PROMOTING INQUIRY IN MATHEMATICS AND SCIENCE EDUCATION ACROSS EUROPE

CAPACITIES

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PRIMAS WP2 – Analysis of national contexts: International synthesis report comparing national contexts, pointing out differences, commonalities, and interesting resources and initiatives appropriate for adaptation to international use.

Final document pointing out differences, commonalities, and interesting resources and initiatives appropriate for adaptation to international use.

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COMPLEMENT TO DELIVERABLE 2.1

1. Introduction

The project PRIMAS comprises 14 teams from 12 different countries. It aims to effect a change across Europe in the teaching and learning of mathematics and science with teachers being supported to develop inquiry-based learning (IBL) pedagogies so that students gain experience with IBL approaches. Ultimately, our objective is a greater number of students with more positive dispositions towards further study of these subjects and the desire to be employed in related fields.

The purpose of WP2 “Analysis” is to produce an analysis of existing factors, structures, opportunities, and challenges that might help or hinder the widespread take up of inquiry-based methods in each country. This analysis will ensure maximum potential leverage and impact for the measures to be taken and the optimal use of existing structures and materials to make this impact cost-effective.

In the first Deliverable 2.1 of this WP, we produced a synthesis of national reports informed by each National Consultancy Panel. In order to structure our synthesis, we used a systemic theoretical approach proper to structure our analysis. It is based on Chevallard’s Anthropological Theory of Didactics (ATD), which provides tools for a description of mathematical or science activity in terms of praxeologies as a way to describe mathematical or scientific organisations in institutions.

This led us to a presentation using Chevallard’s nine levels of determination in order to help differentiate between the various factors in the analysis of constraints and conditions that characterise the teaching of mathematics and science in different countries: Since the 5 lower levels (subject, theme, sector, domain, and discipline) are mostly visible when one makes fine-grained observations of classroom practices, which is not within the scope of our analysis, we regrouped these into one level of discipline. Moreover, the two highest levels (civilisation and society) have been regrouped into one, reflecting the fact that the differences between these two levels did not seem very relevant to our purpose. Thus, the 9 levels were regrouped into 4 levels, but previously separated levels were still separated into different aspects. This led us to the following overall framework, which organised each national report:

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Level 1: Civilisation and society
Civilisation and society – specific role of mathematics or science in society, tradition, or recent changes in education …
Level 2: School
School/global organisation 1 – Separations between primary, lower secondary, and upper secondary education School/ global organisation 2 – Pre-service and in-service teacher training
Level 3: Pedagogy
Pedagogy 1 – Law of education: general statement on pedagogy, tradition in education (transmissive or constructivist tradition, place of the learner, ...) Pedagogy 2 – Type and role of national assessments
Level 4: Discipline
Discipline1 – Links between mathematics and science in the curriculum. Integrated science or separate subjects, ... Discipline 2 – Place of mathematics and science in the curriculum (number of hours). Competence of teachers in mathematics and science (profile of teachers) Discipline 3 – Type of curricula in mathematics or science, signs of IBL? Discipline 4 – Type of sources for teachers in mathematics and sciences (textbooks)? Discipline 5 – Are mathematics and science teachers using IBL? Why? If it is a requisite in the curriculum, even in the textbooks, why not?
In addition: Examples of successful professional development or IBL
Identification and collection of relevant IBL professional development and classroom materials (M 2.1, further used in WP3)

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The international synthesis led us to a set of conclusions regarding the objectives and tasks assigned to our WP. Mainly we came to the following conclusions:

• There is a generally good context regarding national policies, but in some countries one needs to be careful about excessive reforms, while in others IBL is a totally new paradigm.

• There is clearly a necessity to adapt the general schema of our project to local specificity regarding not only culture in IBL but also school organisations and professional development opportunities.

• Regarding pre-service teacher training, in most countries it is rarely IBL oriented. Therefore, it is an opportunity as well as a challenge for PRIMAS to implement some type of IBL-oriented training into pre-service teacher training at various levels of education.

• There is, however, a necessity to take into account teachers' level of expertise in their subject and in didactics.

• One big issue is to succeed in making the change in policies effective in classroom practice.

• We also need to take into account the possible negative side effects of national assessment and to adapt according to the variety of pedagogical/didactical resources.

The recommendations given in Deliverable D2.1 are general guidelines in order to inform the consortium about the realisation of the whole project; it gives us useful information for the construction of the general framework for the whole project and hints for the implementation of the project in each national context.

The identification of similarities and differences as well as good-practice examples has provided invaluable learning and knowledge exchange potential for the consortium members, as well as beyond.

In this complement to Deliverable 2.1, after more than 2 years of life of the project PRIMAS, each participating country produced a short document pointing out 2 or 3 specific issues that respectively made it particularly difficult, or on the contrary favoured, the realisation of PRIMAS objectives, i.e., the implementation of professional development in order to promote the use of IBL teaching in mathematics and the sciences.

In this report, a complement to Deliverable 2.1, the answers from participants are synthesised. To be consistent with our first deliverable, we propose to follow the same schema: the organisation we proposed based on our theoretical framework with 4 levels (see table above).

Our aim is to point out differences and commonalties as well as interesting resources and initiatives that may be adapted for use in other nations.

In this complement, we also point out issues that led PRIMAS participants to adapt their initial strategies to specific conditions and constraints of their national context in order to fulfill as best they can the general framework of the consortium project.

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2. Levels of civilisation and society – Tradition or recent changes in education, specific role of mathematics and sciences in society

As we mentioned in the initial international synthesis, in all countries of the consortium there have been recent changes in curricula (more or less significant when compared with the previous specification) that favour an IBL orientation in the teaching of mathematics and the sciences. In terms of policy, this is both a response to poor results in international evaluations such as PISA and a means of arresting the decreasing number of students choosing mathematics- or science-oriented university studies.

In most countries this response has resulted in a description of the curriculum that emphasises competencies in addition to "academic" content, although that is not true for either Hungary or Romania, where the curricula remain content oriented, which tends to inhibit the development of IBL.

Nevertheless, even when curriculum intentions support IBL in a country's curriculum and educational policy, the means by which the objectives might be supported and reached are very varied. Although in most countries, school authorities are supportive towards implementation of IBL, in several, financial shortcuts and sometimes a strong tradition in a transmissive-type of education prove to be barriers to ensuring an effective change in teaching practices.

Altogether, at the level of civilisation and society, indications are that the political climate is in favour of IBL in the teaching of mathematics and the sciences.

One important objective for PRIMAS has been to communicate and promote IBL to out-of-school target groups, including parents and politicians. In this sense, many varied actions such as mathematics and science fairs, exhibitions, open-days in research laboratories, and a night of sciences have been really successful (**Deliverable D.6.1** PRIMAS "Guide for supporting actions in promoting inquiry-based learning in out-of-school target groups"). Such actions are likely to support policy changes by ensuring that IBL ideas permeate the public consciousness most widely.

Globally at the level of civilisation and society, **Deliverable D.7.1** about policy is important to take into account; it reinforces and complements some issues discussed here.

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3. Level of school – Global organisation, separations between primary, lower secondary, and upper secondary education, pre-service and in-service teacher training

At this level, the global organisation of schools is quite varied in the different countries, and this can have strong influences on the implementation of PRIMAS. However, we note a major variation across the project partnership concerning the training of teachers (especially in-service training), which potentially has a major impact on the intentions of PRIMAS.

As identified in the initial international synthesis, in all countries the lack of qualifications in mathematics and science of primary school teachers, as well as lower secondary school teachers in some countries, is problematic, since these teachers lack relevant pedagogic content knowledge to implement IBL into their pedagogic practice (this is particularly relevant in the UK, Norway, and Spain).

In Hungary, a recent political decision ensured support and improvement in conditions for schools in disadvantaged areas. This has provided an opportunity for the work of PRIMAS in Hungary.

In most countries, pre-service training seems to be a good place in order to make beginning teachers aware of IBL approaches. In countries like Spain, Switzerland, Slovakia, and Cyprus, it is acknowledged that a good IBL-oriented training in mathematics and science education has been possible and reinforced through PRIMAS, especially when changes in teacher training had occurred recently. This has been the case to some extent in the UK, but recent policies there tend to shift the emphasis of initial teacher education directly to schools, which militates against curriculum development and supports the status quo in teaching methods.

On the contrary, in practically all countries of the consortium, difficulties in in-service teacher training have provided challenges to the implementation of PRIMAS. Examples of reasons that hindered the implementation of PRIMAS are given by all countries.

Most of the time the structure of in-service training is very loosely controlled, and the training mainly consists of one- or two-day sessions organised by some volunteer teachers, who do not have qualification as trainers. Moreover, teachers do not gain any gratification for participating in training courses, and in some cases, they have to take part in this training in addition to their usual teaching time, or even have to personally pay for the training. Moreover, in most countries, there is very little pressure on teachers to make them take any in-service training course. Even if teachers are willing to participate in training courses, they are usually not willing to do work outside of the session (for example, doing some homework such as reading a relevant article). In general, teachers are usually interested in ready-to-use recipes to be implemented in their class the next day and prefer this when they are given materials ready for immediate use. It generally is the case in all countries that there is no strategic structure supporting, nor any culture that values, in-service training and professional development. It has consequently been a problem in most countries even to train multipliers. Yet, there are some exceptions.

In Romania, in-service teacher training is controlled by inspectors, who do not offer IBL-oriented training and moreover never take it into account when inspecting teachers. Since these inspections are the only measure used to determine a teacher's improvement in salary, this situation proves a major challenge for enrolling teachers in IBL professional development programmes.

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In Spain, there is a powerful and well-established structure for teachers' professional development called teachers' centres. The PRIMAS team in Andalusia was able to collaborate with these centres, yet they were faced with a problem of motivation from teachers, since in spite of these centres, there is no reward and very little recognition for teacher development. Moreover, recently the government announced some financial cuts that might result in a loss of potential for the teachers' centres.

In Switzerland (Geneva), all teachers (at all levels) are entitled to 5 days of in-service training every year, and replacement teacher costs are provided. However, participation is voluntary, and only a small number of teachers are keen to take part. However, the PRIMAS team was provided with a mandate from the ministry of education to run a compulsory course in conjunction with the introduction of a new curriculum and a new textbook that is IBL oriented. However, mainly for financial reasons, this course was only one day long and required adaptation to a local structure to make the training more efficient.

In Norway, there are national centres supporting mathematics and science education that organise professional development. However, these centres mainly fulfill the directives of the government. As a result, it has been quite difficult for the PRIMAS team in Norway to collaborate with these centres, and therefore they had to look hard for opportunities to attract teachers to in-service training courses, since teachers have to pay for courses other than those of the national centres.

In Denmark, in primary and lower secondary education, IBL-oriented training courses in mathematics and science are available, and teachers are in general willing to participate. Yet, the conditions for participating have recently deteriorated since teachers now have to pay some tuition fees that neither the government nor their school can cover. In upper secondary schools (gymnasium), a network called *Danish Science Gymnasiums* (DASG) exists. The network, which includes about half the high schools in Denmark, requires that the member schools work explicitly towards contributing to professional and didactic development within mathematics and the sciences and be willing to allocate teaching resources accordingly. Individual schools must be involved in at least one of the current projects within the network at any given time. The mission of DASG is to:

- develop new teaching and learning systems and new teaching resources based on curriculum research and recent pedagogical thinking,
- support and promote in-service training activities, including seminars and conferences,
- provide the framework for cooperation between upper secondary schools, universities, and trade and industry,
- highlight best-practice mathematics and science teaching.

PRIMAS is currently collaborating with the DASG in educating upper secondary mathematics and science teachers as PRIMAS-multipliers. The DASG network has turned out to be strong asset in educating such multipliers.

In the Netherlands, *Platform Beta Techniek* (PBT) is an umbrella organisation funding initiatives in schools to focus more on mathematics and science in ways that support IBL. Many schools are taking part in this kind of activity. This has prompted a need for professional development, and the PRIMAS team has been collaborating with the scheme, working with the modules developed in conjunction with the Freudenthal Institute.

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In Slovakia, three professional development courses for practising teachers have been developed with IBL content promoting IBL pedagogies. These have been accredited by the Slovak Ministry of Education, Research, Science, and Sport since the beginning of year 2012. Three courses in mathematics, chemistry, and physics have been designed that support practising teachers in using IBL pedagogies and content. The courses cover some 110 lessons. One half of the lessons are taught as demonstration lessons in classrooms and laboratories of a PRIMAS partner university (Faculty of Natural Sciences). The other half of the lessons are taught using e-learning support. PRIMAS IBL modules are translated into the Slovak language and supplemented by tasks and problems focusing on the content of a particular subject (chemistry and physics). Teachers are awarded credits when they fulfill the course requirements successfully. Those credits will help them reach the next level in their salary scale.

In the UK, a change of government in 2010 brought about many systemic changes in relation to all aspects of education including at the fundamental level of school governance and funding. Most significantly for the work of PRIMAS, systems of support and professional development that were previously well-established by local authorities have ceased to exist in the new regime. Also the Centre for Excellence in Teaching Mathematics that had been established to support teachers' in-service professional development was re-established in a new and less-ambitious format. Consequently, the in-service professional development programme of PRIMAS has been difficult to establish.

It seems that across the partnership, the general situation regarding in-service training and professional development of teachers is often not very well structured or supported at a systemic and institutional level, and participation does not give teachers sufficient reward. Even in such difficult circumstances in most partnership countries, there have been successful initiatives in every country, and where that is not the case, partners continue to plan effective work in the later stages of the project. This seems to be a key issue for the success of a widespread and durable dissemination of IBL in teachers' practice.

Here again, our conclusions can be put in perspective with the conclusions of Deliverable D.7.1 about policy. Moreover, PRIMAS is developing a collection of IBL classroom materials and IBL professional development materials for teachers in Europe (see **Deliverables D.3.1** and **D.3.2)** and a guide for professional development providers that offer courses for mathematics and science teachers in IBL pedagogies (see **Deliverable D.4.1**). These are important achievements of PRIMAS in order to bring more unity across Europe regarding teachers' professional development and particularly access to IBL courses.

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4. Level of pedagogy – General law of education, teachers' practices, national assessment

As we noticed in the initial international synthesis, at all levels of education and in all the countries of our consortium the general laws and policies of education (or equivalent) advocate some type of pedagogy, which is mostly, if not totally, supportive of IBL. There is indeed a real homogeneity in the description of pedagogy in all countries' official documents. This homogeneity clearly reflects an actual international orientation in educational policies, which is a real opportunity for PRIMAS. Yet, beyond this uniformity, there are varied situations. In some countries, this orientation in pedagogy is very recent (Malta, Hungary, Romania, Slovakia, Cyprus, Spain, …). In some others, on the contrary, there is a long tradition of constructivist pedagogy (Norway, the Netherlands, Denmark, Switzerland, the United-Kingdom, …). In some countries, like Germany, the change has been quite radical after the first PISA study results.

In many countries, indeed, it is noticed that teachers' beliefs may hinder changes towards IBL. In Spain, for instance, it seems that teachers' beliefs are strongly oriented towards transmissive-type teaching; this orientation is reinforced by the popularity of textbooks that are mostly written according such a teaching paradigm. Similar situations appear to pertain in Romania and Hungary. In Germany, a reluctance to change seems to come from the fact that teachers (as well as students) feel that IBL results in more stress and significant changes from the comfortable norm. It is thought that teachers and pupils might feel uncomfortable with a change of expectations and atmosphere in the classroom (because of the newness). Thus, at the beginning of the implementation of PRIMAS IBL methodologies, the difficulties might be very conspicuous, and the positive effects of IBL might not be visible or not be experienced immediately. Instead, the way to gratification might be partly unknown, longer, or harder than expected. This is a big challenge for the implementation of the project PRIMAS. In Switzerland, one problem comes from the fact that constructivism has a long tradition, teachers feel that IBL is not new, and they believe they already do it; moreover, teachers are fed up with reform. In England, competition between schools, measured by aggregating national test or national exam results, is another source of stress that makes the adoption of IBL difficult: Teachers are reluctant to take risks in changing their teaching when their pupils' outcomes are monitored continuously.

Our survey suggests that clearly whatever changes are introduced in national curricula and the general law of education, these cannot be effective in changing teachers' practices if a wide range of conditions are not also altered in ways that support teachers in changing their views and attitudes in addition to providing structured support to make the desired changes. This is a real challenge for PRIMAS, and it is clear that in some countries constraints because of teachers' beliefs or working conditions are strong barriers to change. Regarding this issue, the survey of IBL teaching conducted in WP9 (see **Deliverable D.9.2**) is an important complement to inform the general impression discussed here. Moreover, WP5 about supporting actions for dissemination among teachers (see **Deliverable D.5.1**) is an important achievement of PRIMAS in order to respond to this difficulty.

At the level of pedagogy, national assessment is also an important issue. Here again in most countries, this is reported to be a challenging factor for the implementation of IBL since these national assessments are usually not IBL-oriented and therefore do not support teachers' use of IBL. This challenge is especially acute since these national assessments are very important for the institutions, parents, and students. However, we found one interesting exception. This issue is also well documented in **Deliverable D.7.1** about policy.

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In Denmark, there is a tradition of the oral examination of students. Until 2006, it was possible to have such oral examinations with groups of students. At that time, students took an oral examination in mathematics and in physics-and-chemistry combined at the end of 9th grade. The students were assessed in pairs. They were given a problem set and a bank of materials from which they could choose elements to use in their investigation and solutions of the given problems. Each group of students was given a different problem set. The teacher and an external evaluator (a teacher from another school in Denmark) would monitor and observe how the groups of students discussed and solved the problem, what kind of experiments they performed, and why. After some time, they would question the students about their answers to the problems and listen to their justifications and explanations. Based on the observations and dialogue with the students about their solutions and their strategies for finding solutions, the teacher and the external evaluator assessed the students, who were given individual marks. This type of assessment fosters IBL teaching methodologies. Following recent political developments in Denmark, the possibility of a re-implementation of oral group examinations is being considered. This type of assessment is IBL-friendly because it gives opportunities to assess inquiry processes. Hence, a re-implementation of oral group examinations in Denmark might help PRIMAS implementation there in the future.

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5. Level of discipline (and lower) – Place of mathematics and science in the curriculum, competences of teachers, signs of IBL, and type of resources (textbooks)

In most countries, because of politicians' awareness of students' reluctance to study mathematics and science, these subjects are usually supported and reinforced in policy developments (see **Deliverable D.7.1**). In Hungary, for instance, the numbers of teachers of physics and chemistry are low, which has been recognised by giving teachers of these subjects a salary increase of 10–15%, even though at the same time, the number of teaching hours in science and mathematics have been slightly reduced in some cases! In Malta, science is reaffirmed as one of the fundamental components of secondary education. In secondary schools, the maximum number of students in all science classes is now 16, and students can choose a specific scientific option with a considerable number of hours being allocated to science. In Switzerland, the overall number of hours devoted to teaching mathematics and science has increased. Moreover, the fact that in the new curriculum mathematics and science have been put together in one domain is an opportunity for PRIMAS. In the Netherlands, there has been a reform of all science and mathematics examination programs for senior high schools, with the resulting programs starting at the national level in 2015. One of the main aims of renewing the single disciplines was to make them more coherent. All programs define common competences related to research in science. Pre-service and in-service teacher training programs that prepare for these reform programs will certainly profit from PRIMAS PD-modules (see **Deliverables D.3.1, D.3.2 and D.4.1**). In the United Kingdom, monetary incentives have been put in place to draw top graduates into the teaching profession in mathematics and the sciences.

Here we see that in spite of the recognition by politicians of all countries of the necessity to improve the teaching of mathematics and science in order to attract more students, the changes in school regarding the number of hours and the conditions of teaching for these subjects are not always coherent. However, these are important issues for a successful implementation of PRIMAS.

One important issue here concerns the material that teachers can use. Here again, the situation varies in consortium nations. In some countries, teachers can benefit from the use of textbooks that are IBL oriented (Switzerland, the Netherlands, Denmark, Cyprus, …). In some countries, on the contrary, textbooks mostly support transmissive teaching, as in Spain, where such texts are very popular and therefore prove a challenge to teachers' adoption of IBL. In some countries, such as Slovakia and Romania, the recent changes and the lack of IBL-oriented textbooks is an opportunity for PRIMAS. Indeed, providing all countries with a wide range of IBL activities in mathematics and science at all school levels has been one of the main beneficial outcomes of the work of the PRIMAS consortium. These activities are available at the PRIMAS website (not all languages are accounted for at this stage).

Other aspects of the work of partners in different nations have helped inform developments in other countries of the consortium. In Slovakia, for instance, there has been a very interesting adaptation of the mathematical B-day inspired by the Dutch original. This adaptation resulted in 40 students (ages 16–18) from six secondary grammar schools being involved in a mathematical contest in two cities: Nitra and Bratislava. There were also secondary school mathematics teachers involved in conducting the contest. PhD students, PRIMAS mathematics multipliers, and university professors from Nitra and Comenius University in Bratislava participated in particular tasks in the contest preparation, organisation, and evaluation.

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6. Conclusions

This complement to our initial international synthesis allows us to point out some specific points of the international context that have been key issues in the implementation of PRIMAS in order to reach the widespread take up of inquiry-based methods in each country.

In concordance with **Deliverable D.7.1,** contextualising the European policy space in support of inquiry-based learning in mathematics and science, we have pointed out that in all countries, more or less recent changes in the curriculum are globally supporting an IBL orientation in the teaching of science and mathematics. This is a very positive aspect. However, we also pointed out that this support is not sufficient to achieve our goal. Indeed, changes in curricula and a favourable political orientation are insufficient to make a radical change in teaching practices.

At the level of society, there is a need for information and support from different actors, especially parents, in order to make an IBL orientation truly effective. In this sense, the PRIMAS project has taken this dimension into account by setting up in every country supporting actions in promoting IBL in out-of-school target groups (see **Deliverable D.6.1** and the various actions reported on the PRIMAS website).

One main issue concerns teachers' beliefs and ideas regarding IBL. The situation is quite varied in the different countries (depending the history and the culture in mathematics and science education), but differences also exist between primary, lower secondary, and upper secondary school culture. In most countries, the lack of mathematics and science training of primary school teachers is reckon as a major issue. The survey conducted for PRIMAS WP9 (see **Deliverable D.9.2**) is a precious resource for tackling this issue.

Moreover, the problem is not individual, and the evolution in teachers' mentality towards IBL is a collective professional issue that call for specific actions regarding teacher training and professional development. At the general level of pedagogy, PRIMAS WP5 is an important component for developing supporting actions for dissemination among teachers to promote IBL (see **Deliverable D.5.1** and the various actions reported on the PRIMAS website).

Moreover, the structure of teacher training is a major issue. In most countries, it seems quite possible to implement IBL-oriented courses within initial pre-service training. The main difficulties concern in-service training. In this matter, the development by PRIMAS of a collection of IBL classroom materials and IBL professional development materials for teachers in Europe (see **Deliverables D.3.1** and **D.3.2**) is important. However, good material is not sufficient; the structure of in-service training is a key issue. In this regard, we have given examples of the variety of situations in the 12 countries of our consortium. In most countries, we have pointed out some negative aspects that make it difficult to reach all teachers, motivate them, and make access to professional development attractive or plainly feasible, in terms of recognition and reward, financial or not. Some of these national conditions and constraints regarding the structure of in-service teacher training are out of reach for PRIMAS, since they involve policy issues (see **Deliverable D.7.1**). However, PRIMAS WP4 is an important component of our project to provide a global reflection and some propositions regarding this important issue of professional development through the realisation of a guide for professional development providers who offer courses for mathematics and science teachers in IBL pedagogies (see **Deliverable D.4.1**). These are important achievements of PRIMAS to bring more unity across Europe regarding teachers' professional development and particularly access to IBL courses. However, one conclusion of this international synthesis is that the question of professional development is not only a question of improving access to material and the structure of in-service training. It seems that there is also a need for a change in mentality and culture regarding the issue of teachers' professional training.

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At the level of pedagogy as well, national assessment is also an important issue. Here again in most countries, this is reported to be a challenging factor for the implementation of IBL since these national assessments are usually not IBL oriented and therefore do not support teachers' use of IBL. This problem is especially acute since these national assessments are very important for the institutions, parents, and students. However, we found one interesting exception in Denmark. This issue is also well documented in **Deliverable D.7.1** about policy.

Finally, at the level of the discipline, our survey points out that, in spite of the unity in the changes regarding curricula and the necessity to reinforce the teaching of mathematics and science (especially in response to both poor results in international evaluations like PISA and the alarming decrease in the number of students choosing mathematics- or science-oriented university studies, the conditions regarding the time allotted to mathematics and science and the recruitment of teachers are in conflict (see **Deliverable D.7.1**). PRIMAS can take, of course, no possible action in this matter, which is a strictly political and financial issue. On another hand, our analysis showed that the access to IBL-oriented material, through textbooks for instance, is quite varied across the countries of our consortium. PRIMAS WP3, through the collection of IBL classroom materials (see **Deliverables D.3.1** and **D.3.2)** and the international website with the national versions, is an important achievement of our project that will enrich, by pooling resources, the situation in every country.

In this complement, and throughout the deliverable and data collection of all other PRIMAS WPs, we have shown some very inspiring successful actions that circulate among the many partners of the project. These can be new material for the class or for a training course, but they can also be supporting actions for teachers or out-of-school target groups as well as examples of professional development programs.

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