Eight key competences

I am concentrating on three of the competences that we focused on during our recent study looking at curriculum review in the European Schools.

COMMUNICATION IN THE MOTHER TONGUE

• English as a *lingua franca* undermines countries and cultures – mother tongue education has never been more important.

• Mother tongue education is also about developing the ability to articulate thought, present one’s identity through the medium of language, persuade and be included in society.

• It is also an indicator of social class, as pointed out by Basil Bernstein via elaborated and restricted code. Elaborated code is the language of the educated middle classes, restricted code is seen as problematic for students in school. Can be a tool for inequality.

• Therefore mother tongue education has never been more important as a mechanism for promoting educational development as well as equality.

• For example the charity Save the Children has been running projects in Vietnam and Bangladesh for this purpose, teaching local languages well, as research has shown that high quality instruction in the mother tongue at primary school in particular helps later on with second language learning, and also has general educational benefits.

• Indonesia, on the other hand, has introduced a curriculum that has meant eight out of 10 students entering primary school will be taught in Bahasa Indonesia, a language which they are unlikely to be familiar with. This flies in the face of research by the World Bank and other
organisations, who have found that second (and subsequent) languages are learned most easily when the mother tongue is secure.

- Never has high quality mother tongue education mattered more then it does now.

**COMMUNICATION IN FOREIGN LANGUAGES**

- The UK is an interesting case study. It has become particularly lazy with regard to language learning due to the *lingua franca* situation that has arisen since the advent of the internet.

- Let us take the extreme example of Wales. In Wales, the first and second languages are English and Welsh, largely on political grounds, and which way around they are taught varies depending on the region and which language is spoken at home. As a consequence of this policy, additional languages are comparatively rare in schools. A Level MFL uptake in Wales has plummeted from 1467 pupils in 2005 to just 668 in 2013. (Population of Wales is about 3m, with around 200,000 in the 15-19 age group).

- Chinese, Japanese and Arabic were not being taught in any Welsh schools or colleges in 2013 (last available figures).

- Why is this a problem? Carolyn Goodwin, a language advisor at CILT Cymru, the National Centre for Languages, argued for second languages to be taught to Welsh primary school children in 2013, arguing that this not only teaches words, but also culture and understanding, empathy and communication with other cultures and other peoples. It is difficult to disagree with her argument.

- There are also implications for employment later in life, as the UK’s CBI (Confederation of British Industry) has argued. In terms of business demand, they identified the following languages as significant for breaking into new markets as part of a CBI/Pearson survey.

- French (50%), German (49%) and Spanish (44%) were identified as the most useful languages. A total of 31% of businesses wanted staff who
could speak Mandarin and 23% demanded Arabic skills. Others identified Polish (19%), Russian (18%), Cantonese (16%) and Japanese (15%). These are the emerging markets for European businesses.

- It is fair to say that there is currently a situation of panic in the UK regarding learning additional languages on an economic basis if no other.

- This is not the only reason for learning languages, however. There are other benefits. Research into bilingualism shows that people who can switch from one language to another – ‘code switching’ – have cognitive enhancements including the ability to multi-task (Penn State University); they can stave off dementia more easily; memory and perception are improved as found by the Center for Brain and Cognition at the University Pompeu Fabra (Barcelona, Spain); and decision making abilities are improved (University of Chicago).

- Therefore it is clear languages are the key to economic and personal development, and need to be embedded thoroughly in a balanced curriculum. The European Schools provide an excellent example of this being carried out in practice.

MATHEMATICAL COMPETENCE AND BASIC COMPETENCES IN SCIENCE AND TECHNOLOGY

- The 2013 French documentary film *Comment j'ai détesté les maths* is essential viewing to understand the conflict between teachers and the taught in contemporary mathematics classrooms.

- It paints a picture of an elite mathematical force attempting to communicate wonderfully complex methods and structures, only to be resisted by the public, in spite of changes to the curriculum since the 1960s which attempted to make mathematics more intelligible.

- The question for us today is why we need to teach mathematics (rather than, say, just arithmetic) to today’s pupils.
• Eric Gutstein, in the 2006 book *Reading and Writing the World with Mathematics* argued that it needs to be taught for its own sake because it is a beautiful and amazing human accomplishment; but also that a knowledge of mathematics is necessary to be prepared for university as well as future careers, especially those in science, technology, engineering, and mathematics (STEM) fields.

• This brings us to Science and Technology. What happens if these subjects are not taught properly, or at all?

• They are sometimes taught extremely badly. In the US, some of the scientific material in textbooks is regarded as badly flawed. A good example of this is a passage on the slide describing how the Grand Canyon provides ‘evidence’ that the earth may be younger than we think, in a Science textbook published in 1990 and aimed at Christian schools in the US.

• In the light of some of the poor quality or even misleading science education in evidence, we need to ask ourselves therefore about what is known as the ‘big ideas of science’, that *should* be communicated to students. There are ten:
  
  • All material in the Universe is made of very small particles.
  
  • Objects can affect other objects at a distance.
  
  • Changing the movement of an object requires a force to be acting on it.
  
  • The total amount of energy in the Universe is always the same but energy can be transformed when things change or are made to happen.
  
  • The composition of the Earth and its atmosphere and the processes occurring within them shape the Earth’s surface and its climate.
  
  • The solar system is a very small part of one of millions of galaxies in the Universe.
  
  • Organisms are organised on a cellular basis.
• Organisms require a supply of energy and materials for which they are often dependent on or in competition with other organisms.

• Genetic information is passed down from one generation of organisms to another.

• The diversity of organisms, living and extinct, is the result of evolution.

• Unless these ten ‘big ideas of science’ are shared, and communicated to the next generation, it is hard to see how scientific endeavour can continue in any useful form. Therefore they need to underpin any scientific curriculum worthy of the name.
CONCLUSION

This conference asks the question ‘What’s worth learning?’ With regard to mother tongue education, additional languages, mathematics and science, I have tried to give a flavour of some of the debates and discussions we have had as a research team when carrying out the curriculum study for the European Schools. Students need to be taught well in their mother tongues, adding new languages later on. They need to have a structured understanding of the world around them, and how it is expressed scientifically and mathematically. These are the gifts we need to share with the next generation of learners.