Formative Assessment: Improving Learning in Secondary Classrooms

Introduction

Are pupils learning enough, and learning it well in secondary school classrooms – and how can you tell? Can schools and teachers not only measure the progress made by pupils, but also identify their learning needs and respond to them? Effective assessment is needed to provide effective answers to all these critical questions.

Tests and examinations are a classic way of measuring student progress and are integral to accountability of schools and the education system. These highly visible forms of tracking progress, known as "summative assessment" are also used by parents and employers.

But this is only part of the story. To be truly effective, assessment should also be "formative" – in other words, identifying and responding to the students' learning needs. In classrooms featuring formative assessment, teachers make frequent, interactive assessments of student understanding. This enables them to adjust their teaching to meet individual student needs, and to better help all students to reach high standards. Teachers also actively involve students in the process, helping them to develop skills that enable them to learn better.

Many teachers incorporate aspects of formative assessment into their teaching, but it is less common to find it practised systematically. If formative assessment is used as a framework for teaching, teachers change the way they interact with students, how they set up learning situations and guide students toward learning goals, even how they define student success.

Several countries promote formative assessment as a fundamental approach to education reform. The OECD has studied the use of formative assessment in eight educational systems: Australia (Queensland), Canada, Denmark, England, Finland, Italy, New Zealand and Scotland. The study has also brought together reviews covering English, French and German language research literature. This *Policy Brief* looks at the results of that study, including policy principles to address barriers to formative assessment and encourage its wider use. ■

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What are the benefits of formative assessment?

Formative assessment has been shown to be highly effective in raising the level of student attainment, increasing equity of student outcomes, and improving students' ability to learn.

The ***achievement gains*** associated with formative assessment have been described as "among the largest ever reported for educational interventions". The study carried out by the OECD's Centre for Educational Research and Innovation (CERI) supports these findings. Formative assessment also ***improves equity of student outcomes.*** Schools which use formative assessment show not only general gains in academic achievement, but also particularly high gains for previously underachieving students. Attendance and retention of learning are also improved, as well as the quality of students' work.

Several countries have introduced or are developing standards for student performance. But some argue that there is an inherent contradiction between such centralised standards and the individualisation of learning implied in the formative assessment model. Certainly the idea of standards suggests a level of uniformity. Moreover, high-visibility tests that hold schools accountable for meeting centralised standards may aggravate this situation.

But formative assessment methods are not necessarily at odds with standards and testing. Teachers may still work toward standards while identifying the factors behind the variation in students' achievements and adapting their teaching to meet individual needs. Exemplary schools are making progress in closing the gaps in student achievement while recognising individual and cultural differences.

Formative assessment ***builds students' "learning to learn" skills*** by emphasising the process of teaching and learning, and involving students as partners in that process. It also builds students' skills at peer-assessment and self-assessment, and helps them develop a range of effective learning strategies.

Students who are actively building their understanding of new concepts (rather than merely absorbing information) and who are learning to judge the quality of their own and their peers' work against well-defined criteria are developing invaluable skills for lifelong learning. ■

What does formative assessment involve in practice?

There are several key elements for a successful use of formative assessment in secondary schools (See also Box 1).

Teachers using formative assessment have ***changed the culture of their classrooms***, putting the emphasis on helping students feel safe to take risks and make mistakes and to develop self-confidence in the classroom. Teachers working with students from backgrounds other than their own also make efforts to understand cultural preconceptions. They interact frequently with individual or small groups of students and involve students in the assessment process, providing them with tools to judge the quality of their own work.

Teachers also make the learning process more transparent by ***establishing and communicating learning goals***, tracking student progress and, in some cases, adjusting goals to better meet student needs. Teachers are able to compare their assessments with other teachers to ensure that they are treating students equitably. They often find that comments are more effective than marks for improving student performance and helping all students to reach high standards. It is not always easy to drop or decrease the frequency

of marks, however. Sometimes students and their parents prefer to know how they are doing relative to other students.

To meet a range of student needs, teachers **vary instruction methods**. They ensure that lessons include different approaches to explaining new concepts, provide options for independent classroom work, and encourage students who have grasped a new concept to help their peers.

Teachers use a mix of approaches to **assess student understanding** of what has been taught. They may use diagnostic assessment to determine a student's level when he or she first enters a new school or at specified times during the school term to help shape teaching strategies. During classroom interactions, they most often use questioning techniques. Questions regarding causality, or open-ended questions, for example, often reveal student misconceptions. For example, biology teachers in one of the case study schools started asking students what would happen if chlorophyll stopped working, and discovered a common misconception – that the entire world would be dark.

Teachers may provide **verbal or written feedback** on student's work. Teachers and researchers have found that the most effective feedback is timely, specific and tied to explicit criteria. Teachers also adjust their strategies to meet needs identified in assessment.

Box 1.

FORMATIVE ASSESSMENT TECHNIQUES

Teachers across the case study schools developed a number of techniques to better diagnose and respond to student needs.

The traffic light

Teachers working with the King's-Medway-Oxfordshire Formative Assessment Project in England created the "traffic light" technique. At points when teachers want to be sure that students understand a concept, they ask students to hold up a green, amber or red sign to indicate whether they understand, think they understand but are not quite sure, or do not understand. They spend more time with students showing amber and red.

Thinking time instead of hands up

In several of the schools, teachers frequently enforce a policy of "no hands up". The teacher poses a question, takes a pause ranging from three seconds to several minutes, and then calls upon a student. They have found that the quality of responses improves a great deal when students have time to think.

Portfolios, logbooks and rubrics

Portfolios and logbooks as used in the case study schools provide an opportunity for written dialogues between teacher and student, and also provide opportunities for students to reflect on their learning process.

Rubrics are specific guidelines with criteria to evaluate the quality of student work, usually on a point scale. Students may use rubrics to judge their own work, and to edit and improve it.

Ultimately, the goal of formative assessment is for students to develop their own "learning to learn" skills. When formative assessment is used successfully in schools, teachers model effective learning behaviour, teach self-assessment skills and help students to analyse how well different strategies have worked. Students take increasing responsibility for their own learning and progress. Such teaching approaches may be particularly important for children who do not have extra support for learning at home. ■
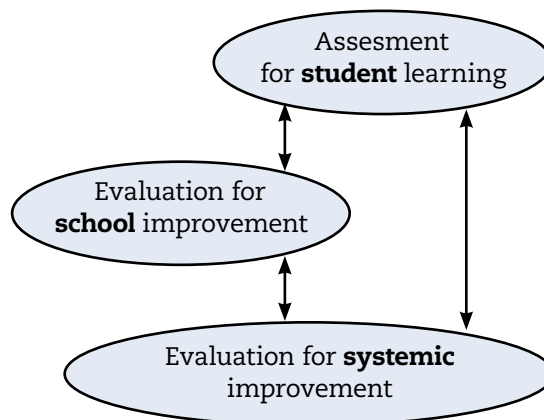
What are the major barriers to wider use of formative assessment?

While formative approaches to teaching and assessment often resonate with practitioners and policy makers, there are barriers to wider practice. They include:

• Perceived tensions between formative assessments and highly visible summative tests to hold schools accountable for student achievement (teachers often teach to these summative tests and examinations).

• A lack of coherence between assessments and evaluations at the policy, school and classroom levels.

• Fears that formative assessment is too resource-intensive and time-consuming to be practical.

Systems that address tensions and foster constructive cultures of evaluation are likely to make much greater progress in promoting reforms. Ideally, information gathered in assessment and evaluation processes is used to shape strategies for improvement at each level of the education system. In classrooms, teachers gather information on student understanding and adjust teaching to meet identified learning needs. In schools, school leaders use information to identify areas of strength and weakness and to develop strategies for improvement. At the policy level, officials use information gathered through national or regional tests, or through monitoring of school performance, to guide investments in training and support for schools, or to set broad priorities for education (See Figure 1).

Figure 1.

COORDINATING ASSESSMENT AND EVALUATION

Source: OECD, *Formative Assessment: Improving Learning in Secondary Classrooms,* Paris, 2005.

How can school leaders and teachers address school-level barriers?

Working closely with colleagues, teachers in the eight countries studied developed a variety of straightforward and often ingenious solutions to address practical barriers to the use of formative assessment in their schools.

Take the basic requirements of the curriculum. Teachers in lower secondary schools are faced with extensive curriculum and reporting requirements. In several of the case study schools, teachers prioritise what they will cover in the curriculum – deciding which concepts are most important and ensuring that students have a good understanding before moving on. Some curriculum items are missed, but teachers are more confident that students are retaining information and learning subjects in greater depth.

Teachers also enlist students in tracking their own performance. For example, teachers sometimes ask students to record the teacher or peer-feedback in individual portfolios. Students are able to refer to their portfolios and teachers do not need to invest inordinate amounts of time in detailed record-keeping. Students may also use tools such as rubrics – a checklist that details the criteria for a quality piece of work – to improve their work independently.

Teachers faced with large classes sometimes use divided classes, keeping one-half of the class busy with independent learning while working through new concepts with the other half; or co-operative learning (building students' skills for peer-assessment, conflict resolution, and leadership). Students experiencing such methods were positive about these approaches.

School leaders in establishments using formative assessment also fostered school-wide cultures of evaluation, using objective data on the impact of teaching methods on student performance. These data give energy and purpose to developing school and classroom strategies for improvement. In schools with strong evaluation cultures, teachers pay more attention to which strategies work well, for which students, and under what circumstances; they also develop stronger interest in understanding learning theories and refer more often to evidence-based research. Within subject departments, teachers may identify common student misconceptions, and develop strategies suitable to teaching their particular discipline.

Teachers and schools using self-evaluation as a way to shape future planning are using knowledge management techniques. They share what they have learnt, work together to create new ideas, and systematise and transmit this knowledge to others. They are able to push innovations further and to sustain them longer. ■

How can policy promote effective teaching and assessment across systems?

Countries participating in the study have developed a range of policies to promote broader practice of formative assessment. These include legislation promoting and supporting the practice of formative assessment and establishing it as a priority, guidelines on effective teaching and formative assessment embedded in the national curriculum, and the use of summative data for formative purposes. Some countries provide tools and exemplars to support effective formative assessment, or have invested in professional development to better equip teachers to use formative assessment, or in programmes and initiatives incorporating formative approaches.

But all countries need to strengthen the mix of strategies and to make deeper investments – particularly in the area of initial teacher education and professional development – if they are to make real changes. ■

How to promote formative assessment?

The OECD has developed policy principles to promote wider, deeper and more sustained practice of formative assessment and teaching that is responsive to student needs. They are:

• **Keep the focus on teaching and learning**

Policy focused on teaching and learning should recognise complexity, be concerned with the process of learning and look to a broad range of indicators and outcome measures to better understand how well schools and teachers are performing. Policy focused on teaching and learning takes a long-term view toward change.

• **Align summative and formative assessment approaches**

Both summative and formative approaches to assessment are important. The learning-to-learn skills emphasised in the formative model – such as the ability to define goals, adjust learning strategies, and to assess one's own and one's peer's work – are sought after in the world beyond school. At the same time, student marks, diplomas and certificates serve as important currency in the wider community. Summative assessments are an efficient way to identify students' skills at key transition points, such as entry into the world of work or for further education.

Yet high visibility summative assessments are a significant barrier to formative practice. In addressing tensions, and to ensure stronger validity and reliability of summative assessments, policy officials should consider multiple measures of student progress.

• **Ensure classroom, school and system level evaluations are linked and are used formatively to shape improvements at every level of the system**

Policies that link a range of well-aligned and thoughtfully developed assessments at the classroom, school and system levels will provide stakeholders with a better idea as to whether and to what extent they are achieving objectives. Formative assessment, when applied at each level of the system, means that all education stakeholders are using assessment for learning.

• **Invest in training and support for formative assessment**

In the majority of OECD countries, national education ministries or departments have influence over the curriculum for initial teacher training and standards for teacher certification. Policy officials in these countries have an ideal opportunity to provide student-teachers with the knowledge and skills necessary for formative assessment.

Teachers already in the workforce also need opportunities to participate in professional development programmes and to test out new ideas and methods. Policy can provide guidance to individual schools as to how professional development funds are best spent. Teachers also need ways to translate abstract ideas into concrete practice. Policy can provide examples and tools to help teachers incorporate formative assessment in their regular practice.

• **Encourage innovation**

Policy makers and school leaders can encourage innovation by fostering confident teachers, peer support and involvement in research. Pilot projects to test research-based innovations in schools and classrooms are also crucial.

Pilot projects, however, should not be scaled-up until their impact has been fully evaluated and the implementation challenges are well understood.

• **Build stronger bridges between research, policy and practice**

Policy can build stronger bridges between research, practice and policy by investing in developing the research literacy of practitioners and policy officials, developing "best-practice" databases and centres to catalogue and disseminate the results of research, and investing in further research.

There is strong evidence of the effectiveness of formative assessment. However, there are still significant gaps in understanding. For example, more research is needed on effective formative strategies and teaching repertoires in different subject areas. There is also a need for more research on effective formative approaches for students based on gender, ethnicity, socio-economic status, and age. Importantly, the benefits of formative assessment identified in smaller scale studies have not yet been achieved at national levels; there is a pressing need for research on effective strategies for implementation and scaling-up.

• **Actively involve students and parents in the formative process**

Formative assessment is by definition an interactive process involving both students and teachers. Yet, there is a need for deeper understanding of the student's part in the formative process. How, for example, do students internalise learning goals and strategies? To what extent can and should students establish individual learning goals? What are the most effective approaches to teaching the skills of peer- and self-assessment?

Equally important is the role of parents. Schools may need to gain parent support for innovative approaches. For example, many teachers and schools using formative approaches have decreased the frequency of summative marks; parents, on the other hand, may see them as important to their child's future. School and policy officials need to address parent concerns directly. Schools and teachers may also engage parents more actively in their children's learning. ■

Do formative assessment methods hold promise for adult learners?

How people learn changes across their lifespan, so it is relevant to ask whether the formative assessment model holds promise for adult learners and, if so, how it should be adapted to take maturity, experience and motivation into account. The answer to this question may help further refine how we think about adult education and lifelong learning.

The OECD's Centre for Educational Research and Innovation is studying teaching, learning and assessment for adults, with a particular focus on adults with low basic skills. The studies on formative assessment in secondary schools and the study on adults with low basic skills will together create a picture of effective teaching, learning and assessment across the lifespan. ■

For further information

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For further reading

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