Diploma Programme

Teaching and learning informed by assessment in the Diploma Programme

Guide and teacher support material

This guide has been excerpted for use in the NYSED PLAN Pilot. Please observe the copyright restrictions on use and distribution.

For more information about the International Baccalaureate assessment and programs visit https://ibo.org/programmes/diploma-programme/assessment-and-exams/

To contact the IB for more information visit https://ibo.org/contact-the-ib/

International Baccalaureate®
Baccalauréat International
Bachillerato Internacional

Diploma Programme

Teaching and learning informed by assessment in the Diploma Programme

Guide and teacher support material

International Baccalaureate®
Baccalauréat International
Bachillerato Internacional

Diploma Programme

Teaching and learning informed by assessment in the Diploma Programme

Published June 2021

Published on behalf of the International Baccalaureate Organization, a not-for-profit educational foundation of 15 Route des Morillons, 1218 Le Grand-Saconnex, Geneva, Switzerland by the

International Baccalaureate Organization (UK) Ltd
Peterson House, Malthouse Avenue, Cardiff Gate
Cardiff, Wales CF23 8GL
United Kingdom
Website: ibo.org

© International Baccalaureate Organization 2021

The International Baccalaureate Organization (known as the IB) offers four high-quality and challenging educational programmes for a worldwide community of schools, aiming to create a better, more peaceful world. This publication is one of a range of materials produced to support these programmes.

The IB may use a variety of sources in its work and checks information to verify accuracy and authenticity, particularly when using community-based knowledge sources such as Wikipedia. The IB respects the principles of intellectual property and makes strenuous efforts to identify and obtain permission before publication from rights holders of all copyright material used. The IB is grateful for permissions received for material used in this publication and will be pleased to correct any errors or omissions at the earliest opportunity.

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, without the IB's prior written permission, or as expressly permitted by the Rules for use of IB Intellectual Property.

IB merchandise and publications can be purchased through the IB Store (email: sales@ibo.org). Any commercial use of IB publications (whether fee-covered or commercial) by third parties acting in the IB's ecosystem without a formal relationship with the IB (including but not limited to tutoring organizations, professional development providers, educational publishers and operators of curriculum mapping or teacher resource digital platforms etc) is prohibited and requires a subsequent written license from the IB. License requests should be sent to copyright@ibo.org. More information can be obtained on the IB public website.

International Baccalaureate, **Baccalauréat International**, **Bachillerato Internacional** and IB logos are registered trademarks of the International Baccalaureate Organization.

IB mission statement

The International Baccalaureate aims to develop inquiring, knowledgeable and caring young people who help to create a better and more peaceful world through intercultural understanding and respect.

To this end the organization works with schools, governments and international organizations to develop challenging programmes of international education and rigorous assessment.

These programmes encourage students across the world to become active, compassionate and lifelong learners who understand that other people, with their differences, can also be right.

IB learner profile

The aim of all IB programmes is to develop internationally minded people who, recognizing their common humanity and shared guardianship of the planet, help to create a better and more peaceful world.

As IB learners we strive to be:

INQUIRERS
We nurture our curiosity, developing skills for inquiry and research. We know how to learn independently and with others. We learn with enthusiasm and sustain our love of learning throughout life.

KNOWLEDGEABLE
We develop and use conceptual understanding, exploring knowledge across a range of disciplines. We engage with issues and ideas that have local and global significance.

THINKERS
We use critical and creative thinking skills to analyse and take responsible action on complex problems. We exercise initiative in making reasoned, ethical decisions.

COMMUNICATORS
We express ourselves confidently and creatively in more than one language and in many ways. We collaborate effectively, listening carefully to the perspectives of other individuals and groups.

PRINCIPLED
We act with integrity and honesty, with a strong sense of fairness and justice, and with respect for the dignity and rights of people everywhere. We take responsibility for our actions and their consequences.

OPEN-MINDED
We critically appreciate our own cultures and personal histories, as well as the values and traditions of others. We seek and evaluate a range of points of view, and we are willing to grow from the experience.

CARING
We show empathy, compassion and respect. We have a commitment to service, and we act to make a positive difference in the lives of others and in the world around us.

RISK-TAKERS
We approach uncertainty with forethought and determination; we work independently and cooperatively to explore new ideas and innovative strategies. We are resourceful and resilient in the face of challenges and change.

BALANCED
We understand the importance of balancing different aspects of our lives—intellectual, physical, and emotional—to achieve well-being for ourselves and others. We recognize our interdependence with other people and with the world in which we live.

REFLECTIVE
We thoughtfully consider the world and our own ideas and experience. We work to understand our strengths and weaknesses in order to support our learning and personal development.

The IB learner profile represents 10 attributes valued by IB World Schools. We believe these attributes, and others like them, can help individuals and groups become responsible members of local, national and global communities.

International Baccalaureate®
Baccalauréat International
Bachillerato Internacional

© International Baccalaureate Organization 2017
International Baccalaureate® | Baccalauréat International® | Bachillerato Internacional®

Contents

Executive summary 1

Executive summary 1

Introduction: What is teaching and learning informed by assessment and why is it important? 4

The DP's approach to assessment 4

Teaching and learning informed by assessment: Summary of the literature 6

What makes feedback effective and how do we deliver meaningful feedback? 10

What makes feedback effective? 10

Developing student evaluative judgment through feedback 12

Should high-stakes summative assessment criteria be used for formative feedback? 14

Examples of effective practices from DP educators 15

How do we design meaningful assessments that support formative feedback? 17

Introduction 17

Universally-designed assessments: Varied and multimodal 18

Feedback that reflects current achievement, learning progress or process 19

Aspects of validity in formative assessment and feedback 22

Common types of formative assessment in DP classrooms and what they aim to measure 27

Three main types of effective designs in DP classrooms 27

Is "teaching to the test" quality formative assessment? 31

How do we assess conceptual understanding in IB classrooms? 32

Inquiry-based and concept-based curriculum 32

What are concepts and how do we assess conceptual understanding? 33

What do classroom assessments look like in a skills-based curriculum? 43

The development of skills within a concept-based curriculum 43

An example of a skills-based approach in DP business management 46

How do we make assessments fair and inclusive for all learners? 51

Universally-designed assessments 51

How do we support IB learners in becoming assessment capable? 55

Student agency in assessments: Peer- and self-assessments 55

Metacognition and self-regulated learning in formative assessments 58

Student-generated questions and assessments 60

Promising practices in IB schools: Examples of student-led assessment 61

Using assessments to support student development of ATL skills and learner profile attributes 62

Formative assessments and the ATL skills 62

Formative assessments and the IB learner profile 65

How can digital technology be used to enhance and transform formative assessments? 67

How can a positive learning environment that promotes formative assessment be cultivated? 71

Supporting IB teachers to become assessment-capable 71

School policies and practices that support quality formative assessments 72

Appendices 74

Glossary 74

References 79

Executive summary

International Baccalaureate (IB) World Schools, educators and students bring a wealth of knowledge and rich and diverse assessment practices to the IB community. The International Baccalaureate Organization (IBO)'s Assessment Division has published a series of policies and documents that map out a comprehensive and diverse set of principles and practices on valid assessments in the IB. To date, many of the examples published have focused on summative assessments designed and assessed or moderated by the IB. To build on the collective wisdom and community of practices in IB World Schools on classroom assessments, a pilot study on "Effective practices in formative assessment in the DP" (Diploma Programme) was conducted from October 2018 to June 2020. The aim of this study is to understand common aspirations and interests in formative assessments, to explore key questions that emerge, and to gather and build on examples of effective practices from IB schools across regions, school and cultural contexts.

This combined guide and teacher support material is based on findings and examples from the pilot study, and integrates them with recent literature. The aim is to map out a set of principles and practices that are driven by research and embody the IB's education philosophy. One of the key features of formative assessment in IB classrooms is that it is driven by teacher and student agency and its responsiveness and dialogic nature. Therefore, this publication is not meant to be a prescriptive guide. The principles outlined here could underpin effective practices of assessment **for** and **as** learning in IB classrooms, while always respecting and attending to the agency and self-leadership demonstrated by IB educators and learners in making decisions about assessment that are best suited to their learning and teaching contexts.

Being mindful of the diverse and intercultural nature of the IB's international education, the goal is to present a range of practices and examples on formative assessment from IB schools in different contexts. Nevertheless, what has been captured here may be a small part of what is possible. The aim, therefore, is that this publication will help to initiate a meaningful dialogue in the IB community, and create a common language to discuss and construct the way forward, to celebrate and promote quality assessments for formative purposes in IB classrooms.

The themes and questions that emerged in the pilot study and in ongoing conversations with IB educators are organized into 11 key questions in this document. These are the most common big questions that are found when exploring effective principles and practices on formative assessments in the IB. The guide and teacher support material is organized around these 11 key questions, with examples of promising practices integrated throughout.

Note that the publication is not designed to be read from beginning to end. Teachers and coordinators can read the sections they feel are most relevant to their needs, or follow it in any order.

Eleven questions on teaching and learning informed by assessment in the Diploma Programme

1. What is teaching and learning informed by assessment and why is it important?
2. What makes feedback effective and how do we deliver meaningful feedback?
3. How do we design meaningful assessments that support formative feedback?
4. What are common types of formative assessments in Diploma Programme (DP) classrooms and what do they aim to measure?
5. How do we assess conceptual understanding in IB classrooms?
6. What do classroom assessments look like in a skills-based curriculum?

7. How do we make assessments fair and inclusive for all learners?
8. How do we support IB learners in becoming assessment capable?
9. How do we use assessments to support student development of approaches to learning skills (ATL) and the learner profile attributes?
10. How can digital technology be used to enhance and transform formative assessments?
11. How can a positive learning environment that promotes formative assessment be cultivated?

Methodology and limitations

The insights and examples in this publication are drawn from the pilot study on "Effective practices in formative assessment in the DP", conducted from October 2018 to June 2020. The sources of data and information in the pilot study are based on but not limited to the following.

1. A review of the literature on research and academic work carried out on formative assessments (ongoing).
    a. Peer-reviewed articles from 2000 to 2020 and earlier seminal works.
    b. Books, journals and other related articles.
    c. Key search terms: "formative assessments", "assessment for learning", "assessment as learning" and other related concepts and strategies.
2. Case studies of six IB World Schools (school visits conducted in October 2018 to January 2020).
    a. Class visits across a range of DP subjects and the core.
    b. Focus-group discussions and individual interviews with DP teachers, coordinators and school leaders.
3. Online discussions on Basecamp (ongoing).
4. Interviews and focus-group discussions conducted with IB members of staff (May to October 2018).
5. Internal research report on "A dialogue on formative assessment in the International Baccalaureate Diploma Programme" (shared internally with IB members of staff in July 2019).

One of the limitations of the pilot study is that all the examples presented focus only on the DP. While the general principles and approaches discussed closely align with the IB's education philosophy and could be relevant to formative assessment practices across the IB continuum, the examples presented may not be able to address fully the unique programme features of the Primary Years Programme (PYP) and Middle Years Programme (MYP).

Moreover, the current pilot study is limited in its scope. The IB World Schools and educators that participated in this pilot study were recruited through IB regional conferences or were recommended as schools that demonstrate effective practices on formative assessments or that have focused on formative assessment as a key area of interest in their school's development. While the number of schools and educators that participated was small, it is also the case that schools from a diverse range of contexts were deliberately sought out, including the following.

- State schools, private national schools and private international schools
- Schools that mainly used English as the language of instruction, and a bilingual school that used both French and English as the languages of instruction
- IB continuum schools where many teachers taught across the MYP and DP. Similarly, schools that only offered the DP or combined the IB programmes with other national or local curriculums in earlier years or grades (for example MYP 1–3 years)
- Schools that only offered the DP in high school, and those that offered both the DP and the state or local curriculum in the high school or diploma level
- Schools across three geographical regions, namely, Asia, Europe and the Americas

However, the number of case studies and the scope of the pilot study are limited. Other limitations of this document may also include unintended researcher bias.

There is, therefore, no suggestion that this publication encompasses a full and representative sample of the rich and diverse practices of effective formative assessments already found, or that may be found in future, in IB World Schools. There are many IB schools and educators who were not able to take part in this study, but are enthusiastic about formative assessment and doubtless would like to share their promising practices. The IB encourages educators to challenge any of the ideas discussed here, and to share with us and the IB community effective practices from their contexts.

Acknowledgments

The IB would like to express its gratitude to all of the IB educators who engaged in discussions that contributed to this publication, sharing many fascinating examples of effective practices. A special thank you goes to the DP students, teachers and school leaders in the following schools, where class visits took place that inspired many of the ideas in this publication, based on the learning and teaching practices found there.

- Branksome Hall, Canada
- Hockerill Anglo-European College, United Kingdom
- King Edward's Witley, United Kingdom
- Międzynarodowe Szkoły Paderewski w Lublinie, Poland
- NIST International School, Thailand
- Toronto French School —Canada's International School, Canada

The DP's approach to assessment

Assessment plays a crucial role in promoting learning and growth in students and in eliciting evidence of learning and tracking progress. The IB's approach to assessment is that learning, teaching and assessment should effectively inform and support one another. The IB's vision is that students will benefit from a holistic assessment experience throughout their IB education, and that their sense of self-efficacy and agency are enhanced in the process. While the four IB programmes (PYP, MYP, DP and Career-related Programme) have different emphases and balances in assessment in support of their curricular goals, and are developmentally appropriate, the underlying principles of assessment are essentially the same across programmes.

In the IB, quality assessments are seen as:

- relevant—supporting learning objectives and curriculum outcomes
- meaningful—assessing what is important and not just what is easy to measure
- authentic—reflecting ways in which our students may encounter these activities in the real world
- universally designed:
    - construct relevant—assessing what we intend to assess
    - varied—using a wide range of assessment tasks and activities that will support diverse learners and all types of learning
    - multimodal—encouraging students to express their skills and knowledge in multiple ways, and designing assessment tasks and activities to allow multiple means of representation
    - fair—do not lead to an unintended advantage or disadvantage to any learner
    - inclusive—allowing meaningful engagement of all learners
- stimulating—extending learning and considering wider student competencies and higher-order cognitive skills
- valid—balancing important principles, such as construct relevance, fairness, manageability, reliability and comparability, to reach the intended purpose of assessment
- fit for purpose—designed, implemented and interpreted in a consistent way to fulfil the purposes for which they are intended (assessments with different purposes may be designed, analysed and interpreted in different ways)
- aligned with IB education philosophy—supporting the IB education philosophy and in line with the ATL and the learner profile.

As can be seen from the title of this document, *Teaching and learning informed by assessment in the Diploma Programme*, the principles and effective practices discussed throughout sit neatly with the IB approaches to teaching and learning. This is because discussions regarding classroom assessments and formative feedback need to go hand in hand with the pedagogical approaches and philosophy of an IB education. For the same reason, while the examples in this publication focus on the IB DP as the highest stakes programme in the IB (and where perhaps there is the narrowest view of formative assessment), the content of this publication may also be relevant to the MYP and PYP.

For further details on the IB's approach to assessment and how to balance these assessment and pedagogical principles in practices, please refer to the following IB publications.

- *Assessment principles and practices—Quality assessments in a digital age*
- *What is an IB education?*
- *Programme standards and practices*
- *Diploma Programme: From principles into practice*

- *Diploma Programme: Approaches to teaching and learning website*

In addition to these key resources, the IB provides a range of other resources that give focused guidance to teachers, coordinators and other stakeholders, based on the principles set out in these key publications. These can be found on the IB website and the programme resource centre.

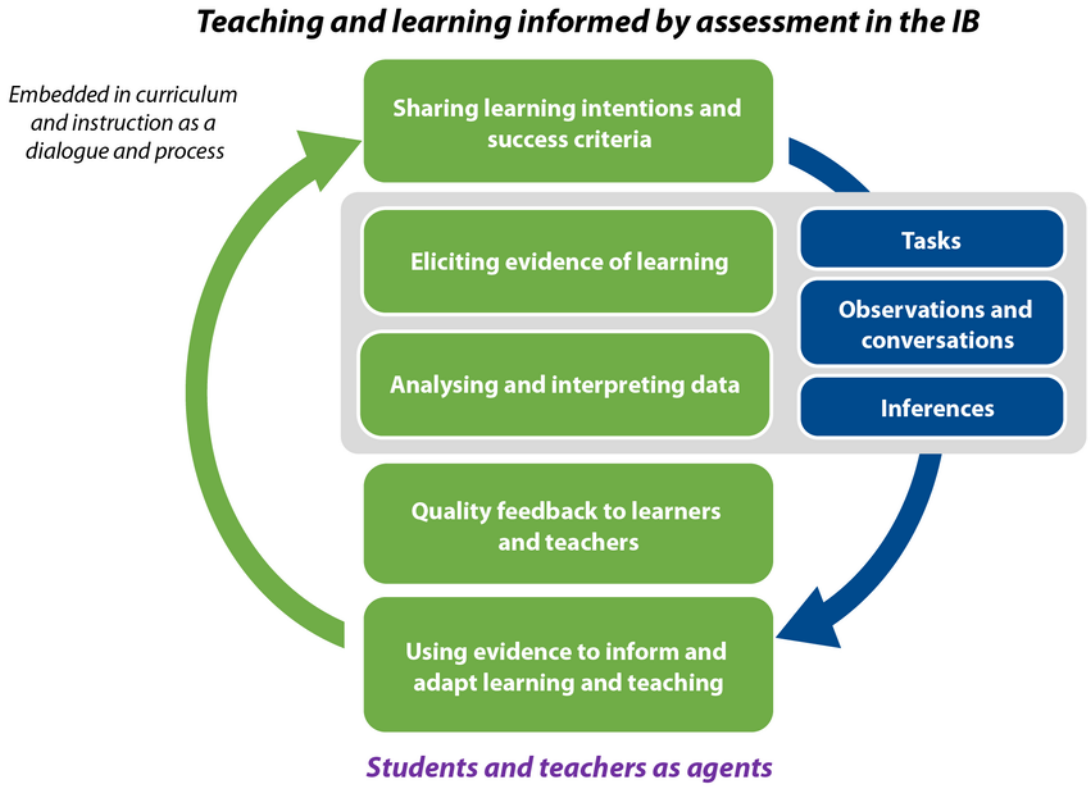
Teaching and learning informed by assessment: Summary of the literature

This section outlines a conceptual framework on teaching and learning informed by assessment in the IB by summarizing some of the key literature. Each topic will be explored further in the different sections of this publication.

As seen in Figure 1, formative assessment is assessment that is embedded in curriculum and instruction, where the inferences drawn from assessment outcomes "relate to the kinds of actions that would best help the student learn" (Black, Wiliam 2018: 553).

Figure 1

A model for teaching and learning informed by assessment



The IB keeps abreast of the latest research and global best practices in formative assessment, sometimes known as assessment **for** or **as** learning. The following are some key points from IB research and important peer-reviewed articles.

For formative assessments to be meaningful and effective, the IB recognizes that:

- assessments are tasks, conversations, observations and inferences
- quality assessments need to be embedded in curriculum and instruction
- formative assessments are founded on research in pedagogy and learning sciences
- the key is to develop agency and assessment-capable IB learners and teachers.

Assessment as tasks, conversations, observations and inferences

- "Formative Assessment is Assessment" (Bennett 2011: 20), and assessment is about making inferences on student learning.

Differences between formative and summative assessments

- The distinction between formative and summative assessments is in the purposes of assessment and "the kinds of inferences being drawn from assessment outcomes" (Black, Wiliam 2018: 553).

	Purpose	Inference
Summative assessments	• To demonstrate the competency or level of achievement of a student generally at the end of a course of study or a unit of learning • To determine the readiness of the student to progress to the next stage of education	• Focus on what the student can do at the end of a course of study or a unit of learning.
Formative assessments	• Ongoing assessment during the course of study to provide evidence and feedback that could move learning forward • The primary purpose is to promote student learning in a well-informed meaningful way	• Relate to the kinds of actions that can be taken next which "would best help the student learn" (Black, Wiliam 2018: 553)

- Formative inferences are those that support learners and teachers to identify strengths and gaps in understanding, such as possible misconceptions and **what steps need to be taken next to move learning forward**.
- Formative assessments consist of three indispensable parts (figure 2).
  - The assessment tasks (can be an activity or a question)
  - The observations and dialogues that take place during the formative assessment process
  - The inferences that can be drawn from the assessment outcomes

Figure 2

Three key elements of formative assessment

- What is observed during formative assessment is not simply students' answers or the learning product but also the learning process, such as learning strategies and the steps taken to generate those responses.
- It is essential to balance relevant assessment principles in the design, interpretation and evaluation of quality formative assessments to build meaningful and fair assessments.

Embedding assessment in curriculum and instruction

- Effective formative assessment needs to be embedded in curriculum and instruction, such that it provides insights about learning as it occurs (Shepard 2017).
- Meaningful formative assessment uses the five key strategies shown in the table below.

	Where the learner is going	Where the learner is right now	How to get there
Teacher	Clarifying and understanding learning intentions and criteria for success	Eliciting evidence of student understanding through effective class conversations, observations and learning tasks	Providing feedback to both learners and teachers to move learning forward
Peer		Peer-assessment and feedback: Activating students as instructional resources for one another	
Learner		Student agency: Activating students as owners of their own learning	

Adapted from Wiliam and Thompson (2017)

Founding assessment on research in pedagogy and learning sciences

- A theoretical framework of formative assessment needs to be founded on research in pedagogy and learning sciences.
    - **Student agency**—Effective formative assessment promotes students' metacognition and self-regulated learning (Clark 2012; Panadero et al 2018).
    - **Collaboration**—Formative assessment is collaborative in nature and promotes peer learning and feedback and collaboration with teachers (Strijbos, Wichmann 2018; Topping 2009).
    - **Feedback**—Effective inferences and feedback are those that are actionable, timely, concrete, forward looking, attend to affect, promote agency, relevant and in some way personalized (Dawson et al 2019; Gibbs, Simpson 2004; Hattie, Timperley 2007; Nicol, Macfarlane-Dick 2006; Yeager, Dweck 2012).
    - **Conceptual understanding**—Effective formative assessment elicits evidence of conceptual understanding in students and their abilities to apply these skills in novel and unfamiliar contexts.
    - **Universal design for learning and of assessment**—Quality formative assessments are those that ensure all learners can access and participate in meaningful and challenging learning opportunities. For example, teachers design the assessment task and stimulus such that the information is represented in multiple means. Students are also encouraged to engage with the learning and assessment materials and they are invited to express their knowledge in multiple ways (Hall et al 2012). For further details on universal design of assessments, please refer to the website of the National Center on Educational Outcomes (https://nceo.info/Assessments/universal_design/overview).

Agency: Developing assessment-capable IB learners and teachers

- The assessment literacy or assessment capability of educators is key to the effectiveness of assessment for formative purposes (DeLuca et al 2019; DeLuca, Klinger 2010; Xu, Brown 2016).
- In this publication, assessment capability is broadly defined as teachers' "capacity to negotiate assessment knowledge and skills in the context of their classroom teaching" (DeLuca et al 2019: 159).
- Professional development plays an indispensable role in supporting IB teachers to become assessment capable. The development of professional learning communities also provides a space for IB teachers to share and build on professional insights in assessments in IB classrooms.
- There is a need to build in time and space for teachers to share, plan and improve assessment practices in curriculum planning and standardization meetings.
- For IB students to benefit from peer-assessment, self-assessment and feedback, they need to be supported in internalizing success criteria and enhancing their assessment capabilities or "evaluative judgment" (Carless, Boud 2018; Panadero et al 2019). In other words, students are better prepared to understand "what is good" and to reflect on the quality of their work and that of their peers.

School policies and practices that support quality formative assessments

Besides supporting teachers to become assessment-capable, IB World Schools create effective culture and school policies to support quality formative assessments in their contexts. The following table shows some items in the *Programme standards and practices* that support effective assessments in schools, both for formative and summative purposes.

Standards	Practices
Culture through policy implementation (0301) Schools develop, implement, communicate and review effective policies that help to create a school culture in which IB philosophy can thrive.	The school implements, communicates and regularly reviews an assessment policy or policies to help create a culture of continuous learning and growth. (0301-05)
Approaches to assessment (0404) Learning, teaching, and assessment effectively inform and influence one another.	Students and teachers use feedback to improve learning, teaching and assessment. (0404-01)
	The school uses assessment methods that are varied and fit-for-purpose for the curriculum and stated learning outcomes and objectives. (0404-02)
	The school administrates assessment consistently, fairly, inclusively and transparently. (0404-03)
	Students take opportunities to consolidate their learning through assessment. (0404-04)

Examples of promising practices in IB World Schools

IB World Schools operate in rich and diverse educational and cultural contexts across the world. Teachers and schools use the *Programme standards and practices* to support the development of a formative assessment policy and effective practices that best fit their contexts and vision on formative assessments. The following are some of the examples of promising practices and school policies shared by IB World Schools in the pilot study.

- **Collaboration, planning and scheduling**
  - Building in time for collaboration and planning of formative assessments among teachers: vertical—across years and MYP and DP—and horizontal, across subjects)
  - Building in time for deeper learning and formative assessment in class
- **Collective teacher efficacy**
  - Providing professional development activities for teachers to engage deeper with topics on formative assessment
  - Teachers as learners: Building professional learning communities to share examples and practices on formative assessments

- A school culture that encourages teachers to experiment and innovate in formative assessment practices
- Conducting action research to examine the effectiveness of school assessment policies and classroom assessment practices
- Autonomy for teachers in designing school-based assessments. For example, a school has moved away from a traditional written test model on mid-term assessments towards a model that uses common standards, while encouraging multiple ways of assessment and representations of knowledge

- **Feedback, grading and reporting practices**
  - Comments without a grade
  - Qualitative feedback: Strengths and areas for improvement
  - Setting the next targets for learning
  - Feedback in multistage assignments
  - Decoupling feedback and grades
  - Reporting on the learning process and progress besides achievement
  - Student agency in report cards: Students reflecting on their learning approaches and strategies and setting personal goals for learning
- **Assessment for growth**
  - Assessment and feedback that promote resilience in the face of challenges
  - Feedback that focuses on learning processes and strategies instead of achievement
  - Quality formative assessment and feedback as guidance for future learning and growth, instead of assessing innate abilities or predicting future grades
- **Driven by data**
  - Formative use of summative assessment data
  - Analysing trends and patterns in assessment data
  - Making assessment fair for all learners: Identifying and minimizing potential assessment biases and barriers to learning

Glossary

Term	Definition
Academic honesty/ integrity	A set of values and skills that promote personal integrity and good practice in learning, teaching and assessment.
Analytic markscheme	A markscheme which tells you what the right answer is and where marks should be awarded.
Assessment	The collection of evidence of learning in order to make judgments about learning and teaching.
Assessment access requirements	A student with assessment access requirements is one who requires changes in assessment conditions to demonstrate his or her level of attainment.
Assessment as a dialogue	An interactive assessment process embedded in learning and teaching. It includes the cycle of sharing learning intentions, eliciting and interpreting evidence of learning, providing feedback, and using that to inform the next steps of learning and teaching. Both learners and teachers take ownership in this process.
Assessment as Learning	An approach to assessment that uses the assessment process and feedback to enhance the metacognitive skills and evaluative judgment of students: namely the ability of students to understand "what is good" and to reflect on the quality of their work and that of their peers.
Assessment bias	Assessment bias is where a defined group (for example, a racial or ethnic group or gender) performs differently on a specific question or assessment task than average for a reason other than ability in the key construct being assessed.
Assessment capability	The ability of a teacher or student to negotiate assessment knowledge and skills in the context of their classroom learning and teaching.
Assessment component	An assessment component is made up of one or more tasks that are collected together, comprising part of the overall assessment. For example, a research assignment, portfolio of work, a project, or an examination paper.
Assessment criteria	Criteria against which a student's performance is evaluated.
Assessment for Learning	An approach to assessment that focuses on seeking and interpreting evidence, then generating feedback. This feedback is then used to improve students' performance. Assessment for Learning is also known as formative assessment.
Assessment of Learning	An approach to assessment that is carried out at the end of a course or unit of study to provide evidence of student achievement, such as to determine the level of performance by allocating a letter or numerical grade. Assessment of Learning is also known as summative assessment.
Assessment Objective	One of a set of statements describing the skills, knowledge and understanding that will be assessed.
Assessment response	A term used to describe all material produced by a student in response to an assessment question or activity.

Term	Definition
Assessment strategy	The method or approach that is used when gathering information about student learning: for example, observations, conversations, open-ended tasks and selected responses tasks.
Assessment task	The activity or series of activities students engage in so that teachers can elicit evidence of learning and engage students in feedback on their learning.
Assessment tool	A method of eliciting evidence of learning, to gather information about a learner's performance and understanding.
Authentic Assessment	Assessments that reflect ways in which students may encounter these activities in the real world.
Backwash effect	In the educational context, backwash usually refers to the way teaching and learning is changed by how the student is assessed at the end of the course.
Command terms (IB-specific)	The words in a question, usually in summative assessments, that explain the assessment objective being assessed.
Comparability	The degree to which a particular outcome can be considered the same as another outcome. For example, if students are given different options in a formative assessment task for reasons of inclusivity, issues related to comparability may include whether the different options are of comparable difficulty, and whether they would allow the teacher to provide equal quality feedback to all learners.
Construct relevance	The degree to which the assessment actually assesses the skills and knowledge that it intends to assess. An example of a low level of construct relevance would be evaluating a student's practical skills with a written exam.
Criterion-related assessment	An assessment process based on determining levels of achievement against previously agreed criteria. The standard is therefore fixed and is not dependent on the achievement of the entire cohort of students.
Criterion referencing	A comparison of student attainment against predefined descriptions of achievement (criteria) for grading or feedback purposes.
Discipline	A branch of learning or field of academic study; a way of ordering knowledge for the purpose of instruction (known generally for practical purposes of assessment in the MYP and DP as "subjects"). Some MYP subject groups and subjects can comprise multiple disciplines. For example, the MYP subject group "arts" includes disciplines like visual arts, drama, music, media and dance. The subject "integrated sciences" includes three disciplines: biology, chemistry and physics.
eAssessment	Assessment carried out on a computer or similar device.
Evaluative judgment of students	The extent to which students recognize and understand the reasons for quality and develop their personal capability to make complex judgments about their work. In other words, students are able to understand "what is good" and to reflect on the quality of their work and that of their peers.
Examination	Examinations are assessment that takes place under controlled conditions. They are usually timed, and comprise materials or questions unknown to the students.
External assessment	Assessment that is set and marked by the IB and not by the teacher of a student.
Feedback (and feedforward)	Qualitative and quantitative feedback provided to the learner to reflect on their current performance and to indicate the next steps needed to improve learning and teaching (the latter is also known as feedforward).

Term	Definition
Formative assessment	An approach to assessment that focuses on seeking and interpreting evidence and generating feedback, where the inferences drawn from assessment outcomes relate to the kinds of actions that would best help the student to learn. It is an ongoing assessment that is embedded in curriculum and instruction. Formative assessment is also known as Assessment for Learning.
Grade	The description of student achievement. Final grades for student work range from 1 (lowest) to 7 (highest). In IB summative assessments, the grade represents the IB's judgment on the overall qualities that the candidate has demonstrated and is consistent between years and subjects.
Grade descriptors	The articulation of the qualities expected of students to achieve each grade. A grade descriptor may be specific to a subject, specific to a subject group, or general across a whole programme. In each case, a grade descriptor should describe the same characteristics. The more specific examples only explain what these descriptions mean in a subject-specific context.
Holistic criteria or holistic appraisal	An approach to evaluating a student's work which considers the work as a single outcome, rather than looking at separate elements of it individually (for example, communication, subject knowledge, quality of argument, and so on).
Inclusive access arrangements	Changed or additional conditions during the assessment process for a student with assessment access requirements. These enable the student to demonstrate his or her level of attainment more fairly and are not intended to compensate for any lack of ability.
Interdisciplinary assessment	Combining or involving two or more branches of learning or fields of academic study within a single assessment. In the DP an interdisciplinary subject is one that meets the requirements of two subject groups through a single subject. In the MYP, interdisciplinary study can be developed both within and between/among subject groups. MYP external interdisciplinary assessment always involves multiple subject groups.
Internal assessment	Assessment carried out by teachers in the school.
Item	Smallest unit of an assessment task or question. An item could be a whole question or parts of a question.
Manageability	The degree to which the assessment and individual tasks place a workload on the student or school. Examples of manageability include the length of the assessments, the equipment or material required to deliver the assessment, or the number of assessments required in a qualification.
Mark(s)	Criterion-related numbers awarded to reflect the quality of the student's answer to the specific question asked. In IB summative assessments, the marks are aggregated to determine the final grade.
Markscheme	Guidance for awarding criterion levels for a given piece of work.
Metacognition	The awareness of one's own knowledge, such as what one knows and does not know, and the ability to understand and regulate one's cognitive processes. It is also known as "thinking about thinking".
Multimodal assessments	An assessment task or activity that allows students to express their skills and knowledge through multiple means of representation (for example, visual, audio, written, verbal, numerical and performative).
Multiple-choice question	A question where a candidate must select the correct answer from a list of supplied possible answers.

Term	Definition
Norm referencing	Where attainment is determined by comparing (referencing) the student's performance against that of the entire population for whom the assessment is designed.
On-screen examination	A formal, timed, externally produced, media-rich examination comprising a series of tasks related to the subject and designed to be answered in a secure exam environment.
Peer assessment or peer review	A structured learning process or activity for students to critique and provide feedback to each other on their work. It supports students to develop their evaluative judgment and their skills in providing feedback to one another.
Plagiarism	The representation, intentionally or unintentionally, of the ideas, words or work of another person without proper, clear and explicit acknowledgment.
Predictability	Predictability refers to the ability of teachers and learners to anticipate what will be asked in an assessment and when. Good predictability supports students in understanding what is expected of them in the assessment. It therefore reduces construct-irrelevant responses and increases assessment validity.
Question	A task or activity used to allow a candidate to demonstrate their competence in a subject.
Reliability	The degree to which the student will receive the same outcome every time his or her work is assessed. It can refer to the reliability between examiners: for example, would two examiners or peer reviewers give the same outcome for the student? It can also refer to the reliability of a single examiner: that is, does the examiner give the same outcome every time she or he looks at the student's work?
Response language	The language in which the student answers the assessment.
Self-assessment	A structured learning process or activity for students to judge their own performance realistically and to improve their work. It supports students to reflect on their learning progress and to develop their self-regulated learning skills.
Self-regulated learning	The ability of learners to understand and control their own learning environments. Self-regulated learning includes the skills to set learning goals, select strategies that help achieve those goals, monitor progress towards the goals, and examine one's own motivation in the process.
Standard	The performance which is expected to achieve a particular score, grade or assessment outcome.
Student agency in assessment	Student agency refers to the process of activating students as owners of their own learning. In the context of formative assessment, this includes engaging students actively in the process of clarifying and understanding intentions and criteria for success, and engaging students in feedback, peer review or self-assessment.
Summative assessment	Assessment aimed at determining the competency or level of achievement of a student, generally at the end of a course of study or a unit of work.
Universal Design of Assessment	The aim of Universal Design of Assessment is that all assessments should be developed with an understanding of the range of requirements that students may have, rather than treating some students differently. This is part of IB's commitment to Universal Design for Learning (UDL), to ensure all learners can access and participate in meaningful and challenging learning opportunities.

Term	Definition
Validity	The overall term that describes whether an assessment, or the purpose for which the assessment outcomes are being used, is fit for purpose.
Validity argument	The evidence and explanation for decisions made in creating an assessment which justifies that it is fit for purpose.
Weak criterion-referencing	If student attainment is compared against predefined descriptions of achievement (criteria) and the performance of previous cohorts, this is known as weak criterion-referencing (or criterion-related referencing). This is the approach the IB takes to maintaining standards.
Working languages	The languages in which the IB communicates with its stakeholders and in which it is committed to providing a range of services for the implementation of the programmes. They are currently English, French and Spanish.

References

A dialogue on formative assessment in the International Baccalaureate Diploma Programme. Internal research report, July 2019.

Adie, L, van der Kleij, F and Cumming, J. 2018. "The Development and Application of Coding Frameworks to Explore Dialogic Feedback Interactions and Self-regulated Learning". *British Educational Research Journal*. Vol 44, number 4. Pp 704–723.

Anderson, LW, Bloom, BS and Krathwohl, D. 2001. *A Taxonomy for Learning, Teaching, and Assessing: A Revision of Bloom's Taxonomy of Educational Objectives*. New York, USA. Addison Wesley Longman.

Andrade, H and Valtcheva, A. 2009. "Promoting Learning and Achievement through Self-assessment". *Theory into Practice* Vol 48, number 1. Pp 12–19.

Assessment principles and practices—Quality assessments in a digital age. July 2019.

Atkinson, SP. 2013. *Taxonomy Circles: Visualizing the Possibilities of Intended Learning Outcomes*. London, UK. BPP University.

Baird, JA, Caro, DH and Hopfenbeck, TN. 2016. "Student Perceptions of Predictability of Examination Requirements and Relationship with Outcomes in High-stakes Tests in Ireland". *Irish Educational Studies* Vol 35, number 4. Pp 361–379.

Belshaw, D. 2017. "Structure of Observed Learning Outcomes (SOLO) Taxonomy". Diagram shared under Creative Commons CCO 1.0 Universal Public Domain Dedication. https://commons.wikimedia.org/wiki/File:Structure_of_Observed_Learning_Outcomes_(SOLO)_Taxonomy.png.

Bennett, RE. 2011. "Formative Assessment: A Critical Review". *Assessment in Education: Principles, Policy & Practice* Vol 18, number 1. Pp 5–25.

Bennett, RE and Gitomer, DH. 2009. "Transforming K–12 Assessment: Integrating Accountability Testing, Formative Assessment and Professional Support". In C Wyatt-Smith and J Joy Cumming. Eds. *Educational Assessment in the 21st Century*. Pp 43–61. Dordrecht, Netherlands. Springer.

Biggs, JB and Collis, KF. 2014. *Evaluating the Quality of Learning: The SOLO Taxonomy (Structure of the Observed Learning Outcome)*. London, UK. Academic Press.

Black, P and Wiliam, D. 2004. "The formative purpose: Assessment must first promote learning". *Yearbook of the National Society for the Study of Education*, Vol 103, number 2, Pp 20–50.

Black, P and Wiliam, D. 2018. "Classroom Assessment and Pedagogy". *Assessment in Education: Principles, Policy & Practice* Vol 25, number 6. Pp 551–575.

Carless, D. 2015. *Excellence in University Assessment: Learning from Award-winning Practice*. Abingdon, UK. Routledge.

Carless, D and Boud, D. 2018. "The Development of Student Feedback Literacy: Enabling Uptake of Feedback". *Assessment & Evaluation in Higher Education* Vol 43, number 8. Pp 1315–1325.

Carlson, PA and Berry, FC. 5–8 November 2003. "Calibrated peer review and assessing learning outcomes". Paper presented at *33rd Frontiers in Education Conference*. Westminster, CO, USA.

Chadwick, D. 2009. Ed. *Approaches to Building Conceptual Understandings*. Wellington, New Zealand. Ministry of Education.

Chaim, OC and Cazarini, EW. 2017. "Peer and Self-grading: Comparisons between Analytical and Holistic Rubrics in an Engineering Classroom". *The International Journal of Engineering Education* Vol 33, number 6. Pp 1798–1802.

Choi, W. 22 May 2020. "Bringing student choice to assessment" [Blog post]. *The IB community blog*. https://blogs.ibo.org/blog/2020/05/22/bringing-student-choice-to-assessment/.

Christodoulou, D. 2017. *Making Good Progress?: The Future of Assessment for Learning.* Oxford, United Kingdom. Oxford University Press.

Chuck, JA and Young, L. 2004. "A Cohort-driven Assessment Task for Scientific Report Writing". *Journal of Science Education and Technology* Vol 13, number 3. Pp 367–376.

Clark, I. 2012. "Formative Assessment: Assessment is for Self-regulated Learning". *Educational Psychology Review* Vol 24, number 2. Pp 205–249.

Crooks, TJ, Kane, MT and Cohen, AS. 1996. "Threats to the Valid Use of Assessments". *Assessment in Education: Principles, Policy & Practice* Vol 3, number 3. Pp 265–286.

Dawson, P, Henderson, M, Mahoney, P, Phillips, M, Ryan, T, Boud, D and Molloy, E. 2019. "What Makes for Effective Feedback: Staff and Student Perspectives". *Assessment & Evaluation in Higher Education* Vol 44, number 1. Pp 25–36.

Dede, C. 2010. "Comparing Frameworks for 21st Century Skills". In J Bellanca and R Brandt. Eds. *21st Century Skills: Rethinking How Students Learn*. Bloomington, IN, USA. Solution Tree Press.

DeLuca, C, Coombs, A and LaPointe-McEwan, D. 2019. "Assessment Mindset: Exploring the Relationship between Teacher Mindset and Approaches to Classroom Assessment". *Studies in Educational Evaluation* Vol 61. Pp 159–169.

DeLuca, C and Klinger, DA. 2010. "Assessment Literacy Development: Identifying Gaps in Teacher Candidates' Learning". *Assessment in Education: Principles, Policy & Practice* Vol 17, number 4. Pp 419–438.

Effective practices in formative assessment in the DP [Unpublished pilot study]

Elwood, J, Hopfenbeck, T and Baird, JA. 2017. "Predictability in High-stakes Examinations: Students' Perspectives on a Perennial Assessment Dilemma". *Research Papers in Education* Vol 32, number 1. Pp 1–17.

Fong, CJ, Patall, EA, Vasquez, AC and Stautberg, S. 2019. "A Meta-Analysis of Negative Feedback on Intrinsic Motivation". *Educational Psychology Review* Vol 31, number 1. Pp 121–162.

Gibbs, G and Simpson, C. 2004. "Does Your Assessment Support Your Students' Learning?". *Journal of Teaching and Learning in Higher Education* Vol 1, number 1. Pp 1–30.

Greatorex, J and Malacova, E. 2006. "Can Different Teaching Strategies or Methods of Preparing Pupils Lead to Greater Improvements from GCSE to A Level Performance?". *Research Papers in Education* Vol 21, number 3. Pp 255–294.

Hall, TE, Meyer, A and Rose, DH. Eds. 2012. *Universal Design for Learning in the Classroom: Practical Applications*. New York, USA. Guilford Press.

Hattie, J and Brown, GT. 2004. *Cognitive Processes in asTTle: The SOLO Taxonomy (asTTle Tech. Rep.# 43)*. Auckland, New Zealand: University of Auckland/Ministry of Education.

Hattie, J and Timperley, H. 2007. "The Power of Feedback". *Review of Educational Research* Vol 77, number 1. Pp 81–112.

Hudesman, J, Crosby, S, Flugman, B, Issac, S, Everson, H and Clay, DB. 2013. "Using Formative Assessment and Metacognition to Improve Student Achievement". *Journal of Developmental Education* Vol 37, number 1. P 2.

Hughes, J, Thomas, R and Scharber, C. March 2006. "Assessing technology integration: The RAT—replacement, amplification, and transformation—framework". Paper presented at *Society for Information Technology & Teacher Education International Conference*. Pp 1616–1620. Waynesville, USA. Association for the Advancement of Computing in Education (AACE).

Jonasson, D. 2006 "On the Role of Concepts in Learning and Instructional Design". *Educational Technology Research and Development* Vol 54, number 2. Pp 177–196.

Kiessling, C, Essers, G, Anvik, T, Jankowska, Meneses, R, Tsimtsiou, Z, Rosenbaum, M and Silverman, J. March 2015. *General Principles for the Assessment of Communication Skills*. tEACH Assessment Subgroup. http://komunikacjamedyczna.pl/wp-content/uploads/2013/09/Ocena-kompetencji-komunikacyjnych-w-opiece-medycznej.pdf

Malouff, JM, Stein, SJ, Bothma, LN, Coulter, K and Emmerton, AJ. 2014. "Preventing Halo Bias in Grading the Work of University Students". *Cogent Psychology* Vol 1, number 1.

Marzano, RJ and Kendall, JS. Eds. 2008. *Designing and assessing educational objectives: Applying the new taxonomy*. California, USA. Corwin Press.

Medwell, J, Wray, D, Bailey, L, Biddulph, M, Hagger-Vaughan, L, Mills, G, Oliver, M and Wake, G. September 2019. *Concept-based teaching and learning: Integration and alignment across IB programmes*. https://www.ibo.org/contentassets/318968269ae5441d8df5ae76542817a0/revised-cbtl-final-report-march-2020-2.pdf

Meyer, E and Land, R. 2003 *Threshold Concepts and Troublesome Knowledge: Linkages to Ways of Thinking and Practising within the Discipline*s. Occasional Report 4, ETL Project. Edinburgh: University of Edinburgh. www.leeds.ac.uk/educol/documents/142206.pdf.

Michigan Assessment Consortium. 2020. *Assessment Literacy Standards—A National Imperative*. https://www.michiganassessmentconsortium.org/wp-content/uploads/MAC_AssessLitStds_2017_9.19.17.pdf

National Research Council. 2011. *Assessing 21st Century Skills: Summary of a Workshop*. Washington DC, USA. National Academies Press.

Nicol, DJ and Macfarlane-Dick, D. 2006. "Formative Assessment and Self-regulated Learning: A Model and Seven Principles of Good Feedback Practice". *Studies in Higher Education* Vol 31, number 2. Pp 199–218.

Panadero, E, Andrade, H and Brookhart, S. 2018. "Fusing Self-regulated Learning and Formative Assessment: A Roadmap of Where We Are, How We Got Here, and Where We Are Going". *The Australian Educational Researcher* Vol 45, number 1. Pp 13–31.

Panadero, E, Broadbent, J, Boud, D and Lodge, JM. 2019. "Using Formative Assessment to Influence Self-and Co-regulated Learning: The Role of Evaluative Judgement". *European Journal of Psychology of Education* Vol 34, number 3. Pp 535–557.

Piaget, J. 1952. *The Origins of Intelligence in Children*. New York, USA. International Universities Press.

Prins, FJ, Sluijsmans, DM, Kirschner, PA and Strijbos, JW. 2005. "Formative Peer Assessment in a CSCL Environment: A Case Study". *Assessment & Evaluation in Higher Education* Vol 30, number 4. Pp 417–444.

Programme standards and practices. October 2018 (revised April 2020).

Rider, EA and Keefer, CH. 2006. "Communication Skills Competencies: Definitions and a Teaching Toolbox". *Medical Education* Vol 40, number 7. Pp 624–629.

Sadler, DR. 2009. "Indeterminacy in the Use of Preset Criteria for Assessment and Grading". *Assessment & Evaluation in Higher Education* Vol 34, number 2. Pp 159–179.

Sadler, DR. 2010. "Beyond Feedback: Developing Student Capability in Complex Appraisal". *Assessment & Evaluation in Higher Education* Vol 35, number 5. Pp 535–550.

Scheffer, S, Muehlinghaus, I, Froehmel, A and Ortwein, H. 2008. "Assessing Students' Communication Skills: Validation of a Global Rating". *Advances in Health Sciences Education* Vol 13, number 5. Pp 583–592.

Shepard, LA. 2017. "Formative Assessment: Caveat Emptor". In C A Dwyer. Ed. *The Future of Assessment: Sharing Teaching and Learning*. Pp 279–303. New York, USA. Routledge.

Strijbos, JW and Wichmann, A. 2018. "Promoting Learning by Leveraging the Collaborative Nature of Formative Peer Assessment with Instructional Scaffolds". *European Journal of Psychology of Education* Vol 33, number 1. Pp 1–9.

Taber, KS. 2013. "Revisiting the Chemistry Triplet: Drawing upon the Nature of Chemical Knowledge and the Psychology of Learning to Inform Chemistry Education". *Chemistry Education Research and Practice* Vol 14, number 2. Pp 156–168.

Teaching and learning with technology: A guide of basic principles. https://ibpublishing.ibo.org/server2/rest/app/tsm.xql?doc=g_0_iboxx_amo_1512_1_e&part=1&chapter=1

Topping, KJ. 2009. "Peer Assessment". *Theory into Practice* Vol 48, number 1. Pp 20–27.

Tsivitanidou, OE, Constantinou, CP, Labudde, P, Rönnebeck, S and Ropohl, M. 2018. "Reciprocal Peer Assessment as a Learning Tool for Secondary School Students in Modeling-based Learning". *European Journal of Psychology of Education* Vol 33, number 1. Pp 51–73.

Ültanır, E. 2012. "An Epistemological Glance at the Constructivist Approach: Constructivist Learning in Dewey, Piaget, and Montessori". *International Journal of Instruction* Vol 5, number 2.

VanTassel-Baska, J and Wood, S. 2010. "The Integrated Curriculum Model (ICM)". *Learning and Individual Differences* Vol 20. Pp 345–357.

Wiggins, GP. 1993. *Assessing Student Performance*. San Francisco. Jossey-Bass.

Wiliam, D. 2011. *Embedded Formative Assessment*. Bloomington, USA. Solution Tree Press.

Wiliam, D and Thompson, M. 2017. "Integrating Assessment with Learning: What Will It Take to Make It Work?". In CA Dwyer. Ed. *The Future of Assessment: Sharing Teaching and Learning*. Pp 53–82. New York. Routledge.

Xu, Y and Brown, GT. 2016. "Teacher Assessment Literacy in Practice: A Reconceptualization". *Teaching and Teacher Education* Vol 58. Pp 149–162.

Yeager, DS and Dweck, CS. 2012. "Mindsets that Promote Resilience: When Students Believe that Personal Characteristics Can Be Developed". *Educational Psychologist* Vol 47, number 4. Pp 302–314.