditions required continued efforts from local team co-ordinators.

Support from school and system leaders

A substantial body of literature has recognised the importance of support from school and system leaders for the professional development of teachers. These stakeholders have the ability to create a culture of innovation within schools and systems, as well as to break down barriers to teacher professional development (Darling-Hammond and McLaughlin, 1995[13]; Day et al., 2010[14]; OECD, 2018[15]; OECD, 2019[7]).

During the project, most of the teams reported that support from school and system leaders represented at least an important precondition – and at best a powerful lever – for the professional development of teachers. The level of support from educational leaders determined the amount of resources (time, funding, administrative support, etc.) and the potential incentives provided to teachers who engaged in the pedagogical intervention.

Teachers in participating teams benefited from varying levels of support from the school administrations. At a minimum, school principals were informed about the intervention and gave their approval for its implementation. In several teams, school and system authorities committed beyond providing a mere agreement to actively supporting the project. Some team co-ordinators actively sought support from school and system leaders by involving them in the planning and local implementation of the project. As illustrated in Box *5.7*, the experience of the Brazilian team provides a good example of this type of initiative.

The support from educational leaders sometimes led to the introduction of incentives to foster teachers' engagement in the project. These incentives took various forms. Some team co ordinators offered financial compensation for the extra time teachers invested in the project. Others provided a budgetary incentive for participating classes to fund a class outing of their choice. In a third instance, co-ordinators delivered a certificate of professional development to participating teachers at the end of the intervention.

Although incentives can be useful, the project also showed that they are not a panacea to foster the engagement of schools and teachers in an innovative intervention. Several teams reported that trust-based relationships and a tradition of co-operation between co-ordinators and schools proved to be a more influential driver of school participation than financial incentives.

Similar observations were made with respect to teachers. In the teams that offered an equal financial incentive to all participants, teachers' propensity to innovate in their teaching nonetheless differed. Highly motivated teachers spontaneously became group leaders, designed their own lesson plans and played a central role during collaborative activities. On the other side, several teachers participated less actively during group work and only implemented pedagogical activities designed by external experts. Although this observation is not surprising, it highlights the importance of teachers' intrinsic motivation for the success of innovative pedagogical interventions.

Box 5.7. Engaging school and system leadership in Brazil

In Brazil, the implementation of the project was led by a non-governmental association active in the field of education, the Ayrton Senna Institute (Instituto Ayrton Senna, IAS), in partnership with the state and municipal departments of education and the state's industry federation.

As part of their strategy to facilitate the implementation of the intervention and the professional development of teachers, IAS co-ordinators sought to ensure a large amount of support from educational leaders through active communication and exchanges. They organised meeting and school visits with education authorities from different levels – from heads of schools to regional administrations – to prepare the implementation of the project, plan training sessions for teachers, analyse the results and discuss areas for improvement.

In some schools, the engagement of principals had a large impact on the intervention as they promoted the project, shared documentation, organised professional development workshops and provided regular assistance to solve practical issues. Regional educational leaders were also convinced by the new approaches. By the end of the project, they were considering ways to initiate a transformation of the whole evaluation system toward more formative assessment, and to integrate the use of rubrics in other teaching practices.

Overall, the project showed that teacher professional development benefited from active communication with school and/or system leaders to ensure their understanding of the goals of the project, their engagement in the process of change and their support toward teachers. At a minimum, teachers should get from their hierarchy the approval and the practical ability to engage in this type of project. Optimally, this support should translate into the implementation of specific measures to ensure that teachers have the right incentives and the best working conditions to foster their students' creative and critical thinking skills.

Lessons learnt

Several lessons can be learnt from the strategies that the participating country teams developed to advance teachers' abilities to foster creativity and critical thinking.

The first is that providing teachers with professional learning opportunities beyond the project materials (rubrics and lesson plans) is essential. In a sense, pedagogical resources are also key to professional change, but probably just a second best solution to support teachers compared to face-to-face training and learning opportunities.

A second lesson is that professional development plans can take many forms, depending on the teaching standards, beliefs of the teachers, but also support of school and systems leaders to the project. Country teams shaped their professional development based on three key elements: training sessions, individual follow-up with teachers, and opportunities for peer dialogue. Overall, four types of strategies were adopted. The first approach was limited to an induction session presenting the project ideas and tools to the participating teachers. The second approach consisted of a series of four to five one-day training sessions, providing room for teachers to further their understanding of how to foster their students creativity and critical thinking, but also to discuss how they tried to do it in practice in their classroom. The third approach added to the training sessions an individual follow-up of teachers, with experts visiting them at regular intervals to give them feedback and foster self-reflection on their practices. The fourth approach added to training sessions and follow-up mechanisms several measures to build a professional learning community. These included school-based meetings to design new activities and reflect on professional practice, school visits during which teachers discussed their modified lessons (or lesson plans) with their peers from other schools, and the development of a digital platform that would allow pedagogical facilitators and teachers to discuss their practice.

All those approaches have their benefits and their implementation partly depends on the budget available to teams, but it is noteworthy that none of them was particularly expensive. The only approach that was arguably not very effective was to limit professional development to an induction training session. While this could work with expert teachers who are very motivated, the competition of multiple other tasks usually made this approach less effective in sustaining teachers' engagement with the project ideas and materials.

Changing one's teaching practices takes time and is difficult. The appropriate duration of professional development programmes depends on teachers' initial understanding of the practices promoted by the project. However, most of the teams reported that a period of six months was seldom sufficient to develop teacher professional skills to foster their students' creativity and critical thinking. Moreover, teams that implemented two rounds of intervention highlighted that the second round continued to bring about important benefits for teachers' learning.

Several elements of the teacher professional development plans could be highlighted as interesting practice:

1. Adopting a gradual strategy seems to have led to a stronger engagement of teachers. For example, several teams participating in the project chose to "start small" by inviting teachers to implement minor changes in their teaching or experiment with activities designed by external experts. This process helped to keep teachers involved in the project and to encourage their professional development.

2. Relying on peer dialogue to provide teachers with support and feedback can be a powerful strategy to develop their professional abilities to foster creativity and critical thinking. During the OECD-CERI project, teams used several means to promote such a dynamic, in particular physical and online platforms to foster peer dialogue. Online platforms were useful to provide participants with flexibility to communicate and collaborate. Yet, they were always part of broader systems designed to facilitate collaboration among teachers through joint lesson design, collective reflection and other means.

3. Measures to enhance teachers' ability to foster creativity and critical thinking are not necessarily specific to this particular goal. Likewise, the benefits of professional development activities implemented during the project extended beyond teachers' capacity to foster creativity and critical thinking. For example, the acquisition of instructional and classroom management skills proved valuable to advance teachers' capacity to implement new pedagogies, assess the outcomes of their teaching and improve their professional practice. Such generic competences have the potential to benefit other types of teaching goals or practices.

The practical application of the new teaching approaches is where the learning happens the most. As teachers reflecting on their experience with the project reported, the improvement of their professional skills came mainly from "practicing in the classroom". Practice also appeared to stimulate teachers' self-efficacy and motivation. A number of teams reported that teachers' views and beliefs evolved markedly after acknowledging – sometimes with surprise – the change in students' results, behaviour and enthusiasm with learning. Wherever teachers perceived that pupils appeared to learn better and to have more pleasure in their work, these positive outcomes, especially when obtained with underperforming children or with students with behavioural disruptions, led to an increase in teachers' motivation and desire to continue working with the new teaching practices.

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