

Policy Brief on the State-of-Affairs on Inquiry Based Learning & the World of Work in 13 European educational contexts

Insights from a comparative overview

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In recent years, the European policy agenda has prioritised the *promotion of equity*, the *enhancement of students' achievement* and the *promotion of entrepreneurship*. With a view to addressing these challenges, educational policy discourse has focused on the promotion of *inquiry-based teaching approaches*, on *opening schools to the world of work* and on *ensuring high quality teaching*. This document reports on the main outcomes of a comparative study conducted in the frame of the mascil project, concerned with the above-mentioned strategic priorities in education and links closely to the main areas of current educational policy discourse. The *scope of the comparative overview* is twofold: on the one hand, it attempts to develop a *thorough understanding of current policy intentions* and actual practice in science, mathematics and technology education; on the other hand it aims to *inform the development of future policy* in national and European settings, by identifying factors that impede upon effective policy implementation.

The comparative overview covers **13 European countries**, namely: Germany, Greece, Netherlands, United Kingdom, Spain, Cyprus, Norway, Romania, Czech Republic, Turkey, Lithuania, Austria and Bulgaria. The study takes the *reference year 2013*, while changes and reforms planned for the coming years have also been taken into account. Main outcomes of the study are presented below, while the full study is accessible at:

http://www.mascil-project.eu/images/pdf/reports/D2.2_Crossnational_report_and_policy_paper.pdf.

Emerging issues pertaining to systemic educational levels

- **Educational reforms** across the countries currently seem to **remain at the level of policy rhetoric** and have not yet been introduced across the meso level relating to schools and teachers – not to mention the micro level of actual implementation in classrooms. The **need for policy making to build bridges** between what is envisioned in general and how it can be implemented in practice becomes apparent.
- Important in this respect is the **existence of coherence in policy rhetoric between expectations of students' learning and expectations of teachers' training**, which seems to be lacking. Pre-service and in-service teacher training is not an area of focus at policy agenda, while policy envisions regarding the teaching of mathematics and sciences as evident in policy documents are not always in accordance with policy orientations regarding teacher training; such incompatibility is a **major hindering factor for bridging the gap between what is envisioned in theory and what is implemented in practice**.

Recommendation



There is a need for coherence in policy rhetoric between expectations of students' learning and expectations of teachers' training. The proposed compatibility between policy envisions regarding the teaching of mathematics and sciences as evident in policy documents and policy orientations regarding teacher training, will be a step towards bridging the gap between what is envisioned in theory and what is implemented in practice.

Emerging issues pertaining to Inquiry based learning

- Inquiry based teaching and learning is generally prioritized in mathematics and sciences policy agenda in the vast majority of the countries. However, if attention is turned to the countries for which inquiry based learning is not a policy priority, an interesting outcome appears: for **countries that seem to have a tradition on implementing activities relating to inquiry based learning, policy orientations seem to move towards more content-based curriculum objectives** and emphasis on content knowledge. Feedback from policy makers during workshops that were conducted within the mascil project provided elaborations on the reasons for such an orientation.
- At school level, findings indicate that in many countries policy rhetoric and official positioning in relation to inquiry base leaning hides another type of reality: in many countries, there is strong evidence that inquiry based teaching and learning is not incorporated in the school culture. **Schools' culture seems to be resistance to change**; this is particularly challenging for the expected impact of the mascil project.
- At classroom level, **traditional teaching focusing on the transmission of content knowledge seems to dominate everyday classroom practice** in many countries of the consortium. The **reasons** evoked seem to be a mixture of the following, with different weight depending on the national context: the need for corresponding materials and in some cases for guidelines for teachers; the exam- orientation of many educational systems with subject-oriented assessment objectives; the reluctance to implement classroom activities towards such aims, not only from the part of teachers but also from parents. It is evident that for successful implementation of inquiry based learning teacher professional development should be accompanied with the actual engagement of parents, something that represent a real challenge for the policy makers.

Recommendation



Inquiry based learning seems to be prioritized more in primary and general secondary than in vocational education. Policy makers should consider the potential of the methodology in vocational contexts, and make more effort in promoting inquiry based learning in vocational contexts.

Emerging issues pertaining to Schooling and the World of Work

- There is evidence of **wide variation** among the countries in relation both to the degree to which they prioritise connections between schooling and the work of work and the way that such a priority is evident in policy practice: out of the 13 national contexts analysed, in five countries it has been explicitly stressed in the national report papers that such connections is *not* a priority in general schools both at primary and secondary general education level.
- Connections between schools and industries or providers of informal education (museums, science centres, bodies aiming to promote science and technology) are more evident in vocational education. For general education, relations between schools and providers of informal education are evident, but not between schools and industries; in most cases these take the form of **extra-curriculum activities**. In addition, the vast majorities of the countries reported **need for cooperation between general and vocational education**.

Recommendation



The connections between schooling and the world of work seems to be prioritized at a level of a general rhetoric in some counties without concrete action plans, especially in primary and general secondary education. Policy makers should further consider the potential of such a connection, in the view of enhancing employability.

- At a classroom level, for the vast majority of the national contexts that have been explored there is evidence of a **lack of appropriate teaching recourses** in science and mathematics subjects relating to the world of work. In a similar vein, in terms of **assessment practices**, they are **rarely related to the work of work** in most national contexts. In the view of the significance of appropriate teaching materials and assessment tools to day-to-day teaching, the work within the mascil project aims to provide high quality support on the area.

Emerging issues pertaining pre-service and in-service teacher training

- There is a **wide variation in relation to the systems responsible for providing pre-service teacher training** and the orientation of science and mathematics training initiatives. In most countries the systems responsible for providing teachers training are the ones that define goals and expectations; as such overall national policy envisions in the area are still missing.
- Especially for in-service teachers, training is being conducted in short-term programs which are mainly project-driven. Both the **lack of concrete policy orientations** regarding teacher training and the unsustainable short-term cycles of training initiatives are considered a major hindering factor towards ensuring high quality teaching.

Recommendation



Transforming teacher practice should be a long-term project, requiring significant and sustained investment in continuous professional development. Short-term cycles of training initiatives have proven to be unsustainable and of little effect in transforming classroom practice.

Emerging issues pertaining to strategic educational priorities

- For the vast majority of the national contexts that have been explored **gender related issues have been prioritized in policy making and official rhetoric**; yet in most cases these remain at a general level, **without concrete guidelines or measures** on how this is to be achieved in science and mathematics education. Support for teachers to implement the policy envisions is still needed. It is notable that in most cases training in inquiry based approaches does not take into consideration gender differences in terms of interests, learning styles, motivation, despite evidence that inquiry based learning contributes to reducing gender stereotypes.
- In a similar vein, the prioritization **of tackling low achievement** in the policy discourse is evident in the vast majority of the national contexts. Yet, **it is the minority of the countries have set national standards** to boost achievement levels in mathematics, while in science education, no member state has specific national support policies.
- In relation to entrepreneurship, many member states have strategies addressing the implementation of entrepreneurship education into general education at primary and secondary level. In most of the cases, though, **support for teachers to implement entrepreneurship activities is still needed**. The above indicate an incompatibility between wider policies envisions and concrete policy actions for implementation.

Recommendation



Concrete guidelines or measures on how equity, low-achievement and entrepreneurship issues are to be addressed in science and mathematics education are needed. Important to this respect is the consideration on how specific teaching methodologies (such as inquiry based teaching and learning) may be a lever towards the accomplishment of such aims.