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## Development Education Research Centre Research Paper No.4



# Global learning and subject knowledge

Douglas Bourn



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**Douglas Bourn**

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## Executive Summary

Learning about global themes and development issues has become an increasingly important part of the school curriculum in England over the past decade. However Global Learning has often been perceived as being more about skills and values than knowledge. At a time when the Coalition government in England is giving increased importance to a subject based knowledge curriculum, where and how does global learning show its relevance and importance?

Global learning in the context of subject knowledge and the school curriculum should cover the following:

- learning about development and global issues but within an approach that encourages challenging of assumptions about 'how poor people lived' and an understanding of the causes of inequality;
- recognition that the learning should include space for perspectives from the Global South and as a consequence opportunities to look at topics and issues through different lenses;
- locating the learning within 'real world' examples, showing the complexity of issues, where simple solutions are not easy to find;
- recognising that any acquisition of knowledge and information about global issues and themes can raise wider questions that could be perceived as 'controversial'.

If subject based knowledge is seen in a pedagogical context that includes factual data and information, content-based knowledge and understanding and its applicability, then global learning could be seen as relevant within all these elements.

Research on four curriculum subjects, mathematics, modern foreign languages, science and religious education, suggests that these elements can be identified within global learning approaches. For example:

- development themes can be a valuable topic to develop subject based knowledge and skills in science and mathematics;
- learning about places, cultures and peoples elsewhere in the world can be addressed through all of the four curriculum subjects and can show the 'real world' relevance of a subject;

- the Global Dimension in terms of making connections between people's lives and those of people elsewhere in the world and bringing together more values based themes such as social justice, equity and sustainability can be promoted most noticeably within science, religious education, foreign languages and to a lesser extent mathematics;
- in terms of critical thinking skills, understanding different perspectives and addressing the challenges of power and inequality in the world, all four subjects have the potential for being appropriate.

However, in all four subjects there was evidence that including a global learning theme was perceived as being outside the 'core elements' of the subject and consequentially a distraction from the priority learning needs.

The construction and perception of the relevance and applicability of knowledge was different in all four subjects.

The research and broader evidence also suggests that many teachers and trainee teachers feel ill-equipped to incorporate a global learning perspective into the subject because of lack of confidence and skills to address the complexity of development and global themes. There was also considerable evidence to suggest that teachers' engagement in global themes depended a great deal on personal motivation, wider world experience and broader social outlook.

## 1

# Introduction

Terms such as global dimension, global learning and global citizenship have become increasingly noticeable features of the school curriculum over the past decade. More and more schools are interested in including themes such as climate change, fair trade, children's rights and global poverty in their curriculum. International links are also now a popular component of the life of many schools.

However there has been a perception in recent years that, apart from subjects such as geography and citizenship, learning about global themes is somehow extra to the core knowledge of the subject (See Hicks and Holden, 2007, Gadsby and Bulivant, 2010). Various publications on global learning for example place particular emphasis on topics like poverty or climate change or fair trade being introduced as 'drop down' curriculum days, as a topic for a school assembly or as a cross-curricular activity (DICE, 2008, Clark, Egan, Unwin, 2011).

There is also some evidence to suggest that many teachers assess their own ability to teach global learning in terms of knowledge about global issues (Hicks and Holden, 2007). (They) believe that if they watch the news more they will be able to do it. They see it as being about facts.

This can lead to a view that global learning has little to offer in terms of the debates about subject knowledge and the current Coalition government in England's emphasis on a return to the 'fundamentals of education'. The Global Dimension was promoted by the previous Labour government through the Qualifications and Curriculum Authority as a cross-curricular theme. With the phasing out of these themes by the Coalition government, where does this leave global learning?

The purpose of this report is to review the existing literature on global learning and subject knowledge and to review research in four curriculum subjects with the aim of identifying what, if any, are the specific features of a subject knowledge based approach to global learning.

The report will specifically aim to address the following questions.

- To what extent and in what ways can global learning enrich a subject based knowledge curriculum?
- From research within 4 curriculum subjects, mathematics, modern foreign languages, science and religious education, what are the specific elements of a particular subject that are relevant and applicable to global learning approaches?
- What is the relevance of the debates around perceptions of global learning in the four curriculum subjects to the everyday concerns of pupils and their interest in the wider world?

The approach taken in this report is to analyse existing literature on global learning and subject knowledge and to assess specifically research undertaken that looks specifically at how teachers, trainee teachers and schools have addressed these relationships. The evidence from the four case studies is based in three instances (modern foreign languages, science and religious education) on interviews with teachers and trainee teachers; and in mathematics on an analysis of a specific school-based example.

**2**

## Clarification of Terminology

A challenge for any research in the area of development education and global learning is to have some clarity on exactly what one is talking about and also on how schools and teachers perceive these areas.

Development education as a concept can be perceived as a pedagogy for global social justice along the following lines:

*a pedagogy of making connections between the individual and personal, from the local to the global, and which by its very nature, is transformative. It needs to be seen as an approach to learning that challenges dominant orthodoxies on education and perceptions about the world and enables the learner to look at issues and the world from a different place (Bourn, 2008 18).*

But for too many teachers and policy-makers, and some NGOs, development education is still seen as learning about development. In many schools this has resulted in promoting learning around topics such as Millennium Development Goals, global poverty, sustainability, gender, human rights and health in an uncritical manner (Smith, 2004).

The concept of the Global Dimension was constructed in 2000 by development education organisations in partnership with the then Labour government as a mechanism for taking forward many of the themes behind development education practice through a series of concepts such as sustainable development, conflict resolution, values and perspectives, interdependence. The use of these concepts was a conscious decision to break the mould, to see this area of practice as much more than learning about development, and above all to demonstrate the interconnectedness of people's lives.

*"The global dimension explores what connects us to the rest of the world. It enables learners to engage with complex global issues and explore the links between their own lives and people, places and issues throughout the world. The global dimension can relate to both developing and developed countries..... It*

*helps learners to imagine different futures and the role they can play in creating a fair and sustainable world*" (QCA 2007:2).

The revised curriculum for 2008 featured 'global dimension and sustainable development' as a cross curricular dimension. However, there were no specific guidelines for mapping each dimension through different curriculum subjects. Schools were left with freedom to address each dimension in a way appropriate to their school.

Alongside the emergence of the concept of the Global Dimension, Oxfam, which has made a strong and influential contribution to development education practice in the UK, posed a slightly different model based around the concept of 'global citizenship', with a particular emphasis on active participation in society alongside other themes identified above (Oxfam, 2008, 3).

For this study, the term 'global learning' is suggested because it moves the thinking forward by locating learning within a global context. It moves beyond interpretations of this area as learning about development issues and about just facts and data; it also acknowledges that the previous government's approach of the Global Dimension, whilst recognising the importance of learning in an interdependent world, did result in some schools reducing their engagement to ticking a series of boxes around a series of concepts (Bourn and Hunt, 2011).

Think Global, for example, defines global learning as:

- critical and creative thinking
- self awareness and open mindedness towards difference
- understanding of global issues and power relations
- optimism and action for a better world (Shah and Brown, 2009).

Whilst supporting the usage of the concept 'global learning', an underlying theme of this report is that there is a need within the practices in this area in schools to give greater emphasis to knowledge about concepts around development in a form that does not merely encourage reproduction of data and information. Therefore in this report, 'global learning' is seen as covering the following themes:

- learning about development and global issues, recognising the need to locate knowledge within an approach that encourages a challenge to assumptions about 'how poor people live' and an understanding of the causes of inequality;
- ensuring the learning includes space for stories and perspectives from the Global South, looking at topics and issues through different lenses;

- locating learning within 'real world' examples, which are often complex and do not offer easy or simple solutions;
- recognising that any acquisition of knowledge and information about global issues and themes can raise wider questions that could be perceived as 'controversial', including the influence of power relations and the causes of inequality.

**3**

## Theoretical Influences and Reflections on Global Learning and Knowledge

The different terms used in this field have tended to emerge either out of NGO practice or from specific recommendations by policy-makers. What is difficult to assess from this practice or policy statements is how global learning is perceived as being related to knowledge. To help clarify potential relationships, the contribution of two leading global education academics, Annette Scheunpflug from Germany and Vanessa Andreotti, a Brazilian educator now based in Finland are relevant.

Scheunpflug suggests that the priority is to address the competencies teachers need to address the challenges of globalisation. This includes dealing with the complexities of a knowledge society. She also raises the importance of locating learning within a recognition of living in a world of certainty and uncertainty, of changing relationships to our sense of space, and dealing with familiarity and uncertainty (Scheunpflug, 2011: 32).

She goes on to suggest that there are three kinds of knowledge:

- basic knowledge or basic competencies that form the foundation for specialised learning and skills such as literacy, mathematical literacy and natural sciences;
- higher level competencies such as problem solving and knowing how to learn;
- types of knowledge that are culturally specific.

Scheunpflug concludes that 'because the more there is to know, the more an individual does not know, people must be aware that they can be wrong, even if they are generally knowledgeable' (*Ibid.* 33). Education, she suggests, has to assist the process of decision-making under conditions of a relative lack of knowledge. One dimensional solutions and linear processes of learning do not address the complexities that often need to be addressed.

Andreotti, influenced by postcolonial and poststructuralist ideas, refers to the importance of 'pluralistic knowledge'. She suggests there is a need for teachers to 'resist instrumental thinking' and to 'reclaim the autonomy of the profession in shaping change in society and not just adapting to change'. Secondly, in response to the challenges of global technologies and the skills base of their pupils, teachers need to 'reclaim their role as cultural brokers' and increasing' their awareness and capacity to analyse and see the world from different perspectives, learning to listen and to negotiate in diverse and complex environments.' Thirdly, Andreotti poses that we should not be imposing what to think or offering universal pedagogies. The role of the teacher should be to keep 'possibilities open and equip learners to engage critically with each possibility, to listen and to negotiate ethically with others, and to analyse and take responsibility for the implications of their choices.' This requires an understanding of knowledge and identities within transient and changing learning communities (Andreotti, 2010:9-10).

Global learning, they suggest, needs to pose questions about the why, what and how of learning about and understanding the world in which we live. Learning within the classroom, they suggest, needs to take account of the impact of globalisation in all its facets and the related influences of power and social justice. These perspectives on global learning also suggest the need to recognise the importance of skills to address complexity, difference and uncertainty and to challenge notions of fixed contents and pre-determined ideas of society and what is possible to secure change.

Above all, what these theorists remind us of is that global learning is an approach to learning that challenges the acquisition and reproduction of received bodies of knowledge; that moves us towards ways of thinking that recognise different perspectives and positions; and that recognises that approaches will change following dialogue and debate. This means above all the need to learn about and understand different meanings and interpretations.

## 4

## The Changing Nature of the Practice of Global Learning

Ten years ago if one looked at evidence of development education and the global dimension within the school classroom, it would have primarily been seen through lessons in subjects such as geography, history or science at secondary level, and in more topic based discussions at primary level. The standard resource would have been photo packs related to a particular area such as ActionAid's Chembakolli material or material on areas such as trade and debt. Role-play games such as the Trading Game were a particular popular activity. References to these materials

and others can be seen in a range of geography text books (see Lambert and Balderstone, 2000).

In 2012 the situation is very different. Whilst these topic and theme-based activities still exist, the content, approach and form of delivery of the global dimension in many schools has changed in significant ways.

Firstly, with the introduction of Citizenship as a key subject within secondary schools, activities and projects around global issues (Brownlie, 2001), but also around young people's engagement in social action, led to a promotion in schools of NGO campaigns (Temple and Laycock, 2008).

Secondly, through a range of policy documents and support from NGOs on the global dimension, and broader curriculum changes, many teachers and schools began engaging with global themes for the first time. This has resulted in a wide variety of interpretations of the Global Dimension, from supporting a charity, to an international school link, to theme work within specific subjects, or to whole school policies around celebrating diversity.

Thirdly, in subjects such as Geography, Science, Modern Foreign Languages, Arts, PSHE and English, the global dimension was promoted as about the immediate locality as much as about far away places. The recognition of the impact of globalisation on people's lives resulted in schools developing classroom-based activities about evidence of 'the global in our community'.

Fourthly, as a result of the internet, schools have been able to provide pupils with instant access to and information about issues and people from all over the world.

Fifthly, and in part linked to the above, has been the expansion of school linking. Whilst this has always been popular in terms of links within Europe, the support of DFID and the British Council for links with schools in the developing world has resulted in a new dimension to learning and experience of global issues in the classroom (Leonard, 2008, Sizmur et. al, 2011).

Sixthly, as UK society becomes more and more multi-cultural, many schools demonstrate the global through the pupils in their classrooms. This has been a stimulus for the global dimension, but has also provided linkages to agendas such as community cohesion and has provided relevance for global learning linked to immediate and direct domestic agendas.

However, this growth in interest in learning about global issues has come under recent scrutiny and some criticism, for emphasising campaigning and action rather than making a direct connection to knowledge. A leading critic of this approach is Alex Standish (2008). Standish suggests that for example the DEA/GA sponsored Geography: the Global Dimension (Lambert, Swift, Morgan and Brownlie, 2004) publication aims to direct children in a particular way. His perspective is based on an approach towards knowledge that is seen as objective and external to real

world and practical experiences. What he does not address is that this publication aims to move beyond seeing global and development issues in geography as about far away places, and seeks to encourage an individual pupils' understanding of and relationship to the wider world (Bourn, Blum and Edge, 2009).

It is suggested in this report that within the framework of 'global learning' outlined earlier, there are some key knowledge elements that could be relevant and appropriate across a number of curriculum subjects.

These elements are:

- understanding of the causes of inequalities in the world, and what it looks like, including within and between nations; and covering areas such as economic development, food, health and education;
- understanding of the consequences of these inequalities in terms of access to resources and resultant issues that may arise;
- recognition and understanding that people have different lifestyles around the world and that there are varying interpretations and perceptions of wealth and poverty and what is perceived to be a 'good life';
- understanding the contexts and influences, particularly social, political and historical, in countries and regions in the world that are experiencing economic hardship;
- learning about policies, programmes and interpretations of sustainable development and their relevance and impact on countries and peoples around the world;
- learning about the social, economic, cultural and political impact of globalisation, particularly with regard to areas such as personal and political identity, migration and movements of people, and the impact of global economic forces on poorer countries and peoples.

Underpinning these elements is the importance of including within many subjects in the school curriculum a real world context that would challenge pupils to understand global issues, experiences and views that may be different from their own but may also be of personal and wider social relevance.

**5**

## Current Contexts for Subject Based Knowledge

The current Coalition government in England is putting considerable emphasis on the importance of subject-based knowledge in the school curriculum. This means that amongst policy-makers, a change is taking place in relation to how knowledge is perceived and promoted. But is it turning the clock back or providing opportunities for greater clarity about the role and relationship of subject based knowledge to learning in general?

One clear danger is to perceive subject-based knowledge as a return to a list of facts and data to be covered with minimal encouragement for enquiry and critically based learning. Standish (p.127) for example states, referring to geography, that the approach of global learning is not about learning about geography but about self-reflection and personal engagement with issues rather than exploration of those issues in a specific geographical and political setting. The focus, he suggests, has moved from knowledge and understanding about issues to making a connection and empathising with the people involved. This he feels displays contempt for subject knowledge – and presumes abstract learning and comprehension of geographical problems are not inherently enlightening. He also suggests that the global learning approach is sceptical towards objective knowledge itself.

What cannot be denied is that since universal education was introduced in the late nineteenth century, English schools have primarily taught a subject-based curriculum. But as the Council for Subject Associations in England has admitted, there may be:

*'a general consensus that schools should prepare pupils to play a full role as global citizens. There is less agreement about the learning they need, to achieve this, and the knowledge, skills and understanding they should acquire. The view is often expressed that you no longer need to go to school to get knowledge, because you can find out anything you want on the internet..... You need to know how to interpret what you find, how to judge it, how to use it and how to seek out further information. This requires a knowledge framework.... Subject disciplines studied at school provide the ideas and material that help us to make sense of information we encounter everyday life'* (CfSA, 2011 p.3-4).

The CfSA goes on to say it is deep not superficial knowledge that matters. It also recognises a clear distinction between subject knowledge and curriculum organisation. Knowledge, it suggests, has all too often been confused with the amassing and recalling of information.

What these debates suggest is the all too easy conflation by policy-makers and some practitioners of knowledge with the subject-based curriculum. One important contributor to these debates has been Michael Young. He has been

concerned about how recent curriculum initiatives have said very little about the question of knowledge. Yet he suggests:

*If we are to give...education in a knowledge society any serious meaning, we need to make the question of knowledge our central concern and this involves developing a knowledge-led and subject-led, and not, as much current orthodoxy assumes, a learner-led approach to the curriculum (Young, 2010: 21).*

Young suggests that a social realist as opposed to an absolutist or relativist approach to knowledge learning is needed. The core argument of social realism is that the acquisition of disciplinary knowledge is what distinguishes education from all other activities (Young 2008); and that disciplinary knowledge acquired in schools is fundamentally more powerful than the knowledge gained from everyday life (social knowledge) because of its explanatory power. It can move young people, intellectually at least, beyond their local and particular circumstances.

In the context of this report, a key theme is the need to recognise knowledge as an integral component of global learning, but this does not mean a mere accumulation of facts. Paulo Freire, whose thinking has influenced a lot of global learning practice, suggests that the learner should be viewed as an independent thinker who must be actively engaged in the process of creating new knowledge and applying critical consciousness to their learning (Freire 1972). Teachers have the responsibility to teach in a way, he suggests, that is humble, tolerant, consistent, and enabling, and that challenges the 'banking concept' of education in which they deposit and pupils passively receive information (Freire 1972:62).

Jane Gilbert (2005) suggests the need to move away from thinking about knowledge as a object to be mastered - a static end-in-itself - to a view of knowledge as a resource, something that people do things with in order to solve real problems. If people need to make sense of and act on global influences, she suggests, they first need to know a lot about themselves (p.197). They need above all to move away from an approach based on reproduction of knowledge to one of generating new knowledge. She further suggests (p.209) that a systems level understanding of a body of knowledge involves understanding how the body of knowledge works - both internally and in relation to other bodies of knowledge. For example science teachers interested in developing a systems level understanding of science might develop activities designed to explore the nature of scientific knowledge - how it is, how it is developed and how it is different from other kinds of knowledge.

A major driver in influencing the content of subject-based knowledge is the specifications for examinations. Lambert and Morgan (2011) for example note their observations on one of the GCSE Geography examinations that development is often seen as an uncontested term, meaning to think in terms of 'problem-solving' rather than 'problem posing'.

These debates about subject knowledge suggest that in order to address

pedagogical questions, there is a need to make a distinction between subject knowledge in an academic sense and subject pedagogic knowledge. This means recognising that the process of teaching identifies a special knowledge in each subject that belongs to education. This subject pedagogic knowledge can be seen perhaps in terms of categories or levels which should not be seen as separate from each other but only together provide the basis for a construction of approaches towards teaching and learning.

Hollman (2011) in the report for the Wellcome Trust on science education distinguishes between 3 categories:

- pure subject knowledge;
- topic specific pedagogy including skills and methods needed to teach specific topics;
- general pedagogy that includes skills and methods applicable across all subjects.

Within geography education, the Geographical Association has posed a variation of this:

- factual core knowledge including information and data;
- content knowledge that is about understanding;
- applied practical knowledge which means its application within society (Tapsfield and Lambert, 2011).

These approaches have some similarity to Scheunpflug's approach outlined earlier; and with the views of Andreotti and pluralistic knowledges there is potentially a basis for a framework for global learning and subject based knowledge.

If subject knowledge is seen in a pedagogical context that includes factual data and information, content-based knowledge and understanding, and its applicability, then global learning could be seen as relevant within all these elements. They could be summarised as:

- the importance of differing perspectives and approaches and critical reflection;
- the global context of the construction and application of knowledge;
- the global relevance of the subject and its potential role in securing change in the world.

## 6

## Teachers and Subject Based Knowledge

The evidence however suggests that whilst there is a potential framework for demonstrating the relationship between global learning and subject pedagogical knowledge, many teachers, whilst supportive of including global themes within their subject, find it challenging and difficult to address.

A common feature of a number of studies on teachers and trainee teachers' engagement in global learning is their lack of confidence, skills and knowledge (Scheunpflug, 2010, Holden and Hicks 2007: 7) in how to incorporate global learning perspectives within their teaching. For example, as Brown found, despite general positive attitudes about global learning amongst student teachers, they 'were far less clear about how global citizenship should fit into the curriculum, with only 28% agreeing that it should have curriculum space in its own right and 58% agreeing that it should run through all subjects' (Brown 2009: 29 - 30). Trainees are not always equipped or experienced in methodologies to deal with complex global issues in the classroom (Brown 2009) and 'seem to lack the confidence or expertise needed to translate their positive attitude toward education for global citizenship into classroom practice' (Robbins, Francis and Elliott 2003: 97). Surveys by Robbins et al (2003) reveal 'significant differences in attitude toward education for global citizenship between trainee teachers pursuing different major fields of study' (Robbins et al 2003: 97). In their ranking of 12 subjects, science trainees scored fourth and RE trainees (perhaps surprisingly) eighth in their motivations towards global citizenship education (Robbins et al 2003: 98). Brown found that humanities teachers were most enthusiastic about a global dimension with 94% agreeing that the global dimension was relevant to their subject and 85% of science teachers agreeing (Brown 2009: 29).

This evidence suggests a complex picture of teachers' relationship to global learning. Whilst there is considerable evidence of increased interest in, and recognition of the value, of global learning within schools, the confidence to incorporate it within their subject is less clear, and this is in part influenced by the subject they are teaching and the perceived relevance of global learning to their subject.

There have been several studies in recent years that have aimed to give an overview of global learning within schools. Some have been more qualitative and case study based (Edge, Khamsi and Bourn, 2009, Bourn and Hunt, 2011) whilst the NFER study for DFID has a combination of a quantitative and qualitative based approach (Sizmi et al., 2011). These studies show that there is evidence that learning about global and development issues can be a positive stimulus for deepening broader subject based knowledge. They also show that some form of direct contact and experience by teachers and/or pupils with pupils elsewhere in the world can make the subject area more real and relevant.

The NFER study also noted that whilst teachers generally reported that they felt reasonably confident teaching a range of global issues, this tended to be in areas such as the environment and fair trade. Teachers reported delivering global learning in a variety of ways, but the most popular in primary was through cross-curricular activities, and in secondary through discrete subject areas (e.g. geography or citizenship). The subject areas identified in the NFER study that included global learning were geography, citizenship, personal, social and health education (PSHE), religious education and art.

A recent survey undertaken by the Development Education Research Centre at the Institute of Education (IoE) of nearly 300 schools in England (a combination of primary and secondary schools) shows that only 3% of respondents do not use global learning as part of curriculum content. What is significant from the evidence gathered is the perceived impact teachers saw global learning having on subject knowledge. 33.6% said they thought it had strong positive impact and 56% said it had some positive impact. There was also evidence that if the school had an International School Award there was more likelihood of a stronger impact on subject knowledge.

The survey also showed that global learning through subject based curriculum was perceived to have greater impact on pupils' learning than linking programmes, outside speakers, fundraising or school assemblies.

With regard to specific subjects where global learning appears, the research reinforced other bodies of evidence of the influence of geography and citizenship and PSHE. Whilst this evidence is based primarily on schools that were known to have some element of interest in global themes, what was noticeable was the emphasis given to the importance of subject based teaching.

If subjects such as Citizenship have an uncertain future, then there is a need to look at other curriculum subjects beyond geography to assess their relevance to global learning themes.

## 7

## Global Learning and Modern Foreign Languages, Science, Religious Education and Mathematics

Modern Foreign Languages, Science, Mathematics and Religious Education are four very different curriculum subjects. All of them have discrete identities as subjects and distinct bodies of knowledge associated with them. The four subjects are referred to in different ways in a range of curriculum policy documents (DfES 2005, QCA, 2007). They are therefore good examples to choose as the basis for

making any wider observations and reflections on the relationship between global learning and subject knowledge.

First of all, this report will summarise the existing literature, policy materials and curriculum guidance that include reference to global themes within the specific subject; and then recent research in each of these subjects will be reviewed.

## Modern Foreign Languages

Modern Foreign Languages (MFL) within the school curriculum has been framed by five learning strands: speaking and listening, reading and writing, intercultural understanding, knowledge about language and language learning strategies. Both the statutory Programme of Study and the advisory Framework for Languages are content-free which means the 5 learning strands can be related to a variety of themes and contexts, allowing schools to determine which topics to teach. Four of the five strands relate to teaching about language skills, how language works, its manipulation and learning strategies, recognising that although languages differ, there are common grammatical, syntactical and lexical features. The remaining strand relates to Intercultural Understanding, explained within the Range and Content of the Programme of Study (QCA 2007a: 168) as 'learning about different countries and cultures and comparing pupils' own experiences and perspectives with those ..... where the target language is spoken.'

A major aim of MFL teachers is to teach pupils to become independent language learners and thus enabling pupils to develop their knowledge and understanding of a subject in relation to their own interests and motivations (Pachler et al 2009:85). Byram (CILT 2008) suggests, 'language learning can (should) have educational value and not only instrumental value' and specifies 'language learning in schools and universities should have an educational dimension ('criticality', self awareness)'.

The curriculum materials that make reference to global learning and MFL tend to highlight themes such as increasing cultural awareness and opportunities for direct contact with native speakers. Global learning, it has been suggested, could enable the learner to gain an insight into the culture and perspectives of the country they are studying. It can also be a way of providing opportunities to explore global issues while developing reading, writing, speaking and listening skills.

MFL can provide opportunities to address key themes within development education and global learning such as the following:

- learning with authentic materials and opportunities to identify with perspectives of people in the countries or communities of the target language;
- learning about lives of people in different countries, their attitudes and experiences;

- students' consideration of their own culture, comparisons with cultures of target language;
- world events and issues. (Midwinter, 1996:3).

As will be shown later through research based on interviews with a number of MFL teachers, this summary could be perceived as being rather simplistic and not recognising particularly the experiences and approaches of individual teachers and the specific social and cultural dimension within which they would be teaching.

## Science

In 2003, the Development Education Association and the Association for Science Education produced the booklet 'Science: The Global Dimension'. It outlined for science teachers the connections between the Science curriculum and the global dimension (Mackenzie, 2003). This booklet argued that:

*'Science is a global activity with consequences for all our lives. It is also a human activity with ethical, social and political dimensions. Science education provides opportunities to relate technological change to changes in a wider context, such as effects on the environment and our quality of life'* (Mackenzie: 2).

The booklet further stated that the 'global dimension offers pupils opportunities to explore real issues with real solutions where there are clear social, moral and ethical choices.' (Ibid, p.4).

In 2005 the then Department for Education and Skills outlined the most obvious connections:

*'Opportunities exist in Science to use data from many parts of the world. By doing this they can appreciate the international nature of science and the contribution scientists from all over the world have made. They can also address the benefits, drawbacks and some ethical issues that arise from the use of science and technology globally'* (DfES 2005).

But the Global Dimension to science education could be argued to be much more than showing that the subject is global and that it raises social, ethical and real life challenges. Global learning could be said to contribute to approaches towards the construction of scientific knowledge through pedagogical approaches. For example a global perspective can reveal how science can be controversial and show that there is not always one single clear solution. Science education with a global dimension could include looking at and comparing life expectancy, health and diet from around the world and the reasons for this variation. In areas such as chemistry, pupils could learn not only about metal extraction but also its economic and social impacts. Many of the examples that can be identified within the sciences are related to social, cultural and economic impacts of physical

processes; the subject lends itself to look at how scientists can contribute to a more sustainable world (Mackenzie, 2003).

## Religious Education

Religious Education (RE) has a different relationship to the curriculum from the other subjects identified in this study. It has a comparatively low status in schools and although it is compulsory, there is no statutory framework and limited curriculum time is allocated to RE. In 2004 the Qualifications and Curriculum Authority launched a non-statutory national framework for religious education and maintained schools must follow the syllabus agreed by their local authority. The framework provides two attainment targets: 1. Learning about religion and 2. Learning from religion with the intention that students question and challenge their own values and opinions by exploring a range of alternative views. It is easy to see very obvious global dimensions of RE and the framework suggests that RE could be explored through the following themes:

- rights and responsibilities: what religions and beliefs say about human rights and responsibilities, social justice and citizenship;
- global issues: what religions and beliefs say about health, wealth, war, animal rights and the environment (QCA, 2004);

The DfES (2005) guidance on the global dimension indicates that exploring the global dimensions of RE will help students to:

*Enhance their spiritual, moral, social and cultural development and their sense of themselves as part of a global community. They consider what religions and beliefs say about global issues and rights and responsibilities.*’ (DfES, 2005).

Religious education is however very often seen within the context of differing cultural perspectives, not addressing or questioning the learners' own worldview or the views of others. Woolley, in recognition of this assumption, suggests that 'spiritual literacy must involve more than being able to appreciate or to read the world; it must enable children to challenge the assumptions of society and to address issues of injustice and inequality (Woolley 2008:149). This echoes Maybury and Teece's (2005:186) argument for a religious education that doesn't simply present religion as a cultural phenomenon but that 'enables pupils to appreciate some of the power and passion of religion as a force for change.'

This suggests therefore that when one looks at the relationship between global learning and religious education there is a need to move beyond being aware of different religious and belief systems and the development of tolerance and understanding of other cultures, to include critical thinking, respect for others and the ability to argue effectively.

Bryan and Bracken (2011) in their study of curriculum opportunities for development education in Ireland make similar observations. 'Theoretically, there are clear opportunities within the RE syllabus for students to engage in a critical and creative fashion within a range of DE issues' (*Ibid.*: 83). Their analysis of RE textbooks, syllabi and curricular materials uncovered a range of opportunities for students to engage with issues relating to social justice, equality and morality.

## Mathematics Education

Mathematics education is one of the subjects where there has been little guidance or advice to teachers on the Global Dimension. The Global Dimension (DfES, 2005) refers only to how mathematics can be used and applied around the world. There have been very few resources that specifically address the relationship between development education and mathematics education, yet it is potentially one of the most globally relevant and important of all school subjects.

One needs to look at the academic literature in and around mathematics education to see the potential for linkages. Cotton (2001:24) refers to mathematics as a powerful tool in explaining and interpreting the world in which we live, 'maths both explains and constructs reality within our society'. Skovsmose (1994), talks about mathematics being more than a skills base but also a knowledge of how we employ these skills and a reflective knowledge which allows us to understand how our mathematical choices affect ways in which we view and create our worlds'. Cotton (p.33) further poses mathematics as contributing to a pedagogy for social justice if the following approaches are considered:

- acknowledging and building on the learners' heritage, valuing and emphasising cultural practices and knowledges;
- moving from informal to formal languages of maths to develop oral, formal and informal traditions;
- promoting collaborative and mutually supportive ways of working;
- encouraging learners to become active in both interpreting and changing their worlds;
- developing critical consciousness through mathematics activity.

Winter (2001:204) emphasises that mathematics cannot and should not be taught in a moral vacuum. 'Students learn maths closely allied to contexts that are real and meaningful for them and use the maths to understand these contexts better.' He notes

*'that all too easily maths teachers leave moral dilemmas debates to other subjects. All too often (we) retreat into drawing scatter graphs of height against shoe size'*

*when we could use GDP against the number of doctors per thousand of the population.'*

*'I would argue that we should be looking for wider, richer and more significant data sets to use with pupils so that we enrich their moral and cultural development as well as teaching them those statistical skills (p.206)*

Ernest, (2001: 280) notes we cannot divorce debates about maths from cultures. It is a discipline that has emerged and developed in a range of cultures around the world. If as Ernest suggests, an 'ethnomathematical' view is taken towards mathematics then the subject would be an intrinsic part of most people's cultural activities.

These perspectives can provide a basis for a clear relationship between mathematics and global learning. The emphasis is on showing the global but also the social and cultural specificities of the subject. Most examples of the relationship would be through having real world and practical topics to study numbers and algebra, shapes, spaces and measures. Related to this is the importance of mathematical skills such as interpreting statistics and data that are relevant to understanding global issues such as fair trade, international debt, population growth, migration, and human development indices.

Mathematics is clearly a global subject. Its roots and influences come from different places around the world. It is a subject that lends itself well to looking at the global influences in the development of knowledge and skills. Mathematics can also be an important subject in developing critical thinking skills around use, presentation and manipulation of data.

## Common Themes

What can one deduce in terms of common themes about the relationship between the different interpretations of development education with these four curriculum subjects?

- Development themes can be a valuable topic to develop subject-based knowledge and skills in science and mathematics.
- Learning about places, cultures and peoples elsewhere in the world can be addressed through all of the four curriculum subjects and can show the 'real world' relevance of a subject.
- The Global Dimension in terms of making connections between people's lives and those of people elsewhere in the world and bringing together more values-based themes such as social justice, equity and sustainability can be promoted most noticeably within science, religious education, foreign languages and to a lesser extent mathematics.

- In terms of critical thinking skills, understanding different perspectives and addressing the challenges of power and inequality in the world, all four subjects have the potential for being appropriate.

However whilst the four curriculum subjects appear to have a connection to global learning approaches, what is less clear is the added value of development education to these subjects. Development and global themes can be useful in bringing a subject to life. They can also be a mechanism for looking at differing perspectives and approaches towards learning.

These observations need now to be tested in relation to research from specific case studies with teachers and trainee teachers within the four curriculum subjects. The next sections look at evidence based on interviews with teachers and trainee teachers in science, religious education and MFL and at a project on mathematics with teachers and pupils in a specific school.

## 8

## Research in Modern Foreign Languages

This section is based on evidence from four semi-structured interviews with four modern foreign languages teachers based in two English secondary schools, on how they understand and address global learning and incorporate it within their teaching (Baker, 2011).

The researcher asked participants for their views about whether 'global issues' fit into Modern Foreign Language (MFL) schemes of work at Key Stage 3. All of the teachers interviewed accepted the relevance and purpose of teaching global issues in language lessons but there were significant differences in their responses, from one who saw it as central, one as important and two others who were more tentative. Whilst the research identified that there was scope for a variety of different "global issues" to be taught in Key Stage 3 MFL lessons there was little consensus. The evidence indicated that at Key Stage 3 treatment of these topics would have to be very rudimentary and a number of reasons are cited: pupils have an insufficient grasp of the foreign language and insufficient maturity to access the topics; textbooks do not address these issues therefore teachers would need to devote extra time to preparing resources; and the schemes of work are already crowded therefore there is little room for introducing new topics. (*Ibid* p.30-40).

An important finding is that teacher interest in the value of teaching such issues is vital in determining whether they are taught. "It would take an awful lot and would have to be something that someone was passionate about for them to be able to try to fit that into the curriculum." Similarly, the opportunities presented by the content-free curriculum are recognised; as one teacher comments "We

have the freedom to be able to mould our curriculum to one that we see fit and appropriate for the pupils".

What this suggests is that the inclusion of global learning is reliant upon the interest and motivation of teachers, the majority of whom have received no training in global learning. Although some language teachers are motivated by their own experience to develop pupil knowledge of global issues, there are many competing demands. For example virtually all MFL teachers would have spent time living and working in another country but evidence from Baker (2011, 33-35) and research at the Institute of Education with trainee teachers suggests that consideration of global learning topics tends to happen mainly at A level due to the mastery of language required to discuss these issues whereas at Key Stage 3 and 4 the text books and syllabi determine the topics taught".

Baker's research indicates that some teachers consider language work on global issues has a motivational nature and one considers it particularly appropriate for gifted and talented learners for whom "it is a perfect opportunity to try to introduce some of those open-ended questions" (p.33). This is clearly in line with the curriculum aim of "using the target language in connection with topics and issues that are engaging" (QCA 2007a: 169).

Above all, the research shows that although MFL teachers recognise the importance of preparing pupils for a globalised society and take the opportunity in language lessons and on school trips to foster values consistent with a global learning approach, there are a number of impediments to an integrated approach. Baker's findings highlight the importance of individual teacher motivation and their awareness of the global learning agenda. Despite interest in the global learning agenda, the dominant view was that the primary focus of the curriculum subject was instruction in the language and that global learning was peripheral.

## 9

## Research in Science Education

Science itself is a global human activity with ethical, social and political dimensions. However, this intrinsic global nature does not always transcend itself through to classroom practice in science education, where it is possible for teachers to take a very narrow approach by focussing on technical scientific processes and theory.

'Science itself presents new challenges, raising questions about our values, beliefs and the choices we make in our lives as individuals and as society. Such challenges

also demand that teachers are confident to face new ideas and to encourage not

only a sense of wonder and amazement in our young people, but also a critical awareness.' (Wellcome Trust/DfES, 2003). Science education, as suggested earlier in this report is not just technical but is imbued with ethical, social, and moral global concerns and perspectives necessitating a reflection on the nature of science itself and the way it is influenced and reflective of global perspectives.

The perceptions a science teacher may have of their role and how they see their subject is central to seeing the ways in which global learning can be reflected and incorporated within their subject. The following evidence is based on interviews with a series of trainee science teachers at the Institute of Education (Li Ting Chung, 2011).

As in the other subjects in this study, there is a strong relationship between the trainee teachers' interest in the global relevance of the subject with their own personal experience.

One trainee teacher, for example, stated she was particularly inspired to teach because of her understanding of science and its global impact:

*"I decided that I didn't want to go into research because I was very concerned about the global dimensions of biochemistry and molecular biology, specifically the genome project which was yet to start and a pile of other things and thought – people need to know about this... It's gonna impact everyone's life irrespective of whether you're gonna become a scientist or not and there was stuff that I could see like the hole in the Ozone layer ...and all of those things led me to want to become a teacher and think – no I'll do that"* (Ibid :39).

This contrasts with another trainee teacher who viewed global learning much more as an extra add-on to her core scientific teaching:

*Obviously I want to (teach the global dimension) as an individual teacher – there's lots of things I want to do and in reality I just don't know whether I – you know – the global dimensions stuff is another thing.* (Ibid: 39).

She very much identified herself as a Science teacher and felt that many aspects of the global dimension lay outside of the knowledge and expertise which is essential for a science teacher to know:

*I'm probably very narrow minded about it and perhaps don't look outside enough in terms of thinking about conflict, human rights, things like that. Which might be typical of science teachers.* (Ibid:40).

A theme that did emerge from the interviews and focus group discussions with trainee science teachers was the importance of the ethical dimensions of their subject and the need to understand and recognise differing viewpoints. As one science trainee stated 'thinking about how someone else might see something

from a different culture or a different country' is an important global dimension of science (ibid:32).

In relation to curriculum content however, the focus tended to be on discrete topics and sustainability themes, particularly climate change. A global dimension was not perceived as permeating all areas of the curriculum.

For a number of trainee science teachers, cross-curricular activities were seen as most effective ways of bringing in global perspectives. None of those interviewed felt that they could fully address global dimensions through their subject matter, in part due to confidence and knowledge about the topic or theme but also due to curriculum priorities.

For one science trainee, he felt that having a global focus made science more engaging for young people and would be distinctly different from 'straight' scientific teaching methods:

*It's hugely engaging which, unfortunately, a lot of science doesn't seem to be. It's something that people who are not well-versed in the technical details of the subject - they still have an opinion... Possibly the biggest advantage of the Global Dimension – it's interesting! (ibid: 45).*

Science trainees' concerns with teaching the global dimension was often related to their inexperience and lack of confidence with inquiry-based approaches to learning. For many science teachers, they were more comfortable with approaches based around practical experiments that proved a theory. The science trainees were more concerned with the validity of evidence used to discuss global issues.

This evidence supports other studies (Holman, 2011) that suggest a need to bring wider pedagogical approaches and a greater depth of subject knowledge into the training of science teachers, including enquiry-based learning, and broader perspectives. The global learning agenda highlights the importance of including pedagogical approaches that may challenge dominant approaches towards science education, but raise the importance of contested views, uncertainty and the influence of wider social and cultural forces.

## 10

## Research on Religious Education in Schools

Religious education (RE) teachers are used to very different styles and approaches from those of science or mathematics teachers. Running class based discussions and debates, posing contentious viewpoints and raising questions of ambiguity are common within RE lessons.

Research at the Institute with trainee teachers shows this most clearly. For example the following student RE teacher stated the following:

*It is a subject where controversial issues and subjects are raised an awful lot of the time in the classroom so I think RE teachers need to be prepared for that, in that it's sort of exclusive to that subject.*

*You'd make it about their (school students') reaction, like give them the basis and then say what is your perspective? Same as RE, you couldn't tell them this is true – you just have to present it and let them decide (Li Ting Chung p.46).*

Three of the RE trainees interviewed recognised that the global dimension meant looking at issues and viewpoints in a different way to one that was the norm. They also stated that this was important for their pupils because it would enable them to view themselves and their peers within their own community through a different lens:

*I think in terms of learning about the religions and where they come from and how they were established – it can have a massive impact on the way the students understand about different people and their backgrounds and their religions. (Ibid:31).*

This is very relevant to RE teaching, particularly when looking at different religions, cultural values and practices. There was a sense from RE trainees that looking at the global dimension of RE helped their students 'relate what we do in a very small focused level to things that are happening worldwide':

*If you're not taught about things that happened outside of the UK then you won't understand a lot of the things that happen in your community or in the UK that are an effect (Ibid: 32).*

All trainees had at least one placement in a multicultural inner London school. These type of schools were seen as aid to developing the Global Dimension in lessons:

*You take for granted where the kids in your class have come from. I think promoting that kind of global awareness is really helpful for the other children to relate to and give their opinions on the issue, especially in RE.*

*I'm in a very multicultural school now and a lot of them have contacts in, say, Libya so we've been talking a lot about what's been going on in Libya (Ibid:34).*

A theme to emerge from the interviews with the RE student teachers was that their subject offered a distinctive ethical and spiritual angle to an issue. One student teacher, for example, identified RE as the unique place in the curriculum to offer the philosophical and spiritual aspects of learning:

*Other subjects tend to assume globalness anyway like Geography and History ... but it's not really taking into account that we're all on a big blue marble hanging in space. So global citizenship I think is uniquely important to RE, maybe there's a spiritual aspect to Global Citizenship, oneness (Ibid.:35).*

There was some discussion amongst the RE trainees as to whether the global dimension should be approached thematically as such, or used to enhance religion-focused schemes of work, acknowledging that it 'depends on your pedagogy'. For example there is a view that the eight concepts of the Global Dimension, and dealing with complexity and ambiguity, were more natural to RE trainees than to, say, science trainee teachers.

The evidence from the interviews with these student teachers suggests that RE teachers are more likely to be motivated by the obvious connections between their subject and its natural requirement to include global perspectives. They felt comfortable dealing with different perspectives and comparing their own views with those of others.

## 11

## Research in Mathematics Education

This final case study, taken from an in-depth study in one secondary school in Germany, raises some issues and themes that are relevant to subject based knowledge and global learning in England.

The main idea of this research was to initiate a holistic self-organised learning process in which global and mathematical competencies and skills were combined. In the theoretical part of the study a 'global modelling process' was developed, which formed the basis for a critical reflection of the school project. Favourable conditions for a fruitful learning process were identified, which would encourage students to think about their role in a global society. The findings of the case study were finally translated into recommendations for schools, educational policy and research (Schell-Straub, 2011).

The research was based on analysing how teachers and pupils responded to learning about the theme 'global poverty' in the context of interdisciplinary teaching of mathematics and a combined subject including geography, economics and social studies. The activities included researching data on global poverty, with the focus on topic clusters related to poverty chosen by pupils: *health/pandemics; family/population growth/homelessness; nutrition/hunger; waste/waste export; rain forest/deforestation/climate change*. The choices identified show a general interest by the pupils in the living conditions of people in other countries.

An important outcome from the research was the evidence of the added value of global learning approaches to the core knowledge and competencies required within mathematics.

For example, global learning approaches within mathematics showed the value of providing 'real world situations' as the basis for developing core skills (Pratt, 2012). He suggests that real world examples can demonstrate a sense of purpose to learning the subject. Too often, he suggests, students become proficient in drawing graphs and making calculations without ever knowing what statistics are fundamentally about (Pratt: 23).

The case study also shows that where learners use and apply the mathematics they know to address problems that arise in their life and work, they can see positive results. Another element of the case study was that pupils themselves could choose the topics they wished to study. This freedom of choice enabled the students to set their own priorities according to their interests. This resulted in a more motivating learning atmosphere and was identified as an important precondition to connect learning to pupils' lives and interests. Pure or abstract mathematical themes might be interesting for a minority of pupils, but the research suggests that what counts for most of them at the end of the school days their use in everyday life.

Secondly, a challenge in making connections between mathematics and global learning was to identify appropriate approaches, evidence and expertise. The cooperation of an NGO helped to enrich the learning by providing external expertise and to help with reducing the complexity of the topics and accessing relevant data.

Discussion emerged in the research on the extent to which the activities were really 'global learning with numbers' or something more than this. Results revealed key mathematical competencies supported the project: mathematical argumentation, problem solving, modelling, using mathematical forms of representation, using symbolic, formal and technical language and operations.

It was found that pupils either found diagrams and graphs on the Internet (existing models) and tried to analyse them (e.g. the relationship between the slum population, expressed in percent of the urban population, and the percentage of the population with a consumption below 1\$ per day between 1990 and 2001) or created their own mathematical models (e.g. a line of best fit representing CO<sub>2</sub> emissions worldwide between the years 1991 and 2006).

This led to pupils reflecting on their use of mathematical tools; they appreciated among other things that they had developed a better understanding of the size of numbers and had learned to work out a line of best fit.

The research showed the opportunities for critical reflection and interpretation in mathematics. Discussions with pupils showed that the topics dealt with offered great potential for critical reflection. One example was that students

were surprised by a graph showing the relationship between slum population, expressed by percentage of urban population, and percentage of population with consumption below 1 dollar a day in Ghana between 1990 and 2001. Evidence emerged that was contrary to what they expected - why was the slum population decreasing yet poverty increasing at the same time?

Throughout the process, teachers encouraged the students to search for links, between the topics they were working on and life in Germany, including their own local context. Teachers tried to initiate thinking processes that might contribute to students' competency of 'being able to play an active role in society at a local, national and international level'. In making links with their own lives - found in statements from pupils - nearly a third showed aspects of mathematical thinking, e.g. numerical proportions or quantities and, according to their own perception, drawing diagrams helped the students to understand causal relationships and differences.

The study revealed insights into how students and teachers experienced the interdisciplinary approach. Pupils said it was 'cool'; they would appreciate interdisciplinary projects in the future and suggested integrating Biology, Chemistry, etc. They explained "*What was important for us was that we recognised causal relationships and differences, that everything is somehow interconnected ...*" – this adds weight to the need to develop a more coherent and interlinked theory of learning that adds value to the subject disciplines.

Whilst this case study from mathematics focuses more on pupils' interests and levels of engagement in a subject, it comes to similar conclusions to the other studies: that global learning can enrich a subject, but may require additional resources and approaches that go beyond the skills and confidence an individual teacher may have.

## 12

## Global Learning's Contribution to Pedagogical Subject Knowledge

These four case studies from modern foreign languages, science, religious education and mathematics, whilst demonstrating different emphases regarding relevance of global learning, all show the potential opportunities for enriching pedagogical subject knowledge.

What they demonstrates is that:

- all of the four subjects in terms of construction of knowledge are very different;

- each subject area has its own traditional approaches towards construction and application of knowledge;
- when 'real world' and 'global themes' are used within a subject they can enhance the understanding of the subject;
- global themes and issues pose major opportunities but also challenges for teachers in terms of pedagogical approaches towards the teaching of the subject.

Teachers in all of the subject areas covered in this study were sympathetic and supportive of including global themes within their subject but there were variations in terms of confidence, skills and the extent to which it was seen as central. The mathematics example shows that where there is in-depth support to both teachers and pupils from external bodies, major advances can be seen. This demonstrates the importance of professional development support to teachers to address global themes, but in a form that makes it directly relevant to their specific subject.

In relation to the questions posed at the beginning of this paper, the following observations can be made.

Global learning can enrich a subject based curriculum, but in different ways and using different approaches. There is evidence that if global learning is perceived to include elements of critical thinking, and reflection on different voices and perspectives then it can provide a significant contribution to the pedagogy of the subject. This in itself is challenging and could be seen as running counter to dominant orthodoxies within the discipline.

This leads on to the second point: that teachers in all the subject areas have their own interpretation and view of their discipline. Their perspectives need to be recognised, valued and promoted within their subject teaching. Teachers' interest and connection to the ideas behind global learning may depend upon their personal experience, self-confidence and motivation regarding the broader social value of their subject.

Thirdly, a global learning approach to a curriculum subject needs to identify discrete bodies of knowledge and data that make reference to themes such as global poverty, sustainable development, globalisation and interpretations of economic and social progress and development.

Finally, the evidence suggests that those directly engaged with global learning in schools need to re-think their relationship to subject-based knowledge. Most of the research on development education and global learning within schools in England has tended to date to focus on whole school approaches or to be directly related to measuring the impact of particular themes such as global citizenship or sustainability. This makes it much easier for commentators such as Alex Standish

to question the value of global learning to, say, geography because there is little evidence to challenge his assumptions.

If global learning is to continue to have an impact in schools, then greater resources and a clearer focus has to be given to its contribution to subject knowledge. There needs to be inclusion of facts and data about development and global themes, but it should not stop there. Global learning should be seen as a pedagogical approach that is relevant and appropriate to the construction and application of knowledge within a subject, fit for the 21st century, that recognises the relevance of global processes, the value of differing voices and perspectives, and above all that includes critical reflection.

The four subjects chosen for this study are not the first areas researchers or teachers would go to, to look at their relationship to global learning. But as this study has shown, one can easily identify examples that show their importance. For example without mathematical knowledge and skills it is difficult to assess the impact of poverty on a particular country. Without scientific knowledge, themes around sustainable development for example are little more than rhetoric. Religious education can enable the learner to understand and reflect upon different cultural interpretations of the world and how they relate to one's own worldview. Increased knowledge of another foreign language can not only help one to communicate with people from another culture and country, it can also provide a way into understanding how ideas and views are constructed within specific cultural contexts.

Subject-based knowledge plays an important role in helping learners understand and make sense of what is happening in the world around them. What a global learning dimension can bring in addition is the wider world context and relevance of the subject. It can provide opportunities for developing bodies of knowledge that give a 'real world' context and that demonstrate the importance of understanding and valuing differing viewpoints and perspectives.

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