



# TEACHER GUIDE

## Assessment of Key Competences in School Education



## ABOUT KEYCONET

KeyCoNet(2012–2014)isaEuropeanpolicynetwork focused on identifying and analyzing initiatives on the implementation of key competences in primary and secondary school education. It is a constantly growing network of more than 100 members from 30 countries gathering together Ministries of Education/related agencies, universities/research institutes, European organizations, and practice related partners.

On the basis of the evidence collected through literature reviews, case studies, peer learning visits, country overviews, videos and exchanges between network members, the project’s final objective is to produce recommendations for policy and practice regarding the enablers and obstacles to a holistic implementation of key competence development.

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# KEYCONET'S REACH ACROSS COUNTRIES AND STAKEHOLDERS

## COUNTRIES:

- Founding countries of KeyCoNet in 2012: Austria, Belgium, Estonia, Ireland, France, Finland, Norway, Portugal, Sweden
- Countries which joined the network in 2013: Spain, UK, Poland, Albania, Romania, Greece, Luxembourg
- Countries which joined the network in 2014: Croatia, Italy, Lithuania, Latvia, Denmark, Cyprus, Slovakia, Bulgaria, Slovenia, Czech Republic, Germany, Malta, Netherlands and Hungary

## STAKEHOLDERS:

- ▢ Ministries of Education/Related agencies
- ▢ Regional entities
- ▢ Universities/Research organisations
- ▢ Teacher training institutions
- ▢ National & European networks
- ▢ Non-governmental organisations
- ▢ Primary & secondary schools



# 1. INTRODUCTION AND CONTEXT OF KEY COMPETENCES IN SCHOOL

## 1.1 Purpose and scope

Equipping children and young people with key competences – the knowledge, skills and attitudes which facilitate the application of knowledge to the fast-changing real-world contexts of the 21<sup>st</sup> century – is a universal challenge faced by schools. This short teacher guide focuses on project-based learning as a teaching method schools can use to help their students develop key competences.

This document is one of a series of teacher guides commissioned by KeyCoNet, the European Policy Network on Key Competences in School Education. It was compiled by the National Foundation for Educational Research in England in support of European Schoolnet's online course for teachers on competences for 21<sup>st</sup> century schools (<http://www.europeanschoolnetacademy.eu/web/keyconet>). It draws upon two literature reviews developed by KeyCoNet:

Arjomand, G., Erstad, O., Gilje, O., Gordon, J., Kallunki, V., Kearney, C., Rey, O., Siewiorek, A., Vivitsou, M. and von Reis Saari, J. (2013). *KeyCoNet 2013 Literature Review: Key Competence Development in School Education in Europe* [online]. Available: <http://keyconet.eun.org/literature-review> [26 June, 2014].

Pepper, D. (2013). *KeyCoNet 2013 Literature Review: Assessment of Key Competences* [online]. Available: <http://keyconet.eun.org/literature-review> [26 June, 2014].

Arjomand *et al.* (2013) cover the definition and implementation of key competences in schools in Europe. Pepper (2013) focuses on the assessment of key competences.

These literature reviews were originally published in 2012 and updated in 2013.

## 1.2 Context and background on key competences

The European Reference Framework on Key Competences for Lifelong Learning (European Commission, 2006) identifies eight key competences which it is considered combine the knowledge, skills and attitudes necessary for personal fulfilment, active citizenship, social inclusion and employment. The framework also sets out the key themes or transversal skills which underpin each competence. These can be seen in the following image.

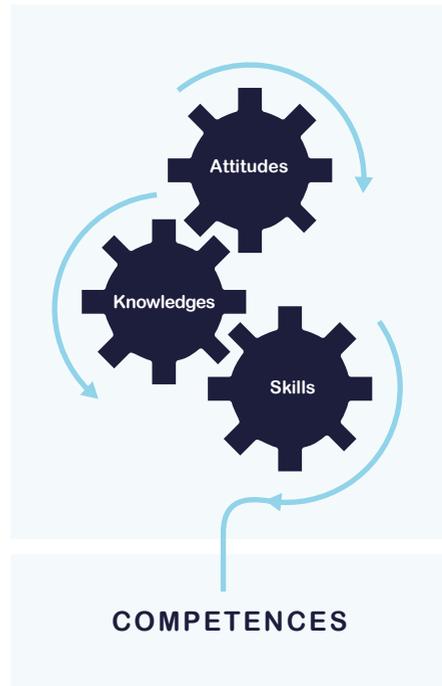


Key competences have grown in prominence in European education systems in recent years and most European countries have made significant progress towards incorporating the key competences into national curricula and other frameworks (European Commission *et al.*, 2012). There is a growing trend towards curricula based on key competences or similar conceptions, which combine knowledge with the skills and attitudes needed in a wide range of real-life contexts (Gordon *et al.*,

2009). Beyond this, the development of key competences is intended to foster lifelong learning, enabling students to use what they have learned in schools and to continue learning throughout their lives.

Internationally the concept of '21<sup>st</sup> century skills' has grown in recent years and is allied to the concept of key competences. The Australia-led international ATC21S project, for example, groups 21<sup>st</sup> century skills in four broad categories:

- **Ways of thinking:** creativity, critical thinking, problem-solving, decision-making and learning.
- **Ways of working:** communication and collaboration.
- **Tools for working:** information and communications technology (ICT) and information literacy.
- **Skills for living in the world:** citizenship, life and career, and personal and social responsibility.



Similarly the US Partnership for 21<sup>st</sup> Century Skills (P21) has developed the Framework for 21<sup>st</sup> Century Learning which sets out student outcomes alongside support systems:

- **Student outcomes:**
  - **Learning and innovation skills – 4Cs (critical thinking, communication, collaboration, creativity).**
  - **Core subjects (English, reading or language arts; world languages; arts; mathematics; economics; science; geography; history; and government and civics) and 21<sup>st</sup> century themes (global awareness; financial, economic, business and entrepreneurial literacy; civic literacy; health literacy; and environmental literacy).**
  - **Information, media and technology skills (information literacy; media literacy; and ICT literacy).**
  - **Life and career skills.**
- **Support systems: standards and assessments; curriculum and instruction; professional developments; and learning environments.**



## 2. WHY AND HOW ARE KEY COMPETENCES ASSESSED?

### 2.1 Why are key competences assessed?

Assessment, with reference to Gipps (1994), Mislevy (1994) and CEDEFOP (2008) is:

*the process of making inferences about an individual's knowledge, skills, attitudes or other constructs using information from one or more methods such as tests, observations, interviews, projects or portfolios with reference to pre-defined criteria.*

Assessing key competences has a dual role: to document learners' key competences and to develop them. It supports changes not only in what is taught but also how it is taught, and consequently what is learnt and how it is learnt (Pepper, 2013; Cook and Weaving, 2013).

### 2.2 What points should be borne in mind when considering the assessment of key competences?

Assessment of key competences involves the assessment of complex outcomes. It is therefore important to consider the validity, reliability and equity of the tools used for their assessment.

#### Validity

The extent to which an assessment tool measures what it was designed to measure (Pepper, 2013; Gipps, 1994; Wiliam and Black, 1996)

#### Reliability

The extent to which an assessment tool consistently and accurately measures learning (Harlen, 2007, p.18)

#### Equity

Emphasises the social nature of assessment and highlights the need to consider differences which are not the focus of the assessment but could influence the assessment (Pepper, 2007 and 2013)

The purpose of assessment should also be considered. Is the assessment formative or summative? **Summative assessment** summarises student achievement at a given time. **Formative assessment** monitors student learning to provide ongoing feedback that can be used by teachers to improve their teaching and by students to improve their learning (Pepper, 2013). However, it can only be considered as formative when the gap between what the learner knows, understands and is able to do, and the learning goal or standard, has been closed (Black and Wiliam, 1998; Looney, J., 2011b).



Other forms of assessment may include:

- **norm-referenced assessments which compare results to the results of a reference group that has taken the same test; such assessments should reveal whether a student is progressing at a slower or faster rate than other children**
- **criterion-referenced assessments which measure whether a student has met a specific target or performance level (also known as status measures or standards-referenced)**
- **ipsative assessments which compare a student's results against his or her previous results (Morris, 2011; University of Exeter, n.d.).**

Key competences incorporate knowledge, skills and attitudes. A key challenge to consider in assessing key competences is ensuring that all three elements – that is, knowledge, skills and attitudes - for each of the eight competences are assessed.

If assessment concentrates on a limited number of the competences, this will distort the curriculum leading to the neglect of other competences. Moreover, if only limited aspects of the competences are assessed, they will also be distorted (Pepper, 2013).

It is also necessary to translate key competences into learning outcomes, that is, statements of the knowledge, skills and attitudes learners should master. These learning outcomes should not be over-specified which will allow teachers to adapt them to their own learners and local context (Cook and Weaving, 2013).

## 2.3 How can key competences be assessed?

A variety of ways are used to assess key competences - standardised tests, e-assessment, attitudinal questionnaires, performance-based assessment and teacher, peer- and self-assessment. For the most accurate view of student learning, teachers need to assess learners over time, using different assessment methods (Looney, J., 2009; Baker, E., 2003).

**Standardised tests** are tests that are developed, administered, scored and graded according to uniform procedures designed to ensure consistent outcomes that can be meaningfully compared across a population (Morris, 2011). In other words, the assessments are designed to ensure reliability. Morris describes standardised assessments as being made up of primarily close-ended questions, multiple-choice questions, true-false or short 'fill-in-the-blank' tasks. She also states that they may incorporate a number of open-ended constructed response questions where a student must provide a written response, respond orally, solve a problem or demonstrate a process. They can be helpful in assessing key competences if they include questions which contain:

- **structure and content that reproduce real-life contexts authentically**
- **multiple steps requiring a chain of reasoning and a range of competences**
- **a range of formats allowing responses which require demonstration of different competences.**

These tests provide a limited picture of learner performance, however, as they:

- **provide a snapshot of performance at a given time**
- **can only be used infrequently without reducing teaching time**
- **sample one part of a domain at any time**

- **reproduce a limited range of contexts authentically**
- **only require certain response types.**

**E-assessment** continues to develop as a mechanism for assessing key competences and offers new opportunities for gathering information on the scope of learners' key competences and their interaction with learning (Pepper, 2013). See the text box, Quest Atlantis, below for an example.

That said, drawbacks with the use of e-assessment in assessing key competences include that, in some cases, assessment technology is not yet ready to deal with the step change between adaptive standardised tests delivered using computers, to continuous assessment and reporting integrated into pedagogic activities (Bunderson *et al.*, 1989). Further development of e-assessments is therefore needed before they alone can be used to assess key competences (Pepper, 2013).

### Quest Atlantis

Quest Atlantis is a multiplayer game that immerses children aged nine to 15 in online and offline learning activities where they role play and make responsible decisions in fictional circumstances. In one set of circumstances, children play park rangers trying to identify the reasons for declining numbers of fish in their national park and develop a solution to the problem. The activity is based on scientific enquiry, such as taking water samples and conducting interviews, and assessment is embedded in the activity. To solve the problem, the children need to develop knowledge, skills and attitudes associated principally with scientific competence but also with civic competence, social competence and digital competence. There is potential to assess learners' use of combinations of these competences (Redecker, 2013).



Learners' attitudes (or 'affects') are often treated as variables for their academic performance (or 'cognition') (Alexander and Winne, 2006; Stobart, 2008). Studies of educational achievement, such as PISA, employ attitudinal questionnaires to survey students' attitudes to learning to help explain their individual performance. Attitudinal questionnaires may also be used to measure the social and emotional competence of learners. An example is set out in the text box, Devereux Student Strengths Assessment (DESSA) below.

## Devereux Student Strengths Assessment (DESSA)

Haggarty, Elgin and Woolley (2012) identified and evaluated 73 assessment instruments. One of these was the Devereux Student Strengths Assessment (DESSA). It has 72 items, each with a five-point frequency scale (sic), e.g. 'During the past four weeks, how often has the child cooperated with peers or siblings? Never/ Occasionally/ Frequently /Very frequently'. DESSA is a teacher rating assessment with an explicit strengths focus with good levels of validity and reliability.

Many of these types of instruments are designed to identify problems and/or risks at individual, school, family and community level. They would therefore need some re-orientation to be used to assess social competence (Pepper, 2013).

They also require self-reporting and may include a large number of questions which raises two issues:

- When answering many questions, do respondents reflect less on the issues raised by them?
- Are the questions varied enough to capture different social contexts and/or to make reference to specific contexts and experiences?

**Performance-based assessment** of key competences could either be based on a single observation, or could involve teachers observing learners over a certain period of time and using a range of tasks. Figure 1 shows different forms of performance-based assessment, which can be used alongside standardised assessment, for formative or summative purposes. Variation in teachers' judgements both within and between schools poses a risk, but evidence suggests that this can be managed with training and moderation (Looney, 2011a, Stanley *et al.*, 2009). Moderation could be either statistical (requiring the outcome of an additional assessment to be compared with the performance-based judgement) or social (based on samples of assessed work within and between schools) (Stanley *et al.*, 2009).

Portfolio assessment of key competences and their cross-cutting themes is also receiving sustained international interest. A portfolio is a place to store data compiled over time, intended to be representative of a learner's progress. E-portfolios expand the range of possibilities; audio-visual and internet files can be included and internet social networks can facilitate dialogue. Developing and reviewing e-portfolios can help learners to develop digital competence, social competence, learning to learn and problem-solving skills. Concerns remain, however, over its reliability for summative assessment purposes.



**Teacher, peer- and self-assessment** is a particular aspect of formative assessment which Pepper (2013) links to the European Reference Framework on Key Competences for Lifelong Learning (European Commission, 2006). Crooks (1988) made a distinction between surface-learning and deep-learning. Deep-learning (active interaction, linking ideas and relating new and previous experiences) appears consistent with more complex goals for learning, including the aims of personal fulfilment, active citizenship, social cohesion and employability promoted by the European Reference Framework. Evidence suggests that feedback explaining why something is wrong and suggesting next steps for learning is more effective than feedback that only identifies errors (Pellegrino and Hilton, 2012).

Self-assessment is another key aspect of successful formative assessment (Black and William, 1998): to internalise teachers' feedback, learners need to reflect on their learning. Peer- and self-assessment practices are important features of assessment for learning as a strategy to promote 'learning to learn' (James *et al.*, 2007). Redecker (2013) reports on the potential for school intranets or internet forums involving social networking, blogs or wikis to be used as peer- and self-assessment tools. These virtual meeting points can enable learners to communicate with one another, carry out collaborative activities and share content in a range of formats. Educational games can also be used to provide opportunities for cooperation between learners.

### 3. DEVELOPING YOUR ASSESSMENT COMPETENCE

Fundamental to ensuring the successful assessment of key competences is that teachers have the appropriate skills to support assessment practices (Looney, 2011a).

Teachers (assessors) need to be able to provide clearly formulated learning outcomes for key competences in which the knowledge, skills and attitudes required are defined (Pepper, 2013). As the assessor, it helps if you are careful to ensure that these learning outcomes are not over-specified as this can risk reducing learning to a series of narrow targets which is not helpful in the acquisition of key competences (Gordon *et al.*, 2009).

For assessment to be relevant to complex contexts, as an assessor you also need to be able to exercise your judgement in any given set of circumstances (Pepper, 2013). The precise balance between specification of learning outcomes and your judgement as an assessor will depend on the purpose of the assessment. For example, learning outcomes that provide the basis for the development of a summative assessment for a qualification will be more tightly specified than the learning outcomes used in relation to formative assessment in the school curriculum. In formative assessment in school, you are more likely to have the scope to adapt the curriculum and pedagogy to the local context and the needs of your students (Pepper, 2013).

In Chapter 2 we have set out a wide range of formative and summative assessment techniques which can be used for the assessment of key competences. These are best used in combination and adapted to the local context. In implementing them, it is helpful if you can ensure that:

- **Students feel safe to make mistakes in the classroom: they are then more likely to reveal what they do and do not understand, enabling you to select an appropriate teaching intervention.**
- **Feedback is timely (provided within minutes or within a period of days), tied to criteria regarding expectations, and includes specific suggestions for how to improve future performance and meet the learning outcomes.**
- **Feedback is ‘scaffolded’: you provide a student with as much or as little feedback as they need to reach the next level.**

- **Feedback demonstrates to the student what they must do to improve. It is specific to the task and avoids phrases like ‘needs more work’.**
- **Questioning techniques reveal your students’ levels of understanding and identify possible misconceptions rather than encouraging a ‘yes’ or ‘no’ response.**
- **Students develop their skills for self- and peer-assessment: this means that your students themselves can gauge how well they are doing in relation to a set standard.**
- **You gain an insight into your students’ thinking through observation; review of their written work, products and portfolios, their presentations and projects; interviews; tests and quizzes, all of which will help you to identify patterns in problem solving.**
- **You are systematic in your approach to classroom assessment as the most effective interactions are the result of careful planning (Looney, 2011b).**



### 4. CONCLUSIONS AND ACTION POINTS: WHAT DOES THIS MEAN FOR PRACTICE?

Key competences are increasingly part of curriculum frameworks and are gradually being reflected in both formative and summative assessment practices.

There is no single definitive approach to assessing key competences. It is best to use a combination of methods over time to gain a full picture of learner competence. This could include standardised tests, e-assessment, attitudinal questionnaires, performance-based assessment and teacher, peer- and self-assessment. Teachers may also integrate formative assessment in their daily classroom interactions.

Some elements in the successful assessment of key competences are outside the control of practitioners. It is the responsibility of policy makers to ensure that they are incorporated into teacher training and continuing professional development

activities, for example, and to ensure that efforts are made to trial and evaluate the different methods of assessing key competences. In evaluating the assessment of key competences, the most important criteria should be validity, reliability, and equity. Assessments should, of course, also be fit for purpose.

Successful implementation of the assessment of key competences, and the real-life context they emphasise, also requires learners to have access to special arrangements such as Braille, large print or screen readers – just as they would in their everyday lives.

## What can you do?

As an individual, alongside developing your assessment skills (see the tips in Chapter 3), you could set up/join a teacher learning community on assessing key competences. Where these exist, they offer opportunities for learning, sharing, discussing, supporting and challenging assessment practices in a non-threatening environment. There may also be opportunities for collaboration with researchers which could lead to the development of new or different assessment practices for key competences.

At school level, you could:

- **discuss a range of options/approaches which best fit the context of your learners and institution**
- **consider the potential for using your school's intranet, blogs or wikis as peer- and self-assessment tools**
- **organise training to give you the opportunity to discuss and explore the concepts of assessment**
- **use portfolios of learners' work as a way of sharing.**



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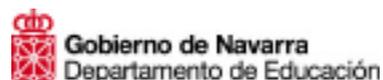
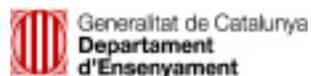
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## ABOUT EUROPEAN SCHOOLNET

European Schoolnet is the coordinator of the KeyCoNet project.

European Schoolnet is a network of 31 Ministries of Education from across the European member states, leading educational innovation at European level. As a major international think tank, European Schoolnet operates key European services in education on behalf of the European Commission, member Ministries of Education and industry partners.

European Schoolnet's activities are divided among three areas of work:

- ➔ Policy, research and innovation: information sharing and evidence building.
- ➔ Schools services: enhancing cooperation between schools across Europe.
- ➔ Advocacy: how ICT and digital media contribute to transforming teaching and learning processes.

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<http://keyconet.eun.org>

