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IB PYP

Growth Mindset

Every child a learner

Teaching for Success

Katherine Muncaster
with Shirley Clarke

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Introduction by Shirley Clarke

The International Baccalaureate Primary Years Programme connection

At the heart of the PYP pedagogy and rationale is the need for students to have high self-efficacy – that is, the belief in themselves to be able to achieve:

> 'The learning community recognizes that agency and self-efficacy are fundamental to learning. A learning community that supports agency offers opportunities for students to develop important skills and dispositions, such as critical and creative thinking, perseverance, independence and confidence. These are vital to the learning process and the development of self-efficacy.'
>
> 'The Learner' from The Primary Years Programme, International Baccalaureate (2018)

Without self-efficacy, learning is inhibited and full potential is unlikely to be realized. Growth mindset thinking *enables* self-efficacy, because it teaches students that there are no limits to their achievements as long as they have the right conditions. Through the lessons in this book, the elements described above are brought to life, giving students opportunities to engage with and discuss what it means to, for instance, persevere, embrace failure, become resilient and enjoy the challenge of learning.

What is growth mindset thinking?

The term 'growth mindset' was coined by Professor Carol Dweck, Stanford University, as a result of her ongoing quest to find out what motivates us to learn. She synthesized all the studies to do with motivation, including many of her own, and gave us a deceptively simple but accessible way of understanding what matters: the fixed and growth mindsets. We all have both growth and fixed mindsets, depending on the circumstances we are in, so growth mindset thinking is most appropriate when learning feels difficult.

Brain truths and myths

First, let's look at what we know about the brain, as this is central to the notion of mindsets. People with a fixed mindset believe that they are born with a certain amount of intelligence and that is that for the rest of their lives. People with a growth mindset, however, know that intelligence is not fixed and that you can, in effect, 'grow' your intelligence. Brain research has made this a reality.

We now know that the brain can be developed like a muscle, changing and growing stronger the more it is used. The brain grows new cells when we are learning new information and skills. Older people can still develop their brains in an enriched environment.

Carol Dweck, in her article 'You can grow your intelligence', explains in simple terms how the brain works. Many teachers use this article to

introduce the workings of the brain to their students (see *References and resources* page 243 for copy of article).

> 'Inside the cortex of the brain are billions of tiny nerve cells, called neurons. The nerve cells have branches connecting them to other cells in a complicated network. Communication between these brain cells is what allows us to think and solve problems.
>
> 'When you learn new things, these tiny connections in the brain actually multiply and get stronger. The more that you challenge your mind to learn, the more your brain cells grow. Then, things that you once found very hard or even impossible to do – like speaking a foreign language or doing algebra – seem to become easy. The result is a stronger, smarter brain.'
>
> (Carol Dweck, 2011)

Research into London taxi drivers' brains (Woollett and Maguire, 2012) discovered that the huge amount of memory they had to use to learn 'The Knowledge' (every street in inner and outer London) resulted in a slightly larger area of the hippocampus. These drivers could also memorize other things easily as a result of this effect. Similarly, people who have, for many years, learned a musical instrument which uses fingering, find it easy to learn to type, because the connections made in the brain for the instrument are the same needed for typing. Once the neural connections have been made repeatedly, the pathways become more fixed.

Making students aware of these facts – showing them YouTube clips of neurons connecting and so on – leads to them being able to identify when they can feel their brain 'growing'. 'This is really making me think! I can feel my neurons connecting!' is a common exclamation in such a learning culture.

People used to think that intelligence tests conferred a lifelong score, but we now know this is incorrect. The score is simply an indicator of one's achievement at that time, not a predictor of future achievement – the same with any test, unless there are severe learning impairments. I urge teachers to use the terms 'lower achievers' and 'higher achievers', which implies 'at this moment', as opposed to 'high ability' and 'low ability' or 'able' and 'less able', which implies permanence.

The route to developing a 'smarter' brain is **time**, **effort**, **input** and **practice**. We all come to school at different stages in development for certain subjects or skills based on how or whether our genes have been expressed, together with the influence of our home environment – a reason so many of us, at an early age, write off certain subjects when we compare ourselves to others more seemingly adept. It is important to know that with varying amounts of **time**, **effort**, **input** and **practice** we could all reach a required level of proficiency. A crucial component of the learning culture in the classroom is to talk continually with students about how the brain grows, how we can grow our abilities through input and practice, and the gift of being able to learn from one another and tap into all our different strengths.

Fixed and growth mindsets

The notion of a 'growth mindset' (Dweck, 2000) has become an accessible concept to describe the way learners need to feel about themselves and their abilities in order to be successful

learners. Research over many years has highlighted that we all differ as learners, being mostly fixed or mostly growth, and differing in different contexts, such as school subjects.

Fixed mindset (Performance orientation)	**Growth mindset (Learning orientation)**
Intelligence is static. **I must look clever!**	**Intelligence is expandable.** **I want to learn more!**
Avoids challenges	Embraces challenges
Gives up easily	Persists in the face of setbacks
Sees effort as pointless	Sees effort as the way
Ignores useful criticism	Learns from criticism
Likely to plateau early and achieve less than full potential	*Reaches ever higher levels of achievement*

Figure 1 Fixed versus growth mindsets

A fixed mindset is the result of a continual focus on your ability rather than your achievement and effort. Praise to infants onwards reinforcing 'cleverness' or intelligence and exclaiming over speed of mastery gives a clear subliminal message: to get approval you need to master new things quickly and with little effort, both of which will earn you the 'clever' label. The more your ability, speed and lack of effort are praised ('Well done! You hardly needed to think about/work at that at all!' or 'Clever girl!'), the more you don't want to lose that position of greatness, so the less you want to engage in tasks which require time or effort or might lead to some kind of failure. People with a fixed mindset avoid challenging tasks for fear of failure, thus missing many valuable learning opportunities.

Dweck has also pointed out that it is not enough to encourage growth mindset thinking if the systems in the school actually contradict those messages. Many studies (for example, Black and Wiliam, 1998; Butler, 1988; Cameron and Pierce, 1994) show that rewards (that is, a concrete version of grades, given to a select few for their achievement, effort or behaviour) and ability grouping (Hattie, 2008) reinforce fixed mindset thinking, both for those who get the reward and those who don't, and for those 'labelled' in high or low tracks or sets. Students do not need rewards when the culture is focused around all students competing against themselves and their own previous achievement. When mixed ability is the norm, students learn from one another and do not feel that the system has already decided what they will be capable of. When there is a growth mindset culture in which the learner's achievement is celebrated verbally and personally, and the goal is to strive for excellence, stickers and stars seem tokenistic and patronizing, and ability grouping is limiting and unnecessary.

The following table (Figure 2) was included in 'Mindset Works' (**www.mindsetworks.com**), an invaluable online resource linked with Carol Dweck's research. It shows how the different mindsets affect the effort a learner applies to a task. We are all somewhere on the continuum between having a fixed or a growth mindset, depending on the context we are in, so the addition of the 'mixed' column helps to identify some of the features and therefore needs of those students in between the two mindsets. This would be especially useful when establishing a rough baseline of students' current mindsets.

	Fixed	Mixed	Growth
Taking on challenges	You don't really take on challenges on your own. You feel that challenges are to be avoided.	You might take on challenges when you have some previous experience with success in a related challenge.	You look forward to the next challenge and have long-range plans for new challenges.
Learning from mistakes	You see mistakes as failures, as proof that the task is beyond your reach. You may hide mistakes or lie about them.	You may accept mistakes as temporary setbacks, but lack strategies to apply what you learned from the mistakes in order to succeed.	You see mistakes as temporary setbacks, something to be overcome. You reflect about what you learned and apply that learning when revisiting the task.
Accepting feedback and criticism	You feel threatened by feedback and may avoid it altogether. Criticism and constructive feedback are seen as a reason to quit.	You may be motivated by feedback if it is not overly critical or threatening. Who is giving the feedback, the level of difficulty of the task, or their personal feelings might all be factors in your motivation.	You invite and are motivated by feedback and criticism. You apply new strategies as a result of feedback. You think of feedback as being a supportive element in the learning process.
Practice and applying strategies	You do not practise and avoid practising when you can. You do not have any strategies for accomplishing the learning goals or tasks, or you apply ineffective strategies.	You practise, but a big setback can make you want to quit. You are more willing to practise things you are already considered good at. You are open to being given a strategy to meet a challenge, but you rarely apply your own strategies unless it is something you are already good at.	You enjoy the process of practising and see it as part of the process of getting good at something. You may create your own practice or study plans. You fluidly use many strategies, think of some of your own strategies and ask others about their strategies.
Perseverance and focus	You have little persistence in learning goals and tasks. You give up at the first sign of a struggle.	You may persevere with prompting and support. Unless you are provided with strategies for overcoming obstacles, you will stop or give up.	You 'stick to it' and have stamina for the task(s). You keep working confidently until the task is complete.
Asking questions	You do not ask questions or do not know which questions to ask, but you can usually say you 'don't get it' if asked.	You might ask questions about a portion of the task that you feel you can do. If you perceive it to be beyond your ability, you probably won't ask questions.	You ask specific questions, ask questions about your own thinking and challenge the text, the task and the teacher.

	Fixed	Mixed	Growth
Taking risks	You do not take risks, and if something is too hard, you give in blank or copied work, if anything at all. You are not engaged in the process/task.	You will take risks if the task is already fairly familiar to you. If not, you will resort to copying or giving in partially completed work.	You begin tasks confidently, risk making errors and openly share the work you produce.

Figure 2 How mindset affects effort, Mindset Works Inc. (www.mindsetworks.com), 2012

Finally, we need to find the right words when students tell us they are stuck or do not understand something, so that we create a culture where mistakes and lack of understanding are normalized: they are an opportunity for new learning to take place and vital feedback for the teacher. Dweck suggests words to use and words not to use (see Figure 3).

What not to say (fixed mindset)	What to say (growth mindset)
	
Not everybody is good at maths. Just do your best.	When you learn how to do a new kind of problem, it grows your maths brain!
That's OK. Maybe maths isn't one of your strengths.	If you catch yourself saying 'I'm no good at maths', just add the word 'yet' to the end of the sentence.
Don't worry. You'll get it if you keep trying. (If students are using the wrong strategies, their efforts might not work. They may also feel particularly inept if their efforts are fruitless.)	That feeling of maths being hard is the feeling of your brain growing.
Great effort! You tried your best. (Don't accept less than optimal performance from your students.)	The point isn't to get it all right away. The point is to grow your understanding step-by-step. What can you try next?

'Mindsets revisited', *Education Week*, Carol Dweck, September 2015

Figure 3 What to say and what not to say

Bringing the growth mindset to life

This book is the result of Katherine's passionate vision to make the growth mindset a living, breathing culture throughout her schools. The lessons and activities embody the spirit and the precision of Carol Dweck's growth mindset, thus enabling all teachers to more easily follow their example and help create highly confident, error-enjoying, risk-taking learners. Enjoy!

Introduction by Katherine Muncaster

This book takes the abstract concept of mindsets and turns it into a series of engaging lessons, linked to the PYP curriculum, for every year of school. The exploration of mindsets has had a huge impact in my schools and others I have worked with. It has raised standards, built resilience and created a culture of collaborative learning both in the classroom and in the staffroom. This book provides practical classroom activities and strategies to foster the development of growth mindsets and an effective learning culture.

How does the book develop PYP Learners?

Developing 'agency'

Agency, according to Bandura (2001), 'enables people to play a part in their self-development, adaptation and self-renewal within changing times'. Students need to be prepared for an ever-changing world. The teaching of mindsets builds students' resilience and a desire to learn, to challenge themselves and to encourage others – all of which are necessary for their future success.

The lessons in this book empower students to become responsible, independent learners who are equipped with the tools to support them. Students are encouraged to take initiative and think for themselves. Through modelling, students are encouraged to develop strategies for learning, such as how to build resilience and to respond effectively to mistakes in their learning journey.

Normalizing mistakes enables students to see them as part of the learning process. Developing the use of feedback through effective language empowers students; examples of how to do this are shared throughout the lessons. Students are also encouraged to set themselves challenges in their learning and to identify them for their peers. This process continues to support the development of an effective learning culture and agency.

The use of talk partners and learning groups assists in the process of developing a learning community. Students are provided with opportunities to collaborate and to take action collectively. Through debate, students are given scenarios to reflect and discuss with others. They are encouraged to share their opinions, to listen and to work in conjunction with one another to provide solutions to problems or to debate until a consensus of opinion is reached.

Throughout the lessons, students are provided with the opportunity to reflect on themselves as learners. This is a useful time to encourage them to identify aspects of their learning they find challenging, to ask questions and to seek help from others. The process of learning is modelled through 'visible thinking', which enables teachers to share their own learning journey, and to provide the scaffolding and the language for students to share theirs.

IB Learner Profile

Overview of the International Baccalaureate Learner Profile

Learning behaviour	Symbol	Characteristic
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 perspective 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 co-operatively 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 others and ourselves. 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.

Figure 4 IB Learner attributes

How does the book develop students' approaches to learning?

Inquirers – students are encouraged to be independent and from an early age a great emphasis is placed on the students' own learning journey. Strategies for independent learning are made visible through modelling and sharing. In *Chapter 1 Lesson 1 Help! I'm stuck!*, students are encouraged to reflect on strategies for when they are stuck and to work collaboratively to break down learning into small steps. The use of photographs of students is encouraged, especially with younger learners, to model visible thinking and strategies for success.

In *Chapter 6 Lesson 5 Famous failures*, students reflect on what failure means and are encouraged to ask questions. The task given has no right or wrong answer and they are encouraged to share their opinions. Frequently, students are given activities where there is not necessarily a 'right' answer – instead they are encouraged to think, reflect and share their thoughts.

Knowledgeable – students develop their knowledge about how the brain works and the process of learning. In *Chapter 7 Lesson 6 Learning pathways*, students explore applying and sharing their knowledge with younger students. In *Chapter 4 Lesson 4 Mistakes that worked*, students learn about how some inventions were created, and in *Chapter 5 Lesson 5 Fantastic elastic brain*, they begin to learn about how their brain works.

Thinkers – students are encouraged to reflect and analyse problems. They are provided with activities to stimulate them, such as *Chapter 6 Lesson 2 Too old to …* and *Chapter 6 Lesson 3 What makes a great teacher?*. Activities are also designed to develop students' skills through discussion and debate. In *Chapter 3 Lesson 1 Playing teacher*, the students discuss and debate strategies to support a student who has a fixed mindset.

Communicators – through the use of talk partners and learning groups, students are able to develop effective communication skills. The structures of the learning groups include specific roles to enable students to adapt and develop their communication skills. Students are asked to create success criteria to ensure that roles are clarified and they have clear success criteria for being an effective talk partner.

Students are provided with a range of opportunities to give feedback to their peers and their teachers. In *Chapter 5 Lesson 3 Doom words*, students reflect on the impact of the language used and which words enable them to be effective learners. Feedback is examined further in *Chapter 7 Lesson 1 'Don't say … Say …'*, when students create effective feedback phrases to encourage the learning process.

Principled – students are encouraged to act with integrity and honesty. In their learning they are encouraged to reflect honestly and identify aspects that they find challenging. For example, in *Chapter 1 Lesson 3 Incy Wincy Spider* and in *Chapter 3 Lesson 6 Ding ding! How much effort?* students analyse how much effort they put into their learning.

They have opportunities to participate in principled debates including whether to exclude an animal that can't dance from a ball (*Chapter 2 Lesson 2 Strictly can't dance*). In *Chapter 6 Lesson 2 Too old to …*, students debate whether an elderly person should be taught to use new technology. Throughout all of the lessons they are encouraged to reflect and challenge

their thinking and differing viewpoints in an appropriate and respectful manner.

Open-minded – students seek out and evaluate a range of viewpoints, particularly when working in their learning groups and in whole-class discussions. At times the teacher may share contentious ideas and opinions to stimulate debate, for example in *Chapter 4 Lesson 3 Born to be …*, when students must debate whether certain people are born to be good at something. Within the lesson structure, ideas to further challenge students' thinking are included in both the main activity and the challenge section.

Educating students about the brain and its neuroplasticity encourages them to reflect on learning beyond fixed ideas that some people are 'clever' and others are not. Exposing students to the *process* of learning removes pre-conceptions and encourages them to see themselves on a unique individual learning journey.

Caring – students are encouraged to be empathetic, to reflect fairly on the viewpoints of others when they are asked to discuss sensitive topics and real-life scenarios. Through careful modelling they are shown how to challenge one another. Students also have opportunities to make a positive difference, to support one another on their learning journey; a collaborative culture is nurtured where children feel it is safe to 'fail' and learn from their mistakes.

Risk-takers – students are encouraged to build resilience and rise to new challenges throughout the lessons. In *Chapter 1 Lesson 4 Clevertsticks*, students are introduced to the concept of challenge through the image of a mountain. This is then developed further in *Chapter 1 Lesson 5 Toppling towers*, where the teacher models failure and resilience. Encouraging students to develop resilience is a key aspect of many of the lessons, including *Chapter 2 Lesson 5 Super snails 1: The power of perseverance* and *Chapter 5 Lesson 2 Bounce!*. In *Chapter 6 Lesson 1 Passport to learning*, students reflect honestly on aspects of learning they find challenging and strategies they can develop to overcome these barriers in later lessons.

Balanced – students recognize how we are interdependent. The collaborative learning culture that is created and developed throughout the lessons builds positive relationships between students, and nurtures each individual and the class as a whole. Students also explore what makes them unique individually, learning through activities such as in *Chapter 7 Lesson 2 Diamond minds*, where they identify what is important for them individually as a learner.

Reflective – being reflective is a key aspect of every lesson. Students are consistently prompted to think 'What did I learn today?' and to identify clear next steps in their learning. Honest, reciprocal feedback is encouraged both from peer to peer and between students and teachers.

Through the use of debates and discussions they are encouraged to reflect on the opinions and ideas of others. Being reflective is modelled as an essential aspect of being an effective learner through the lessons, and dedicated reflection time is included in every lesson to nurture and develop students' skills.

All aspects of the IB Learner Profile are developed through the lessons and the creation of a collaborative culture. Specific links are identified in the individual lessons through the use of the different symbols (see Figure 4); look out for them in the margins to identify where a particular skill of the Learner Profile is being explored.

How to use this book

Links to PYP and the Learner Profile

The development of a growth mindset culture across a school works in tandem with the PYP curriculum and, in particular, the Learner Profile. (The interrelationship is discussed in detail in the previous Introduction section.) In addition, key behaviours from the Learner Profile are highlighted through the use of symbols throughout the lessons and are quickly identifiable in the table of contents for each age group (see Figure 4). These symbols can also be used on cards and on flipcharts to reinforce the behaviours with the students.

Look out for the symbols in the margin throughout the lessons to identify where certain behaviours from the IB Learner Profile are being developed.

Structure

The lesson plans are organized into year groups and can be followed as a whole-school approach. Each series of lessons has a brief overview that explains where the students are with growth mindset prior to beginning the next series of lessons and what the next set of activities will do to deepen their understanding. You could use this to select an alternative starting point to ensure your students' needs are being met.

The lessons are designed to provide students with opportunities to learn about and discuss the key characteristics of a growth mindset and effective learning. These include:

- learning from mistakes
- failure
- resilience
- perseverance
- challenge
- effort
- self-efficacy.

As these concepts are revisited throughout the school, it deepens the students' understanding and enables them to become confident, independent learners.

The lesson plans for 4–5-year-olds have a different format to the others to ensure that the learning takes place in appropriate contexts, including continuous provision. All the lessons begin with a whole-class introduction to the week's focus/stimulus for mindsets. The sessions are designed to be short, involving the students in being active learners, responding to the stimulus and talking to their talk partners. This is then developed further by the use of a group activity and continuous provision. More detail is given on the structure of the lessons for 4–5-year-olds on page 33, before the first lesson begins.

The lesson plans for 5–11-year-olds all follow a similar structure. They are designed to explore the key concepts within a range of contexts. Often the contexts are flexible and can be adapted to suit the needs and interests of your students. The lessons also contain further developments, including ideas for display, follow-up activities and links to supporting materials. The lessons are designed to challenge the students' thinking and include

key questions to focus them on a particular aspect of growth mindset. In addition, there are challenges to stretch the students' thinking beyond the lesson.

When?

I have explored teaching these lessons at various points in the school year and have found that the most effective time to teach them is during the second part of the Autumn term and the most effective medium is through Social and Emotional Learning (SEL). This allows teachers time to start building relationships with the students prior to beginning the mindset journey. With younger students, it is more effective to begin teaching them at the start of the Spring term as this again provides time for the students to settle in to school and for the staff to develop relationships with them.

How?

I would recommend teaching all of the six lessons over a half term and in the order in which they have been written. With older students, you could explore teaching some lessons over more than one session depending on how the students respond and their prior learning. It is important, however, to revisit the concepts regularly throughout the school year through informal, open and honest discussion with the students about their learning.

Strategies to use in the classroom

We have listed here a few ideas that you can use in the classroom as you work through the lessons to develop a growth mindset. You probably use many of these strategies already, but if not, they will add to your repertoire. Reminders are given throughout the text on when to use these strategies.

Key language

The lessons introduce the key vocabulary of mindsets and enable the students to effectively describe the characteristics of both growth and fixed mindsets from an early age. This is often done through the use of vocabulary cards which the students are asked to sort. In addition, the books that have been used in certain lessons to support the students' understanding have been carefully selected for their use of the language we wish to promote when developing a growth mindset. At times, it might be useful to include images that reinforce the vocabulary as this will ensure all learners are able to access it.

Some lessons introduce specific language: for example, *Chapter 2 Lesson 5 Super snails 1: The power of perseverance* introduces the word 'persevere' to students within the context of snails and in *Chapter 7 Lesson 1 'Don't say … Say …'* students are given the opportunity to reflect on the impact of the words we use.

Some lessons also contain examples of misconceptions that might occur. *Chapter 5 Lesson 4 Mindset trumps* includes possible misconceptions and potential strategies for a teacher to help clarify a student's understanding.

Although the language of the classroom is a key element in developing mindsets across a school, it is not my intention to identify key vocabulary for each year group as I would not wish to limit the students' learning. Instead, teachers should build upon and develop

the language that the students have been introduced to by being an effective role model.

Visible thinking and teachers as role models

Throughout the lessons there is a great emphasis on ensuring that the process of learning is highly visible. An integral part of the lessons is developing the students' use of language and providing opportunities to talk about their learning – as such, the lessons are rich with language and key vocabulary is introduced and revisited throughout the approach. It is essential that this language becomes part of normal class practice and so, as teachers and adults, we should continuously model using it. Teachers must act as role models and be honest and open about their own learning. Through modelling and sharing their own learning journeys (visible thinking), teachers can further develop the classroom culture.

Teachers as facilitators of learning

The teacher's role within the lesson is often that of a learning facilitator, but adopting this role can be quite challenging initially. It requires teachers to take a step back from being directly involved in the learning for part of the lesson and to listen to the students' discussions carefully without intervening. This will reveal a lot about the students' attitudes to learning and their individual mindsets. It can also provide students with the opportunity to discuss and reflect independently, to listen to different opinions and to resolve issues within their group or with peers. This is an important skill for them to acquire and it also encourages them to develop as independent learners.

During the students' discussions, it is often useful to make a note of their responses. This will allow you to share and discuss misconceptions during the feedback or to revisit them at a later point.

Allow the students enough time to discuss each question but not too much time that they become less focused. Monitor the students closely as you want them to remain on task, with their learning progressing effectively. If they have too much time they will become distracted. To ensure the students remain focused, you could use the strategy of 'eavesdropping', where you listen to the discussions from a distance rather than intervening, and make a note of the students' ideas. Then, rather than taking individual feedback, you share with the class the ideas you gleaned from listening to the discussions. Ideas can also be shared through a display.

Arranging the classroom

Talk partners

When students are working with their talk partners, it is essential that they are sitting next to each other. The students need to be familiar with working with a talk partner and with following simple rules (for example, taking turns to speak, looking at their partner, talking about the question in focus). Prior to the lesson, you could remind the students of this by briefly reviewing the success criteria for being an effective talk partner. This might be done through the use of photographs illustrating the key skills.

Talk partners should be changed regularly to provide students with the opportunity to learn with different students.

If you have students who find it difficult to work co-operatively, you could ask them to talk in a group of three (with at least one member of the group being a good role model).

Small groups

Often the students are required to work in small groups. If it is the first time that they have worked in small groups, you will need to consider the groupings carefully.

Ensure the room is set up to encourage effective discussion between the students. A good arrangement is square tables with the students sitting either side facing each other. The tables could be arranged at a slight angle to ensure everyone can clearly see the board.

To encourage all students to join in the discussion, an object could be passed around the group to indicate turn taking.

Learning groups

The learning groups are designed to provide a clear and coherent structure to group work, which enables students to develop a range of skills in addition to their focus activity. Students must take on one of four key roles: a **manager**, a **reporter**, an **encourager** or a **recorder** (see Figure 24 on page 86). These are designed to be flexible and can be adapted to suit the needs of your class, so roles, for instance, could be shared. Two students could share a role depending on the number of students in your class. The encourager is an ideal role that can be shared.

Initially it is advisable to allocate a specific role to a child and to provide them with a number of opportunities to explore the same role. The students can also wear badges to reinforce the roles they are playing. As students mature and become familiar with this way of working, the roles can be changed regularly as this allows them to demonstrate a range of skills.

Prior to using learning groups to develop mindsets in school it would be useful to give the students experience of working in this way. Initially they could be introduced to the different roles and asked to suggest ways in which they should behave or things they should say for each one. These ideas could then be used to create posters to remind the students how to be successful in the different roles. Crucially, students should also be given opportunities to practise the different roles – discussing simple ideas allows them to think more about what is happening in the group and their role within it. This can then be further developed through activities that require the students to share differing opinions.

The use of learning groups could be developed further by students creating their own success criteria for each role, or the roles could be adapted or extended. For example, the role of a questioner could be introduced, which would require the individual to ask questions to clarify meaning and develop ideas further.

When the students are working in roles, it is important for you, the teacher, to act as a facilitator.

Preparing students to give feedback

Once the discussions are over, the teacher's role is to ensure that the students have the opportunity to feed back their ideas and allow other students to respond to them.

You might want to alert any student who could be passive or reluctant to join in by letting them know in advance that you want to hear their ideas. Remind students that there are no right or wrong answers and that you simply want to hear their opinions.

You could also remind the students that you will be randomly selecting them to share their ideas as this will help to ensure they focus. Various methods can be used to select students randomly so that they can give feedback. For example, you could use lollipop sticks where each student's name is written on a stick and one is selected at random. Another useful alternative is to use raffle tickets, where each student has a ticket and the teacher selects a number at random to feed back. Various online resources are available, such as the 'Random Name Picker' at **www.classtools.net/random-name-picker/** or the 'Random Student Selector' at **www.ehyde.com/No%20Hands/**.

In some classes, you might choose to identify a few pairs of students to initially share their ideas with the class and act as role models.

A timer can be used to show the students how long they have to talk for and to ensure they remain focused.

Use of equipment

When using any equipment, ensure this is set up and ready to be used!

It can be very helpful to use a visualizer or document camera to share a reading book with the students. This has the benefit of enabling you to zoom in on specific images to stimulate discussion.

A camera or tablet can be used to take photographs to make cards to show key skills or to add pictures to displays, for instance.

Check that YouTube and other websites are not blocked in school prior to lessons that include these.

Many of the figures throughout this book give you examples of stimuli to show the students or examples of work by students. You can use these ideas to create your own stimulus materials. The resources listed are downloadable from the IB Extras website: **www.hoddereducation.co.uk/ib-extras**.

The big picture: a growth mindset culture throughout the school

Whole-school approach

I have worked with a variety of schools to support their implementation of mindsets and the key to their success has been the culture of high expectations for all. The shared vision of every child as a learner – regardless of a child's starting point, socio-economic or ethnic background or home life – is key to successful implementation. It needs to be embodied in the culture of the classroom, and staff need to be given time to explore and reflect upon the concept of mindsets. They need to understand and have ownership of it with the opportunity to review and reflect on classroom practice.

For a whole-school approach to be truly successful, it needs to be led from the top by the head teacher and senior leadership team. This is done best by the senior leader leading whole-school assemblies to reinforce the messages. This book contains three assemblies that explore the characteristics of growth mindset, the desire to be challenged, making mistakes and learning as an incremental process. These can be used at the beginning of each term.

Figure 5 shows the key aspects required for the successful implementation of growth mindsets and a growth mindset culture in a school.

You might begin by directly exploring mindsets through the lessons and activities and this will have an impact on the classroom culture, the language used and the wider life of the school. As this develops, you might find it useful to select an aspect that you feel is a particular focus for your school and explore ways of enhancing this.

Figure 5 Key factors for successful implementation of growth mindsets in a school

Learning and mistakes

As the culture of the classroom shifts and students become more open and honest about their learning, fantastic opportunities arise to use mistakes as part of the learning journey. At first it is useful to model making mistakes yourself and ask the students to identify them. This could be done by providing the students with opportunities to compare and contrast learning (for example, by asking them to look at two answers to a question in mathematics and to discuss which one is successful and how they know this). Initially the differences will need to be explicit, but as the students become familiar with this, the differences can become more subtle (for example, where a correct strategy is being used but there is an error in the working – see Figure 6).

This strategy is also very effective in developing mathematical fluency, as the successful answer can model how to correctly explain the strategy. This, as well as giving students opportunities to discuss the mistakes of others, opens them up to sharing and discussing their own mistakes. Students at my school now explain their thought processes in maths and are extremely honest about them, from sharing strategies to revealing that they have copied someone's work!

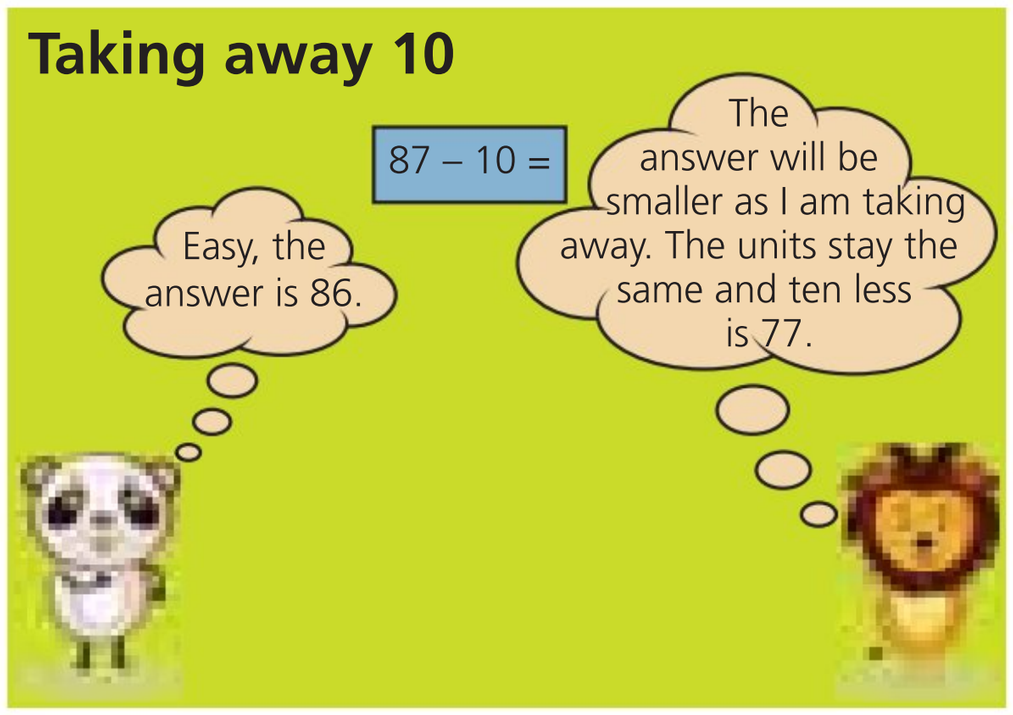


Figure 6 Using mistakes in the learning journey

Jo Boaler is an expert on mindsets and maths and I would highly recommend her work (see, for example, Boaler's 2015 book, *Mathematical Mindsets*).

Figure 7 illustrates the importance of mistakes as an integral part of the learning process.

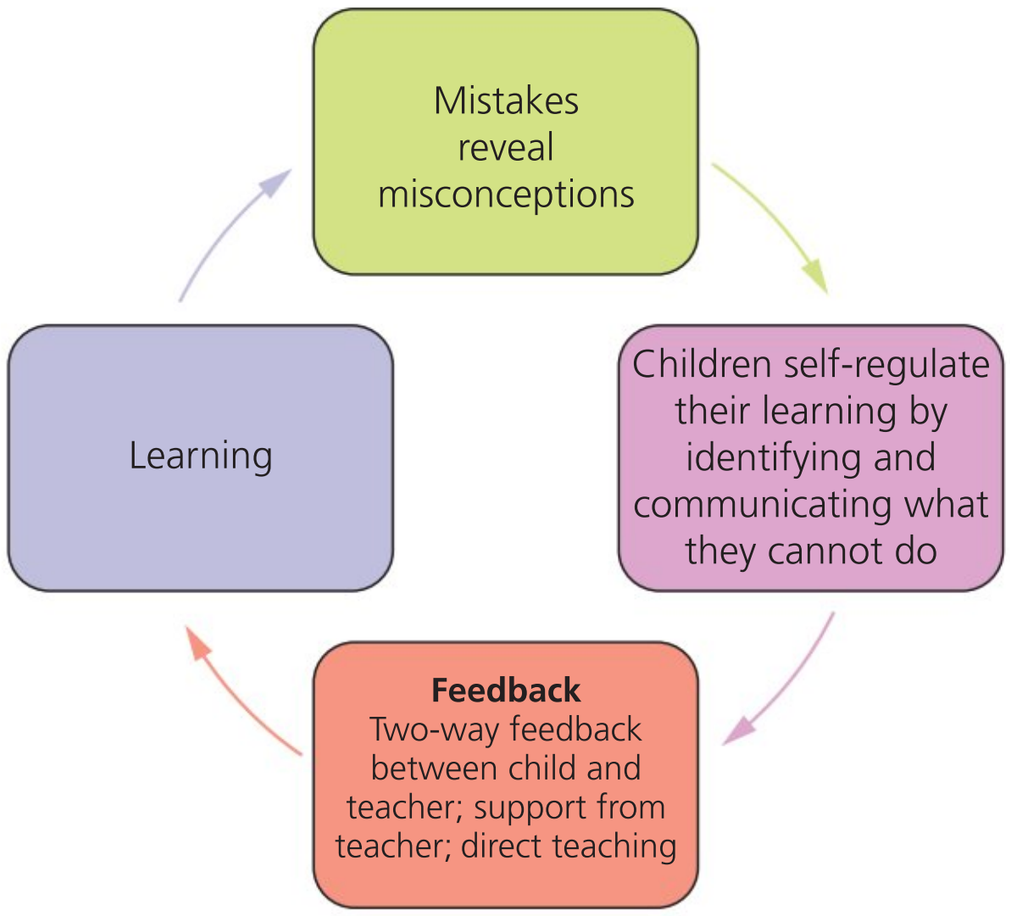


Figure 7 Mistakes as part of the learning process

Feedback and challenge

Caroline Dweck (see page 9) emphasizes the importance of honest and explicit feedback that enables a learner to engage and improve. It is important that, as teachers, we are honest with our feedback and that we identify specific areas of strength and the key next steps in areas for improvement. The word 'challenge' is very effective at engaging students in their learning. Initially the teacher should identify a challenge as part of their feedback about a child's learning. The next step, of students identifying their own challenges, then develops this further and can be illuminating. As students become more fluent about learning they can become very specific and subsequently have a huge impact on teaching. Students often identify aspects of their learning that otherwise could have gone unnoticed. At times, the students will even set challenges for the teachers! As John Hattie (2012) says in *Visible Learning for Teachers*, the most powerful feedback is from student to teacher, not teacher to student.

Impact quotes

The following quotes are testimonies of the advantages of adopting a whole-school growth mindset culture.

Teachers

'Working together as a staff enabled us to embed the concepts of mindsets across the whole school. Teaching mindsets opens a gateway for students to challenge themselves and learn from mistakes.'

Denise Storey, teacher

'Embedding the concept of mindsets in the school culture allows everyone (staff and students) to become more effective at challenging themselves and embracing change.'

Frank Earp, teacher

Student voice

6–7-year-olds

'After learning about the growth mindset I didn't feel scared to put my hand up and ask for help.'

'A growth mindset really helped me improve at maths.'

'Because I know about growth mindset I try to challenge myself.'

'I now love a challenge and want to be the best I can because I understand why having a growth mindset can help me learn.'

10–11-year-olds

'A fixed mindset is like being caught in a net.'

'If you have a fixed mindset you'll never be able to do the things you really want to and you'll end up just giving up on what you really wanted to achieve.'

'Growth mindset allows you to make your mark, whoever you are, whatever you want to do.'

'Hold nothing back.'

'If you have a growth mindset, it may take a while, but you will get better and better at what you are trying to do.'

'Having a growth mindset is like drinking a magical potion.'

'I once tried to do something and after about five attempts, I still couldn't do it, but I kept trying and practising and now I can.'

'Growth mindset is vital for learning. Without a growth mindset you could give up on everything.'

'If you have a dream you need a growth mindset to accomplish it.'

'Having a growth mindset can encourage everyone around you to do better at everything.'

'A growth mindset is the way forward. A fixed mindset will never move you along the learning track. If you are fixed you are fixed, if you have a growth mindset you are progressing, growing.'

'With a fixed mindset, I would not be able to overcome tough challenges. Thank you for teaching me the way of a growth mindset.'

'Having a growth mindset helps me learn and develop my brain to the best it can be.'

The future …

From my own experience, the students become the most powerful ambassadors for mindsets, as they develop ownership of their learning and their awareness of the learning process. They begin to challenge their peers, their parents and even staff about learning and this further develops a learning culture in life and a 'buzz' in the classroom and school.

I hope this book inspires you and enables you to develop a learning culture in your school. I would be delighted to hear about your experiences and receive feedback on the ideas and activities. I can be contacted on Twitter **@feedyour_brain** or **everychildalearner@gmail.com**. Good luck!

IB Mindsets assemblies

1 Stumbling – the learning journey

Learning objectives	Resources
• To encourage students to reflect on the learning process • To view and value mistakes as part of the learning process	• Clip of baby learning to walk • PowerPoint with key questions and images • Vocabulary cards: challenge, resilience, persevere, determined • Suggestions for music (see below) – to be used at any point to reinforce the concept

IB Learner Profile

- **Thinkers** – we use critical and creative thinking skills.
- **Risk-takers** – we are resourceful and resilient in the face of challenges.
- **Caring** – we show empathy, compassion and respect.

Assembly

Introduction

Show the students a slide with pictures of:

- a plaster
- a grazed knee
- a first aid kit
- a baby.

Ask the students to reflect on:

How are these things connected?

Give the students time to reflect and then take their responses.

Share with the students a time when you fell over and hurt yourself; try to include details of how you felt, what you were doing and how you recovered. You may also want to invite some students to share their experiences.

Show the students a clip of a baby learning to walk and the process that it goes through, including making mistakes and falling. This clip **www.youtube.com/watch?v=jIzuy9fcf1k** is particularly effective as it shows a baby responding positively to learning to walk, the process of mistakes and trying again.

Remind the students to watch the clip carefully and to take note of what is happening, as you will be asking questions afterwards.

Ask the students:

What was happening in the clip?

What was the baby learning to do?

What happened when he couldn't do it?

Why do you think I chose this clip for you to watch?

Allow the students to watch the clip again, reflecting on the question you have posed, then select students to share their opinions. Hopefully the students will identify that it was chosen as it demonstrates how we learn and that the baby responded positively to its mistakes. They will also suggest other ideas!

Explain to the students that when we are born we learn to do lots of things, including how to walk, eat, talk, play and so on. (You may wish to have props or images of these different things a baby learns to do.) Explain that we are born curious and eager about the world around us and we keep learning until we can do those things. However, sometimes we can find learning tricky and we can stumble, make mistakes and find things challenging.

Visible learning – share an example of something that you have found challenging to learn. Include: the context, how you felt, what you did, mistakes you made and how you overcame the challenges. (You may wish to illustrate your learning journey using some images on a slide for the students to reflect on.)

Ask the students to reflect upon an aspect of their learning that they have found challenging and have made mistakes in. Encourage some students to share their own learning journey with others, including how they felt and how they overcame barriers to the learning. (You may wish to have some students pre-selected for this activity who could also use images to share their journey with the others.)

Ask them:

How did you feel?

What happened when you made a mistake?

What helped you to overcome the challenges?

Reinforce this with key vocabulary cards: challenge, resilience, persevere, determined.

Time for reflection

Suggest to the students that stumbling as part of the learning process enables us to learn, deepens our understanding and challenges us.

Close your eyes and take a moment to silently think of a challenge that is ahead of you.

Now, imagine yourself overcoming that challenge.

Imagine that challenge makes you stronger and wiser, and you feel positive that you are going to do your best.

Music

'Try Everything' by Shakira (the theme from *Zootropolis*)

'One more step along the world I go' by Sydney Carter

'It's a new day' (*Come and Praise*, 106)

Follow-up

In circle time, the students could be asked to discuss how they wish to challenge themselves, and teachers could model their own personal experience of challenge.

2 Learning from our mistakes

Learning objective	Resources
• To encourage students to see mistakes as part of the learning process	• A box containing beads or small bricks • A box wrapped as a present • A range of objects and images in an open box to represent what you have learned (see Part 3 below) • Key vocabulary cards: learner, resilience, persevere, determined • Suggestions for music (see below) – to be used at any point to reinforce the concept

IB Learner Profile

- **Thinkers** – we use critical and creative thinking skills.
- **Risk-takers** – we are resourceful and resilient in the face of challenges.

Assembly

Part 1: A mistake

Stand in front of the students with the box containing lots of small things (beads or bricks work well for this as they are small). Accidently drop the box on the floor and allow the objects to spill out. As this is happening ensure you model an upset and worried facial expression.

Give the students time to react to the situation: often some students will offer to help, while others may just laugh. Settle the students, ensuring they are ready to listen.

Ask the students:

How do you think I felt when I made the mistake and dropped everything?

How do you feel when you make a mistake?

How should we react when someone makes a mistake?

Part 2: My favourite mistake

Show the students the box wrapped as a present and explain that it contains something very important and special. Ask them to think about what might be important and special to you, and share some of their ideas.

Explain that your favourite mistake is inside the box and that you want to share it with the students. You might wish to have an object or an image inside the box to represent the mistake.

An example of a mistake that you made could be a calculation in maths, for instance 4 + 8 = 10. This could be displayed on a large screen and the students could be asked to reflect upon why you were wrong.

Ask the students:

Why am I wrong with this calculation?

Why do you think this mistake is important to me?

Why do you think I made this mistake?

What caused me to make this mistake?

What do you think I learned from making this mistake?

Part 3: Learning from my mistakes

Explain that you learned a lot from making this mistake. Expand on this further by removing examples from the box of the things that you've learned. These might include:

'I learned that I need to double check my work.'

'I learned that I need to ask for help if I am stuck.'

'I learned that I need to practise this more.'

'I learned that I need to not rush when I am learning.'

'I learned that I need to use my number bonds to help me.'

You could illustrate the things you learned and display them on a screen or ask a student to hold up a poster reinforcing each one.

Part 4: We all learn from our mistakes

Ask the students to think about a mistake that they have made and what they learned from it.

Ask the students:

Who likes to make mistakes?

Why/Why not?

Can you tell me about a mistake that you have made?

What did you do?

What did you learn from it?

Explain that we are all learners and that, as learners, we will not be able to do everything straight away. Tell the students that we should make mistakes as part of the learning process and use them to improve. Making a mistake can often make us feel sad and disappointed, but instead we should see it as an opportunity and continue to do our best, persevere and never give up. Just think about all the things that you are learning in the process. Just like me!

Reinforce this further with key vocabulary cards: learner, resilience, persevere, determined.

Time for reflection

Close your eyes and think about a mistake that you have made.

Think about how it has made you stronger and helped you to develop as a learner.

Now, think about how you will respond next time you make a mistake.

Remember to always strive to do your best and don't be afraid to ask for help to help you improve.

Music

'Try Everything' by Shakira (the theme from *Zootropolis*)

'*Sesame Street*: Big Bird sings about mistakes' by the cast of *Sesame Street*: **www.youtube.com/watch?v=GHkymY6yKMg**

Follow-up

The staff could create a display sharing the mistakes they have made and what they learned from them. Examples could include failing their driving test and retaking it or falling over when learning to ski and getting back up again so that they could practise more. This helps to reinforce the idea that we all make mistakes and can learn from them.

It is important the staff know the theme of your assembly prior to you sharing this with the students, as this will enable them to reinforce it. In lessons, when students make mistakes, the teacher should emphasize through discussion and feedback that they are being learners and should ask the students how making that mistake has helped them to improve.

3 *The Dot* (from small beginnings …)

Learning objective	Resources
• To encourage students to always try when learning new things	• *The Dot* by Peter H. Reynolds • A picture of a large dot • Two contrasting drawings of people (either displayed on a screen or enlarged to allow all students to see them): one should be a simplistic stickman drawing of a person that does not include all the key body parts while the other should be a more complex drawing of a person (still imperfect but much better) • Suggestion for music (see below) – to be used at any point to reinforce the concept

IB Learner Profile

- **Risk-takers** – we are resourceful and resilient in the face of challenges.
- **Caring** – we show empathy, compassion and respect.
- **Communicators** – we express ourselves confidently and we collaborate effectively.
- **Inquirers** – we learn with enthusiasm and sustain our love of learning throughout life.
- **Open-minded** – we seek and evaluate a range of points of view.

Assembly

A dot

Show the students a picture of a dot. This could be displayed on a screen or on a large piece of paper. Explain that you want them to think about whether they would be happy if a student in their class produced this in an art lesson. Once the students have had time to reflect on your question, develop this further by asking the students:

How would you feel if you were the teacher and someone drew this?

What would you say to them?

Can you convince me that this is a 'good' piece of learning? Why do you think that?

The Dot

Read the story of *The Dot* to the students or share it by watching a retelling of the story on the screen.

Once the students have listened to the story, ask them to reflect on it and then take feedback:

How did Vashti feel at the start of the story?

How did Vashti feel at the end of the story?

What helped to change Vashti's behaviour and encourage him to try?

What type of mindset did he have at the beginning of the story?

What type of mindset did he have at the end of the story?

What did Vashti do at the end of the story?

Why do you think he encouraged another student to have a go?

Explain that Vashti was encouraged by his teacher to try to see his dot as the starting point of his learning in art, that he became more confident and willing to try, and that this helped him to learn.

Getting better

Show the students the two contrasting drawings of people. Explain that the drawings were created by the same person.

Ask the students to reflect upon what helped the person to learn how to draw and to improve:

What has helped this student to get better at drawing?

Can you think about anything else that would help you to improve?

What would you say to someone to help them improve?

How would you feel if you were the student looking at your different drawings?

Explain that we can all learn to be better at something but that different things help us to improve. Ask them to reflect upon something they have got better at.

Time for reflection

Close your eyes and take a moment to silently think of something that you have got better at.

Think carefully about what helped you to improve.

Think carefully about how you can help others to improve.

Music

'It's a new day' (*Come and Praise*, 106)

Follow-up

The students could retell the story with props or small world play. Older students could write a script for *The Dot* or they could create their own versions and these could be shared in a follow-up assembly.

In circle time, the students could be asked to share something that they improved at and what helped them to get better at it. These ideas could then be used to create a display that can be acted out as a prompt for learning behaviours.

All of the students could create their own dot to represent themselves and these could form a school display.

CHAPTER 1

Lessons for 4–5-year-olds

Lesson	Focus	IB Learner Profile	Page
1 Help! I'm stuck!	Different ways to do something tricky; putting your coat on by yourself; feelings when things are difficult	• **Thinkers** – we use critical and creative thinking skills. • **Communicators** – we listen carefully to the perspective of others.	35
2 Everyone can learn to ride a bicycle	Feelings about difficulty; encouraging themselves and others to try again	• **Caring** – we show empathy, compassion and respect. • **Thinkers** – we use critical and creative thinking skills.	39
3 Incy Wincy Spider	Identifying challenging things; setting challenges	• **Reflective** – we work to understand our strengths and weaknesses. • **Risk-takers** – we are resourceful and resilient in the face of challenges.	42
4 *Cleversticks*	Characteristics of the mindsets; helping a character to have a growth mindset; setting challenges	• **Reflective** – we work to understand our strengths and weaknesses. • **Risk-takers** – we are resourceful and resilient in the face of challenges. • **Caring** – we show empathy, compassion and respect.	46
5 Toppling towers	How to tackle difficulty; setting personal challenges; taking risks	• **Reflective** – we work to understand our strengths and weaknesses. • **Risk-takers** – we are resourceful and resilient in the face of challenges.	50
6 *Rooting for You*	Identifying challenging things; setting personal challenges	• **Caring** – we show empathy, compassion and respect. • **Communicators** – we express ourselves confidently and we collaborate effectively.	55

Overview

These lessons introduce the concept of mindsets in bite-size chunks. The concept is reinforced through engaging stories. The idea that learning is difficult is explored in a range of familiar scenarios. Students are given the opportunity to experience challenging activities and to begin to reflect on how they felt when they were not initially successful. At the end, the students begin to identify their own learning challenges and to view learning as a journey.

Lesson structure

Each lesson begins with a whole-class introduction to the week's focus/stimulus for mindsets. Ideally, the initial whole-class discussion should take place at the beginning of the week as this will allow enough time for the students to access the continuous provision and the group activity during the rest of the week.

These introductory sessions are designed to be short and to involve the students being active learners, responding to the stimulus and talking with their partners. The lessons will be more effective if the students are familiar with working with a talk partner and are clear on how to be successful at this (see Clarke, 2014, *Outstanding Formative Assessment*, Chapter 4).

Group activity

The group activity can be led either by the teacher or by another adult. During the small group discussions, it is useful to make brief notes and to keep examples of the students' thoughts and suggestions. One helpful way of doing this is by using laminated speech bubbles – see Figure 8 (page 41) in Lesson 2 as an example of how to do this. These can then be displayed as a reminder in the classroom and they will also give individual students ownership of what they have said. Often you will find students reminding others of effective learning behaviours as they follow them around with their speech bubble!

Continuous provision

The continuous provision activities are designed to reinforce the concept and allow the students to explore it independently through small world play, constructions and the opportunity to be creative. The idea of challenge within this is introduced in *Lesson 5 Toppling towers*. The students are

offered different challenges using the visual image of a mountain. The colour of the mountain will relate to the challenge. Gradually, as the students become more familiar with this, they are given opportunities to create their own challenges.

To encourage the students' independence and to ensure they understand the task, a QR code reader is very effective. It allows students to scan an image using a tablet and the code, then leads them to a video (that staff or students have uploaded previously) that explains the challenge. The students can then attempt the challenge and can re-watch the instructions at any point. To develop this further the students can begin to explain the challenges that they have set and these can be displayed and uploaded for others to see.

Reflection time – what have we learned?

This session needs to take place once the students have had access to the different opportunities in the classroom. Again, it is a short session facilitated by the teacher that brings together ideas and challenges learning further.

1 Help! I'm stuck!

Learning objectives	Resources
• To identify different ways a person can learn to do something tricky • To identify the steps to success for putting your coat on by yourself • To describe how you feel when learning or doing something difficult	• Teacher's coat • Camera or tablet • Photographs of students putting on their coats • Coats and clothes with fastenings • Mazes • Materials to create mazes • Photographs of mazes

IB Learner Profile

- **Thinkers** – we use critical and creative thinking skills.
- **Communicators** – we listen carefully to the perspective of others.

Lesson

1 *Arrange the students so they are next to their talk partner on the carpet. The students need to be familiar with working with a talk partner and with following simple rules, for example taking turns to speak, looking at their partner, talking about the question. It would be useful to remind the students of the expectations for speaking and listening through the use of photographs illustrating the key skills.*

Enter the room with your coat on back to front and explain to the students that you are stuck. This will quickly grab the students' attention and stimulate the discussion.

2 Ask the students to talk to their talk partner about:

Why am I stuck?

What is the problem?

You could use a timer to show the students how long they have to talk for and to ensure they remain focused.

Take feedback from a small number of pairs that you select randomly.

3 Model trying to put your coat on in different ways and keep getting stuck, for example back to front, inside out and upside down. Then tell the students: **'It's too challenging. I just can't put my coat on!'**

Explain that you need the students' help to think of ways to learn how to put your coat on. Ask the students to talk to their talk partner about:

How can I learn to put my coat on?

During the discussions, you should take the role of a facilitator. Listen to the students' discussions, and encourage them to reflect and think of different ways. It might also be useful to provide some pairs with an object to pass between them to indicate whose turn it is to speak.

Invite the students to feed back their different ideas. Initially, you could ask some pairs that you know have original ideas and would be effective role models. Then select some students randomly.

If the students suggest strategies that are not helping them to learn to do it themselves, then challenge them. For example:

But I wanted to learn to do it myself. How can that help me?

4 During the week, a member of staff could document the learning and take photographs of the students demonstrating different strategies that help you learn to put your coat on. Alternatively, this could be saved for the group activity and the photographs then displayed.

Group activity

During the week, small groups of students should work with a member of staff and revisit the challenge of putting your coat on independently.

Look at the picture of the teacher stuck in the coat. Ask the students to talk to their talk partner about how you can learn to put your coat on.

Once they have shared their ideas, narrow the focus of the discussion to the steps they would need to take to put on their coat. Ask them:

What would be the first thing you would do?

How will that help you?

What would you do next?

You could provide each pair with a coat to model the different steps. This will allow the students to check that their ideas work and are in the correct order.

Within the group, share the students' ideas and, if appropriate, use a tablet to share the students' images and put them in order. Or, if you have already taken photographs, provide the students with a set to put in order to show

how to put your coat on successfully. This will create visual success criteria that can be annotated with instructions and displayed in class.

If the students suggest strategies that are not helping them to learn to do it themselves, then challenge their perspective. For example:

But I wanted to learn to do it myself. How can that help me?

Continuous provision

Provide an assortment of coats or costumes that use a variety of fastenings. The students could be asked to sort them by level of challenge and to choose a challenge. This could be displayed as the weekly challenge activity. The students can then work together trying to put the different costumes on and can record the process using cameras.

Stuck! Draw a maze on the playground and ask an adult to model being stuck in the maze. The students should help the adult to escape the maze by giving instructions and encouraging them. Show the students photographs of mazes if they do not know what a maze is or if further explanation is needed.

The students can then create their own mazes and give instructions on how to get out. Discuss how the students can help you get out of the maze and how they can make it more challenging.

Materials can also be provided for the students to create their own mazes in the creative area. Examples could be given as different challenges for the students to aspire to create or it could be offered as an open-ended activity.

Reflection time – what have we learned?

This should be completed once everyone has worked on the group activity and when you feel it would have the greatest impact on their learning. The students should be on the carpet with a clear view of the board.

Review the stages of how to put your coat on, using the photographs. Ask the students to help sequence the ideas on the board using the photographs.

Put the photographs in the wrong order and allow the students to correct you. Ask the students:

Is this the correct order?

What is wrong?

What should come next?

Develop the students' reflection on putting their coat on by asking them to think about:

What have I learned?

What can I already do?

What will I work on next?

It may be appropriate to model your own answers to these questions if the students are unfamiliar with them. This will provide them with a scaffold and help them to develop their responses.

Follow-up

Display the strategies for learning to put your coat on independently as a poster to support the students in the classroom.

Repeat the activity for different challenges that the students face, for example learning to read or using a knife and fork. Use photographs and captions to display the ideas.

2 Everyone can learn to ride a bicycle

Learning objectives	Resources
• To identify how people feel when they find something difficult • To suggest ways of encouraging themselves and others to try again	• Film (or book) of the story *Everyone Can Learn to Ride a Bicycle* by Chris Raschka • Enlarged images from the book • Speech bubbles with the students' comments (see Figure 8) • Small world play – bike and costumes • Recording equipment (for example, camera, miniature books, talking tins for voice recording)

IB Learner Profile

- **Caring** – we show empathy, compassion and respect.
- **Thinkers** – we use critical and creative thinking skills.

Lesson

1 *Arrange the students so they are next to their talk partner on the carpet. The students need to be familiar with working with a talk partner and following simple rules, for example taking turns to speak, looking at their partner, talking about the question. It would be useful to remind the students of the expectations for speaking and listening through the use of photographs illustrating the key skills.*

Explain to the students that they are going to watch a story that has no words and that their eyes will have to work extra hard to understand the story.

Watch the film of *Everyone Can Learn to Ride a Bicycle* (with no words). Pause it at **2.05 minutes** OR read the story aloud until the little girl falls off her bike on **page 16**.

2 Ask the students to reflect and discuss the following with their talk partner:

How would you feel if you fell off your bike?

Listen to the students' discussions. After a short time bring the students back together and take feedback. Initially you could select particular

students to act as role models to share their ideas, and then randomly select others. Challenge the students' thinking further by asking:

Do you think it is easy to learn to ride a bike?

How does the little girl feel when she falls off her bike?

What would you do next?

Would you put the stabilizers back on?

Group activity

The students should work in a small group with an adult.

The students revisit the part of the story where the little girl falls off her bike. You could use the image from page 16 to stimulate the discussion. Ask the students to discuss:

What is happening in the picture?

How does the girl learn to ride her bike?

Once the students have shared their ideas, develop this further by asking the students to think about:

What would you say to the girl to encourage her to try again?

How could we help motivate her?

The students' ideas could be recorded on a speech bubble with their photograph on. This could then be displayed in the classroom as a visual prompt to encourage the students to keep trying.

When all of the groups have completed this activity, you can revisit and share their ideas with the whole class. Reread the students' suggestions of what they would say. Set them the challenge of trying to use the phrases to encourage others in their learning.

Continuous provision

Stage small world play using figures of a child, a bike and an adult to allow the students to retell the story. This could then be recorded by the students using photographs, talking tins or in miniature books.

Small world play could also be used for students to explore alternative scenarios where someone has failed, such as a baby learning to walk.

Costumes for the different characters and a bike could also be provided for the students to role-play the story outside. Enlarged images could be given to

the students to stimulate the activity. An additional adult may also work in role as the child who cannot ride the bike.

Reflection time – what have we learned?

This should be completed once everyone has worked on the group activity and when you feel it would have the greatest impact on their learning.

Continue to watch or read the remainder of the story. Then ask the students to reflect and discuss with their talk partner:

What happens in the next part of the story?

How does she feel when she succeeds?

Next ask the students to feed back their ideas using lollipop sticks or an alternative method to randomly select them. You could remind the students that you will be randomly selecting them to share their ideas as this will help to ensure they focus.

Use further probing questions to challenge and encourage the students to reflect further, including:

What happens next in the story?

What is the girl able to do by the end of the story?

Would the girl have been as successful if she had used stabilizers?

How does she learn to ride her bike?

Model and explain how you felt proud when you learned to do something and did not give up. You could give a personal example to illustrate as this will ensure the learning is visible for the students.

Students' responses

Figure 8 Students use speech bubbles to encourage each other

3 Incy Wincy Spider

Learning objectives

- To identify things they find challenging
- To set challenges for themselves that they can work towards

Resources

- 'Incy Wincy Spider' from www.youtube.com/watch?v=doyv0fL0YJw (or book version)
- Picture of the nursery rhyme for the group activity
- Laminated sun and clouds
- Mark-making materials
- Drainpipe
- Giant plastic spider
- Materials to make spiders (in a variety of colours for the display)
- Examples of spiders

IB Learner Profile

- **Reflective** – we work to understand our strengths and weaknesses.
- **Risk-takers** – we are resourceful and resilient in the face of challenges.

Lesson

1 *Arrange the students so they are next to their talk partner on the carpet. The students need to be familiar with working with a talk partner and following simple rules, for example taking turns to speak, looking at their partner, talking about the question. It would be useful to remind the students of the expectations for speaking and listening through the use of photographs illustrating the key skills.*

Watch the nursery rhyme 'Incy Wincy Spider'. If you do not have access to YouTube, you could share a picture book version or key images from the nursery rhyme.

2 Ask the students:

What does Incy Wincy Spider keep doing in the rhyme?

Why do you think he keeps trying?

Develop the students' thinking further by posing the question:

Is it easy to keep trying?

Give the students a few minutes to discuss this with their talk partner. During the discussions, the teacher and any other adult should observe and listen to the students' ideas. You could record their ideas to display or to stimulate further discussion.

3 Once the discussions are under way you could choose an opportune moment to challenge them further by asking:

Why should you keep trying?

What can stop you from trying?

Randomly select some students to share their ideas with the class.

4 Continue to record their ideas to use on the display, particularly noting things that help you learn and things that stop you learning, as this will enable the process of learning to be visible. These could be displayed on suns and clouds to represent aids and barriers to learning. Explain that Incy Wincy Spider has a growth mindset as he never gives up and keeps trying his best. Explain that, if you give up, you have a fixed mindset.

Group activity

The students should work in a small group with an adult.

Visible thinking – the adults should explain about something that they found difficult, for example: 'I found it difficult to put my head under water when swimming.' They should then develop this further by explaining how they went on to improve and learn how to do it. The process of modelling ensures that the learning experience is visible.

It might be useful to compare the adult's learning journey to Incy Wincy Spider crawling up the spout, using an image from the nursery rhyme and referring to it.

Ask the students to share what they find tricky. You could pass an object around the group to indicate whose turn it is to speak.

Develop this further by asking:

How will you challenge yourself and learn to do it?

Create a 3D drainpipe display with the students' spiders and challenges. Inspired by examples of spiders that you show them, the students should make their own spider to climb the drainpipe on the display (see Figure 9).

Place their spiders at the bottom of the drainpipe. As they get better at their challenge they can move themselves up the drainpipe.

Students' responses

Figure 9 Moving towards their challenges

Continuous provision

Provide a creative table with materials from which the students can create spiders.

The outdoor classroom could include a plastic spider drainpipe and mark-making materials to allow the students to create different situations for the spider to overcome. The clouds and sun could be written on to show problems and words of encouragement.

Reflection time – what have we learned?

This should be completed once everyone has worked on the group activity and when you feel it would have the greatest impact on their learning.

Students can revisit the display regularly and, with discussions with staff, 'move themselves up the drainpipe' as they grow closer to meeting their challenge. Initially, you may need to scaffold this for the students, for example: 'Billy has been practising, so he is learning and moving towards his challenge.'

Over time you will find that the students begin to identify for themselves when they need to move and will also begin to remind other students that they are learning and have made progress towards their challenge. Develop these reflections further by asking the students to think about:

What did you learn today?

What can you already do?

What will you work on next?

The action of the spider climbing could be used in class as a signal that the students will be doing some challenging things and are in the process of learning.

4 *Cleversticks*

Learning objectives

- To identify characteristics of the different mindsets
- To suggest ideas for how a character can develop a growth mindset
- To set challenges for themselves and others

Resources

- *Cleversticks* by Bernard Ashley
- Visualizer or document camera (optional)
- Objects to be moved (including dried pasta, beads, cubes, play dough balls, dried lentils)
- Containers
- Chopsticks
- Challenge mountain cards (see Figure 10)

IB Learner Profile

- **Reflective** – we work to understand our strengths and weaknesses.
- **Risk-takers** – we are resourceful and resilient in the face of challenges.
- **Caring** – we show empathy, compassion and respect.

Lesson

1 *Arrange the students so they are next to their talk partner on the carpet. The students need to be familiar with working with a talk partner and following simple rules, for example taking turns to speak, looking at their partner, talking about the question. It would be useful to remind the students of the expectations for speaking and listening through the use of photographs illustrating the key skills.*

Read the story *Cleversticks* until the line 'Why couldn't he be good at something too?'.

You could use a visualizer to share the book with the students. You could also zoom in on Ling Sung's face.

2 Ask the students to reflect and then to discuss with their talk partner:

How does Ling Sung feel?

If you feel it is appropriate you could challenge the discussions further by asking:

What does he want to be good at?

What is he trying to do?

During the discussions you should 'eavesdrop' on the conversations from a distance rather than intervening, and make a note of the students' ideas. Then, rather than taking individual feedback, you share the ideas you gleaned from listening to the discussions with the class.

If you have students who find it difficult to work co-operatively, you could ask them to talk in a group of three (with at least one member of the group being a good role model).

Inform a few students that they will be sharing their ideas shortly. Take feedback from the students on their ideas.

3 Now ask them to discuss:

How would you feel if you kept trying to do something but couldn't do it?

During the discussions you need to monitor the students closely as you want them to remain on task and focused, with their learning moving on. If they have too much time they will become distracted.

Bring the students back together and again ask them to share their ideas.

Group activity

The students should work in a small group with an adult.

The adult should continue to read the rest of the story about how Ling Sung has a talent. Then ask the students to discuss the following questions in turn:

How does he feel now?

What does Ling Sung do to help the others?

Do you think we all have a talent?

During the discussions you could pass an object round, such as some chopsticks, to indicate whose turn it is to speak.

Challenge this further by giving the students some time with their talk partner and ask them to think and talk about:

How can we get better at things?

Take feedback from the students on how to get better at something.

Continuous provision

Allow the students to free play – set out a table with chopsticks and a range of items which the students should try to move using just the chopsticks. Identify one container as the start and another as the finish. Students should explore moving the objects between the containers.

They can then set challenges using pictures of the different objects (with Velcro on the reverse if needed) and match them to colour-coded challenge mountain pictures (see Figure 10). This type of colour-coding allows the students to discuss which challenge they have tried. A stopwatch could also be added to the activity to allow students to time how many they can do.

Reflection time – what have we learned?

This should be completed once everyone has worked on the group activity and when you feel it would have the greatest impact on their learning.

Bring the students back together and ensure they are sitting with their talk partner. Look at the page from the book where the teacher is helping Ling Sung.

Discuss with the students:

Do you think it is a good idea for the teacher to fasten his coat?

What do you think the teacher should do?

You could review the free play with the students and take feedback for which was the most challenging object to move. Ask the students to set a challenge for the teacher and then the teacher should attempt to have a turn.

When modelling, the teacher should model failure and respond using a growth mindset. As the teacher models, he or she should 'thought-shower' (that is, explain how they feel and what they are doing, ensuring their thinking is visible).

Students' responses

Figure 10 Challenges and challenge mountains

DOWNLOADABLE RESOURCES

Challenge mountain pictures

www.hoddereducation.co.uk/ib-extras

5 Toppling towers

Learning objectives

- To identify different ways a person can learn to do something tricky
- To encourage students to seek and create a challenge for themselves
- To encourage students to take risks and engage in new learning

Resources

- Picture of two towers (see Figure 11)
- Construction materials
- Building cards with different levels of challenge (see Figure 12)
- Challenge mountains (see Figure 12)
- Camera or tablet

IB Learner Profile

- **Reflective** – we work to understand our strengths and weaknesses.
- **Risk-takers** – we are resourceful and resilient in the face of challenges.

Lesson

Part 1: Easy tower

1 *Ensure the students are sitting on the carpet with a clear view of the board.*

Show the students two pictures of towers on the board (see Figure 11 for an example) and ask them:

What can you see?

How many towers are there? (Students should indicate their responses with their fingers.)

The students should then be asked to look closely at the towers and think about which one is an easy tower and which looks like a challenging tower to make.

The students can share their opinions by a show of hands and their ideas could be challenged further by asking for reasons.

Figure 11 Two towers – one easy, one tricky

2 *To ensure that all of the students can see the teacher, it would be useful to rearrange them so they are sitting in a circle. The process of modelling and sharing your thinking ensures that the process of learning is visible.*

Explain that you are going to try to build the easy tower and that it is important to keep looking at the picture as you try to build the tower.

Model building the tower and thought-shower or explain the process, for example: 'I need a blue one next so it is the same as the photograph. This is a bit tricky, as I have to keep looking. How many more do I need?'

As you build the model, deliberately make errors at times, such as using the wrong colour, and allow the students to correct you.

Once you have completed the tower, ask the students for feedback:

What do you think of my tower?

Have I made the same tower as in the picture?

Part 2: Development – challenging tower

3 Introduce the next tower by telling the students that you are now ready for a challenge.

Again, you should thought-shower the process, for example: 'On the bottom I need a red with … because that's what is on the picture.'

Make a mistake and allow the students to correct you, explain why you are wrong and help you do it again.

Ask the students if the task is too tricky/challenging for you and whether you should give up.

Tell the students you are going to have another try and continue to model the process of building the towers. Continue to thought-shower the process you are going through.

4 Ask the students:

Who thinks they would be able to build the tricky/challenging tower?

Develop this further by asking them to discuss with their talk partner:

What do you think you would do if you tried to build the tricky tower and couldn't do it at first?

Group activity

The students should work in a small group with an adult.

The adult should introduce the 'challenge mountain' as a symbol for when something is challenging and tricky and add it to the picture of the tower (see Figure 12). The different colour mountains represent different levels of challenge and are easily recognizable to younger students. However, it is important to swap the level of challenge you associate with a specific colour each term to prevent students simply choosing whatever task they think will be easy or hard.

Explain that you have set challenges for the students in the construction and that they should try to build them. The students can then explore the challenges and have a go at building them.

Extend this further by asking the students to create their own challenges and record them as photographs to be shared with others.

Continuous provision

Continue the use of challenge mountains in the classroom, initially with the construction, and observe how the students behave when faced with a challenge. Does this match up to your opinion of the type of mindset they have?

Later this can be extended to a range of independent activities.

Reflection time – what have we learned?

This should be completed once everyone has worked on the group activity and when you feel it would have the greatest impact on their learning.

Look at some of the examples of towers and challenges the students have built over the week. You could prepare some students by warning them that they may be asked to speak, in order to ensure they feel confident.

Take feedback from the students:

How did you feel when you were trying a challenge?

What helped you to keep trying?

Did you create your own challenge? What makes it a challenge?

Discuss what the students think a challenge is. Ask them to discuss with their talk partner to deepen their level of discussion.

Students' responses

Figure 12 Challenge mountains and building cards with different levels of challenge

DOWNLOADABLE RESOURCES

Challenge mountain pictures

www.hoddereducation.co.uk/ib-extras

6 *Rooting for You*

Learning objectives	Resources
• To identify things they find challenging • To set challenges for themselves that they can work towards	• *Rooting for You* by Susan Hood • Speech bubbles • Visualizer or document camera (optional) • Puppet-making materials • An outline of a house and a school

IB Learner Profile

- **Caring** – we show empathy, compassion and respect.
- **Communicators** – we express ourselves confidently and we collaborate effectively.

Lesson

1 *Arrange the students so they are next to their talk partner on the carpet. The students need to be familiar with working with a talk partner and following simple rules, for example taking turns to speak, looking at their partner, talking about the question. It would be useful to remind the students of the expectations for speaking and listening through the use of photographs illustrating the key skills.*

Look at the first illustration from *Rooting for You*. Ask the students to discuss:

How is the seed feeling?

Why do you think it doesn't want to go out?

You could use a visualizer to share the book with the students. You could also zoom in on specific images to stimulate discussion.

2 Continue to read the next three pages of the story until the line 'all alone' on **page 8**. Ask the students to discuss with their talk partner:

If you were a seed, would you stay in the ground or would you want to go outside?

Remind the students that there are no right or wrong answers, just their opinions.

Once the discussions are under way, you should listen in to the conversations and make a note of any interesting ideas. You could identify a few pairs to initially share their ideas with the class and act as role models.

Using lollipop sticks, randomly select students to provide feedback on how they would behave if they were the seed. Probe their ideas further by asking:

Why would you behave like that?

What would help you to behave differently?

Group activity

In small groups, finish reading the story and ask the students:

Who helped the seed to keep on trying and growing?

What would you say to the seed to encourage it to keep trying?

Who helps you to keep trying?

Collect some of the students' ideas on speech bubbles as these can be used as visual prompts to remind the students to keep trying.

Continuous provision

In the creative area, leave materials such as socks and pegs for the students to create their own character that is willing to try.

To encourage them to learn to try new things, ask the students:

Can you give your character a name?

How can you help your character to try new things and to learn?

Reflection time – what have we learned?

This should be completed once everyone has worked on the group activity and when you feel it would have the greatest impact on their learning.

Provide time for the students to share their puppets and feed back on how they help them to learn and try new things.

Discuss who and what helps the students to learn new things in school and at home. Illustrate these on an outline of a house and an outline of a school.

Follow-up

Visible thinking – you could model the attributes of both growth and fixed mindsets using a class puppet. We recommend having **a single puppet to model both mindsets** as this reflects what both adults and students do in their learning.

Create a 'have a go board': make a display board of photographs of the students having a go (that is, trying to do something new or challenging). Also ask parents to share examples from home and outside school and display both. This reinforces the idea that mindsets can apply in every aspect of our lives. Staff could also add their own attempts at having a go at new things to the display to model their own growth mindsets.

CHAPTER 2

Lessons for 5–6-year-olds

Lesson	Focus	IB Learner Profile	Page
1 I give up!	Characteristics of growth and fixed mindsets, and helping a character with a fixed mindset	• **Caring** – we show empathy, compassion and respect. • **Communicators** – we express ourselves confidently and we collaborate effectively. • **Reflective** – we work to understand our strengths and weaknesses.	59
2 Strictly can't dance	How it feels to fail and how to learn	• **Caring** – we show empathy, compassion and respect. • **Communicators** – we express ourselves confidently and we collaborate effectively.	62
3 Grow, grow, grow your brain	Describing the learning journey and what learning means	• **Communicators** – we express ourselves confidently and we collaborate effectively. • **Thinkers** – we use critical and creative thinking skills.	66
4 Soaking up the learning	What happens in the brain when we learn	• **Reflective** – we work to understand our strengths and weaknesses. • **Inquirers** – we learn with enthusiasm and sustain our love of learning throughout life	72
5 Super snails 1: The power of perseverance	The snail's growth mindset; identifying personal challenges	• **Thinkers** – we use critical and creative thinking skills. • **Risk-takers** – we are resourceful and resilient in the face of challenges. • **Knowledgeable** – we develop and use conceptual understanding.	76
6 Super snails 2: Setting challenges	Characteristics of a growth mindset; setting personal challenges	• **Communicators** – we express ourselves confidently and we collaborate effectively. • **Reflective** – we work to understand our strengths and weaknesses.	80

Overview

Following on from the activities for students aged 4–5 years, these lessons reinforce and explore the concept of mindsets through familiar contexts. They also introduce key vocabulary, including persevere and failure. Students work collaboratively with talk partners and small group learning is introduced. The lessons also look at the brain and begin to explore what happens in the brain as we learn. Learning challenges are reinforced and effectively illustrated through the use of snails. Students are asked to be reflective – to consider how they can improve their learning and suggest strategies to support themselves as learners.

1 I give up!

Learning objectives	Resources
• To identify characteristics of growth and fixed mindsets • To suggest ideas for how a character can develop a growth mindset	• Charlie and Lola DVD: *Too Many Big Words* (Series 2, Episode 26) • Giant thought bubble • Giant heart shape

IB Learner Profile

- **Caring** – we show empathy, compassion and respect.
- **Communicators** – we express ourselves confidently and we collaborate effectively.
- **Reflective** – we work to understand our strengths and weaknesses.

Lesson

1 *Introduce the concept of mindsets using a story with familiar characters. Charlie and Lola works extremely well as the students are familiar with the characters and attracted by the delightful illustrations. The story is about Lola starting school and how initially she enjoys it until she decides it is too tricky for her. After that, she decides that she wants to stay at home.*

Watch the Charlie and Lola DVD until **4.43 minutes**.

2 Using two students in role as Charlie and Lola, create a freeze frame of the characters sitting together ready to discuss Lola's problem. This can be done using some props, masks and some creative flair. You might find it useful to discuss the roles first. Points for discussion could include:

How would Charlie and Lola freeze?

How can you show how you are feeling using your face and body?

3 Once the students are in their freeze, you can use a giant thought bubble over a character's head to stimulate discussion or a giant heart to represent how a character is feeling.

Ask the students to discuss with their talk partner:

How is Lola feeling?

Why does she feel like that?

Ask the students to feed back. Select students to contribute at random, using lollipop sticks or an online resource such as the 'Random Name Picker' at **www.classtools.net/random-name-picker/** or the 'Random Student Selector' at **www.ehyde.com/No%20Hands/**. Then allow the students to relate how Lola is feeling to their own experience.

Ask the students:

Have you ever felt like Lola?

What made you feel like that?

Understanding students' mindsets

4 *The students should now work in small groups. If this is the students' first time working in small groups you will need to consider the groupings carefully. To encourage all students to join in the discussion, an object could be passed around the group to indicate turn taking. You might also want to alert any child who could be passive or reluctant to join in by letting them know in advance that you want to hear their ideas (and that there are no wrong answers).*

Ask the groups to discuss:

If they were Charlie, what would they say to Lola?

Once the discussions are under way, you should undertake the role of a learning facilitator. Listen to what the students are saying as it will reveal a lot about their attitudes to learning and their individual mindsets. Try not to intervene since allowing students to resolve issues within their group is an important skill for them to develop.

Ask the students:

Why shouldn't we give up?

5 You need to choose the right moment to intervene with an extension activity. This is always tricky, as you do not want to interrupt the students' discussion but need to ensure the learning continues to develop.

Reflection time – what have we learned?

Invite the students to feed back their ideas for what Charlie should say to Lola and collect them for a display (see Figure 13). Encourage the students to think about one another's ideas. Give them one example of Lola giving up. Ask them if giving up is a good idea or not.

Challenge the students further to explain their thinking. Explain that Lola is demonstrating a fixed mindset when she tries to give up and Charlie is encouraging her to have a growth mindset and to keep trying.

Challenge

You could set the students the challenge of presenting their ideas in role as Charlie and Lola. If students are unfamiliar with the idea of a learning challenge, you might want to explain this concept in greater detail, dangling it as a carrot for all students to aim for.

Further developments

Visible thinking – model your own learning and describe a time when you felt like Lola. Describe what you did to overcome the feelings.

Identify times when students are demonstrating a fixed mindset in their learning and encourage them to develop a growth mindset through feedback.

Create a class display board using the students' ideas. This can act as a prompt for the students as to what mindset they should adopt.

Read a story about a character that has a growth mindset. Then use this character as a visual reminder of the importance of persevering. Drop the character into flipcharts, worksheets and instructions.

Students' responses

Figure 13 Encouraging a growth mindset

DOWNLOADABLE RESOURCES

Video of students discussing fixed and growth mindsets

www.hoddereducation.co.uk/ib-extras

2 Strictly can't dance

Learning objectives	Resources
• To describe how it feels to fail • To suggest ways they can support one another and learn new things	• *Giraffes Can't Dance* by Giles Andreae • Visualizer or document camera (optional)

IB Learner Profile

- **Caring** – we show empathy, compassion and respect.
- **Communicators** – we express ourselves confidently and we collaborate effectively.

Lesson

1 *Arrange the students so they are sitting with their talk partners and are able to easily see the book.*

Read the story *Giraffes Can't Dance* until the section on **page 12** when all the animals laugh at Gerald. You could use a visualizer to share the book with the students. You could also zoom in on Gerald when the animals all laugh at him at the ball. This will help to focus the students' discussion.

2 Ask the students to discuss:

How is Gerald feeling?

Why is he feeling like that?

Ensure you monitor the students' discussions carefully, allowing them enough time to discuss each question but not so much time that they become less focused. To ensure the students remain focused, you could use the strategy of 'eavesdropping', where you listen to the discussions and make a note of the students' ideas. Then, rather than taking individual feedback, you share the ideas you gleaned from listening to the discussions with the class.

3 Extend the discussion further by giving the talk partners a few minutes to discuss each of the following:

How do the other animals behave?

How does that make Gerald feel?

What has he failed to do?

Take feedback from different students; act as a scribe or get another adult to jot down words to describe how Gerald is feeling. These could be used for a display to illustrate the learning process from making mistakes.

Understanding the students' opinions on failure

4 *The students should now work in small groups (three to four members). If this is the students' first time working in small groups you might want to consider the groupings carefully. To encourage all students to join in the discussion, an object could be passed around the group to indicate turn taking. You might also want to alert any student who is passive or reluctant to join in by letting them know in advance that you want to hear their ideas (and that there are no wrong answers). You could allocate the name of one of the animals from the story (for example, the 'rockin' rhinos') to each small group.*

The students should then discuss and decide:

Should Gerald be allowed to go to the ball?

Each group should decide if they would let him go and provide reasons for their decision.

Once the discussions are under way, you should undertake the role of a learning facilitator. Listen to what the students are saying as it will reveal a lot about their attitudes to learning and their individual mindsets. Try not to intervene since allowing the students to resolve issues within their group is an important skill for them to develop. You could make notes of the students' responses to allow you to revisit misconceptions at a later point or share ideas through a display.

5 The students could record their ideas in a 'for and against' format. You would need to ensure, however, that this does not distract from the quality of the discussion.

Reflection time – what have we learned?

Prepare the groups for feedback time by giving them a five-minute warning to prepare a member of their group to share their ideas. To begin with you could select a confident student from the group, but as the students become more familiar with working in small groups, they could nominate their speaker themselves or more reluctant students could be encouraged to try the role.

The students should then give feedback about their decision: would they let Gerald go to the dance? Ensure you challenge the students to explain why they have reached their decision.

Challenge the students further by asking them:

Did everyone in your group agree?

How could you encourage Gerald to want to try to join in?

Provide each group with the opportunity to feed back on their ideas.

Challenge

Ask the students to work in the same groups and to discuss and debate the following question:

Which is more important – trying your best or something being easy and getting it right?

This activity will reveal the students' attitudes to learning and spark much interesting discussion.

Further developments

Expand on this theme by asking the students to think about something they have found tricky to do and how they have got better at it, for example learning to swim, ride a bike or read.

Create a class display featuring a scene from the ball; include vocabulary to describe how Gerald is feeling after he fails (see Figure 14). Reinforce the concept of learning from our mistakes by displaying comments that the students have suggested about why Gerald should try again and reasons why he should be allowed to go to the ball.

Students' responses

- How is Gerald feeling?

'Sad because all the other animals can dance but Gerald can't.'

'Sad because he has been left out.'

'Down and upset as everyone is leaving him out.'

'Left out and upset.'

How do the other animals behave?

'Bad, naughty, they are just leaving him out because he can't dance. You shouldn't do that.'

'Just because he can't dance doesn't mean he can't join in.'

'They are laughing at him, saying he can't dance and teasing him.'

Should Gerald be allowed to go to the ball?

'He can come to the dance, we will teach him.'

'He should just try.'

'He shouldn't because the others (animals) might be mean.'

'He should just go to the ball, people shouldn't be mean.'

'He can go, he just needs to practise.'

'If he doesn't go, he won't get better. This could be a problem at a party.'

'Yes, as if he practises he would be able to learn to dance. You don't just know it, you have to try and learn.'

'If you have a go, maybe you can do it. Just try one go.'

'If he can't dance, he can't dance.'

'No, because he should be able to dance first.'

'Yes, as he might get better at dancing there.'

'He should go as he might be able to dance. He should ignore the others.'

Figure 14
Don't give up!

3 Grow, grow, grow your brain

Learning objectives	Resources
• To discuss and share their opinions on what they think the word learning means • To describe the learning journey, using the pictures to support	• Brain cards (see Figure 15)

IB Learner Profile

- **Communicators** – we express ourselves confidently and we collaborate effectively.
- **Thinkers** – we use critical and creative thinking skills.

Lesson

1 *Ask the students to sit with their talk partner.*

Slowly reveal the word 'learning' on the board. Read the word to the students and ask them to read it to you. To hook the students in, you could read the word in different voices, such as your posh voice or your whispering voice. Ask the students:

What do we mean by the word learning?

Explain that they are going to discuss with their talk partner what they think about or associate with the word 'learning'.

Remind the students that there are no right or wrong answers, just their opinions, and you are going to select students to share their ideas randomly, for example through the use of raffle tickets with the students' names on them.

2 After a short discussion time of a few minutes, bring the students back and randomly select students to feed back to the class about their ideas. When responding to the students' ideas, try to respond in a neutral manner and pose questions to challenge their ideas further rather than instantly correcting any misconception.

What does learning look like?

3 Ask the students to sit at tables with their talk partner. Provide each pair with the four different pictures of the brain (Figure 15). Ask them to discuss:

What do you think is happening to the brain in each picture?

Why do you think that?

What does this remind you of?

During the students' discussions, and when you feel it is appropriate, provide brief reminders of their focus. This could be done either as a whole class or to specific pairs.

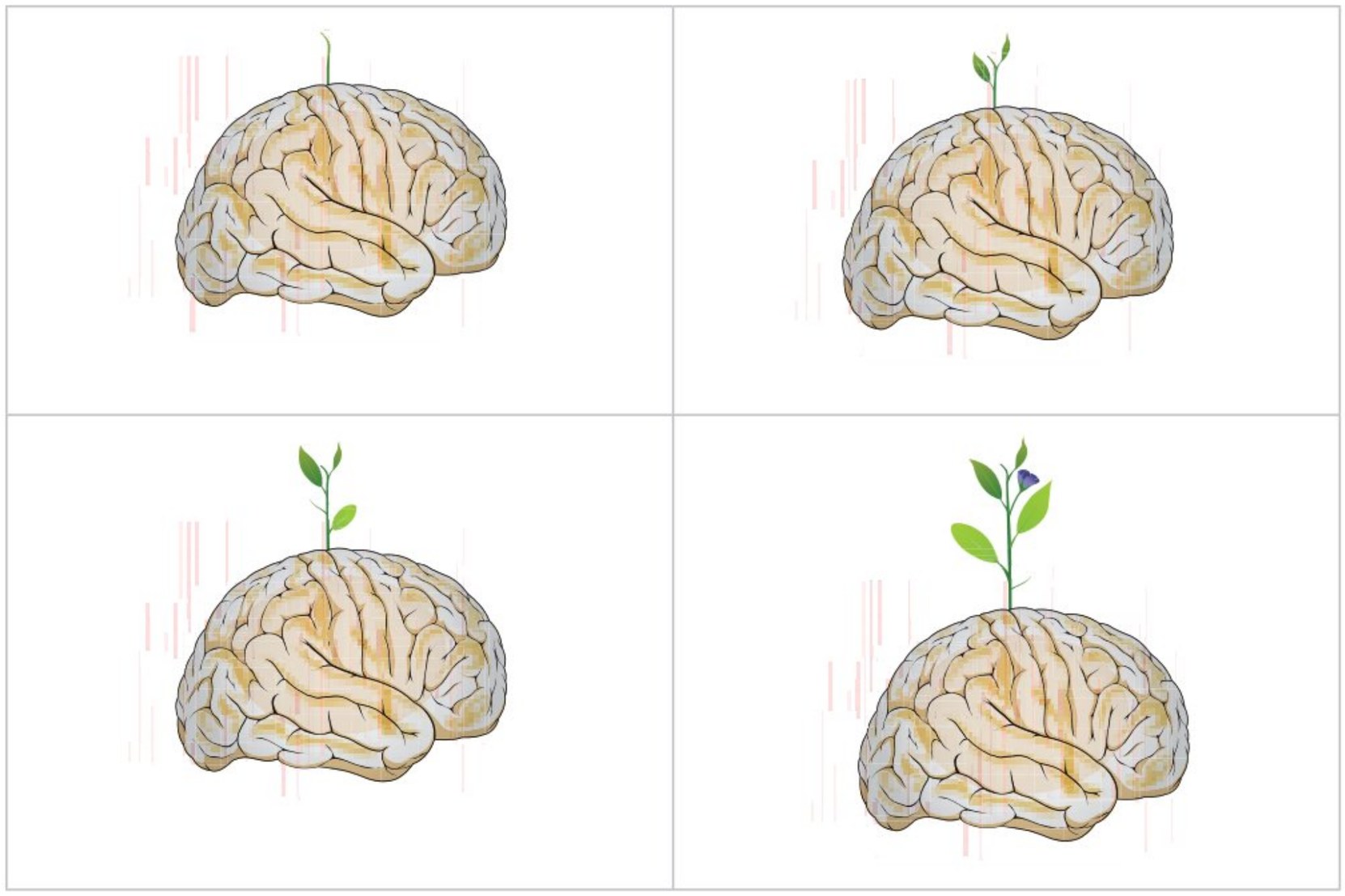


Figure 15 Brain cards

4 Ask the students to feed back what they think is happening in the pictures. Challenge their ideas further by asking:

Why do you think that?

Do you ever feel like that when you are learning?

5 During this process some students might automatically put the images into an order. If they have not done so, you could probe their thinking further by challenging them to put the pictures in order. Students will respond to this challenge in different ways: most will put the images in a linear order, although a few might form a learning circle. This can be an extremely revealing activity.

Reflection time – what have we learned?

Look at the images of the brain growing in order and ask the students:

Why have you put the pictures in this order?

Is there any other order or way of presenting them?

Can you describe what is happening to the brain in the different stages?

Can you describe to your partner a time when you felt like that about your learning?

Depending on the students' discussions earlier and their concentration span, you could focus on one of the questions above rather than all of them. Choose carefully, considering which will bring out the most useful information and reinforce the concept of learning as a process.

During the feedback you or another adult could take notes of the students' ideas for each image. These could then be used in a display as a learning prompt. This learning board can be added to as the students' ideas develop and used as a means for the students to self-identify when their learning is at a particular point. Mini versions could also be put in the students' books and used by them to identify where they are in the learning process.

Challenge

Ask the students to think about whether there is another image or object that they could use to describe the process of learning. Develop this further by asking:

Why have you chosen this object/image to represent learning?

Can you explain what would happen if I made a mistake?

Further developments

Teach the students this song to the tune of 'Row, row, row your boat'. This reinforces the idea that learning is a process and a journey rather than instant.

Grow, grow, grow your brain,

Challenge yourself today.

Listen, practise, double check

And try in every way.

DOWNLOADABLE RESOURCES

Brain cards

www.hoddereducation.co.uk/ib-extras

Students' responses

What does the word 'learning' mean?

'It means you have to listen.'

'Having fun.'

'Learning makes you think a lot.'

'Concentrate and watch what the teacher does.'

'Learning means if you don't know something, you're going to learn it.'

Should learning be easy?

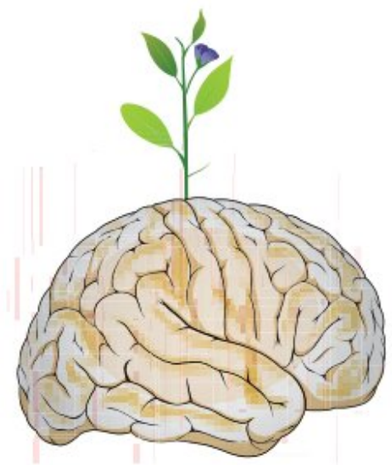
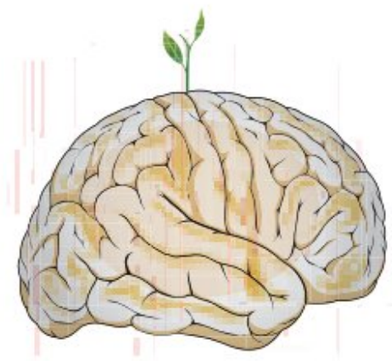
'No, because it means you already know it!'

'If you get it wrong, you can try again. You've got to keep on going.'

'If you get it wrong, you can try again. If you get it right you've learned it.'

'Learning something new is like entering a dark cave.'

How we learn

	My brain has grown bigger. I no longer need help. I have successfully learned something new. I am ready for a new challenge.
	I still need help. It is still tricky but I am getting better. I am concentrating.
	I am putting lots of effort in. I keep trying every day and I am concentrating. I ask for help. I make mistakes and try again.

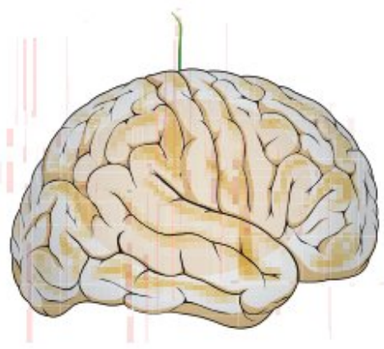
	Work can be tricky and challenging. I work with an adult and need help. I need lots of practice.

Figure 16 Sorting the brain cards (1)

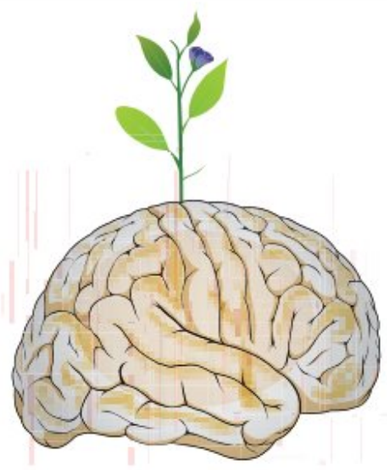
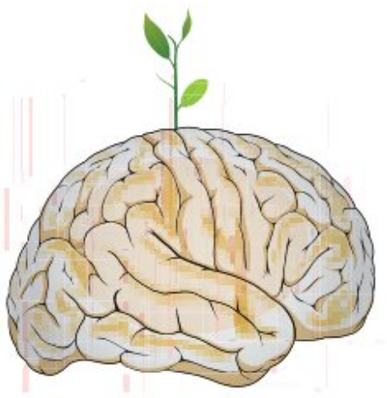
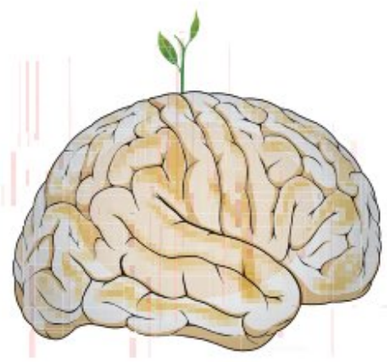
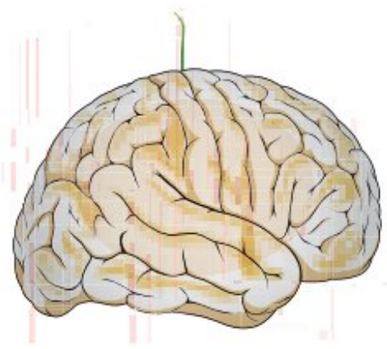
	I have learned something new. I can do it myself. I have a strong bridge in my brain. I am ready for a new challenge. I can do it!
	My learning has improved. I might not need help. Sometimes I can do it by myself. The bridges in my brain are growing. I am beginning to challenge myself. Learning is becoming easier.
	I am beginning to learn but it is still tricky. Don't give up! I still need some help. Beginning to get bridges in your brain. I need lots of practice.
	Learning can be confusing. Ask for help! You might feel scared. It's like entering a dark cave. You are going to make mistakes. Keep working and trying.

Figure 17 Sorting the brain cards (2)

Figure 18 How to grow your brain

4 Soaking up the learning

Learning objectives	Resources
• To identify the characteristics of growth and fixed mindsets • To describe what happens to our brain when we learn	• Two sponge brains (see below) • Laminated labels: 'growth' and 'fixed' • Containers with characteristics and coloured water (see below)

IB Learner Profile

- **Reflective** – we work to understand our strengths and weaknesses.
- **Inquirers** – we learn with enthusiasm and sustain our love of learning throughout life

Lesson

1 *Ask the students to sit in a circle.*

Show the students a sponge brain (a sponge that has been cut into the shape of a brain). To distinguish between the two mindsets you could use two different coloured sponges rather than one. Another option would be to place green food colouring in the water in the containers which represent the characteristics of a growth mindset (see below).

Growing your brain

2 Explain to the students that they are going to help make the brain grow and learn new things. Explain that one brain has a growth mindset and the other has a fixed mindset. Place laminated labels stating '**growth**' and '**fixed**' next to each brain.

Show the students the different containers. Each should be clearly labelled with a characteristic of a growth or a fixed mindset:

- giving up
- making a mistake
- trying again
- likes easy work
- doesn't listen
- rushes work
- always likes to be right
- tries a challenge
- keeps practising
- likes being first to finish
- believes that you can't get better.

The containers for fixed mindsets should be empty but the ones labelled with the characteristics of a growth mindset should contain water.

In addition to this, you could label some containers with learning behaviours that relate to the students in your class, such as 'shouting out the answers'.

3 Begin by asking the students to sort the containers into growth and fixed mindsets.

Then ask individual students to add possible ingredients to help their brain learn new things and see what happens. The containers with the characteristics of a fixed mindset should have no effect on the sponge brain. The containers with characteristics of a growth mindset (that is, those containing water) should become heavier as the water is absorbed by the sponge.

4 Ask the students to discuss with their talk partner:

What have you noticed?

What has happened to the brain?

Did anything happen when we added the fixed mindset ideas?

Why do you think that was?

Take feedback from the students. Before the students begin their discussion, you could have alerted some of the quieter members of your class by informing them that they will be sharing ideas.

Reflection time – what have we learned?

Pose the question: **Which brain would you rather have? Why?**

Discuss this with the students and, if you feel it is appropriate, provide some talk time. Then allow the students to share their ideas and remind the other students to listen carefully as you might be asking them what they think of someone else's idea.

Ask the students: **How can we develop our own growth mindsets?**

Challenge

Discuss with the students whether there is anything else we need to make our brain grow and help us to be better learners.

Would you need to have an empty container or one with water in it (that is, a fixed or a growth mindset)?

Display the students' ideas for helping your brain learn new things in the classroom.

Further developments

Challenge the students to identify what they need to do to become a better learner by giving each one a card saying: 'I am making my brain grow and learn by …'

Create a display entitled 'I am making my brain grow and learn by …'.

Students' responses

Figure 19 What the brain needs to grow and learn

- What did you notice when we added the characteristics of the mindsets to the brain?

'The growth mindset brain changed. It's got heavier.'

'The fixed mindset brain stayed the same. Nothing changed.'

- Is there anything else we need to make our brains grow?

'Never give up!'

'Go steady.'

'Keep trying.'

'Don't rush.'

'Choose hard work.'

'Listen to the teachers.'

5 Super snails 1: The power of perseverance

Learning objectives	Resources
• To identify the characteristics of a growth mindset (as demonstrated by a snail) • To identify an aspect of their learning in which they would like to improve or challenge themselves	• A picture of a snail • YouTube clip of a snail at **www.youtube.com/watch?v=Y9yffb7X9fk** • Figure 20 or other information about snails • Snail puppet

IB Learner Profile

- **Thinkers** – we use critical and creative thinking skills.
- **Risk-takers** – we are resourceful and resilient in the face of challenges.
- **Knowledgeable** – we develop and use conceptual understanding.

Lesson

1 *Ask the students to sit on the carpet with their talk partner and ensure they have a clear view of the board.*

Begin by finding out what the students already know about growth and fixed mindsets:

What can you tell me about a growth mindset?

What does a fixed mindset mean?

Can you tell me anything else?

If any misconceptions are revealed by the students, you could build in some talk time and ask them to discuss whether they think … is true and why.

Super snails

2 Show the students a picture of a snail and ask them what they know about snails. Select some students randomly to share their ideas with the class. You will need to ensure you move the learning on after a short discussion to avoid the students veering off at a tangent.

3 Explain that they are going to watch a video of a snail and that you want them to think carefully about:

What the snail does.

Why the filmmaker chose the music.

Show the YouTube clip of the snail moving to music.

Ask the students to discuss with their talk partner:

What type of mindset do you think the snail has? Why?

How do you know?

Randomly select some students using the lollipop method to answer the questions.

4 Together look at the information in Figure 20 showing some facts about snails and images of snails climbing. You could also show the students a ruler and a timer to illustrate how long it takes and how short a distance snails can travel in that time.

Give the students more talk time: ask them to discuss with their talk partner:

Now you have learned some more about snails, do you think a snail has a growth mindset or a fixed mindset?

Have you changed your original opinion? Why?

Snail facts

Did you know that snails move about 1.3 cm a minute?

They are one of the slowest creatures on the planet.

Snails are very strong. They can lift 10 times their body weight!

Figure 20 Snail facts

5 Introduce the word '**persevering**': write it on the board and read it to the students. Then read it together a few times to reinforce it. Allow the students some time to think about what persevering means. Take ideas from the students and then, depending on their responses, you might need to explain what persevering means. Develop this further by asking the students to think about how the snail perseveres and how they can persevere in their learning. Give the students time to discuss this with their talk partners. To ensure the students remain focused you could use the strategy of 'eavesdropping', where you listen to the discussions and make a note of the students' ideas. Then, rather than taking individual feedback, you share the ideas you gleaned from listening in to their discussions with the class.

Reflection time – what have we learned?

You will need a medium to large space for this activity: 'Set your inner snail free!'

Invite all the students to curl up into a small ball like a snail inside its shell. Ask them to think about:

If you were a snail, how would you challenge yourself in your learning?

Remind the students that they need to be very quiet and listen carefully to ensure they don't scare the snails! Again, it might be useful to alert a few students, informing them that they will be sharing their challenge with the class. Ask an individual snail to uncurl while sharing how they would challenge themselves. Repeat until all the snails have shared their challenges. Another adult could make a note of the students' individual challenges for the next lesson.

Challenge

Ask the students to think of other animals that they think demonstrate a growth mindset. Can they explain why they think this?

The students could use books or the internet to find out more about animals and their characteristics.

Further developments

Use a snail puppet to represent and reinforce the concept of persevering. When you observe a child persevering in his or her learning, place the puppet next to them, or ask other students to place the snail when they observe another child persevering.

Ask the students:

Are you persevering like a snail?

The idea of snails persevering was the key plot in the film *Turbo*. This can be a useful means of reinforcing the concept, as can the beautifully illustrated book *Snail Trail* by Ruth Brown. There are also a number of great non-fiction books about snails, including *Snails* by Susanna Davidson.

DOWNLOADABLE RESOURCES

- PowerPoint presentation 'Snail facts'
- Video of students pretending to be snails

www.hoddereducation.co.uk/ib-extras

6 Super snails 2: Setting challenges

Learning objectives	Resources
• To explain what a growth mindset is • To identify and set a learning challenge for themselves	• Photographs of snails • Model snail and learning track (see Figure 21) • Photographs of snails • Materials to make snails • Visualizer, document camera or tablet

IB Learner Profile

- **Communicators** – we express ourselves confidently and we collaborate effectively.
- **Reflective** – we work to understand our strengths and weaknesses.

Lesson

1 *Ask the students to sit with their talk partners. Prior to the lesson, you could remind them briefly of the success criteria for being an effective talk partner.*

Write this question on the board and read it together, using snail photographs to stimulate the discussion where needed:

Do snails have a fixed mindset?

Ask the students to discuss with their talk partner whether they think this is the case or not, and why. Ensure you monitor the discussion carefully, providing enough time for the students to share their opinions but not too much that they go off task. To prepare the students to share ideas you could give them advance warning during their discussions that you will be asking for their opinions.

2 Bring the students back together and ask them to vote on whether they think snails have a fixed mindset or not, or if they didn't know, using a simple thumbs up, down and wavering in the middle method. Select students with different opinions to explain why.

Super snails

3 Recap on the snail and its growth mindset by asking the students:

Which animal did we talk about last week (Lesson 5)?

What can you tell me about a snail?

Can you explain what type of mindset a snail has?

Figure 21 A snail on a learning track

4 Using a visualizer, document camera or tablet, share with the students your snail on its learning track (see Figure 21). Explain you have set yourself a challenge of … that you are going to work towards. Try to pick a personal challenge and one that the students would relate to, such as putting your head under water when swimming or trying to slow down and take more care with your learning. You could share a few examples to ensure the students do not focus on your (single) challenge and adopt it.

Try to use the term 'learning' when talking about your challenge rather than 'work' as it has meaning in a wider range of contexts and is more of a continuous journey that we are on rather than an end product that was laborious.

Visible thinking – model for the students:

- what you were learning to do
- the challenges you faced
- how you overcame the barriers.

5 Explain to the students that they are going to make their own snail and learning track and set themselves a learning challenge to work towards. Remind the students that the challenges might be different, as we are all different learners. Then the students should create learning tracks and snails (to represent themselves). The learning challenge could be written on a sign as the finish line.

You might need to set aside additional time to complete this activity as it can be quite time consuming. You could then have the discussion with talk partners and reflection time later on in the day or week, once all the learning tracks have been completed.

Reflection time – what have we learned?

Ask the students to share their learning track with their talk partner and to discuss:

What are your challenges?

What strategies can you use to move on your learning track?

How can you get better at this?

What would you need to do?

Can you think of anything that might stop you from moving on your track?

When it is appropriate, take pit stops for the students to feed back about a question and then move the discussion on to the next aspect.

Challenge

Ask the students to think about barriers to their learning. You might want to model your own again here, such as worrying about opening your eyes under water.

What could be a barrier to your learning challenge?

How would you create this on your learning track?

Further developments

Display the learning tracks in the classroom. Then the students can move their snail forwards when they believe that they have demonstrated they are working and improving at their challenge. New challenges can be added too.

Emphasize that it is not a race against others and those who have chosen a harder personal challenge will take longer and are actually working harder! The circular nature of the track reflects how learning keeps moving on.

Students' responses

Figure 22 Child's snail ready to start on its learning track

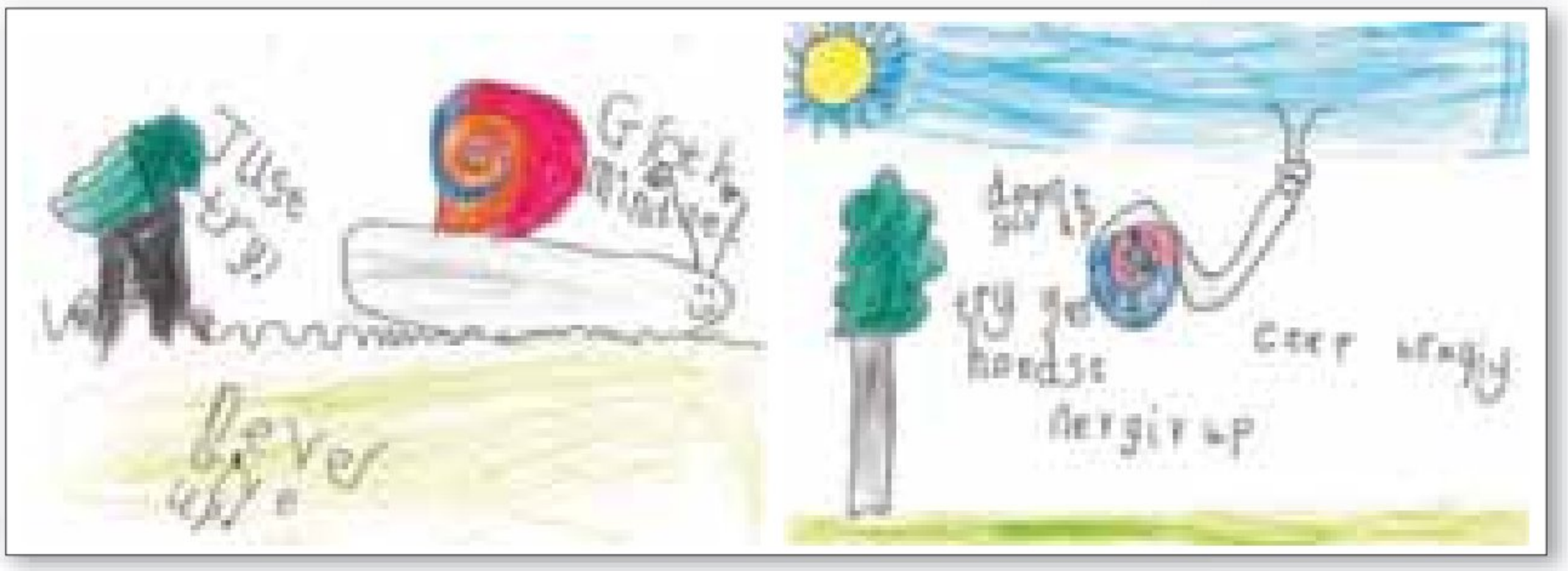


Figure 23 How snails learn!

CHAPTER 3

Lessons for 6–7-year-olds

Lesson	Focus	IB Learner Profile	Page
1 Playing teacher	Working in specific roles in a learning group; strategies that would help a child with a fixed mindset engage in their learning	• **Caring** – we show empathy, compassion and respect. • **Communicators** – we express ourselves confidently and we collaborate.	87
2 'Oh no! I've made a mistake!'	How we feel when we make a mistake; strategies that help us learn	• **Caring** – we show empathy, compassion and respect. • **Risk-takers** – we are resourceful and resilient in the face of challenges. • **Knowledgeable** – we develop and use conceptual understanding.	91
3 'Girls can't do that!' Dream big!	Discussing and debating whether girls should be allowed to be engineers; identifying how we should respond to a mistake	• **Open-minded** – we seek and evaluate a range of points of view. • **Principled** – we act with integrity and honesty, with a strong sense of fairness and justice.	95
4 Super effort	Creating a character to represent effort; the characteristics of effort	• **Communicators** – we express ourselves confidently and we collaborate. • **Reflective** – we work to understand our strengths and weaknesses.	99
5 Challenge mountains	Setting learning challenges; reviewing their challenge and identifying progress	• **Reflective** – we work to understand our strengths and weaknesses. • **Risk-takers** – we are resourceful and resilient in the face of challenges.	109
6 Ding ding! How much effort?	Different stages of effort; creating their own effort meter	• **Thinkers** – we use critical and creative thinking skills. • **Knowledgeable** – we develop and use conceptual understanding.	114

Overview

From age six onwards, students are required to work collaboratively with others through the introduction of 'learning groups'. This builds on the previous lessons where the students worked with a talk partner, as they are now required to work in groups of four and to take on a specific role within the group. Students are provided with opportunities to debate ideas and share different opinions. The idea of mistakes as part of the learning process is explored in greater detail and students are encouraged to identify strategies to enable them to learn. The concept of effort is introduced and the students are encouraged to reflect on their own effort and their desire to be challenged.

Learning groups

The learning groups are designed to provide a clear and coherent structure to group work, which enables students to develop a range of skills in addition to their focus activity. Students must take on one of four key roles: a **manager**, a **reporter**, an **encourager** or a **recorder** (see Figure 24). These are designed to be flexible and can be adapted to suit the needs of your class, so roles, for instance, could be shared. Initially it is advisable to allocate a specific role to a student and to provide them with a number of opportunities to explore the same role. As students become familiar with this way of working and also more mature, the roles can be changed regularly as this allows them to demonstrate a range of skills.

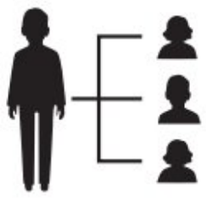
Prior to using learning groups to develop mindsets in school it would be useful to give the students experience of working in this way. Initially they could be introduced to the different roles and asked to suggest ways in which they should behave or things they should say for each role. These ideas could then be used to create posters to remind the students how to be successful in the different roles. Students should also be given opportunities to practise the different roles. Providing them with opportunities to discuss simple ideas allows them to think more about what is happening in the group and their role. This can then be further developed by activities that require the students to share differing opinions.

When the students are working in roles, it is important for you, the teacher, to act as a facilitator. Listen to what the students are saying as it will reveal a lot about their attitudes to learning and their individual mindsets. Try not to intervene since allowing the students to resolve issues within their group is an important skill for them to develop. This allows them to develop as

independent learners. You could make a note of the students' responses to allow you to revisit misconceptions at a later point or to share ideas through a display.

The use of learning groups could be developed further by students creating their own success criteria for each role, or the roles could be adapted or extended. For example, the role of a questioner could be introduced that would require the individual to ask questions to clarify meaning and develop ideas further.

Manager



Their role is to:
- make sure everyone understands
- keep the group on task
- be fair
- ensure the work is completed and decisions are made.

Reporter

Their role is to:
- share the findings of the group with others
- speak clearly and confidently
- read through and organize ideas.

Encourager

Their role is to:
- make sure everyone joins in
- reward and praise people
- be positive
- increase the confidence of the other group members.

Recorder

Their role is to:
- record the ideas of the group
- suggest ways of wording ideas
- read through and check work
- make sure they record everyone's ideas.

Figure 24 Roles in learning groups

1 Playing teacher

Learning objectives	Resources
• To work in a specific role in a learning group • To identify strategies that would help a child with a fixed mindset engage in their learning	• Picture of a grumpy, frustrated child, 'Sara' • Cards or posters explaining learning group roles (see Figure 24 on page 86) • Role badges showing 'manager', 'reporter', 'encourager', 'recorder'

IB Learner Profile

- **Caring** – we show empathy, compassion and respect.
- **Communicators** – we express ourselves confidently and we collaborate effectively.

Lesson

1 *Arrange the students so they are sitting with their talk partner, either on the carpet or at desks.*

Introduce the concept of mindsets using the familiar context of school and a fictional child, Sara, being reluctant to learn. Students will relate to some of the behaviours and feelings that this fictional character displays.

Introduce the character Sara to the students using an image of a grumpy, frustrated child. Depending on your class and the behaviours they display, you could change the gender and the name of the character so that it clearly reflects their needs.

Explain who Sara is and how she behaves, for example: 'This is Sara. She is a new child who will be coming into Class 2 shortly. However, Sara doesn't like school and can misbehave in class.'

2 Develop this further by sharing some more information about Sara. Explain that she:

- refuses to do the work in class
- moans and makes silly noises
- says everything is easy so she won't bother
- bangs equipment and fiddles with pencils

- tries to distract others
- shouts out and disrupts lessons
- grumbles 'I hate Maths/English!'.

You could just focus on some of these behaviours or you could adapt some of them to better reflect the nature of the students in your class.

3 Ask the students to discuss Sara with their talk partner:

What type of mindset does Sara have?

Why do you think that?

Ask the students to feed back to the class and carefully challenge the reasons for their opinions.

Playing teacher

4 *The students are now going to work in learning groups. Ensure your room is set up to encourage effective discussion between the students. An effective arrangement is square tables with the four students sitting two either side facing one another. The tables could be arranged at a slight angle to ensure everyone can clearly see the board.*

Explain to the students that they are now going to work in learning groups, with each individual playing a specific role: **manager**, **reporter**, **encourager**, **recorder**. Introduce the group roles to the students using cards or posters as shown in Figure 24 on page 86. If students have already explored these roles when completing a simple task, they will have become familiar with what their job entails.

Allocate a role to each student. Two students could share a role depending on the number of students in your class. The encourager is an ideal role for sharing. The students can also wear badges to reinforce the roles they are playing.

5 The students should then discuss their ideas about the following question as a small group, working in their allocated role:

If you were Sara's teacher, what would you do to encourage her to join in more with her learning?

Once the discussions are under way, you should undertake the role of a learning facilitator. Listen to what the students are saying as it will reveal a lot about their attitudes to learning and their individual mindsets. Try not to intervene since allowing students to resolve issues within their

group is an important skill for them to develop. This allows them to develop as independent learners. You could make a note of the students' responses to allow you to revisit misconceptions at a later point or share ideas through a display.

It is beneficial to give the students time warnings to ensure they remain on task and to allow the reporter to prepare to speak and share the group's ideas.

Reflection time – what have we learned?

Prepare the groups for feedback time by giving them a five-minute warning to prepare the reporter to share the group's ideas. To begin with, you could select a confident student for that role within the group, but as the students become more familiar with working in role, more reluctant students could be encouraged to try the role. Remind them that you will be expecting them to share:

What would you do as Sara's teacher to encourage her to want to be a learner?

Why do you think that would be an effective strategy?

Following the five-minute preparation time, the reporter should then give feedback on their group's discussion. Provide each group with the opportunity to feed back their ideas.

Challenge the students' thinking and encourage other members of the group to participate. Ask them to explain why they think their idea would be effective. Ensure you probe the students to explain why they have reached their decision and ask them:

Did everyone in your group agree?

Can you see any problems with their ideas?

Challenge

Ask the students to discuss if they have ever felt like Sara and what caused them to feel like that. Thinking back to that time, could they have behaved differently?

Further developments

A follow-up discussion could be based on whether they would allow a child with a fixed mindset to attend their school. Again, the students could debate this within their learning groups.

To continue to develop the quality of the groups' interactions and roles, you could develop success criteria for each role. Two adults could model successful and unsuccessful group roles. The students could observe the interaction and discuss the differences and provide feedback for the adults in order to generate success criteria.

Students' responses

- If you were Sara's teacher, what would you do to encourage her to join in more with her learning?

'Give her a special seat with a friend who would show her what effort looks like.'

'Let her do fun things and enjoy her learning.'

'She needs to try her best and challenge herself!'

'Don't give her easy work – she needs to challenge herself.'

'When I first started at school I was nervous.'

'She should ask for help.'

'The teacher should tell her she will lose her golden time if she doesn't try hard.'

DOWNLOADABLE RESOURCES

Roles in learning groups – cards

www.hoddereducation.co.uk/ib-extras

2 ‘Oh no! I’ve made a mistake!’

Learning objectives	Resources
• To identify and describe how we feel when we make a mistake • To identify strategies which can help us to learn	• *The Girl Who Never Made Mistakes* by Mark Pett and Gary Rubinstein • Visualizer or document camera (optional) • Picture of the deep, dark learning hole (see Figure 25)

IB Learner Profile

- **Caring** – we show empathy, compassion and respect.
- **Risk-takers** – we are resourceful and resilient in the face of challenges.
- **Knowledgeable** – we develop and use conceptual understanding.

Lesson

1 *Arrange the students so they are sitting with their talk partner and have a clear view of the board and the teacher.*

Show the students the following words, read them to the class and then ask them to read them together with you: ‘**mistake**’, ‘**error**’, ‘**incorrect**’, ‘**wrong**’.

Before they begin the discussion, remind them that you will be selecting students randomly to share their ideas. Ask them to discuss with their talk partner what the words mean and take feedback from them using lollipop sticks.

2 Read the story *The Girl Who Never Made Mistakes* until Beatrice makes a mistake at the talent show on **page 23**. You could use a visualizer to share the book with the students.

Look carefully at the picture of Beatrice on stage after everything has gone wrong. Zoom in on her facial expression to focus the students’ attention. Ask the students to discuss:

How does Beatrice feel?

Why does she feel like that?

What would you do if you were Beatrice?

You could display the key questions for discussion on the board to allow the students to focus their discussions.

Take feedback from different students and act as a scribe or ask another adult to jot down the students' opinions and ideas. These could be used for a display to illustrate learning from mistakes.

The deep, dark learning hole

3 Show the students the picture of the deep, dark learning hole and explain that often, when we have made mistakes, we feel as if we are stuck in a 'learning hole'.

Explain to the students that they are going to think of ways to help Beatrice and others out of the learning hole, and record their ideas on paper.

If appropriate you may want to give guidance for the students to focus their learning. This could be displayed on the board and include:

What would you say?

What could you do?

Who could help you?

How could you represent that in a picture?

You could give the students some talk time with their talk partners before they begin working individually to record their ideas.

Figure 25 The deep, dark learning hole

Reflection time – what have we learned?

Perhaps using a visualizer, share examples of the students' ideas and ask them:

Can you share your drawing with the class?

Why have you drawn that?

What does it represent?

How would you feel if you made a mistake like Beatrice and were stuck in the deep, dark learning hole?

Challenge

Challenge the students to think about:

What can cause you as a learner to enter the learning hole?

Is there anything specific you can do to help yourself get out of it?

Think about an occasion when you thought you were in the learning hole in school:

How did you feel?

Did you try to get out of it?

What did you do?

Did anyone help you?

Further developments

Use the students' ideas to create a large learning hole display. Show the different strategies represented with a visual prompt as well as words, for example a ladder. The display can act as a visual reminder for learners and for both students and teachers to use during the learning in the classroom.

Give the students some talk time to discuss:

How can teachers support learners in overcoming their mistakes?

DOWNLOADABLE RESOURCES

- PowerPoint presentation 'The deep, dark learning hole'
- Video of students deciding how to get out of the deep, dark learning hole

www.hoddereducation.co.uk/ib-extras

Students' responses

Figure 26 Don't panic!

Figure 27 Helping someone out of a learning hole

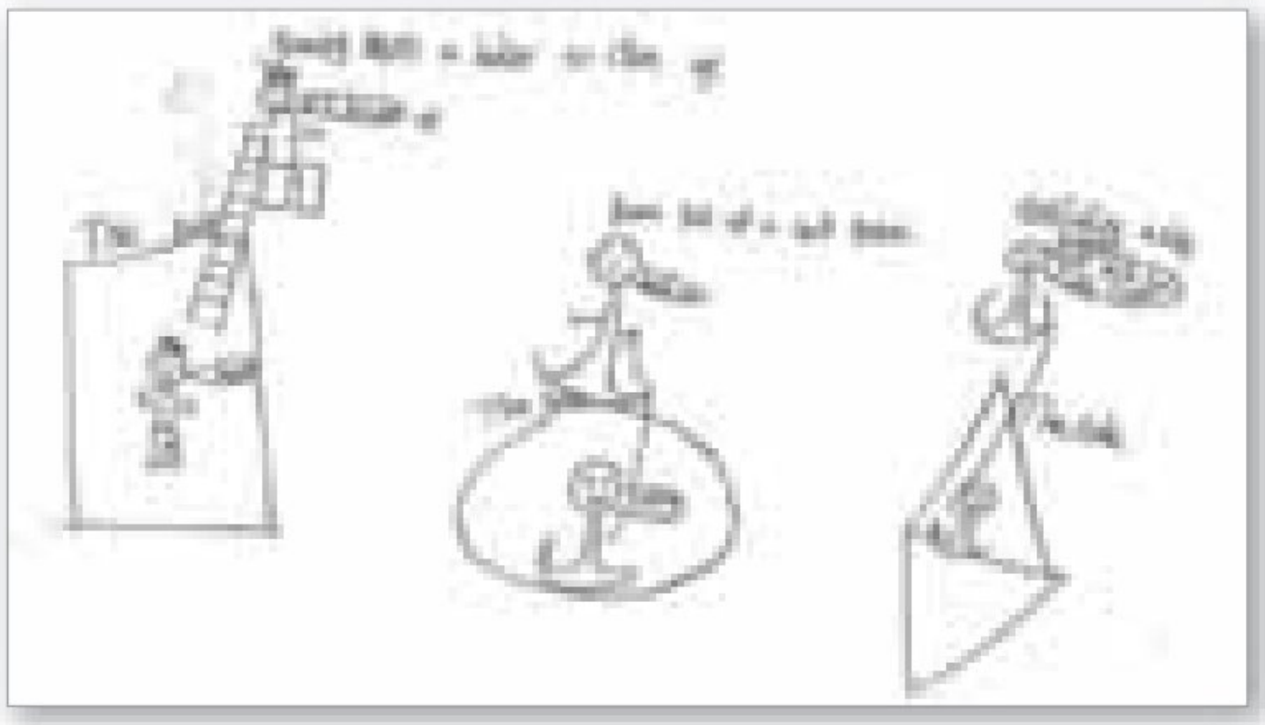


Figure 28 Getting out of the learning hole

3 ‘Girls can’t do that!’ Dream big!

Learning objectives	Resources
• To discuss and debate whether girls should be allowed to be engineers • To identify how we should respond to a mistake	• *Rosie Revere, Engineer* by Andrea Beaty • Visualizer or document camera (optional)

IB Learner Profile

- **Open-minded** – we seek and evaluate a range of points of view.
- **Principled** – we act with integrity and honesty, with a strong sense of fairness and justice.

Lesson

1 *Arrange the students so they are sitting with their talk partner and have a clear view of the board and the teacher.*

Show the students a picture of the character Rosie from the book *Rosie Revere, Engineer*. Ask the students to think about what things the character Rosie might be successful at.

Before they begin the discussion, remind the students that you will be selecting students randomly to share their ideas. Ask them to discuss with their talk partner and take feedback from them using the lollipop sticks. Challenge the students’ answers further by asking:

Why do you think that?

Dream big!

2 Read the story until **page 12**, where Rosie decides to keep her dreams of being an engineer to herself. You could use a visualizer to share the book with the students.

Explain that Rosie wants to be an engineer but some people do not believe girls can be engineers. Ask the students to initially discuss with their talk partner:

What do you think an engineer does?

After allowing the students a few minutes to discuss it, take feedback and clarify the different things an engineer does. You could also display images of different types of engineers at work, to reinforce the concept.

3 Once the students understand what an engineer does, ask them to discuss with their talk partners:

What are the reasons why Rosie (a girl) could or couldn't become an engineer?

If appropriate you might want to give guidance for the students to focus their learning. This could be displayed on the board and include:

Can you think of any reasons why a girl shouldn't be an engineer?

How would you encourage Rosie to become an engineer?

Can girls and boys do any job they'd like?

Initially, ask the students to share their opinions through a quick poll on whether they think Rosie could or could not be an engineer. Then take feedback from the students and probe their ideas further by asking:

Why do you think that?

Do you need to be good at something to do it?

4 Continue to read the story to the students until **page 26**. Reread the line: 'The only true failure can come if you quit.'

Ask the students to talk to their partner:

What happened at the end of the story?

Why did her aunt describe her invention as 'Your brilliant first flop was a raging success'?

Why is something that went wrong still a success?

Reflection time – what have we learned?

Ask the students:

Now you've read the whole story, do you still believe that girls can/can't be engineers?

Take feedback from individual students and, if appropriate, ask other students to comment on these ideas.

You could share photographs of men and women doing jobs that are not stereotypical, including being an engineer or a male nurse, to reinforce the fact that men and women can do any job they wish. There are no limits to what the students can become, whatever their gender.

Challenge

Use the word **FLOP** as a stimulus for the students to create an acrostic, which could act as a learning prompt. You could give the students an example and then ask them to create their own. For example:

First

Learning

Often

Practise

Further developments

Ask the students to think about what they would like to be when they are older. Encourage them to dream big and to draw themselves in the future in their chosen career.

Other activities to support this book: **www.andreabeaty.com/**.

Students' responses

- What could Rosie be good at?

'Ballet.'

'Doing hair.'

'Helping people.'

'Playing with animals.'

'Looking nice.'

'Handwriting.'

- What is an engineer?

'They make things like a car.'

'They fix things.'

'They invent and make things.'

Should Rosie (a girl) be an engineer?

'She shouldn't be an engineer as she gets so sad when things go wrong.'

'She can as boys and girls can do the same thing.'

'Girls and boys can do what they want if they put their minds to it.'

'We think Rosie should be an engineer as she is good at making things.'

'No, because men normally get that job.'

'Boys and girls can get any job if they work hard and practise.'

'She shouldn't be an engineer as she is too nervous.'

'Being an engineer is not just a job for boys!'

'Yes, because she makes fantastic inventions.'

'Yes, because she has tried hard.'

'In the olden days, a girl wouldn't be one.'

'Rosie needs to talk to people and see if they would let her be one.'

How would you encourage Rosie to try?

'Tell her what she is good at.'

'Say never give up!'

'Tell her if you work hard at school you can do it!'

'Keep up your work.'

'Tell her not to listen to the grumpy uncle, he's just being mean.'

Acrostics for FLOP

Failing
Learning is an
Option so
Persevere

Fantastic
Learning
Only if you
Persevere

4 Super effort

Learning objectives	Resources
• To create a character to represent effort • To explain what the characteristics of effort are	• Growth and fixed mindset vocabulary cards (see Figure 29) • Wanted poster template (see Figure 30) • Visualizer or document camera (optional)

IB Learner Profile

- **Communicators** – we express ourselves confidently and we collaborate.
- **Reflective** – we work to understand our strengths and weaknesses.

Lesson

1 *Arrange the students so they are sitting with their talk partner. The talk partners should be changed regularly to provide students with the opportunity to learn with different students.*

Give the students key vocabulary cards with words connected to growth and fixed mindsets (see Figure 29).

You could personalize some of the statements so that they reflect behaviours that are specific to your class.

Ask the students to read the words with you and then to you. Ask them to work with a talk partner and to sort the vocabulary into groups. Explain that there is no right answer and you are just interested in their different ideas.

If the students are struggling with any of the words, build in some talk time to discuss and clarify their meaning.

gives up	keeps trying to learn new things	chooses easy work	chooses tricky work	practises
perseveres	tries again	wants to be seen as clever	finds a new strategy to help them learn	likes being first to finish

Figure 29 Growth and fixed mindset vocabulary cards (1)

2 Ask the students to feed back their ideas on how they have sorted the cards:

How have you sorted your vocabulary cards?

What connections have you made?

Could you add any other words or phrases to your group?

Has anyone sorted them in a different way?

It would be useful to display the vocabulary cards on the board or via a visualizer as it will help illustrate the students' ideas clearly.

Wanted: Super Effort!

3 Explain that you want the students to create a character to represent 'Super Effort' when they are learning.

Ask the students to discuss with their talk partner:

How does someone demonstrating super effort behave?

How could you represent that using a character or a person?

What sort of learner would they be?

What might they look like?

You could display these questions as a visual prompt on the board and then, as the students' discussions develop, you could reveal the next question to focus on when appropriate. It is important to be responsive to your students' discussions and to continue to move the learning on.

4 Ask each student to complete a wanted poster for the character 'SEF' and to describe how the character behaves (see Figure 30).

Figure 30 Wanted poster template

Reflection time – what have we learned?

Give the students a few minutes to prepare themselves to share their ideas. Explain to them that you are going to randomly select students to share their wanted posters for SEF and ask them to explain the characteristics of SEF.

Explain to the students that you are interested in:

Why have you represented/drawn SEF in this way?

How does he or she behave?

What would you do if you found learning challenging?

Allow the students a few minutes to think through their ideas and explanations before using lollipop sticks or an alternative method to randomly select who will respond.

Challenge

Ask the students to write instructions on 'How to behave like SEF' or 'How to be a learning ninja' (see Figures 33–36).

Further developments

The students could create wanted posters for NEF (No Effort) for crimes against learning and include characteristics of poor learning behaviour.

Select a version of SEF to adopt as a class, create a class puppet and use it as a visual reminder of effective learning behaviours. Display the wanted posters as a reminder of the expectations for learners.

DOWNLOADABLE RESOURCES

- Growth and fixed mindset vocabulary cards
- Wanted poster template

www.hoddereducation.co.uk/ib-extras

Students' responses

One student created the idea of a 'learning ninja' in response to the SEF activity. This led to a great whole-class discussion on how a learning ninja behaves. The students identified a range of characteristics and this had a profound effect on the culture of the classroom. Students would remind one another to behave like a learning ninja and would praise one another for displaying the effective characteristics. Occasionally, they would even remind me!

Figure 31 Advert for a learning ninja

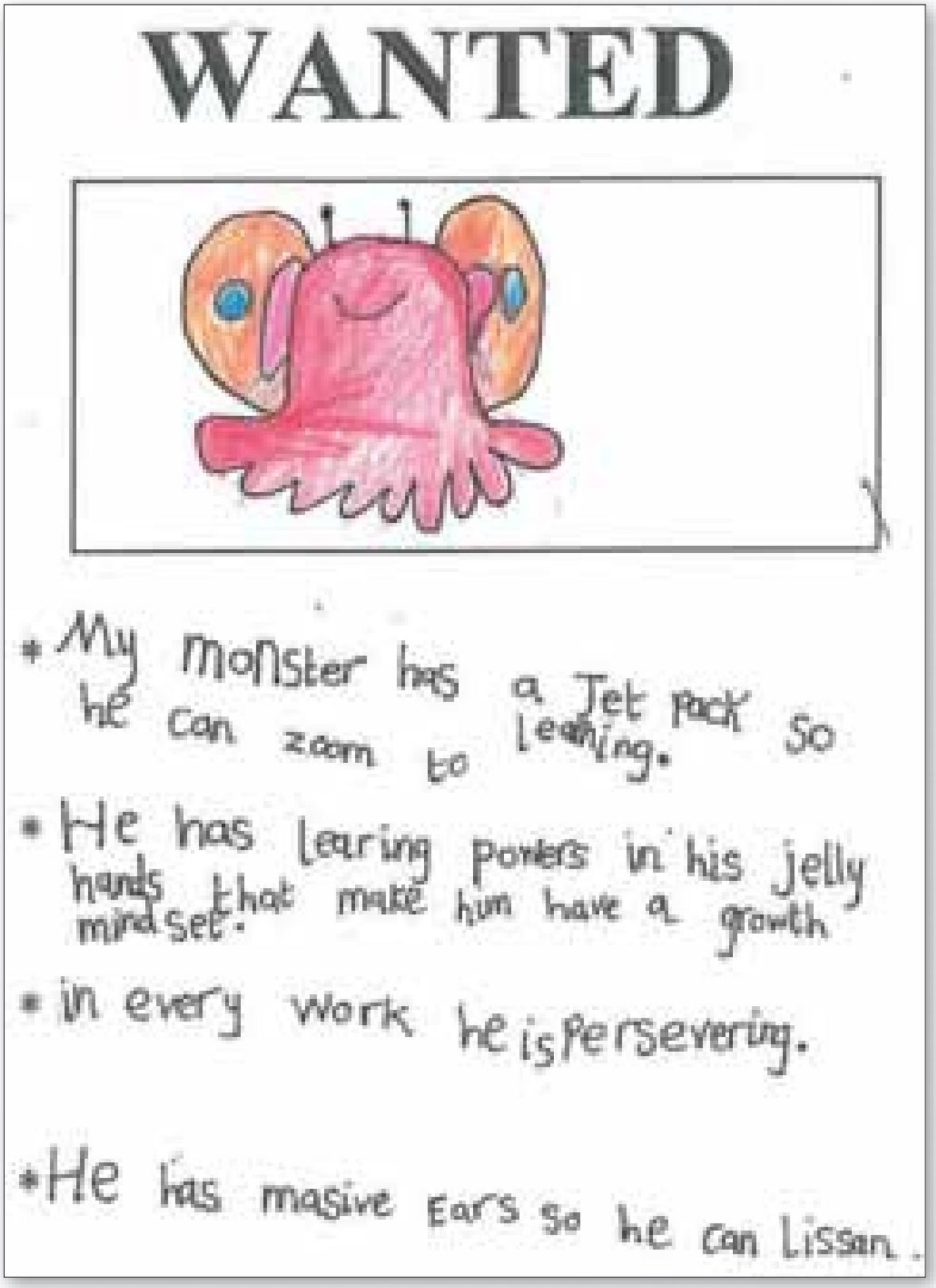


Figure 32 Wanted: Super Effort for learning

Figure 33 How to be a learning ninja

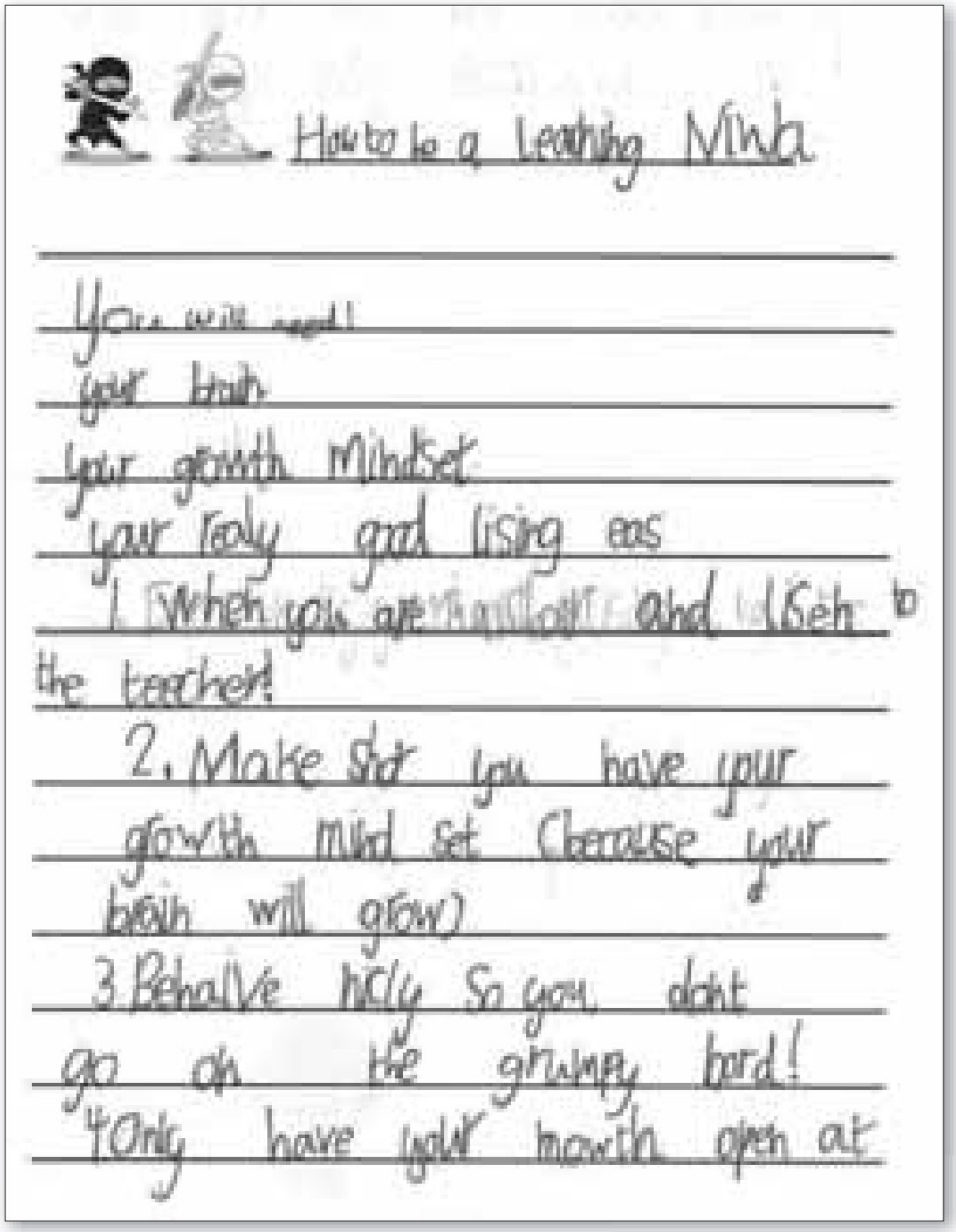


Figure 34 What you need to be a learning ninja (1)

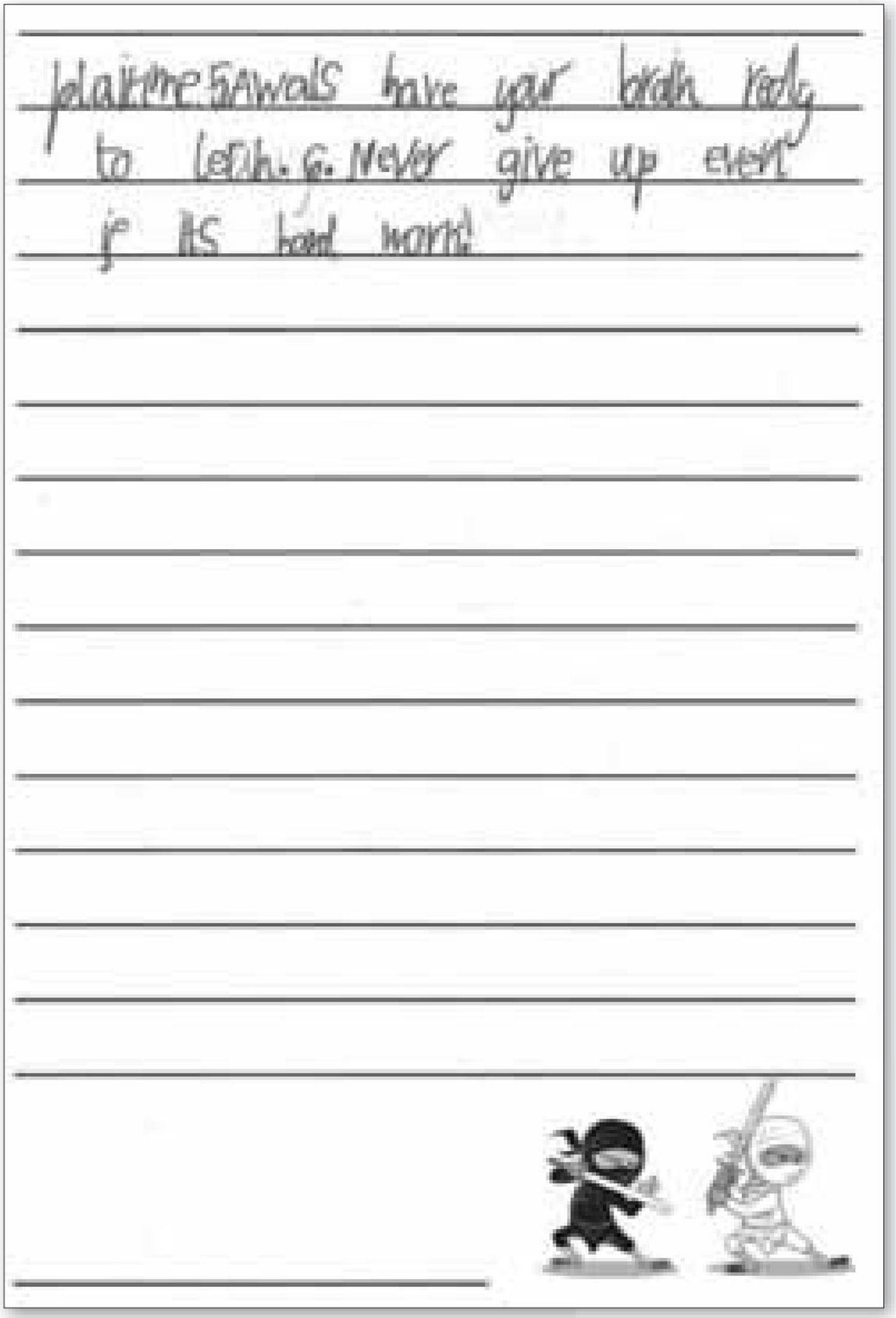


Figure 35 What you need to be a learning ninja (2)

Figure 36 SEF display

5 Challenge mountains

Learning objectives	Resources
• To set a learning challenge • To review their challenge and identify their progress	• Picture of a mountain (see Figure 37) • Display board showing a giant challenge mountain (see Figure 38) • Photographs of each child with speech bubbles (see Figure 39)

IB Learner Profile

- **Reflective** – we work to understand our strengths and weaknesses.
- **Risk-takers** – we are resourceful and resilient in the face of challenges.

Lesson

1 *Arrange the students so they are sitting with their talk partner and able to clearly see the board.*

Slowly reveal an image of a mountain (see Figure 37). It might be useful to use a spotlight tool to slowly reveal the image and hook the students. You can then ask:

What do you think this is a photograph of?

Why do you think that?

Ask the students to discuss the following questions with their talk partner:

What can you see?

Would you like to climb the mountain?

How would you feel?

Ask the students to feed back (select students to contribute at random, using lollipop sticks or an online resource such as the 'Random Name Picker' at www.classtools.net/random-name-picker/ or the 'Random Student Selector' at www.ehyde.com/No%20Hands/).

Figure 37 A giant mountain

2 Develop the discussion further by posing the question:

How is learning similar to a challenging mountain?

Allow the students some thinking time and then ask them to discuss the question. During the discussions, you should use the strategy of 'eavesdropping'. This is where you listen to the discussions and make a note of the students' ideas. Then, rather than taking individual feedback, you share the ideas you gleaned from the discussions with the class.

It might be necessary for you to make explicit the link between learning and climbing a challenging mountain. You may need to explain that learning is like climbing a mountain: it can be challenging and you need to practise and have help to overcome the difficult parts.

Challenging myself!

3 Show the students the small pictures of themselves and the speech bubbles. Ask them to think about:

How can you improve as a learner?

What challenge would you set yourself?

It might be useful to model to the students how to phrase a learning challenge. For instance, you could use pictures of members of staff with their learning challenge written in a speech bubble. It is also extremely effective to use fictional characters that the students are familiar with: Horrid Henry, for example, would have the challenge of being willing to try to have a go at his learning.

Ask the students to set their own learning challenge, identifying a learning behaviour that they wish to improve. The students should then write this on their speech bubble (see Figure 39).

Reflection time – what have we learned?

The students place themselves on the whole-class challenge mountain (see Figure 38). As or when they feel (or the teacher feels) they are making progress, they should move up the mountain.

Ask the students to talk to their talk partner about what will help them to improve and move up the mountain and what might prevent them from learning.

Once the students reach the top of the mountain, they could set themselves a new challenge and discuss what helped them to improve.

Challenge

Ask the students to think about their learning challenge and to create 'steps for success' by breaking down the steps they need to take to achieve it.

Further developments

Using Adobe Spark Video (**https://spark.adobe.com/**), which is free to download, the students could review their learning and create a short film using photographs of their work before and after it has improved, with a voiceover explaining how it happened.

Ask the students if they can think of another image or method of explaining learning.

How would they illustrate this?

Students' responses

Figure 38 The challenge mountain

Figure 39 Personal challenges

An example of a student's alternative explanation of learning

'Learning in Colour Zones' by Alex aged 7:

'In the red zone you are frustrated and not learning. The next zone is orange, where you might begin to learn but it's not your best. Next is blue where you are swimming in the learning sea, with your head above water. Finally, there is the green zone like a grassy field in summer where everyone is happy and you are trying your best. There is a lot of learning and you are challenging yourself.'

DOWNLOADABLE RESOURCES

PowerPoint presentation: picture of a giant mountain

www.hoddereducation.co.uk/ib-extras

6 Ding ding! How much effort?

Learning objectives	Resources
• To identify the different stages of effort • To create their own effort meter	• Learning behaviours vocabulary cards (see Figure 40) • Effort meter template (see Figure 41) • Giant effort meter (like, for example, Figure 42)

IB Learner Profile

- **Thinkers** – we use critical and creative thinking skills.
- **Knowledgeable** – we develop and use conceptual understanding.

Lesson

1 *Ensure the students are sitting with their talk partner.*

Give each pair a set of the vocabulary cards of different learning behaviours (Figure 40).

Look at the behaviours and read them with the students and then ask them to read them back to you.

Ask the students to work with a talk partner to sort the cards into groups. Again, explain that there are no right or wrong answers. Once the discussions are under way, you should undertake the role of a learning facilitator. Listen to what the students are saying as it will reveal a lot about their attitudes to learning and their individual mindsets. Try not to intervene since allowing students to resolve issues with their talk partner is an important skill for them to develop. Again, you might wish to make a note of the students' responses to allow you to revisit misconceptions at a later point or share ideas through a display.

concentrating	challenging yourself	misbehaving	improving
giving up	responding to a challenge set by a teacher	persevering	practising

Figure 40 Learning behaviours vocabulary cards

2 Once the discussions are under way, you need to choose the right moment to intervene with an extension activity. This is always tricky, as you do not want to interrupt the students' discussion, but you need to ensure the learning continues to develop. Ask them to discuss:

Are there any other behaviours that could be added to your different groups?

Randomly select pairs of students to share their ideas.

Giant effort!

3 Show the students a giant blank effort meter that is divided into four colours (Figure 42 shows an example of a completed effort meter). Ask the students to match the different behaviours to the four different stages of effort. Again, extend the discussion further by asking the students:

Are there any other behaviours that could be added to your different groups?

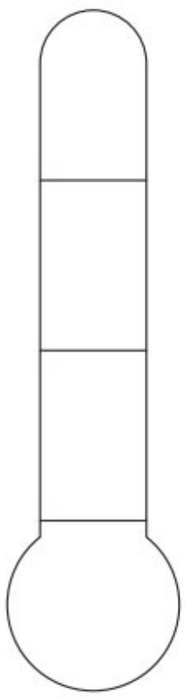


Figure 41
Template for an individual effort meter

Reflection time – what have we learned?

Students create their own individual effort meter using the template shown in Figure 41. They can then use this to reflect on their learning. They should personalize it and include their own learning behaviours for each stage.

Challenge

Ask the students to debate whether they always put the same amount of effort into their learning.

Further developments

Use the students' ideas to create a large effort meter for display. This can act as a visual prompt for learners, and both students and teachers could give feedback for the learning in the classroom.

During learning, ask the students to reflect on their effort and use their individual effort meters to share their perceptions.

As the students' learning develops, you could revisit the effort meter and add characteristics.

DOWNLOADABLE RESOURCES

- Learning behaviours vocabulary cards
- Template for an individual effort meter

www.hoddereducation.co.uk/ib-extras

Students' responses

Figure 42 Completed individual effort meter

Figure 43 Close-up of individual effort meter

CHAPTER 4

Lessons for 7–8-year-olds

Lesson	Focus	IB Learner Profile	Page
1 On the high wire	How someone feels when they fail; ways of encouraging someone to try	• **Caring** – we show empathy, compassion and respect. • **Reflective** – we work to understand our strengths and weaknesses. • **Risk-takers** – we are resourceful and resilient in the face of challenges. • **Communicators** – we express ourselves confidently and we collaborate effectively.	118
2 Firing neurons	What happens in your brain when you are learning something; describing what they think happens inside the brain of a growth/fixed mindset	• **Knowledgeable** – we develop and use conceptual understanding. • **Open-minded** – we seek and evaluate a range of points of view.	122
3 Born to be …	The characteristics of growth and fixed mindsets, and debating whether we are born to be good at something	• **Communicators** – we express ourselves confidently and we collaborate effectively. • **Reflective** – we work to understand our strengths and weaknesses. • **Open-minded** – we seek and evaluate a range of points of view.	126
4 Mistakes that worked	The importance of making mistakes as part of the learning process; creating a learning cycle to illustrate how an item was created	• **Reflective** – we work to understand our strengths and weaknesses. • **Inquirers** – we learn with enthusiasm and sustain our love of learning throughout life	134
5 Challenge mountains	Challenging areas and barriers to learning; developing ways of overcoming these	• **Thinkers** – we use critical and creative thinking skills. • **Risk-takers** – we are resourceful and resilient in the face of challenges. • **Reflective** – we work to understand our strengths and weaknesses.	141
6 Never give up!	How to overcome failure in different contexts; how it feels when we fail/ make mistakes; creating a game that represents the process of learning	• **Thinkers** – we use critical and creative thinking skills. • **Reflective** – we work to understand our strengths and weaknesses.	144

Overview

These lessons build on the previous learning about mistakes and overcoming failure. These themes are explored through a story and computer games. The idea is introduced that positive things can happen from mistakes. The brain and how it works is explored further and students are asked to begin to make links between the different mindsets and their own brain. Personal challenges are also revisited and reflected on in greater detail and these can be used to create a working display in the classroom.

1 On the high wire

Learning objectives	Resources
• To identify how someone feels when he or she fails • To suggest ways of encouraging someone to try	• Role badges (optional) • *Mirette on the High Wire* by Emily Arnold McCully • Visualizer or document camera (optional) • Flipchart showing images from the story and discussion points (see below)

IB Learner Profile

- **Caring** – we show empathy, compassion and respect.
- **Reflective** – we work to understand our strengths and weaknesses.
- **Risk-takers** – we are resourceful and resilient in the face of challenges.
- **Communicators** – we express ourselves confidently and we collaborate.

Lesson

1 *During this lesson, the students will need to sit with their talk partner initially and then, as the lesson progresses, they will be sitting in learning groups at tables. You need to ensure your room is set up to encourage effective discussion between the students, such as square tables with four students sitting in twos facing each other. The tables could be arranged at a slight angle to ensure everyone can clearly see the board.*

Prior to beginning the lesson you might need to recap or introduce the different roles in the learning groups. This could be done using cards or posters as shown in Figure 24 on page 86. Explain to the students that they are going to work in learning groups with a specific role: **manager**, **reporter**, **encourager** or **recorder**. Role badges can be worn if desired.

You could have previously allowed the students to explore these roles when completing a simple task. This would allow them to become familiar with what their job entails. Initially it is advisable to allocate a specific role to a student and provide them with a number of opportunities to explore the same role. As the students become familiar and older, the roles can be changed regularly.

2 Show students the front cover of the story *Mirette on the High Wire*. Then ask them to discuss with their talk partner what they think the story might be about.

3 Read the story until the point where Mirette tries to walk on the wire and falls to the ground on **page 9**. You could use a visualizer to share the book with the students. You could also zoom in on Mirette falling from the wire.

Ask the students to briefly discuss with their talk partner:

How does Mirette feel when she falls from the wire?

Look at the picture. How do you know she feels like that?

What would you do if you had tried to do something challenging like Mirette and couldn't do it?

What type of mindset is she demonstrating? How do you know?

During the discussions, you should use the strategy of 'eavesdropping'. This is where you listen to the discussions and make a note of the students' ideas. Then, rather than taking individual feedback, you share the ideas you gleaned from the discussions.

On the high wire

4 Ask the students to move into their learning groups.

Then continue reading the book until Bellini admits to being afraid of failure and falling off the wire on **page 18**.

In their learning groups, ask the students to discuss:

How is Bellini feeling?

Why does he feel like that?

If you were Mirette, what would you say to Bellini?

Display the discussion points on cards or on the board so that the 'manager' can use them as a guide for the group discussions. Structure the discussion by slowly revealing each question to move the discussion on. During the discussions, you should undertake the role of a learning facilitator. Listen to what the students are saying as it will reveal a lot about their attitudes to learning and their individual mindsets. Try not to intervene since allowing students to resolve issues within their group is an important skill for them to develop. This allows them to develop as independent learners. You could make notes of the students' responses to allow you to revisit misconceptions at a later point or share ideas through a display.

5 Give the students a warning five minutes before asking them to feed back. This allows them to work together to ensure the reporter is fully prepared to feed back. If you feel it is appropriate, you could recap on what successful reporting looks like. The reinforcement of the success criteria will encourage students to develop their role of the reporter to a higher standard.

Initially, it might be useful to select a more confident or well-prepared student to deliver their group's feedback. Focus particularly on their ideas about what they could say to Bellini. Once the reporter has fed back, allow other members of the group to add to the discussions.

Reflection time – what have we learned?

Extend the discussion further by asking the students to relate the character's experience to their own, using the next set of discussion points. Again, you could have the discussion points on cards or displayed on the board so that the manager can use them as a guide to the group discussions.

Is it easy to try again after failing?

What have you failed at? Did you try again?

What helped you to improve?

What strategies can you use to overcome your fear of failure?

Give the students five minutes of talk time to discuss their perceptions of failure before asking for feedback. You could select one question as a focus for the discussion.

During the discussions, you should continue to undertake the role of a learning facilitator, listening to the students rather than intervening as it will reveal a lot about their attitudes to learning and their individual mindsets. Again, you might wish to make a note of the students' responses to allow you to revisit misconceptions at a later point or share ideas through a display.

You could select groups randomly to feed back rather than asking every group, to ensure that the students remain focused and the lesson continues to develop at pace.

Challenge

Finish reading the story and then ask the students to discuss:

What helped Bellini to overcome his fear of making a mistake and failing?

Now ask the students to find other stories that contain characters who overcome barriers or challenges when learning to do something. A selection of these books could be displayed in class.

Further developments

Use the idea of the high wire for a display about learning and mindset. Photographs of the students could be displayed on the 'learning tightrope'. Incorporate examples of challenging learning on the high wire and ways of learning that help us to make progress such as practice or help from someone.

An alternative way of using the 'high wire of learning' would allow students to hang aspects of learning on it that they perceive to be challenging. Individual students could then remove them as they master the challenge or add another aspect to the wire. This can be very illuminating and reveal a lot about the students' perceptions.

In addition to the above activities, the students could write their own story about a character making a mistake and learning from it.

Students' responses

How would you encourage Bellini to try again?

'When you have a fixed mindset your brain doesn't get bigger, it just locks. It locks down and just shuts down.'

'I would take all of the people that said he was fantastic to speak to him and they would make him feel better about himself.'

'Why are you worried to do it again when you have done it before?'

'Tell him that when he was a student he kept falling until he was a grown up.'

'We decided that Bellini had a fixed mindset because he was terrified of going on the high wire again. Because of his fixed mindset he didn't dare go on the dangerous high wires again. We decided that if we were Mirette we would encourage Bellini to try to do the high wire and not be afraid.'

2 Firing neurons

Learning objectives	Resources
• To identify what happens in your brain when you are learning something • To describe what they think happens inside the brain of a growth/fixed mindset	• YouTube clip of firing neurons and brain at **www.youtube.com/watch?v=TSwQOf4V3fE** • The scene about what happens in the brain when you learn, from the TV series *The Human Mind* • Video about how the brain works at **https://vimeo.com/142378753** • Visualizer, document camera or tablet

IB Learner Profile

- **Knowledgeable** – we develop and use conceptual understanding.
- **Open-minded** – we seek and evaluate a range of points of view.

Lesson

1 *Ensure the students have a clear view of the board and are sitting with their talk partner. This lesson begins with the video clip being used as a hook to focus the students' learning. This then leads to a focused discussion.*

Inform the students that they are going to watch a video clip and that they need to focus and ensure they watch it carefully. Watch the YouTube clip of neurons firing (without the sound). Perhaps watch it again to allow the students the chance to observe closely. There are many other examples on the internet that could be used to extend the discussion.

Ask the students to discuss with their talk partner:

What do you think is happening in the clip? Why?

What is this film of?

When the discussions are under way and you feel it is appropriate, you can develop them further by asking:

Can you suggest any words to describe what you saw?

How could you describe the movement?

Following some talk time, ask the students to feed back ideas to the class. You could alert some students that they are going to share their ideas and then select students randomly to feed back. A useful strategy is the use of

raffle tickets, with each student having a ticket and the teacher selecting a number of a student to feed back. Another method is to give every student a number and select the numbers using a bingo machine.

Learning and the mindset

2 Now watch the scene from the TV series *The Human Mind* that illustrates what is happening in the brain during learning. It uses the idea of learning creating bridges as connections are built in the brain. (If you cannot locate *The Human Mind*, describe the same idea to the students yourself.)

Ask the students to discuss:

What do you think the brain of someone with a growth mindset looks like?

What would you see happening in there?

Eavesdrop on the students' conversations and, when you feel it is the appropriate time, bring the students back together and again select students randomly to share their ideas.

3 Give the students some time to talk about:

What does the brain of someone with a fixed mindset look like?

What would you see happening in there?

Does it work in the same way as a growth mindset? Why or why not?

Ask the students to feed back on their ideas and probe them further by asking them to explain why they think that.

4 Provide the students with plain paper and ask them to record what a brain with a growth mindset looks like and what a brain with a fixed mindset looks like.

Challenge the students further by asking them to label their pictures with explanations about what is happening.

Reflection time – what have we learned?

Allow the students time to prepare to feed back their ideas. Pre-empt by saying that you would like them to explain as follows:

What do you think brains working with the different mindsets look like?

How do you think they work? Why?

Use a visualizer or tablet to share their recordings.

Explain that scientists have identified how a fixed mindset and a growth mindset can cause the brain to work in different ways. For further information on this, see 'Introduction by Shirley Clarke' (page 5).

Challenge

You could develop this further by watching the video at **https://vimeo.com/142378753**, giving a more complex explanation of how the brain works, or by watching other clips about how the brain works, including **www.youtube.com/watch?v=KrEXdjQpSRA**.

Further developments

When teaching and setting challenging tasks, explain to the students that you have set the task to make their neurons fire. Reinforce the language while teaching.

When discussing learning in lessons and giving feedback, ask:

Whose neurons are firing when they are learning something new?

Students' responses

- Following the video clip showing neurons firing, what do you think is happening?

'It's your brain working, the lights are on and moving.'

'The lights are your brain being unlocked.'

- What words would you use to describe what you have seen?

'Faster and faster as new ideas are formed.'

'Messy.'

'Super signals.'

'Slimy-alien like.'

'Creating things inside it.'

- What do you think happens in a brain with a growth mindset?

'It keeps on learning new things.'

'Inside your brain connections are growing.'

'It's faster at learning, it has strong pathways.'

'It gets heavier as you have more knowledge.'

'It is green and black in colour.'

'The colour of the brain changes as connections develop.'

- What does a fixed mindset look like?

'It's red and black like a volcano, ideas are being drawn out as you are not listening and you have a fixed mindset.'

'It has more gaps as they give up so they haven't learned enough to build a bridge across the gaps.'

'Like a volcano when it erupts (when someone gives up) or thinks they are clever.'

3 Born to be …

Learning objectives	Resources
• To identify the characteristics of growth and fixed mindsets • To debate whether we are born to be good at something	• Group role badges (optional) • Pictures of Usain Bolt or a similar athlete/sportsperson • Information about Usain Bolt (see Figure 44) or another athlete

IB Learner Profile

- **Communicators** – we express ourselves confidently and we collaborate effectively.
- **Reflective** – we work to understand our strengths and weaknesses.
- **Open-minded** – we seek and evaluate a range of points of view.

Lesson

1 *During this lesson, the students will need to sit with their talk partner initially and then, as the lesson progresses, they will be sitting in learning groups at tables. You need to ensure your room is set up to encourage effective discussion between the students, such as square tables with four students sitting in twos facing each other. The tables could be arranged at a slight angle to ensure everyone can clearly see the board.*

Prior to beginning the lesson, you could have recapped on the different roles in the learning groups. This could be done using cards or posters as in Figure 24 on page 86 and asking the students to briefly discuss what makes an effective manager. This can be repeated for the different roles, or each learning group could discuss how to be effective at a specific role. The students' ideas could then be added to the posters to improve them and to give the students ownership of them.

Explain to the students that they are going to work in learning groups with a specific role: **manager**, **reporter**, **encourager** or **recorder**. You might want to use role badges.

You might have previously allowed the students to explore these roles when completing a simple task. This would allow them to become familiar with what their job entails. Initially it is advisable to allocate a specific role to a student and to provide them with a number of opportunities to explore the same role. As the students become familiar with the idea and more mature, the roles can be changed regularly.

2 Reveal the word '**debate**' on the board. Ask the students to discuss as a learning group what they think this word means and how you should behave when debating.

While the discussions are taking place, observe the students and when you think it is an appropriate moment, bring the discussions to a close and ask the groups for feedback. Through careful questioning, reach an agreement on a shared definition of 'debate'. Examples of possible questions to develop this are:

Do you agree a debate is where we …?

What should you do if you disagree with someone's ideas?

Do we have to agree with everyone's ideas?

Will there be a right or wrong answer?

This could be developed further by creating a brief list of behaviours we should see when a debate is happening, for example sharing ideas or listening and responding to people's suggestions.

Born to be …

3 Show the students the pictures of Usain Bolt. Ask the following questions to find out what they already know:

Who is this?

What do you know about him?

Develop this further by providing background information about his achievements (see Figure 44). There is also a useful page about his achievements at **www.biography.com**.

Usain Bolt

He trains for 90 minutes at least 4 times a day.

Even though he loves chicken nuggets, he tries to go for 3 months without them.

Instead, on a typical day, he eats:

Breakfast: Ackee and saltfish (a traditional Jamaican dish) with dumplings, cooked banana, yellow yam and potato

Lunch: Pasta and chicken breast

Dinner: Rice and peas with pork

Did you know …?

Figure 44 Facts about Usain Bolt

4 Then pose the question:

Was Usain Bolt born to be a runner?

In their learning groups, ask the students to debate:

Do you think that you can be born to be good at something? Why?

How did Usain Bolt become an athlete and win medals for running?

What has helped him to improve?

Have the discussion points on cards or displayed on the board so that the 'manager' can use them as a guide to the group discussions. Structure the discussion by slowly revealing each question to move the discussion on. You could also provide paper for the students to record their ideas on, perhaps in a simple 'agree and disagree' format or using the worksheet (see Figure 45).

Was Usain Bolt born to be …?

Yes, he was because ...	No, he wasn't because …

Figure 45 Worksheet for 'Born to be …'

During the discussions, you should undertake the role of a learning facilitator. Listen to what the students are saying as it will reveal a lot about their attitudes to learning and their individual mindsets. Try not to intervene since allowing students to resolve issues within their group is an important skill for them to develop. This allows them to develop as independent learners. You could make a note of the students' responses to allow you to revisit misconceptions at a later point or share ideas through a display.

Give the students a warning five minutes before asking them to feed back. This allows them to work together to ensure the reporter is fully prepared to feed back. If you feel it is appropriate, you could recap what successful reporting looks like. The reinforcement of the success criteria will encourage the students to develop their role of the reporter to a higher standard.

Reflection time – what have we learned?

Ask the groups to feed back on their debates and to share key discussion points. Once the reporter has finished feeding back, you may wish to allow other members of the group to add to the feedback.

To probe the feedback further, you could ask the following questions:

Would you have a different opinion if you were debating whether a person was born to be an artist or a footballer and so on?

Do you think that you are born to be good at something?

Did everyone in the group agree?

Challenge

Ask the students to suggest people to be debated as to whether they are 'Born to be …'. Short films can be made showing both sides of the debate. This can also be included in a display through the use of QR codes.

Further developments

This activity can be adapted in a range of ways. You can select a different famous person to capture the students' interest and provoke discussion. The world of sport provides a range of contexts, as do the news, films and music.

A display could be created that incorporates a range of people and shows the learning journey they went on to achieve success. Students' comments taken from the debate could be included as talking points.

DOWNLOADABLE RESOURCES

- PowerPoint presentation about Usain Bolt
- Worksheet 'Was Usain Bolt born to be ...?'

www.hoddereducation.co.uk/ib-extras

Students' responses

What does the word 'debate' mean?

'A big conversation.'

'It's where one person wants one thing and another person wants something else.'

'It's virtually an argument but you don't fall out.'

'It's like an argument where people think of different reasons to disagree with opinions.'

Guidance for debates

'Make sure everyone gets the opportunity to speak.'

'Don't interrupt!'

'Be kind.'

'Listen to each other.'

'Look at whoever is speaking.'

'Don't go over the top or be cross when you're arguing.'

'Be friendly and sensible.'

'Make sure you give reasons for your opinions.'

'You can always say we'll agree to disagree.'

Figure 46 Born to be …

Was Usain Bolt born to be an athlete?

'No, he was a normal student who loved running and trained a lot.'

'Babies aren't born to run, they learn.'

'He had a dream, which was achievable. He could be in the Olympics if he trained hard and learned more.'

'Yes, as he was born to be and he grew up to be.'

'He was a man with a talent but that wasn't enough.'

'He could have been born to be something else!'

Was Usain Bolt born to be....?

Yes, he was because...	No, he wasn't because...

Was Usain Bolt born to be....?

Yes, he was because...	No, he wasn't because...

Was Usain Bolt born to be....?

Yes, he was because...	No, he wasn't because...

Figure 47 Was Usain Bolt born to be …?

Was David Beckham born to be a talented footballer?

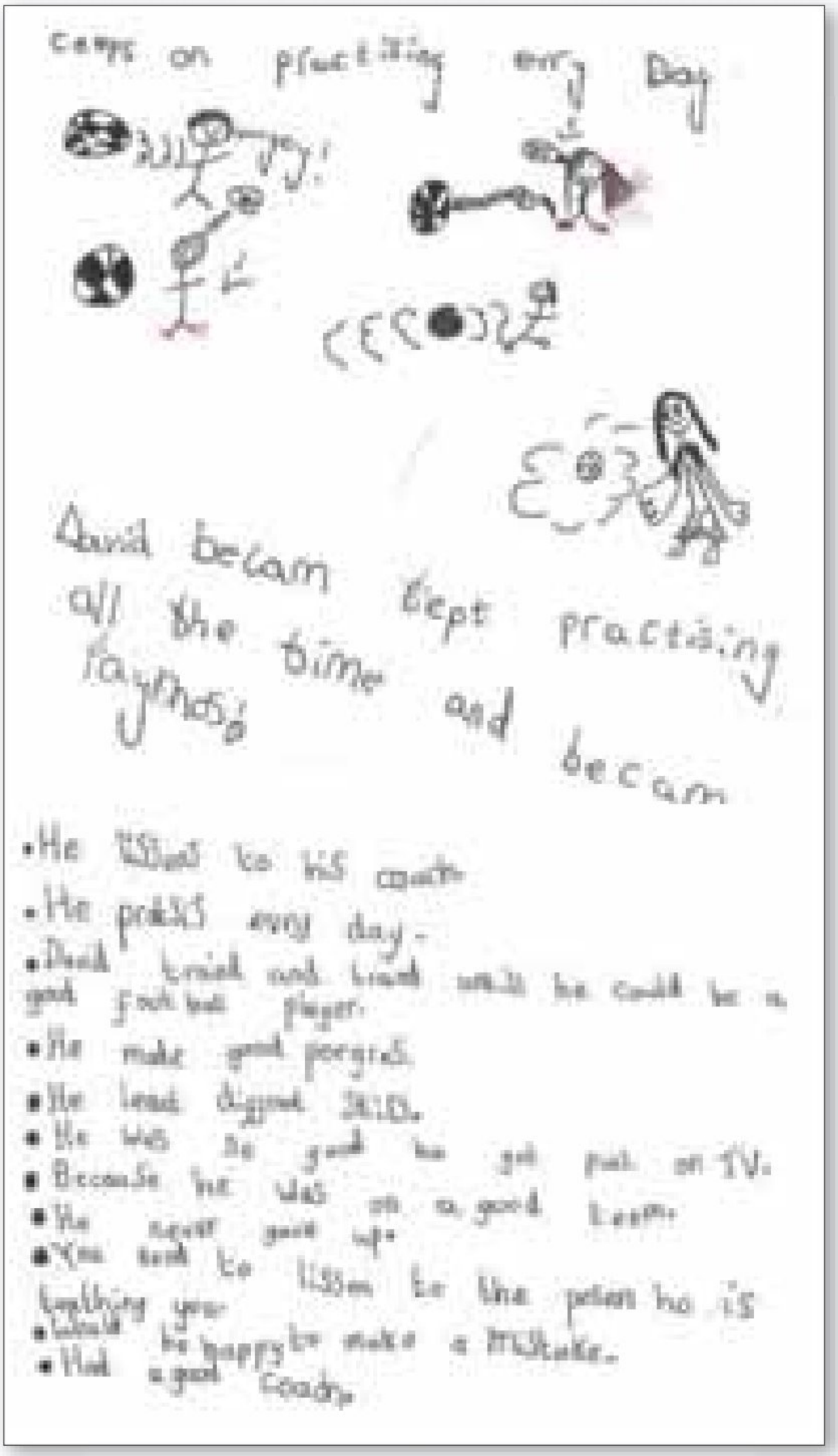


Figure 48 Was David Beckham born to be …?

4 Mistakes that worked

Learning objectives	Resources
• To identify the importance of making mistakes as part of the learning process • To create a learning cycle to illustrate how something was created	• Images of items invented by mistake (see Figure 49) • *Mistakes That Worked* by Charlotte Foltz Jones • The invention of the frisbee (see Figure 50) • Visualizer or document camera • Article 'Inventions that were mistakes' at http://mag.amazing-kids.org/non-fiction/stories/inventions-that-were-mistakes/

IB Learner Profile

- **Reflective** – we work to understand our strengths and weaknesses.
- **Inquirers** – we learn with enthusiasm and sustain our love of learning throughout life

Lesson

1 *Arrange the students so they are sitting with their talk partner and can see the board.*

Have ready some images of objects that were created by mistake (see Figure 49). You will find a range of examples in the book *Mistakes That Worked*. Try to personalize this by including examples that would be of interest to your students, for example Coca-Cola, the slinky, a frisbee, a piggy bank and sticky notes.

Slowly reveal the images and ask the students:

What can you see?

2 Invite the students to discuss what they think all the different items have in common:

Can you think of a reason why these items are connected?

Ask them to think of as many possible connections as they can. Following some talk time, ask the students to feed back ideas to the class. You could alert some students that are going to share their ideas and then select students randomly to feed back, perhaps by using lollipop sticks.

Once you have taken feedback from the students, reveal to them that all of the items were actually created by mistake. The inventors had not planned to create them – they were made by accident!

Figure 49 Connections – mistakes that worked

The frisbee mistake

3 Explain that you are going to share the story of how the frisbee was invented. Read the story taken from the book *Mistakes That Worked*. You could also display some key points about how it was invented on the board (see Figure 50).

Reread the story and then ask the students to think about the key points in the frisbee's creation. Give the students talk time to discuss this. Structure the discussions by asking the students to think about the following points, gradually revealing each point, taking feedback and then moving on:

What was the original idea?

What things caused the creation of the frisbee?

Can you describe the frisbee now?

How would you present this?

The frisbee

The original frisbee was a pie tin stamped with the words 'Frisbie Pies'. It was made of metal. It was made to hold pies.

It would have done nothing except hold pies if some students at Yale hadn't decided to eat the pies and then play a game by tossing the tins to one another.

They would call 'frisbie' as they threw the tins to warn people that they were throwing objects.

Figure 50 How the frisbee was invented

4 When appropriate, develop this theme further by asking the students to create a learning cycle to represent how the frisbee was created by mistake. Allow the students access to a range of resources such as different pens and paper of various sizes.

To support this activity, perhaps model possible ways of presenting the journey of a frisbee and how it was invented, for example as a cycle.

Using a visualizer, share some of the examples of the frisbee's learning journey and review how the students have represented this.

Reflection time – what have we learned?

Ask the students to think about their own learning journey and when they make mistakes. Ask them to talk to their talk partner about:

When do you make mistakes?

What happens when you make a mistake?

How do you feel when you make a mistake?

What happens when you learn?

How do mistakes help?

Once again, take feedback from the students and probe their ideas further:

Why do you think that?

Can you explain why you feel like that?

Challenge

Give the students their exercise books. Ask them to identify key mistakes they have made and reflect:

Why do you think you made those mistakes?

What did you learn from them?

What would you do differently if you could go back?

How could you get better at this?

What do you do now if you are stuck in your learning?

Further developments

The students could choose one of the items displayed at the beginning of the lesson and write a report on how it was created by mistake. They could use their imagination to create a plausible explanation.

Other examples of items created by mistake are discussed in the article 'Inventions that were mistakes' at **http://mag.amazing-kids.org/non-fiction/stories/inventions-that-were-mistakes/**.

DOWNLOADABLE RESOURCES

- PowerPoint presentation about items invented by mistake
- PowerPoint presentation about how the frisbee was invented
- Video of students discussing mistakes

www.hoddereducation.co.uk/ib-extras

Students' responses

- What things caused the creation of the frisbee?

'It wasn't made to be a toy, it happened by accident as they were playing a game.'

'The shape helped.'

'It was a mistake, it wasn't meant to be a game.'

'People used it differently.'

- How do you feel when you make mistakes?

'I know mistakes are part of the learning process.'

'When you make mistakes, the next time you make the same mistake again, you can correct them.'

'Don't shout at people who make mistakes in learning as they are learning from it.'

'If you were starting to learn long division, at first you may make lots of mistakes. Don't give up! You are learning from it.'

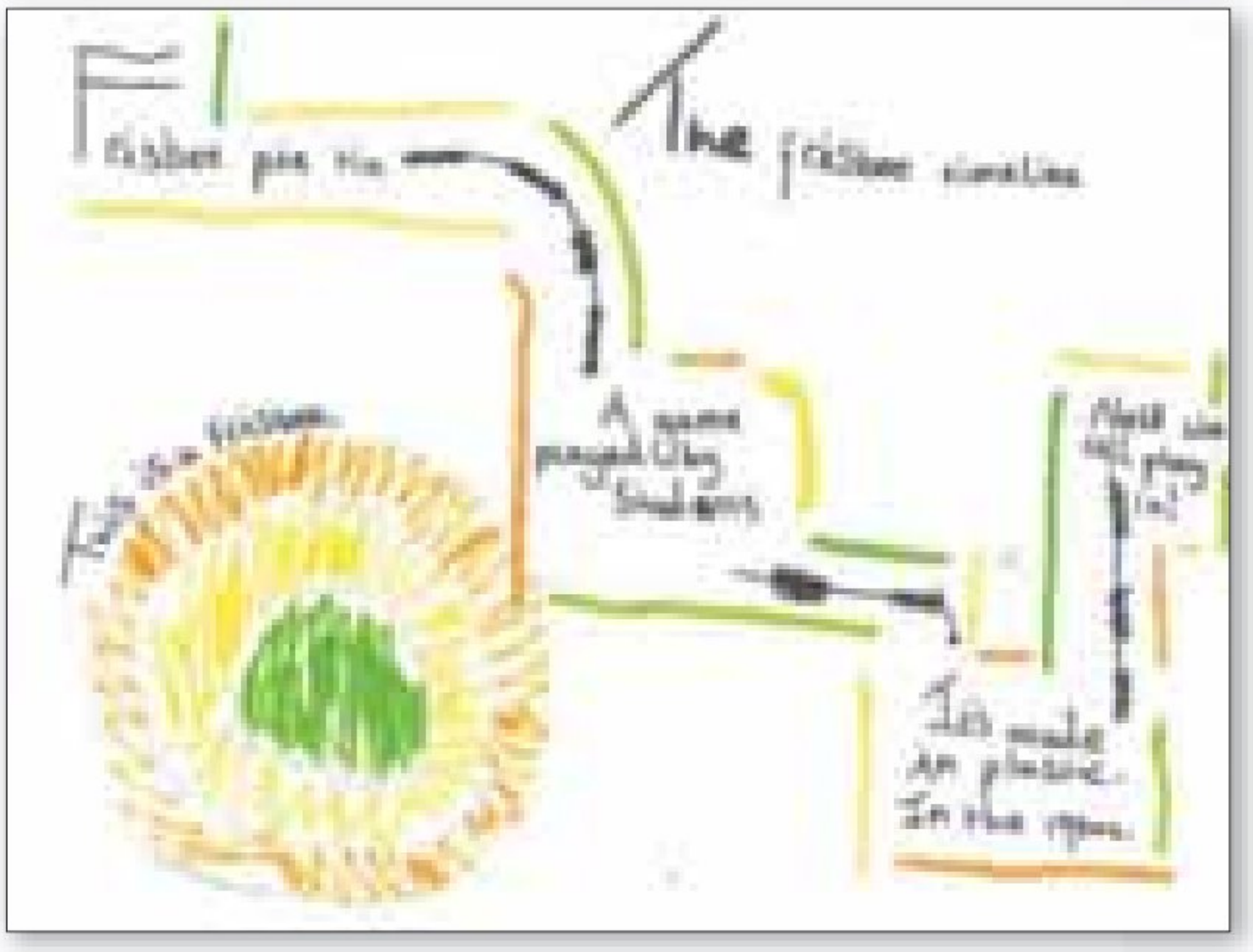


Figure 51 The frisbee timeline

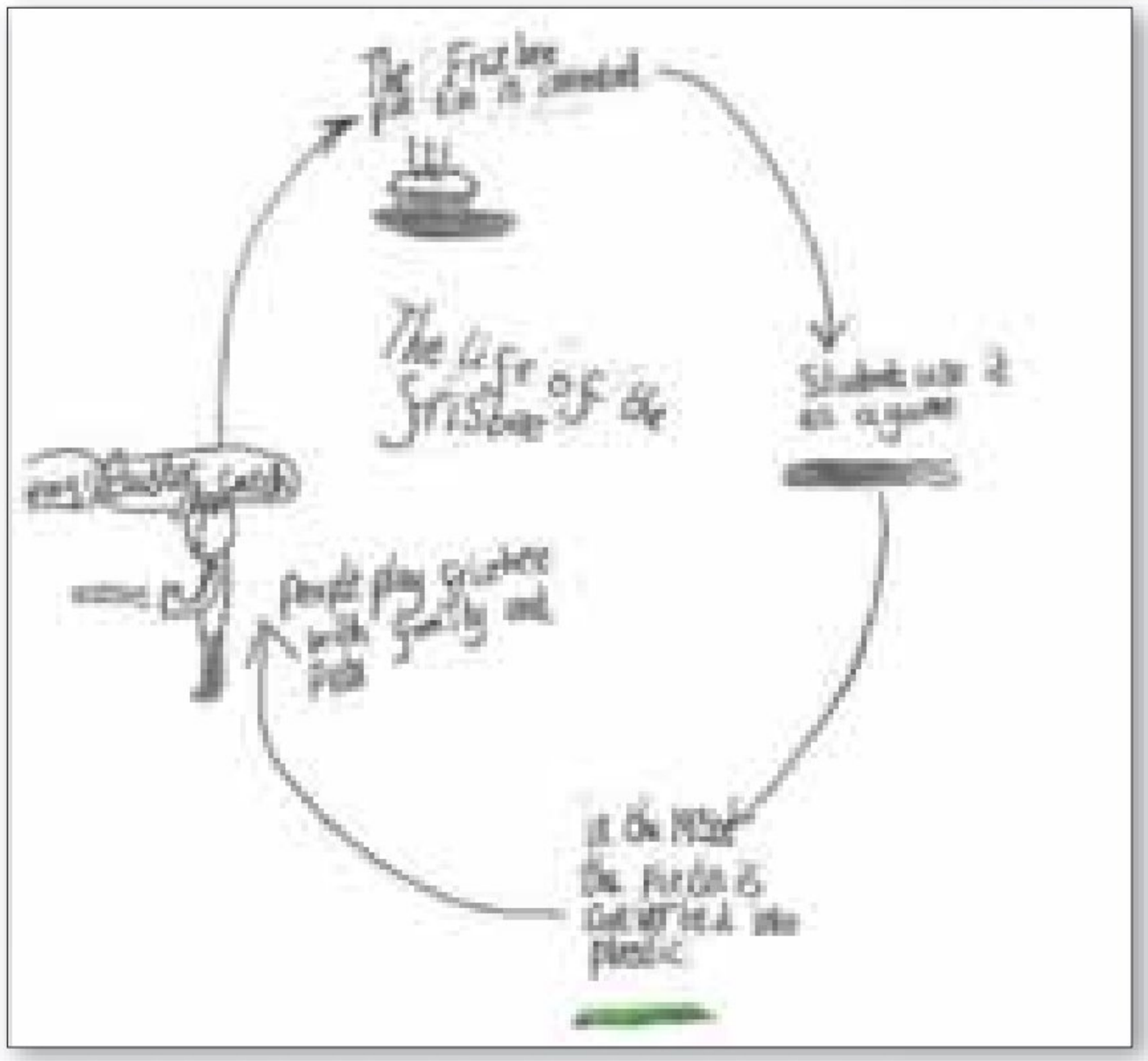


Figure 52 The life of the frisbee

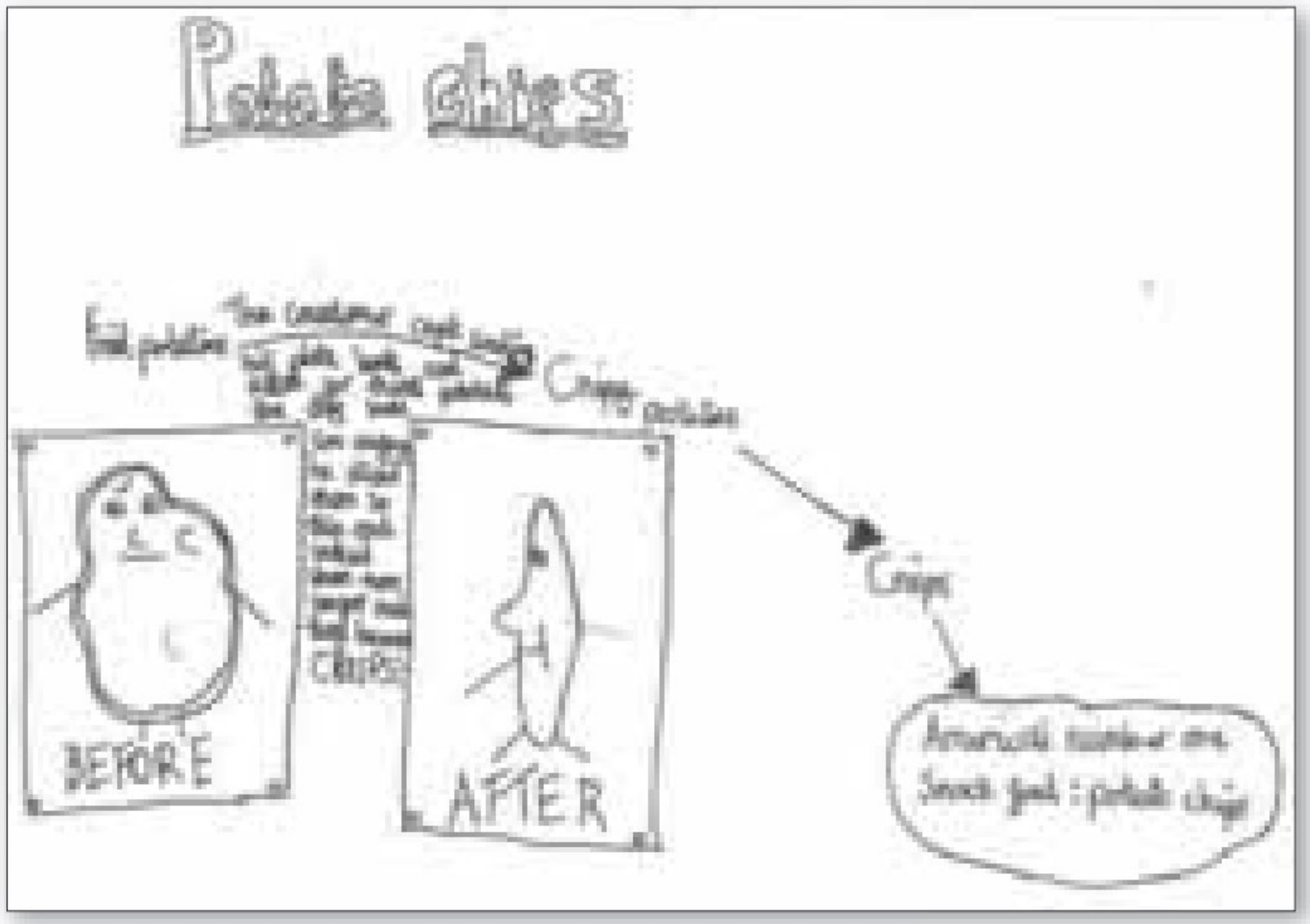


Figure 53 Inventing potato chips

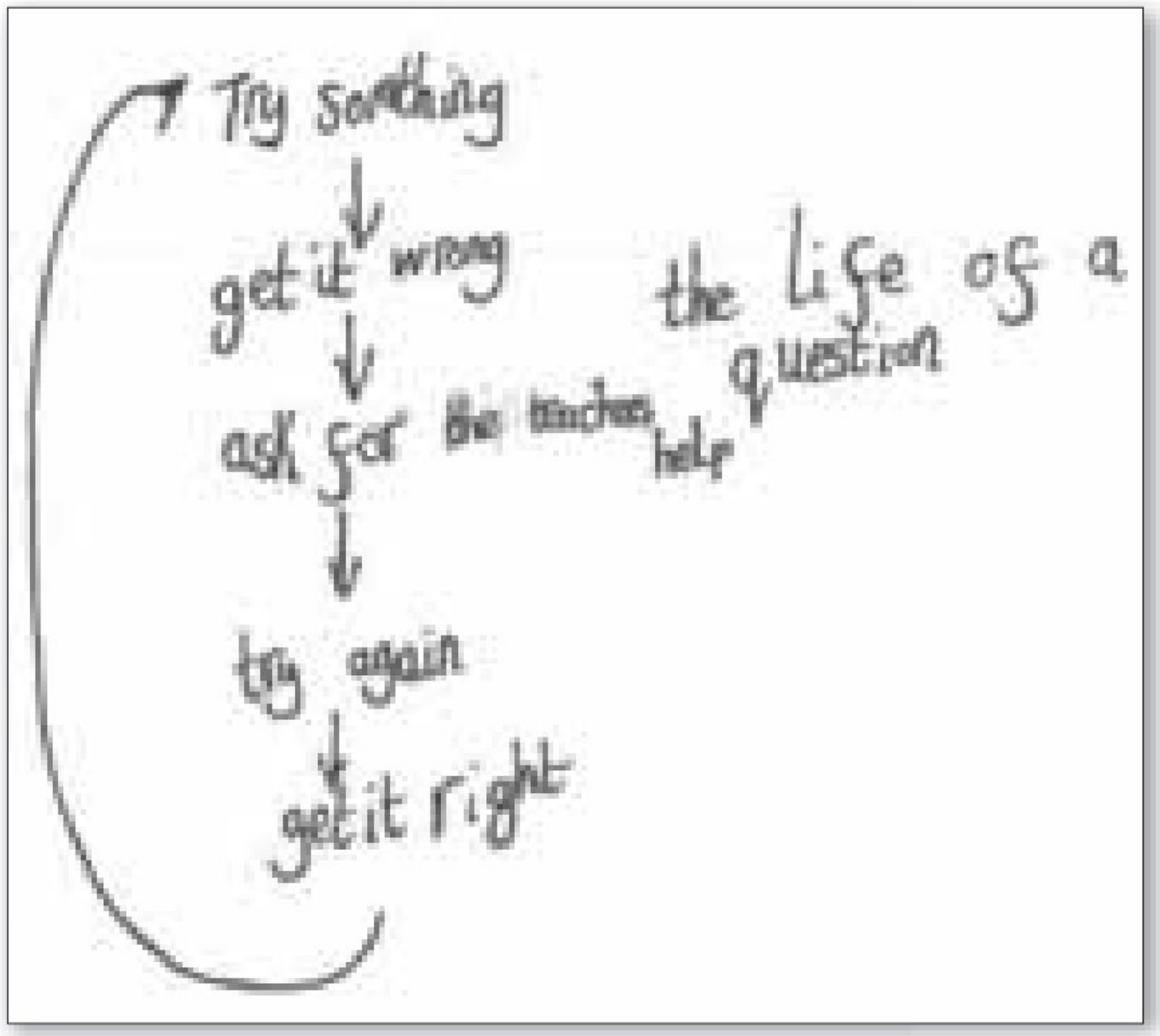


Figure 54 The life of a question

5 Challenge mountains

Learning objectives	Resources
• To identify an area that you find challenging and the barriers to learning • To develop ways of overcoming barriers to learning	• Challenge mountain vocabulary cards (see Figure 55) • Visualizer or document camera • Materials to build challenge mountains

IB Learner Profile

- **Thinkers** – we use critical and creative thinking skills.
- **Risk-takers** – we are resourceful and resilient in the face of challenges.
- **Reflective** – we work to understand our strengths and weaknesses.

Lesson

1 *Seat students with their talk partners.*

Introduce the key vocabulary cards to the students and invite them to sort the words into groups. Ask them to discuss what the words mean and why they have grouped them together.

After talk time, ask students to feed back their ideas.

effort	challenge	personal
mistake	overcome	determined
error	motivation	difficult

Figure 55 Challenge mountain vocabulary cards

2 **Visible thinking** – model an aspect of learning that you have found difficult. Explain to the students the barriers to your learning. Ask the students to discuss with their talk partner how they would help you to overcome the barriers. Using a visualizer, model what your challenge mountain would look like and how you would illustrate the barriers.

Climbing your mountain

3 Ask the students to discuss:

What have you found challenging?

What barriers are there?

How could you overcome the barriers?

4 Then provide the students with materials to create their own challenge mountains.

Reflection time – what have we learned?

Students share their challenge mountains using the visualizer. Ask them to describe their mountain and the barriers to their learning and how they would overcome them.

Display the students' mountains in the classroom as a visual reminder of their learning journey and how they are trying to improve.

Challenge

Ask the students to suggest an alternative image that they could use to illustrate a learning challenge. They could write a guide for a younger student, using an image to reinforce the idea, explaining what happens when we are learning. Encourage the students to focus on the ideas and the explanation and not to make the image too elaborate so that it takes up most of their time.

Further developments

Students should be encouraged to move themselves independently on the challenge mountain to reflect the progress they are making on their learning journey.

Once students have been successful with their learning challenge, the mountains can be adapted for a new challenge.

DOWNLOADABLE RESOURCES

Challenge mountain vocabulary cards

www.hoddereducation.co.uk/ib-extras

Students' responses

Figure 56 Moving up my challenge mountain

Figure 57 You can do this!

6 Never give up!

Learning objectives	Resources
• To discuss how we overcome failure in different contexts • To describe how it feels when we fail or make mistakes • To create a game that represents the process of learning	• Images of computer games and students learning in school • A YouTube clip of a challenging scenario in Minecraft • Visualizer or document camera (optional) • Materials to design a game

IB Learner Profile

- **Thinkers** – we use critical and creative thinking skills.
- **Reflective** – we work to understand our strengths and weaknesses.

Lesson

1 *Arrange the students so they are sitting with their talk partner and can clearly see the board.*

Show the students some images of a range of age-appropriate computer games, for example Minecraft, Mario Kart or Lego Star Wars, and an image of students learning in school. Ask them initially to think about which is the odd one out and why. Next they should discuss their ideas with a talk partner. Take feedback from the students about their ideas.

2 Ask the students to put up their hands if they play computer games.

Develop the discussion further by asking the students to think about and then discuss with their talk partner:

How do you feel when you fail or make a mistake with your learning?

How do you feel when you fail or make a mistake when playing a computer game?

When you are playing a computer game, do you give up and never play again?

Do you feel differently when you make a mistake when playing a game or when you are learning in school?

3 Show the students a YouTube clip of a challenging scenario in Minecraft. Then, presenting one question at a time, ask the students to discuss and reflect on:

How would you feel if you were playing this game?

Would you give up? Why/Why not?

Do we behave in the same way when we are playing challenging games as we do when we are learning?

Learning games

4 Explain to the students that they are all game designers/programmers and that they have been asked to create a learning game where the process of learning is made into a computer game.

Ask the students to think about:

What does a successful game have?

What would your learning game look like?

What could make your characters fail or challenge them?

How would you be successful?

5 Provide the students with paper and a range of materials to design their game.

Reflection time – what have we learned?

Once they have completed their designs, randomly select a few students to share and explain their ideas – perhaps using a visualizer. Allow students time to reflect on one another's ideas and to ask questions.

Challenge

Ask the students to create a list of similarities and differences for how they feel when they make a mistake when playing a computer game compared to when they are learning in school.

Further developments

Have a class debate with the students working in their learning groups:

Do students give up more easily when learning in school than when playing computer games?

Students can use simple coding to create a learning game using images.

DOWNLOADABLE RESOURCES

PowerPoint presentation 'Which is the odd one out?'

www.hoddereducation.co.uk/ib-extras

CHAPTER

5 Lessons for 8–9-year-olds

Lesson	Focus	IB Learner Profile	Page
1 From failure to success	Valuing failure as an important part of the learning process; defining the term 'successful'	• **Reflective** – we work to understand our strengths and weaknesses. • **Thinkers** – we use critical and creative thinking skills. • **Communicators** – we express ourselves confidently and we collaborate effectively.	148
2 Bounce!	Strategies for persevering and learning when they make a mistake; describing how they feel when they make a mistake	• **Communicators** – we express ourselves confidently and we collaborate effectively. • **Reflective** – we work to understand our strengths and weaknesses. • **Risk-takers** – we are resourceful and resilient in the face of challenges.	153
3 Doom words	Words that can restrict us as learners; creating our own words to describe the learning process	• **Reflective** – we work to understand our strengths and weaknesses. • **Thinkers** – we use critical and creative thinking skills.	159
4 Mindset trumps	Characteristics of an effective learner; suggesting justification for awards; creating a simple game	• **Reflective** – we work to understand our strengths and weaknesses. • **Thinkers** – we use critical and creative thinking skills. • **Open-minded** – we seek and evaluate a range of points of view.	163
5 Fantastic elastic brain	Identifying the characteristics of growth and fixed mindsets; debating whether we are born to be good at something	• **Reflective** – we work to understand our strengths and weaknesses. • **Knowledgeable** – we develop and use conceptual understanding. • **Inquirers** – we learn with enthusiasm and sustain our love of learning throughout life	169
6 Learning cereals	Characteristics of an effective learner; creating a design for a learning cereal packaging	• **Thinkers** – we use critical and creative thinking skills. • **Inquirers** – we learn with enthusiasm and sustain our love of learning throughout life	173

Overview

These lessons are designed to deepen the students' understanding of the brain and how it works when we learn. The idea of personalized learning is reinforced. Failure and its role in the learning process is developed further as the students reflect on failures who became famous and what factors enabled them to achieve. Key vocabulary is revisited and defined, including the effective characteristics of a learner. Students are also encouraged to reflect on language that might have a negative impact on learning and how they can develop a more positive approach through the language they use.

1 From failure to success

Learning objectives	Resources
• To identify and value how failure is an important part of the learning process • To define the term 'successful'	• Photographs of famous people (see Figure 58) • Background information about these people (see Figure 58) • Additional information (see Figure 58)

IB Learner Profile

- **Thinkers** – we use critical and creative thinking skills.
- **Reflective** – we work to understand our strengths and weaknesses.
- **Communicators** – we express ourselves confidently and we collaborate effectively.

Lesson

1 *Arrange the students so they are sitting with their talk partner and are able to see the board clearly.*

Share with the students the four photographs and the background information about these famous people (see Figure 58, but use different famous people if they are more appropriate for your students):

- Jo Pavey
- Walt Disney
- J.K. Rowling
- Bill Gates.

Read the background information on each person together. You could build some talk time in here to allow the students to discuss any words that are unfamiliar, such as 'entrepreneur'.

2 Then ask the students to work with their partner to put the photographs in order according to which person they think is the most successful. Remind the students that there is no right or wrong answer and that you are just interested in their opinion.

Once they have completed the activity, ask the students for feedback:

Who was the most successful?

Why do you think that?

Who was the least successful? Why?

Were you and your partner in agreement?

3 With their talk partner, ask the students to discuss:

What does the word 'successful' mean?

Then take feedback from them and challenge the students' thinking by asking:

Does it always mean that you're the best?

Would that make you change your order? Why?

If it means … how would this affect your ordering?

Give the students time to revisit their ordering.

Famous failures

4 Provide the students with the additional information on how the famous people failed (see Figure 58), read it together and then allow the talk partners to revisit their ordering.

Ask the students:

Does the additional information make you change your ordering?

If so, why?

Use lollipop sticks to randomly select students to answer the questions, thus ensuring all students are focused. Alert them prior to the discussion that you will be doing this.

Famous people			
			
Background information			
Jo Pavey won a gold medal at the age of 40 in 2014 in the 10,000 m. She is the oldest female European champion in history.	Walt Disney is the creator of Mickey Mouse and the winner of 22 Academy Awards.	J.K. Rowling wrote the Harry Potter books and has sold more than 400 million books around the world. They have become the best-selling books in the world.	Bill Gates is the co-founder of Microsoft. He is one of the best-known entrepreneurs in the world. He is worth an estimated US$81.8 billion.
Additional information			
In the 2002 Commonwealth Games Jo Pavey came 5th and in the 2012 European Championships she came 7th.	Walt Disney was fired from a newspaper and told that 'he lacked imagination and had no good ideas'.	J.K. Rowling sent her book to 12 publishers and it was rejected by them all. When it was finally accepted she was told not to give up her job as the book probably would not sell.	While studying at university, he failed his exams. The first business Bill Gates started was a complete failure.

Figure 58 Famous people – pictures, background information, additional information

Reflection time – what have we learned?

You should provide some personal information about something you have failed at, for example Mrs Muncaster failed her driving test twice but she had extra lessons and practice to help and then finally passed it on the third attempt. It is important to model failure to the students so they see it as part of everyday life.

Ask the students to discuss:

How do you feel when you fail?

Can you give an example of something you've failed at?

What could you do differently?

How do you overcome failure?

How did your failure help you learn?

The teacher should work in role as a facilitator while the students discuss this. Listen to what the students are saying as it will reveal a lot about their attitudes to learning and their individual mindsets. Try not to intervene since allowing students to resolve issues with their partner is an important skill for them to develop.

Then choose some students to feed back their discussions. Be sensitive and discuss beforehand with the student whether he or she is happy to share.

Challenge

Ask the students to debate:

When do you think you learn more – when you succeed or when you fail?

Further developments

In an extended write, the students should write a report on failure and include some of the information from the session, alongside further research and a personal reflection on failure.

Adapt the activity using other famous failures or characters from books.

DOWNLOADABLE RESOURCES

PowerPoint presentation about famous people

www.hoddereducation.co.uk/ib-extras

Students' responses

- Who was the most successful?

'J.K. Rowling, Jo Pavey, Bill Gates and then Walt Disney. We think J.K. Rowling is the most successful because of the number of books she has published. Jo Pavey is next because she won a medal. Bill Gates is next because he made the internet work. Walt Disney is not as important as he just made fun films.'

'Bill Gates, Walt Disney, J.K. Rowling, and then Jo Pavey. Bill Gates is on the internet and everyone uses Microsoft. He also earns a lot of money. Then Walt Disney as he makes amazing films. Then J.K. Rowling as people love her books and finally Jo Pavey as the others are more famous, we don't really know her.'

'Walt Disney, Bill Gates, J.K. Rowling and then Jo Pavey. Walt Disney is first because lots of people watch his films; they are all over the world. Bill Gates created lots of useful things by himself. Then it's J.K. Rowling as she wrote lots of books that people love. Last is Jo Pavey as she is really old and we haven't seen her on television.'

- What does the word successful mean?

'It means you have achieved something.'

'You did it.'

'If you were playing football, you may have got too old but you could have been successful.'

'It means you got to the top.'

- Did your ordering change? Why?

'We thought about the bad things that had happened and changed it. Bill Gates overcame the most so he is the most successful.'

'Bill Gates first and then Walt Disney next because Walt Disney did try very hard.'

'Walt Disney last because he was fired and was less successful.'

Another student responded to the above comment:

'But he didn't give up so he was successful.'

How do you feel when you fail?

'Unhappy.'

'You might feel like you want to try again, it is only your first attempt.'

'When you fail does it mean you are bad at something or a learner?'

'I really wanted to be in the football team but they kept not picking me so I kept practising and going to training. I kept trying and then I got picked.'

2 Bounce!

Learning objectives	Resources
• To identify strategies for persevering and learning when they make a mistake • To describe how they feel when they make a mistake	• Picture of a student frustrated by learning (see Figure 59) • Large balls (one inflated and one not) • Bouncy balls • Permanent markers

IB Learner Profile

- **Reflective** – we work to understand our strengths and weaknesses.
- **Communicators** – we express ourselves confidently and we collaborate effectively.
- **Risk-takers** – we are resourceful and resilient in the face of challenges.

Lesson

1 *Organize the classroom so that the students are sitting with their talk partner and can see the board.*

Show the students a picture of a student feeling frustrated in his or her learning. Ask them to discuss with their talk partner:

How is the student in the picture feeling?

How do you feel when you make a mistake?

Figure 59 A boy frustrated by learning

Explain to the students that there is no right or wrong answer to the second question and that you are just interested in their opinion. While the students discuss this, you should eavesdrop: ideally there should be a mixture of feedback from those who become frustrated by their mistakes and those who see it as a part of the learning journey.

Take feedback from the students, using questioning to probe their perceptions. The strategy of posing a question, then pausing to allow thinking time and then finally pouncing would be extremely effective here. It would ensure the students have the opportunity to reflect and share their opinions, while allowing the lesson to continue to develop.

How do you feel when you make a mistake? Why?

When do you feel like that?

Do you feel you make mistakes more often in a particular subject?

Do you deal with mistakes differently depending on the subject? Why do you think this is?

Why do you think we have different opinions?

Bounce

2 Show the students two balls, one inflated and one not. Ask the students to watch what happens when you (or two students) drop the different balls.

Again, ask the students to talk to their talk partner:

What happened when we dropped the inflated ball?

What happened to the deflated ball?

What do you think the two balls represent?

If necessary, explain to the students that the inflated ball has a growth mindset and that the deflated ball has a fixed mindset.

3 Ask the students to think about the different ways the mindsets cause you to respond to mistakes. The students should record the ways and characteristics on paper or on a bouncy/deflated ball.

You may wish to give the students an example of how the different mindsets can affect how we respond to mistakes. For example, if you have a fixed mindset you would give up but with a growth mindset you would challenge yourself and try to find a new strategy. A growth mindset bounces into learning.

To differentiate the activity, you could provide examples of responses for students to sort instead.

Reflection time – what have we learned?

Visible thinking – ask the students to feed back and share examples of the different ways they can respond to mistakes. Emphasize the importance of having to BOUNCE BACK after a mistake as it is part of the learning process.

To encourage the students to think of a range of specific strategies, ask them to discuss:

Is it enough just to keep trying?

Is that all we need to do to get better?

Give the students some time to talk to their partner and then, when you feel it is an appropriate point in the discussions, ask them to feed back. Initially take feedback by asking the students to vote on whether they agree with the statements and then develop this further by asking them to explain their thinking.

To develop this discussion further you could model to the students trying to solve a calculation using the same strategy repeatedly. Then ask the students:

What can I do to improve?

Should I just keep trying the same method?

Responses you are hoping to encourage include:

- Don't give up
- Ask a partner for help
- Try again
- Learn a new strategy
- Revisit my learning
- Receive intervention
- Ask a teacher to help
- Understand it's part of the learning process
- Practise and go back to first steps.

Challenge

Can you think of a different word or phrase to describe a mistake?

Do you think there is a specific order in which you should attempt the different strategies following a mistake?

Further developments

Create a display using the two balls and the different ways the students respond to mistakes. Add to the board as the students show different responses across the curriculum.

Students' responses

- How do you feel when you make a mistake?

'Angry.'

'Happy, as when you make a mistake you're learning. You don't need to worry, just try again.'

'Cross because you have to rub it out which makes your work a mess.'

'Happy as you can learn from your mistakes.'

'Upset but not too angry, maybe angry inside.'

'I make more mistakes in maths as I don't really get it.'

'In English there's no right answer, there can be lots of answers, but in maths you need a right answer.'

'I act the same, as a mistake is a mistake whatever lesson. You just need to learn from it.'

'You get used to dealing with mistakes in subjects you find hard.'

'If you get more confident with something you worry less.'

'When you are little you can have a different attitude, in Year 1 you get very frustrated when you make a mistake but as you get older you can control it. As you get older you think more about your learning behaviour.'

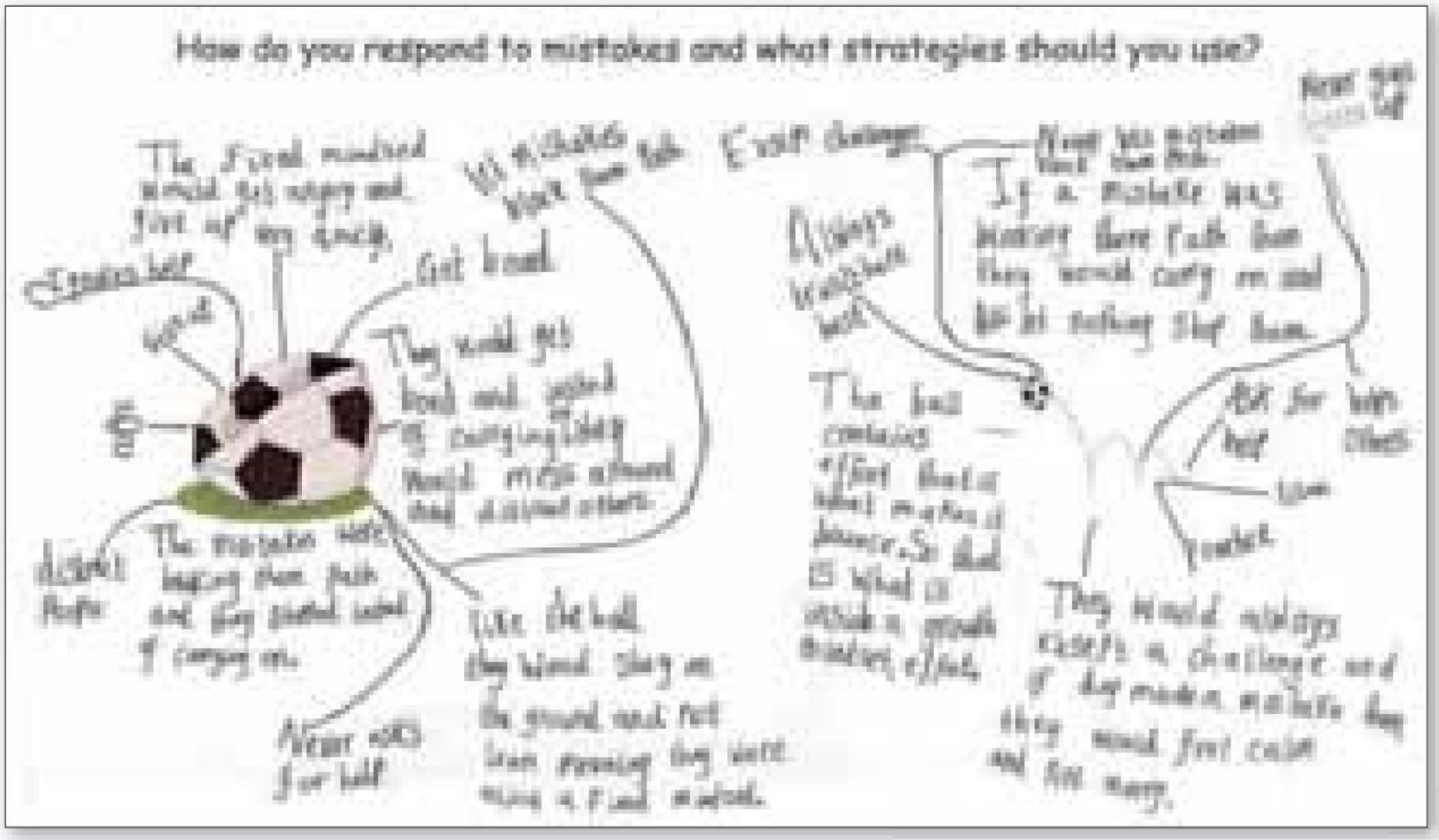


Figure 60 How to respond to mistakes (1)

Figure 61 How to respond to mistakes (2)

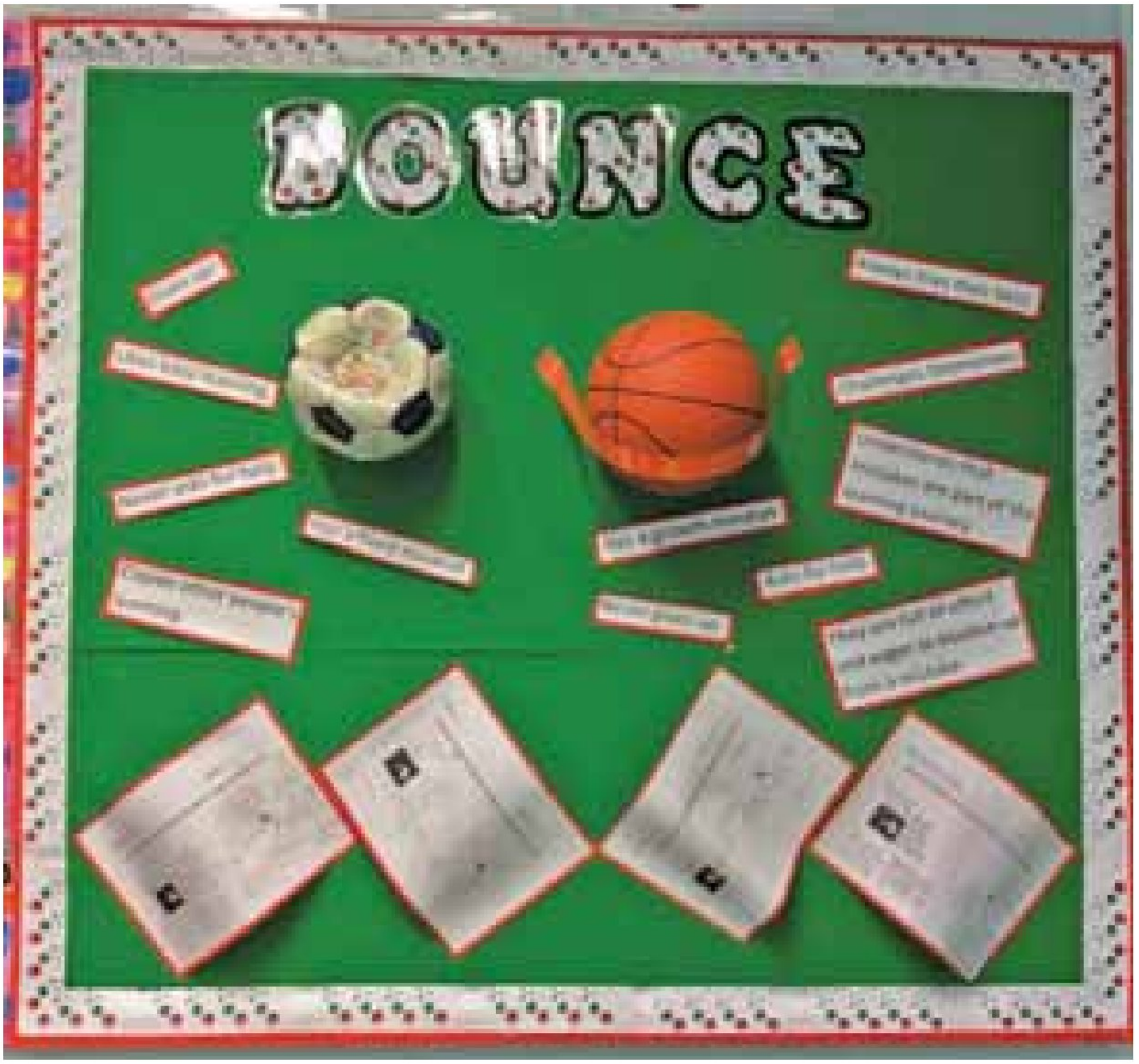


Figure 62 Bounce poster

DOWNLOADABLE RESOURCES

- PowerPoint presentation of a student frustrated by learning
- Video of students discussing mistakes

www.hoddereducation.co.uk/ib-extras

3 Doom words

Learning objectives	Resources
• To identify words and phrases that can restrict us as learners • To create our own words to describe the learning process	• Doom words and learning words (see Figure 63)

IB Learner Profile

- **Thinkers** – we use critical and creative thinking skills.
- **Reflective** – we work to understand our strengths and weaknesses.

Lesson

1 *Arrange the students so they are sitting with their talk partner and can see the board.*

Show the students the word '**easy**' and ask them to discuss with their talk partner what they think it means. Explain you are interested in their opinions rather than there being a correct answer.

Once the discussions are under way, allow the students enough time to share their opinions and then, at the appropriate moment, bring the class back together. Take feedback from the students.

Develop this further by asking the students:

Do you like easy learning?

Allow them to respond using a show of hands and then probe their responses further by asking:

Why do you like/dislike easy learning?

Do you always like easy learning in every lesson?

2 Next pose the question:

Do you think that the word 'easy' is bad for learning?

Again, give the students some time to discuss this with their partner. During the discussions you should 'eavesdrop' on the conversations as this will allow you to observe the different opinions and misconceptions and to select students with opinions that differ to feed back.

If the students suggest that 'easy' could be both a useful word and a negative word, probe this further, as some students will identify that as they learn to do something it becomes easy.

Doom words

3 Explain that some words can be described as 'doom words'. These are words that can be bad for learning, like 'easy'.

It would be useful at this point to provide an anecdote about someone's learning behaviour and you could personalize this to reflect the learning behaviour of the students you teach. For example: 'Fred likes to be the first to finish and always says very loudly "finished!". Fred isn't concerned about challenging himself – instead he is more focused on being quicker than other students and finishing his learning first.'

4 Encourage the students to think about any other words or phrases that could be described as doom words. Ask them to discuss examples with their talk partner or to write a list.

If appropriate, you could differentiate the activity by providing the students with words to sort into doom words or learning words (Figure 63) before asking them to think of some of their own.

easy	learning	challenge
right	first to finish	determined
boring	mistake	difficult

Figure 63 Doom words and learning words

Reflection time – what have we learned?

Ask the students to share their ideas with the class and then select some suggestions that can be turned into positive learning phrases and words, for example: 'I can't …' can become 'I can't YET!'

Ask the students to suggest ways of changing a doom phrase into a learning phrase. Initially, you might need to model different ways of doing this, for example: 'I can't do this … so please can you help me?'

Challenge

During the doom word discussion, the students could record their ideas in a Venn diagram to show words that can be learning words, doom words or both.

Further developments

You could extend the discussion by asking the students to discuss and identify 'doom' learning behaviours.

Ask the students to create a poster to promote the school/classroom as a learning zone where doom words are not acceptable.

Share the idea that, at some point, learning a particular skill should become easier. For example, they could not do column addition at first but, with lots of practice, they managed to master it and it became 'easy' because of their resilience and thirst for learning. Ask the students to reflect on their learning and share their own examples of having mastered a particular skill.

DOWNLOADABLE RESOURCES

Doom word and learning word cards

www.hoddereducation.co.uk/ib-extras

Students' responses

What does 'easy' mean?

'Easy means something you can do. It's the opposite of hard.'

'You can do it straight away, do it lots of times without getting it wrong.'

'It's simple.'

'You don't have to think about it, like 2 + 2.'

'It's when something isn't challenging. But you must be careful about saying it to others as we all find different things easy and challenging.'

Is the word 'easy' bad for learning?

'My opinion is that easy is bad for picking work as you need to challenge yourself.'

'It's both as when you have just started learning it could be hard but it should become easier.'

'Saying easy can upset and annoy others as they may find it hard.'

'It can have a negative impact as you need to challenge yourself in your learning and not choose easy!'

What is a doom word?

'Something that you shouldn't say.'

'We made doom words up as easy is a word that's bad for your learning.'

'You can have doom phrases like I give up.'

'We need bounce words that help you come back to learning.'

4 Mindset trumps

Learning objectives	Resources
• To identify the characteristics of an effective learner • To suggest justification for why a character is awarded a given number of points for a characteristic • To create a simple game	• A mindset trumps card describing you, the teacher (see Figure 64) • Effective learner cards (see Figure 65) • Mindset trumps template (see Figure 66)/Top Trump It app • Visualizer or tablet

IB Learner Profile

- **Reflective** – we work to understand our strengths and weaknesses.
- **Thinkers** – we use critical and creative thinking skills.
- **Open-minded** – we seek and evaluate a range of points of view.

Lesson

1 *Ensure the students are sitting with their talk partner ready to talk and have a clear view of the board.*

Ask the students if they have ever played the Top Trumps® card game and to respond through a show of hands.

Ask them to discuss with their talk partner:

How do you play the game?

What makes you successful at it?

What can cause you to fail?

2 Show the students the mindset trumps card featuring yourself and look at the characteristics the points have been awarded for. Ask the students:

What have I been awarded points for?

What does … mean?

Figure 64 Teacher top trumps

Mindset trumps

3 Explain to the students that they are going to create their own mindset trumps using characters from students' books.

Explain that they should award points out of 100 for each character. The points will be awarded for the characteristics of an effective learner. Ask the students to discuss with their talk partner:

What do you think makes an effective learner?
How should you behave when you are learning?

Take feedback from the students and review the suggestions. Ensure that all the students understand what the different words mean and, if appropriate, build in further talk time to allow the students to explore and clarify their understanding.

Possible answers might include:

- effort
- resilience
- growth mindset
- desire to be challenged
- effective listener
- initiative
- honesty
- ability to ask for help.

If your students are unfamiliar with the characteristics of an effective learner, you could begin the lesson with this activity or you could provide them with the characteristics on cards (see Figure 65) along with other attributes that are not effective and ask students to sort them with a partner. Ensure you check that all of the students understand the vocabulary; use talk time and feedback to avoid misconceptions.

perseveres	likes to be challenged	likes to be right
likes easy work	first to finish	determined
worries about making a mistake	resilient	gives up

Figure 65 Characteristics of an effective learner vocabulary cards

The following are examples of students' misconceptions and ways that these could be addressed by the teacher:

Possible misconception	Teacher's response
A child suggests making mistakes.	Would it be making mistakes or making mistakes and learning from them?
A child suggests kindness.	Does that make us an effective learner or a kind person?
A child suggests a negative characteristic.	Remodel it as a positive characteristic.

4 The class should then decide which four different characteristics they are going to award points for.

Revisit your example of a mindset trumps card for yourself.

Visible thinking – model awarding yourself points for the four chosen characteristics. For example:

'I am going to award myself 50/100 points for resilience because I have a tendency to give up, particularly when writing and decorating. I need to try harder with this.'

'I am awarding myself 80/100 for resilience because I use mistakes as part of the learning process and don't get upset if I get something wrong.'

5 Explain that they are going to create a mindset trumps card for a given character and that they need to think carefully about the point allocation and provide reasons for this.

Perfect Peter (from *Horrid Henry*), for example, would be awarded 20/100 for growth mindset because he always likes to be right. Ask the students to discuss with their talk partner possible reasons why Perfect Peter would be awarded only 20 points for the characteristic of having a growth mindset.

Allocate a character to each set of talk partners and either ask them to complete the template or to use the Top Trump It app to create a card for a character. Try to use a range of characters that includes a wide range of contexts where effective learning behaviours can be debated. Suggestions for characters include Horrid Henry, Perfect Peter and Charlie from *Charlie and the Chocolate Factory*.

It might be useful to have a word bank for some students to use, to remove any barriers to learning.

Provide copies of books or enable access to the internet so the students can research the characters. If you allow the students to choose their own character, you might wish to check that these are appropriate.

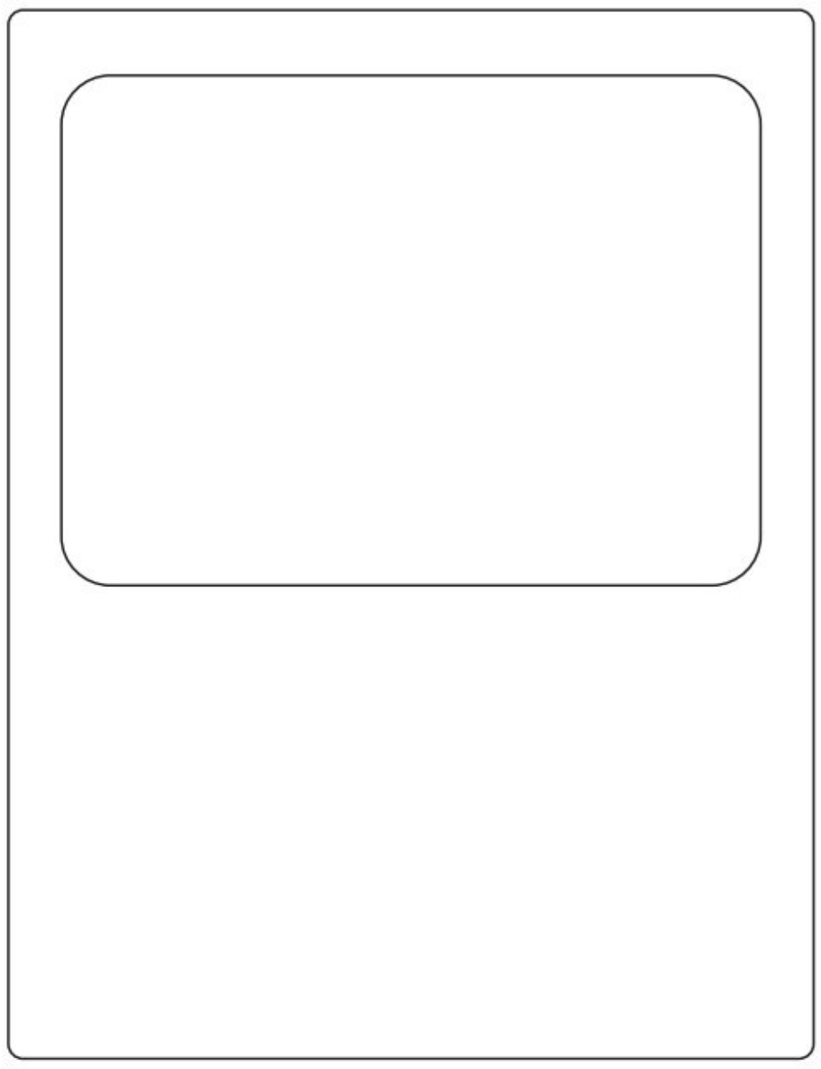


Figure 66 Mindset trumps template

Reflection time – what have we learned?

Share the examples of the cards the students have created, ideally using a visualizer or by displaying the trump cards from the app.

Compare and contrast two cards and ask the students to justify why they have awarded the points for each characteristic. Then ask the class to debate whether they agree over how the points were awarded. Try to select two cards with glaring contrasts or an over-allocation of points in order to facilitate a deeper discussion.

This activity could be replicated by asking each set of talk partners to work with another pair to share their justification for the allocation of points.

Challenge

A variation on this game could be created using famous people (sporting personalities are extremely effective). The students could research their careers, identify the different characteristics and award points. Again, they would need to provide justification for the allocation of points.

Further developments

Students could create additional mindset trumps characters at home, which could be added to the class game.

You could create a display of the students in the class, asking them to identify which characteristics of an effective learner are their strengths and perhaps one aspect as an area for development. These could then be displayed and, as the area for development improves, the student or the class could award new points.

DOWNLOADABLE RESOURCES

- Characteristics of an effective learner vocabulary cards
- Mindset trumps template

www.hoddereducation.co.uk/ib-extras

Students' responses

Figure 67 Examples of students' mindset trumps

5 Fantastic elastic brain

Learning objectives	Resources
• To identify the characteristics of growth and fixed mindsets • To debate whether we are born to be good at something	• Odd one out examples (see Figure 68) • Elastic bands • *Your Fantastic Elastic Brain* by JoAnn M. Deak • Visualizer or document camera (optional)

IB Learner Profile

- **Reflective** – we work to understand our strengths and weaknesses.
- **Knowledgeable** – we develop and use conceptual understanding.
- **Inquirers** – we learn with enthusiasm and sustain our love of learning throughout life.

Lesson

1 *Arrange the students so they are sitting with their talk partner and can see the board.*

Reveal the three images in Figure 68 to the students.

Explain that there are no right or wrong answers to the next question. Give the students time to discuss their ideas with their talk partner:

Which is the odd one out? Why?

Then develop their thinking further by asking them to think about:

Is there another odd one out?

Can you think of a different reason?

Take feedback from the students on their different ideas and reasons for something being the odd one out.

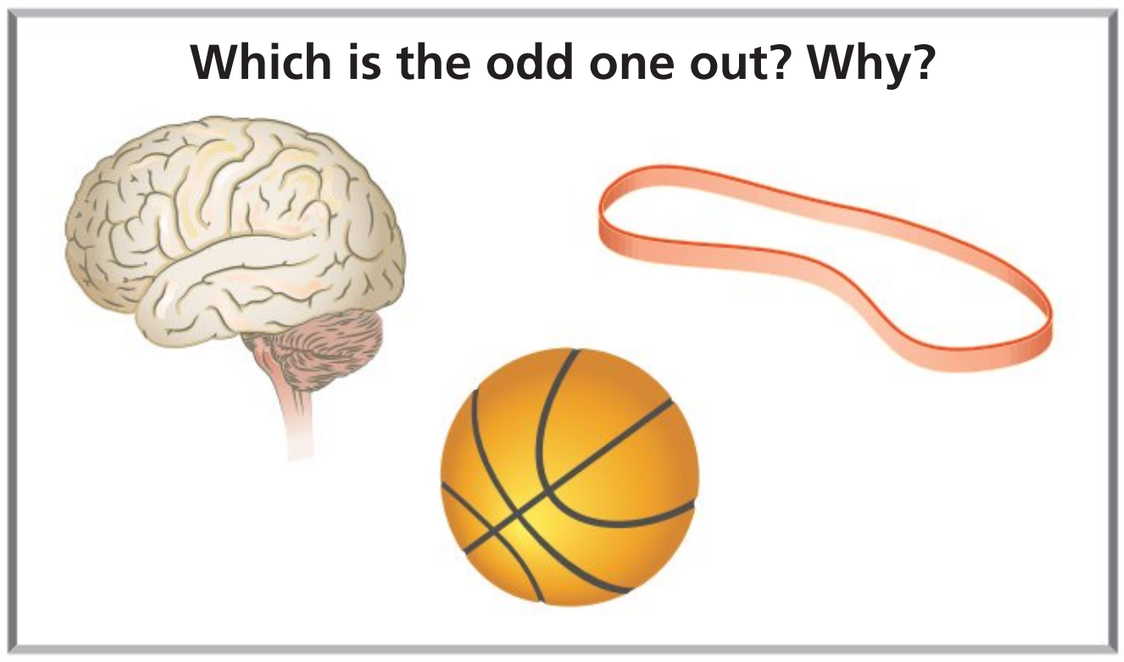


Figure 68 Odd one out

Stretch and learn

2 Show the students an elastic band and model how it can be stretched and manipulated. Explain that you want them to think about why you have shown them an elastic band while they listen to you read the book.

3 Share the book *Your Fantastic Elastic Brain* with the students. You could use a visualizer for this. You could also use a flipchart to illustrate key examples of what the brain can do and how it works.

Next pose the following questions to encourage them to reflect on what they have heard:

Why do you think I showed you an elastic band at the start of the lesson?

What type of mindset enables your brain to be like an elastic band?

What did you learn from the book?

4 Explain that each of their brains is unique and that they can learn and improve their learning. Develop this further by explaining that when they are learning something new, it can cause the brain to grow new connections between the neurons.

Share with the students your own example of why your brain is fantastic and elastic. It might include statements such as:

'My brain is elastic because I persevered and learned to ride my bike.'

'My neurons are firing in maths because I am learning my six times table.'

'My brain can do different things: it can remember facts and learn new things.'

'I can make my brain stronger by making mistakes and learning from them.'

Reflection time – what have we learned?

Ask the students to think about their own brain and how fantastic and elastic it is. Explain to the students that they are going to record information about why their own brain is fantastic and elastic (see Figure 70). Reinforce the idea that every brain is unique because they will all have had different learning experiences.

Once the students have completed their recording, randomly select some students to share why their brain is fantastic and elastic. You could use a visualizer to share their ideas. Probe the students' learning further by asking:

Why is that fantastic?

Which learning skills have you used?

What would you like your brain to learn to do next?

This activity can be differentiated through the use of an app such as Explain Everything, where students can explain why their brains are fantastic and elastic.

Challenge

Ask the students to think about the different parts of the brain – cerebrum, amygdala, hippocampus and cerebellum. Can they explain how each part of their brain is fantastic and elastic?

Further developments

The app, Your Fantastic Elastic Brain, supports the book and could be used by the students either in school or with parents at home.

Create a class display explaining how the brain is fantastic and elastic.

Students' responses

Which one is the odd one out?

'The elastic band is the odd one out because it doesn't teach you how to learn.'

'Ball is the odd one out because the other two can stretch and grow.'

'The brain is the odd one out as the others are objects.'

Figure 69 Fantastic elastic brain display

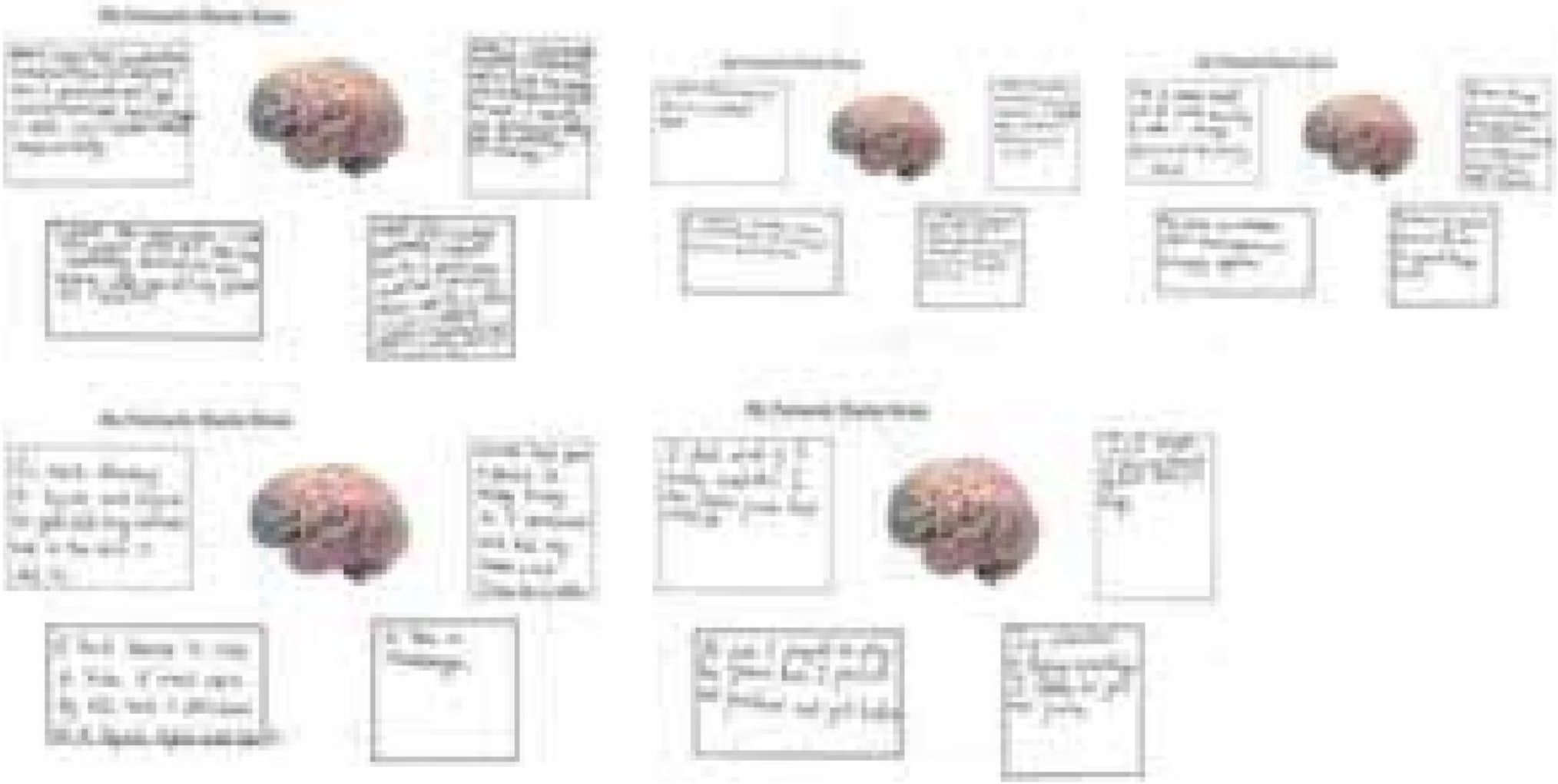


Figure 70 My fantastic elastic brain examples

DOWNLOADABLE RESOURCES

- PowerPoint presentation 'Which is the odd one out?'
- Mindset trumps template

www.hoddereducation.co.uk/ib-extras

6 Learning cereals

Learning objectives	Resources
• To identify the characteristics of an effective learner • To create a design for a learning cereal packaging	• Images of cereal boxes or bags • Materials for design • Tablets (optional) • Visualizer or document camera (optional)

IB Learner Profile

- **Thinkers** – we use critical and creative thinking skills.
- **Inquirers** – we learn with enthusiasm and sustain our love of learning throughout life.

Lesson

1 *Initially, arrange the students so they are sitting with their talk partner and can also clearly see the board. You could provide the students with a range of cereal boxes to stimulate the discussion.*

Ask the students to think and talk about:

How many different things can you think of that we eat for breakfast?

Take feedback and then ask the students to focus on cereals. Ask the students:

Who eats cereal for breakfast? (The students can respond by a show of hands.)

What do you know about cereal?

What do you think makes a good cereal?

Why is cereal important?

What would you include in a good cereal?

Ensure you build in talk time between each question to allow the students to reflect.

Learning cereal

2 Explain to the students that they are going to design a new breakfast cereal that will help them become an effective learner.

Ask them to discuss with their talk partner:

What makes an effective learner?

If your students are not familiar with the characteristics of an effective learner or if you have students who need further support, you could provide them with a range of characteristics on cards for them to sort and to stimulate discussion. You could use the cards from Figure 65 on page 165.

Give the students some talk time and then ask them for feedback. Randomly select students to feed back using either lollipop sticks or raffle tickets attached to their chairs.

Explain to the students that they are going to design the cereal box for their new learning cereal and that they need to encourage people to eat it. Look at a range of cereal packet designs and discuss with the students which ones they think are effective and why. Create success criteria for the effective packaging of a learning cereal.

It might also be useful to provide initial scaffolding for the discussion; for example, you could model an idea: 'I would create a cereal that contains extra perseverance to ensure that learners didn't give up.'

3 The students can then create their cereal packet design using a variety of materials (see Figure 71). Alternatively the students could create their design using an app such as Paper by FiftyThree or Brushes Redux.

Reflection time – what have we learned?

Randomly select some examples of the students' cereal packaging and share them using a visualizer if you have one. Ask the students to discuss each chosen student's learning and to think about:

What is successful about this design?

How could she or he challenge themselves and improve it?

What are the key ingredients for his or her cereal?

Challenge

Provide the students with some statements and ask them to reflect on whether they make you an effective learner:

- repeatedly making careless mistakes in maths
- checking spelling using a dictionary
- asking a friend for help
- copying someone's work.

Further developments

Students could create a menu for a learning diet that promotes the effective characteristics of a learner.

Students could write an advert to promote their learning cereal and the effective characteristics of learning.

DOWNLOADABLE RESOURCES

Video of students discussing mistakes

www.hoddereducation.co.uk/ib-extras

Students' responses

What makes a successful learner?

'Concentration.'

'Growth mindset.'

'Making mistakes and learning from them.'

'Enthusiasm.'

'Imagination.'

'Paying attention.'

'Not giving up on challenges or things they find hard.'

'Brain.'

'Asking for help.'

'Listening carefully.'

'Creativity.'

'Practising at home and in school.'

What does a successful cereal packaging need?

'Says on the packet what it does.'

'A full and healthy breakfast – ready for school.'

'Balanced.'

'Great logo and characters so students like them.'

'It should be healthy and list the ingredients.'

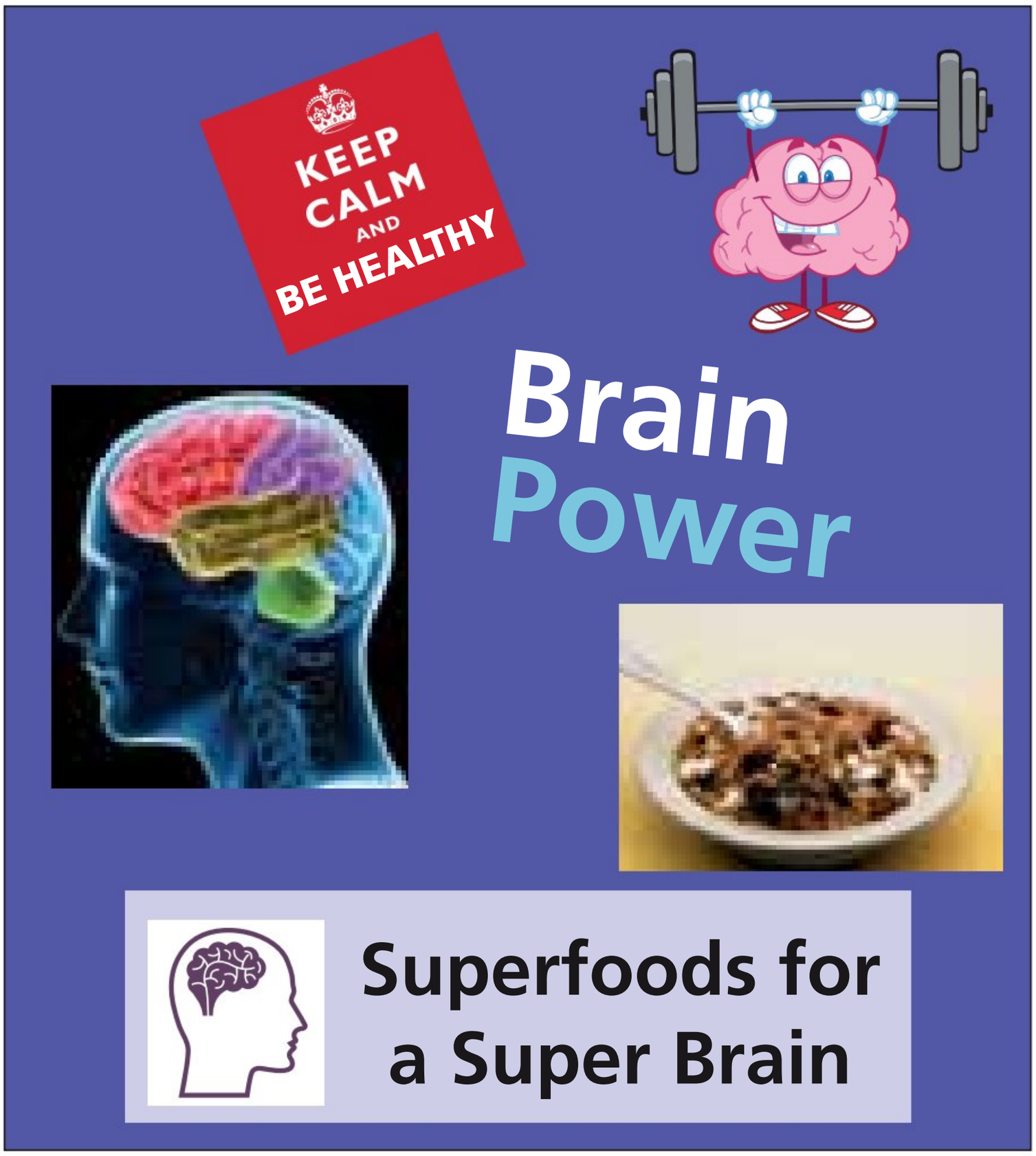


Figure 71 A learning cereal

CHAPTER

6

Lessons for 9–10-year-olds

Lesson	Focus	IB Learner Profile	Page
1 Passport to learning	Reflecting on the different mindsets, how they use them and what their strengths are	• **Communicators** – we express ourselves confidently and we collaborate effectively. • **Reflective** – we work to understand our strengths and weaknesses. • **Risk-takers** – we are resourceful and resilient in the face of new challenges.	178
2 Too old to …	Suggesting ways to help someone learn; exploring stereotypes	• **Communicators** – we express ourselves confidently and we collaborate effectively. • **Thinkers** – we use critical and creative thinking skills. • **Open-minded** – we seek and evaluate a range of points of view. • **Principled** – we act with integrity and honesty.	184
3 What makes a great teacher?	Identifying the characteristics of a successful teacher; justifying opinions	• **Reflective** – we work to understand our strengths and weaknesses. • **Thinkers** – we use critical and creative thinking skills. • **Inquirers** – we learn with enthusiasm and sustain our love of learning throughout life.	188
4 Brain power!	Creating a 3D model of the brain; explaining how the brain works	• **Communicators** – we express ourselves confidently and we collaborate effectively. • **Inquirers** – we learn with enthusiasm and sustain our love of learning throughout life. • **Knowledgeable** – we develop and use conceptual understanding.	196
5 Famous failures	Debating what it means to be a failure; reflecting on how the characteristics of the mindsets affect being successful or being a failure	• **Communicators** – we express ourselves confidently and we collaborate effectively. • **Reflective** – we work to understand our strengths and weaknesses. • **Open-minded** – we seek and evaluate a range of points of view. • **Principled** – we act with integrity and honesty.	200
6 The iceberg illusion	Explaining what happens when you are learning; creating images to illustrate the learning process	• **Communicators** – we express ourselves confidently and we collaborate effectively. • **Reflective** – we work to understand our strengths and weaknesses. • **Risk-takers** – we are resourceful and resilient in the face of new challenges. • **Inquirers** – we learn with enthusiasm and sustain our love of learning throughout life.	206

Overview

Students are asked to reflect on how they learn and to develop personal challenges in greater detail in a 'learning passport'. The learning groups are revisited and used to debate whether you can be too old to be a learner. Students are asked to reflect on the role of a teacher in their learning process. The lessons also deepen the students' understanding of the brain as they are required to work collaboratively to make a model brain to share with younger students. Students are asked to further explore the idea of being successful and to use 'sketchnoting' to explore the hidden factors that contribute to success.

1 Passport to learning

Learning objectives	Resources
• To identify the strengths and areas for development in learning • To reflect on when they use different mindsets and how this affects their learning	• Growth and fixed mindset vocabulary cards (see Figure 72) • Learning passport template (see Figure 73) • Learning passport completed by the teacher

IB Learner Profile

- **Communicators** – we express ourselves confidently and we collaborate effectively.
- **Reflective** – we work to understand our strengths and weaknesses.
- **Risk-takers** – we are resourceful and resilient in the face of new challenges.
- **Inquirers** – we learn with enthusiasm and sustain our love of learning throughout life.

Lesson

1 *Arrange the class so the students are sitting with their talk partner and have a clear view of the board. If you have a visualizer, document camera or tablet ensure these are set up and ready to be used.*

Provide the students with a list of growth and fixed mindset characteristics (Figure 72). Then ask them to read them through and check that they understand all the vocabulary. If there are any words they are uncertain of, build in some talk time to discuss them. Take feedback from the students and clarify any misconceptions.

Ask the students to work with their talk partner to sort the cards into groups. Explain that there are no right or wrong answers and that you are just interested in their opinions. It would be useful to display these characteristics on the board as it will allow the students to model how they have organized them and to feed back.

Randomly select a pair to share how they have sorted the cards. They could model their sort on the board and explain why they have chosen to organize the characteristics in this way.

Challenge the students' learning further by asking:

How have you organized the characteristics?

Why did you choose to organize them in that way?

Could you organize them in a different way?

Can you suggest another characteristic that you could add to the group?

What is a growth mindset?

What is a fixed mindset?

likes easy work	likes to be challenged	wants to be right
stops trying if they think something is difficult	likes to be the first to finish	is determined to keep trying
recognizes mistakes are part of learning	wants to be a learner	perseveres when learning is difficult

Figure 72 Growth and fixed mindset vocabulary cards (2)

2 In addition to sorting the characteristics that you have provided, the activity could be extended by challenging the students to add their own ideas/behaviours on sticky notes.

Learning passports

3 *You will need to have previously completed your own learning passport to share with the students. Try to be as honest as possible as you need to be a role model for the students. It might be necessary to first have a brief discussion about what a passport is.*

Share your learning passport with the students.

Visible thinking – model and explain your rationale behind your thinking, for instance:

'I find it very difficult to have a growth mindset in everything I do as I prefer to do English and enjoy reading.'

'When I am putting effort into something you would see me getting things wrong, sometimes asking for help and trying different ways. I would be trying my best. I could be doing better than I have done previously.'

4 Explain to the students that they are going to complete their own learning passport and that these are not going to be marked. They need to think about themselves as a learner and how they behave and feel. Remind them that the passports are a personal reflection of them as a learner.

Give out the learning passport templates (see Figure 73) and allow the students a few minutes to think about the questions and headings. You could clarify some of the questions such as:

What does it look like when you are putting effort in? (If I walked into classroom and you were doing some learning and putting lots of effort into it, what would it look like?)

Effort

What does it look like when you are putting effort into your work?

How do you feel when you find something difficult or can't do it?

Learning Passport

Where do you think you could put more effort in?

What do you do if you can't do something?

Mindset

What type of mindset do you have?

Challenge

What do you find challenging in school?

What level of challenge do you like?

0 10

Can you give me an example of when you have used your growth mindset?

How could you help develop yourself in that area?

How are you challenged in school?

How easy is it to have a growth mindset?

How do you feel when you are being challenged?

Figure 73 Learning passport template

Reflection time – what have we learned?

Once the students have completed their passports, encourage them to feed back:

How did you feel when you were completing your learning passport?

Is it useful to spend time reflecting on yourself as a learner?

Have you learned anything about yourself?

Which part of the passport did you find the most challenging to complete?

If you could change the passport in any way, what would you change?

Challenge

Can students create their own version of the learning passport for you to complete? Ask them to think about:

How would you present it?

What subheadings/sections would you include?

Further developments

Throughout the year, the learning passports can be revisited and students might want to use them during lessons. The students should be asked to reflect on the following:

Does the passport still reflect you as a learner?

Has anything changed?

DOWNLOADABLE RESOURCES

- Growth and fixed mindset vocabulary cards
- Learning passport template

www.hoddereducation.co.uk/ib-extras

Students' responses

What is a growth mindset?

'A growth mindset means if there's no one around you choose the right learning behaviour.'

'If you get a question wrong and you've failed, think of it as your first attempt in learning.'

'If you think having a growth mindset makes you the best, which is like having a fixed mindset and shows you don't understand it.'

'Fixed mindset is where you don't do anything, you don't challenge yourself. Growth mindset is where you do.'

'Fixed mindset – you think the work is so easy.'

'Fixed mindset chooses easy work and gets it right. Then gets stuck when faced with challenging work.'

- Which part of the passport did you find the most challenging to complete?

'The effort section, because when you find something hard it's not always easy to explain why.'

'I found completing my passport challenging. It is hard to be truthful and to reflect on where you are going wrong.'

- Did you find it helpful to complete a passport?

'Yes, as the teachers know what you need to improve on.'

'You can look at it in a few years and see how you have improved.'

'It helps you know more about yourself.'

'Yes, as you can get support as the teacher knows.'

'When you're grown up you'll know what you were like when you were younger.'

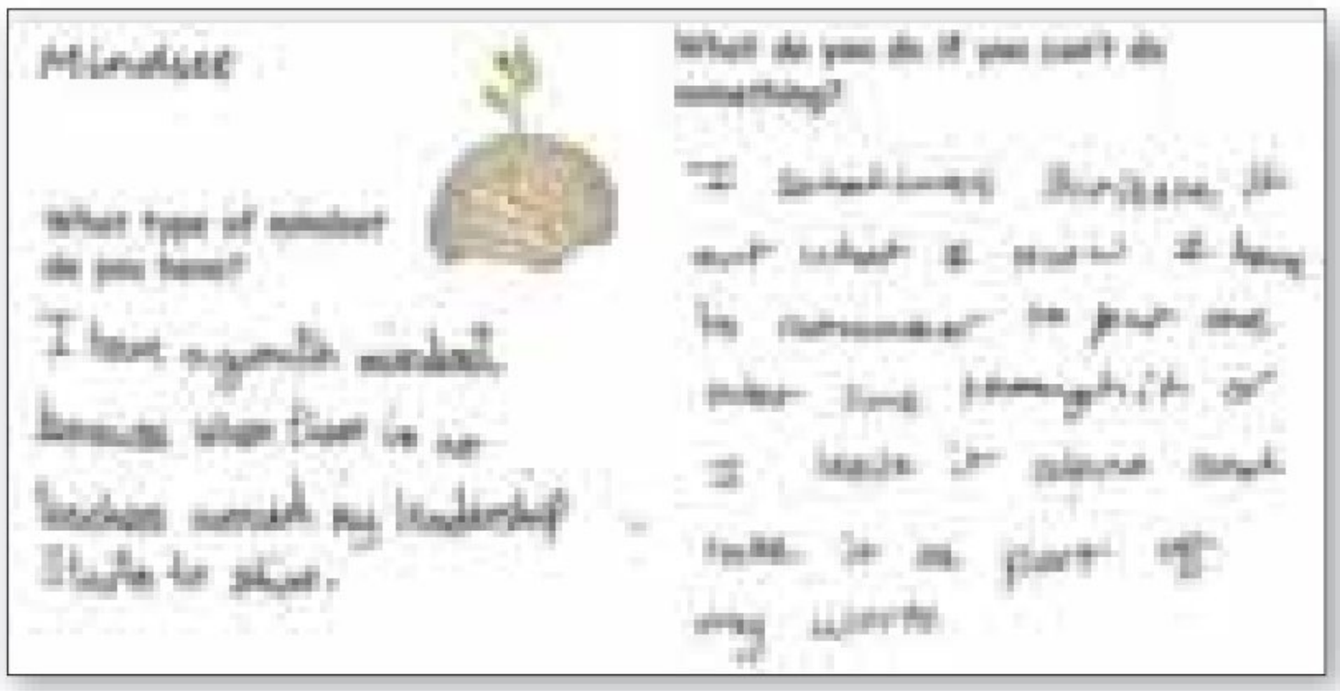


Figure 74 My growth mindset

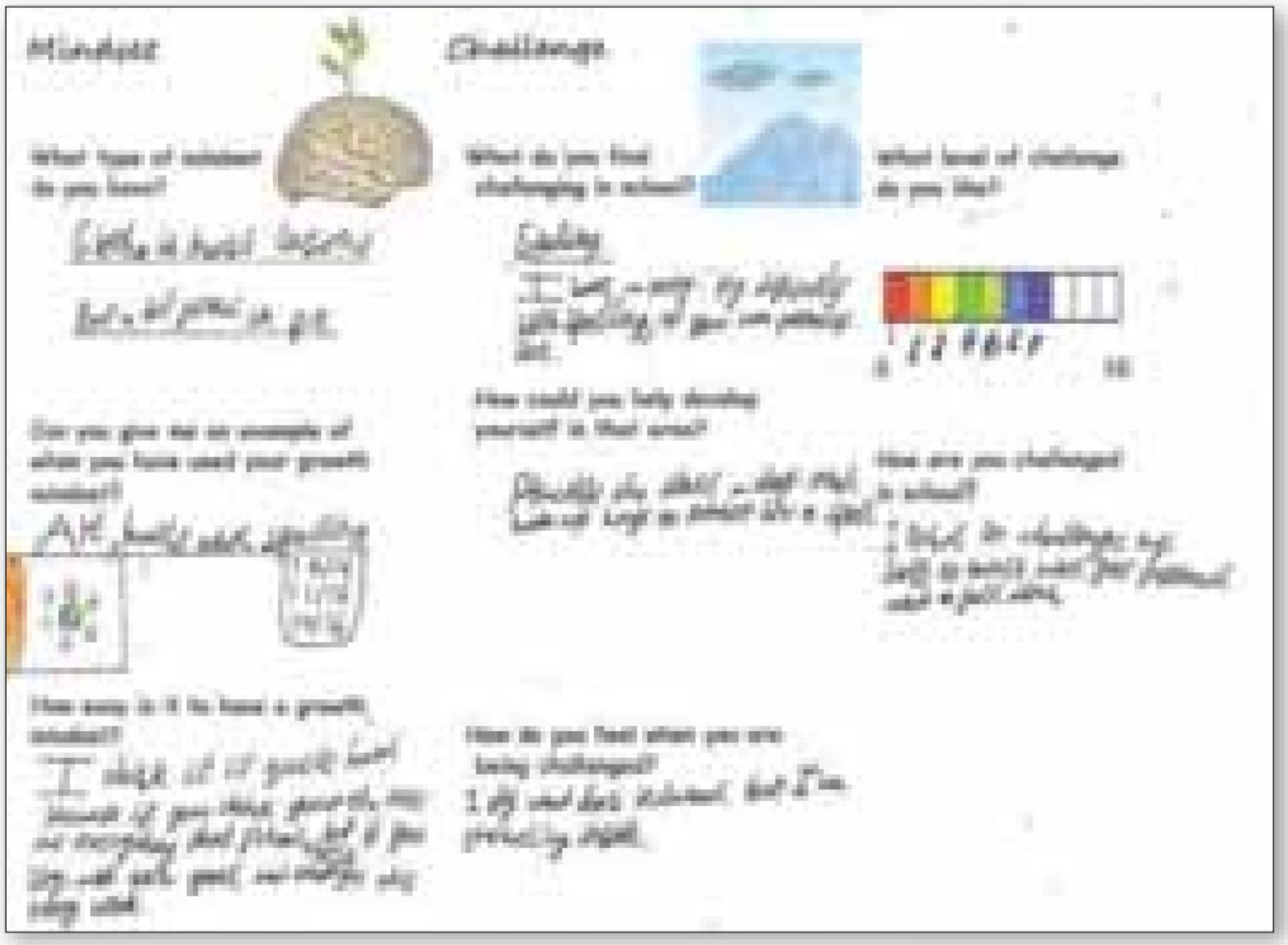


Figure 75 My mixed mindset (1)

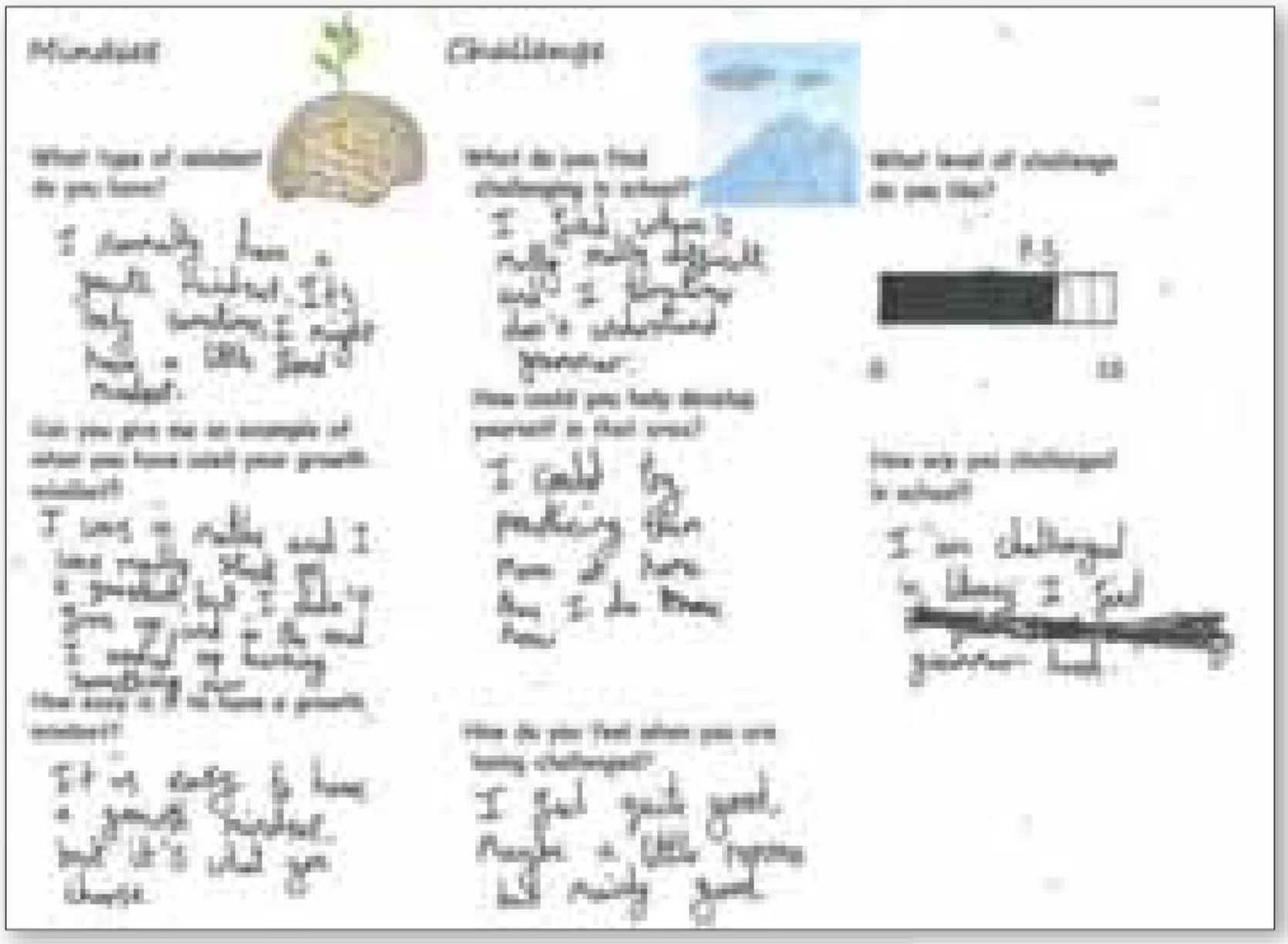


Figure 76 My mixed mindset (2)

2 Too old to …

Learning objectives	Resources
• To suggest ways to help someone learn • To explore stereotypes	• Role badges (optional) • Picture of an elderly person • Picture of a tablet • Some pictures of common stereotypes (see below)

IB Learner Profile

- **Communicators** – we express ourselves confidently and we collaborate effectively.
- **Thinkers** – we use critical and creative thinking skills.
- **Open-minded** – we seek and evaluate a range of points of view.
- **Principled** – we act with integrity and honesty.

Lesson

1 *Ensure your room is set up to encourage effective discussion between the students. The students are to work in learning groups and will each take on a role. An effective arrangement is square tables with four students sitting two either side facing each other. The tables could be arranged at a slight angle to ensure everyone can clearly see the board.*

Recap/introduce the different roles that the students take on in the learning groups: **manager**, **reporter**, **encourager** or **recorder**. Use the cards or posters from Figure 24 on page 86 if necessary. These roles can be allocated to different students when you use the learning groups or you could give a student a specific role for a sustained period to allow them to develop their skills. You might want two students to share a role, depending on the number of students in your class. The encourager is an ideal role for sharing. The students can also wear badges to reinforce the roles that they are playing.

2 Reveal a picture of an elderly person and a tablet to the class. Explain to the students that they are going to debate in their learning groups:

Is an elderly person too old to learn how to use a tablet?

Put the word '**debate**' on the board and ask the students to discuss as a learning group what they think this word means and how they should behave.

While the discussions are taking place observe the students and, when you think it is an appropriate moment, bring the discussions to a close and ask the groups for feedback. Through careful questioning, reach an agreement on a shared definition of a debate. Examples of possible questions are:

Do you agree a debate is where we …?

What should you do if you disagree with someone's ideas?

Do we have to agree with everyone's ideas?

Will there be a right or wrong answer?

This could be developed further by briefly creating a list of behaviours we should see when a debate is happening, for example sharing ideas and listening and responding to people's suggestions.

Remind the students that they have to share their opinions but can also ask questions to challenge one another. You could provide the students with question prompts to encourage them to develop their thinking. Students can choose to record their work in their own format.

3 Ask the students to work in their learning groups to debate whether an elderly person can learn to use a tablet. You could remind the students to think about an elderly person in general rather than the oldest person in the world! It might also be appropriate to have a discussion about what the word '**elderly**' means, to avoid any misconceptions. You should act as a facilitator, observing the groups and intervening only when necessary. While listening to the group discussion, take a note of any misconceptions or interesting ideas and feed these into the discussion by posing a question or returning to them at another point.

To probe and deepen the students' discussions, ask them to think about the following during their discussions. You could reveal these questions on the board once the discussions are under way to extend them further:

Can you think of ideas for and against?

Why do you think that …?

What evidence do you have to support your ideas?

What would a person need in order to be able to learn how to use a tablet?

Before you want the students to feed back, give them a five-minute warning to allow the reporter to prepare. If this is the first time the students have worked in these roles, you could model how to effectively report back to the class.

Reflection time – what have we learned?

Ask the reporters to feed back on their discussion and the conclusion they came to. Key questions are:

What did you discuss?

Why did your group think that?

Can you expand on your idea further?

What conclusion did you come to?

Was it a difficult decision to make? Why?

Explain that we often have preconceived ideas that affect us and the opinions we have. Often these ideas can be formed based on limited knowledge or how things are represented on the television or through the media. Share some images of these ideas and explain that they are called 'stereotypes'. Ask the students:

Do you know of any other stereotypes?

How can we prevent stereotypes?

Ask each group to nominate a member who they think has improved and has put greater effort into their role and learning. Take feedback from the groups and ask them to explain why they have chosen that person.

Challenge

Can the students suggest an alternative question for debate?.

Further developments

The class could debate other issues that involve stereotypes such as 'Can a disabled person play sport?' or 'Are girls better cooks?'.

Students' responses

- Is an elderly person too old to learn how to use a tablet?

Yes

'They could be shaky and not able to use it.'

'Some people might want to read a book rather than learn to use an iPad.'

'It could be dangerous, they might get a virus from the iPad.'

'The older you get, the harder it can be.'

'It may be too fragile and they could break it.'

'You might keep forgetting things.'

No

'An iPad has Siri so you can use voice control. It doesn't matter if you have shaky hands.'

'You are never too old to do anything!'

'Old people can do what they want.'

'If you are old you may wish to experiment.'

'There are apps that can help you.'

'You can teach them.'

'Different people can use an iPad for different things.'

'You can ask people if you need help.'

'They can do what they want.'

'Someone can teach you.'

- Do you know of any other stereotypes?

'Boys can't do ballet.'

'Girls can't play football.'

'Boys do more dangerous things.'

'Girls shouldn't join the army.'

- What would a person need in order to be able to learn how to use a tablet?

'Someone to help them.'

'Patience and perseverance.'

'Be determined.'

'A growth mindset.'

3 What makes a great teacher?

Learning objectives	Resources
• To identify the characteristics of a successful teacher • To justify their opinions	• Odd one out images (see Figure 77) • 'There is no bathroom!' scene from the film *Kindergarten Cop* • Outline of a teacher (see 'Students' responses') • Visualizer, document camera or tablet

IB Learner Profile

- **Reflective** – we work to understand our strengths and weaknesses.
- **Thinkers** – we use critical and creative thinking skills.
- **Inquirers** – we learn with enthusiasm and sustain our love of learning throughout life.

Lesson

1 *Arrange the classroom so the students can see the board and are sitting with their talk partner.*

Reveal to the students the images of a school, people playing sport and a learner driver (see Figure 77). Ask them to discuss with their talk partner which is the odd one out. Explain that there is no right or wrong answer and that you are just interested in their opinions.

Allow the students some time to debate while you assume the role of facilitator. Listen carefully to their discussions and pick up on any misconceptions or interesting viewpoints. You could use these to develop the discussion by posing them as questions; for example: 'Do you have to be a certain age before you can learn to …?'

At an appropriate moment, draw the discussions to a conclusion and take feedback. Probe the students' thinking further by asking:

Which do you think is the odd one out?

Why do you think that?

Can you identify a different odd one out?

Can you suggest another picture that we could add to the group?

Figure 77 Which is the odd one out?

A great teacher

2 Watch the 'There is no bathroom!' scene from the film *Kindergarten Cop*. Then explain that the students are going to watch the scene again and this time should focus on the teacher played by Arnold Schwarzenegger, thinking about whether he is an effective teacher or not.
Give the students some talk time to discuss his behaviour. Take feedback from the students and probe their thinking further by asking:
How does the teacher behave?
Why do you think he does that?
Do you think that's a good idea?
Is he a great teacher? Why/Why not?
You might need to focus discussions beyond that of just the teacher's behaviour.

3 Explain to the students that you now want them to think about a teacher who would help them to be the best learner they can be. Provide each pair with an outline of a teacher and ask them to create a template for an effective teacher. Remind the students they should think about:
What are the characteristics of an effective teacher?
Why are these important?

How should teachers behave?

How can they help you to learn?

What does a good teacher need to know?

How does a good teacher behave?

What kinds of things do they say?

Reflection time – what have we learned?

Once the students have completed their designs of an effective teacher, randomly select pairs to share their ideas using a visualizer, document camera or tablet.

After a selection of students have shared their ideas, allow the students some thinking and talk time to reflect on:

Are all effective teachers the same?

Were there any characteristics that everyone identified?

Are there any characteristics that have not been identified?

Could you be an effective teacher?

Do we, as learners, all need the same type of teacher?

Why does a teacher need a growth mindset?

Challenge

Students could create a job advert for a new teacher at their school. They should think about:

What characteristics are important?

How would you persuade them to apply for the job?

Further developments

It would be useful to share some of the students' ideas with the staff at your school and to provide the teachers with time to discuss and reflect on them.

DOWNLOADABLE RESOURCES

- PowerPoint presentation 'Which is the odd one out?'
- Perfect teacher template

www.hoddereducation.co.uk/ib-extras

Students' responses

Which is the odd one out?

'The car is the odd one out as others can take place at school.'

'You can't learn to drive at school so the car is the odd one out.'

'When you are driving you are learning how to drive, you get taught to do something and learn in all three.'

'Rugby is the odd one out as you have a coach not a teacher.'

'Are a teacher and a coach the same?'

'A coach could be called a teacher.'

'They are different as a coach only teaches sport; teachers specialize in learning and students.'

How does the teacher behave? (a bad teacher)

'The teacher is terribly behaved, they are shouting at students and not letting them do things.'

'He is out of order and shouting for no reason. The students are young and need encouraging.'

'He is not listening to the students.'

'He needs to explain more.'

'Teachers need to be strict.'

'It gives a bad impression, the students may copy and he should be a role model.'

Why does a teacher need a growth mindset?

'Teachers need one so they don't give up explaining when someone doesn't understand. They need to be patient.'

'They need a growth mindset to challenge themselves and others.'

'They need to persevere and have willpower to keep going and trying as a teacher.'

'As they need to want to learn things rather than being told to.'

- What are the effective characteristics that everyone identified? (a good teacher)

'They should be kind but a little strict.'

'They need to encourage students to do their best and challenge themselves.'

'Always there for you.'

'Teachers can be different.'

'Motivated and effective.'

Figure 78 Teachers wanted! (1)

Figure 79 Teachers wanted! (2)

Figure 80 Teachers wanted! (3)

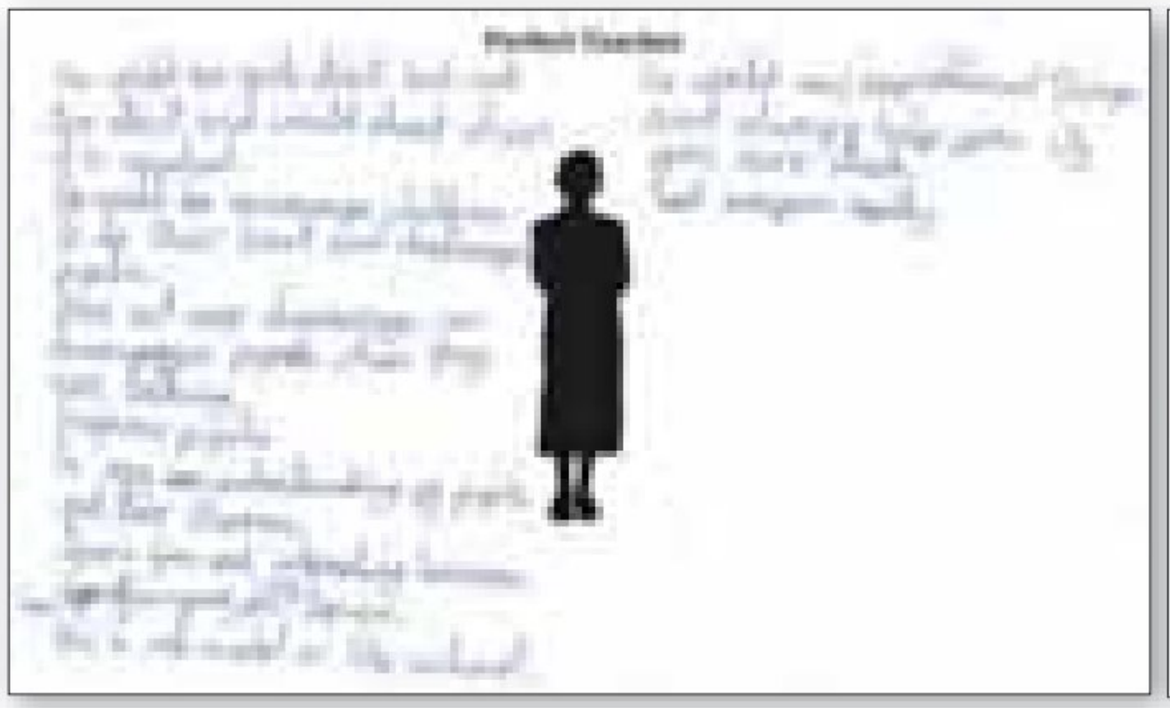


Figure 81 The perfect teacher (1)

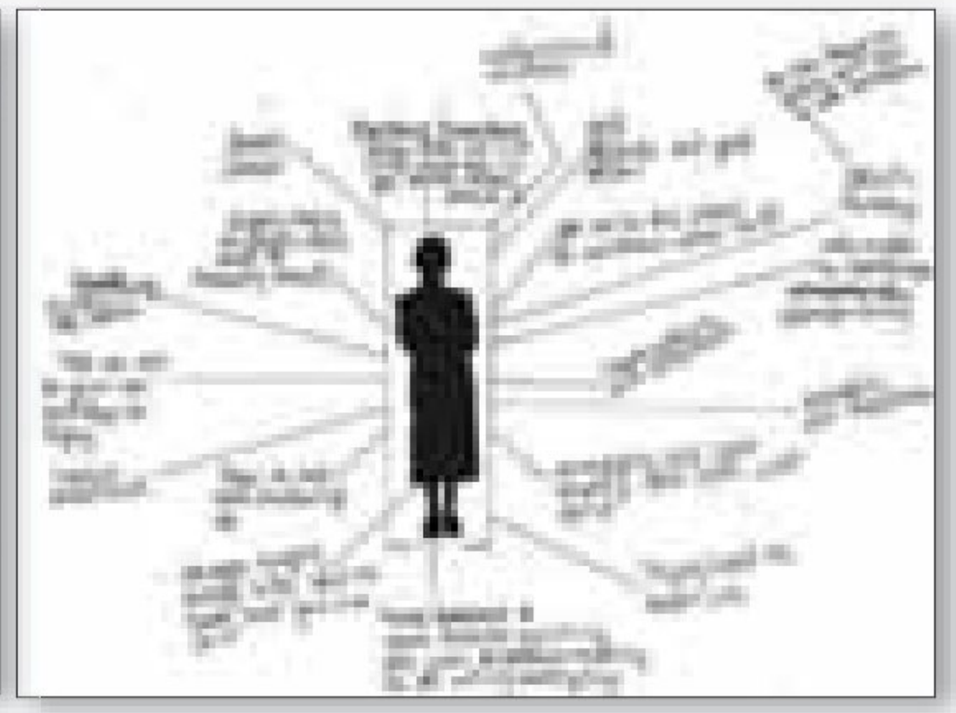


Figure 82 The perfect teacher (2)

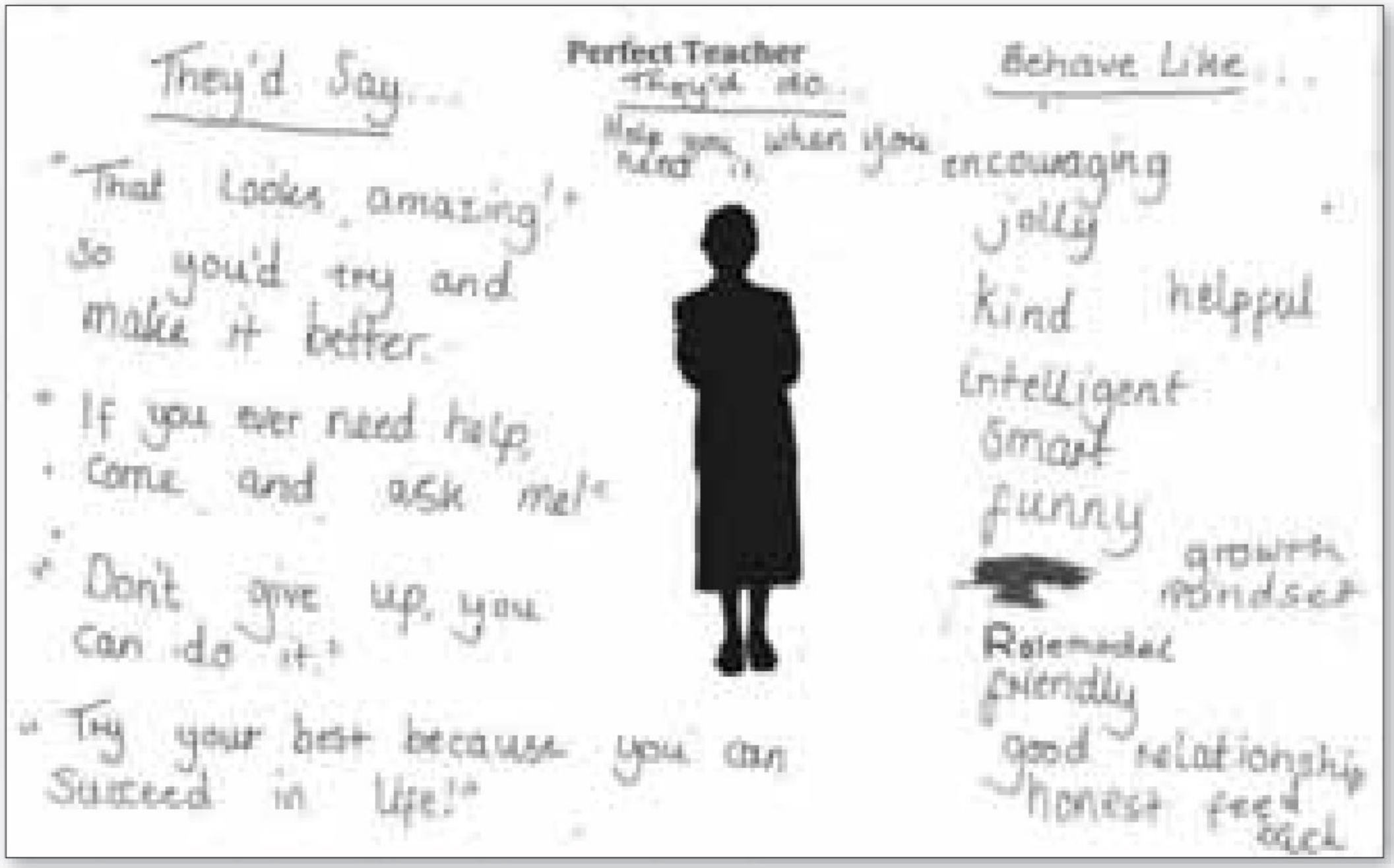


Figure 83 The perfect teacher (3)

4 Brain power!

Learning objectives	Resources
• To create a 3D model of the brain • To explain how the brain works	• YouTube clips: **www.youtube.com/watch?v=bLHutEdVEH4** (includes three key areas of the brain) OR **www.youtube.com/watch?v=JuJy1THhqSY** (includes different parts of the brain in greater detail) • Images of parts of the brain (see Figure 84) • Swimming cap • Shaving foam or similar • Materials to create a 3D brain such as bricks, modelling clay, fabric

IB Learner Profile

- **Communicators** – we express ourselves confidently and we collaborate effectively.
- **Inquirers** – we learn with enthusiasm and sustain our love of learning throughout life.
- **Knowledgeable** – we develop and use conceptual understanding.

Lesson

1 *Arrange the students so they are sitting with their talk partner and can see the board.*

Watch a video clip explaining how the brain works. The two examples given in the resource list above contain clear explanations that are suitable for students, but the internet has many different examples.

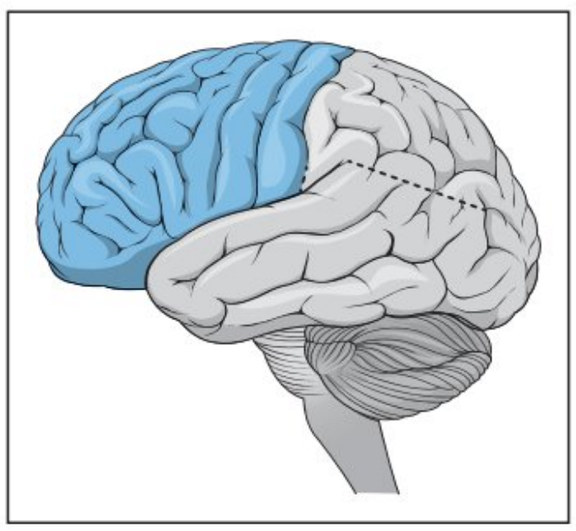
After watching the clip, ask the students:

What did you learn from that clip?

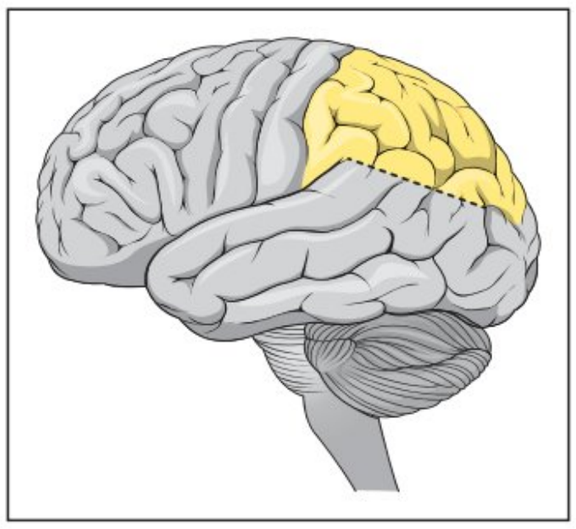
What does the … do?

Which part of the brain …?

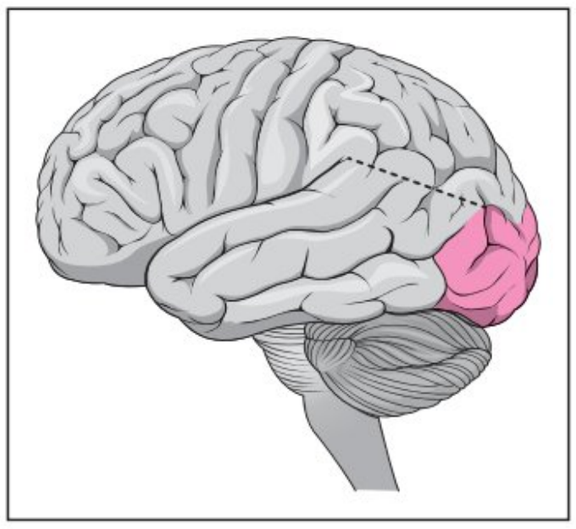
2 Ask the students to work with their talk partner to match the images of the different parts of the brain with an explanation of how they work on the whiteboard. Take feedback from the students and correct any misconceptions.



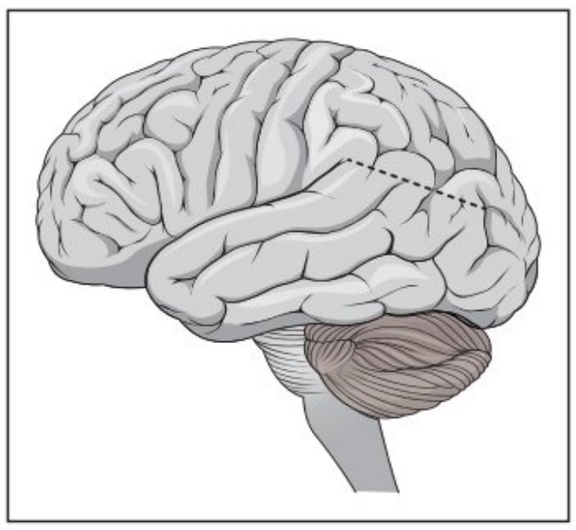
Cerebellum
The cerebellum controls balance, movement and co-ordination (how your muscles work together).



Occipital lobe
The occipital lobe enables us to correctly understand what our eyes are seeing.



Frontal lobe
The frontal lobe is used a lot. You use it for thinking, to make decisions, and it is where your personality is formed. We also use it for more complex processes such as planning.



Parietal lobe
The parietal lobe is used to process taste, temperature and touch.

Figure 84 Parts of the brain to be matched with explanations

Model brains

3 Choose a volunteer and explain that you are going to create a brain. Place a cap on the volunteer's head (a swimming cap works well). Using shaving foam, choose a part of the brain and create it on the cap. An

alternative way of modelling this would be to use a model of the brain made from a mould (widely available on the internet) using jelly or cake.

Visible thinking – each time, state which part of the brain you are making and ask the students what it does. Repeat for the key parts of the brain:

- cerebrum
- hippocampus
- cerebellum
- amygdala
- prefrontal cortex.

4 Tell the students that they are going to create a model brain using materials of their choice (see Figures 85–88). This will then be used to help explain how a brain works to 6- and 7-year-olds. You could share examples of how students have previously made brains from materials such as bricks, wool or modelling clay. Remind the students that the key parts of the brain need to be clear and that they will be receiving feedback from the younger students about how effective their models are.

Give the students time to discuss:

What will you make the brain out of?

Why have you chosen that?

Which parts of the brain will you include?

How would you ensure each part of the brain is easily identified?

5 The students now make their models of brains using any materials they wish.

Reflection time – what have we learned?

Once the brains are complete, allocate time for the students to share their models with younger students and to receive feedback from them. You could give the younger students a format for giving feedback or base it on success criteria, which the older students could create prior to making their presentation.

Challenge

The students could choose to include additional parts of the brain in their model, such as the occipital, insular or parietal lobes.

Further developments

The students could use their models to create short video clips, explaining how the brain works.

A display of the different brains could be created with parts of the brain clearly labelled and including key facts.

DOWNLOADABLE RESOURCES

PowerPoint presentation of parts of the brain to be matched with explanations

https://www.hoddereducation.co.uk/ib-extras

Students' responses

Figure 85 A brain made of LEGO® blocks (1)

Figure 86 A brain made of LEGO® blocks (2)

Figure 87 A material brain (1)

Figure 88 A material brain (2)

5 Famous failures

Learning objectives	Resources
• To debate what it means to be a failure • To reflect on how the characteristics of growth and fixed mindsets affect being successful or being a failure	• Role badges (optional) • Picture of prizes (see Figure 89) • Photos of Rebecca Adlington at the London 2012 Olympic Games • Headlines from news reports about Rebecca Adlington

IB Learner Profile

- **Communicators** – we express ourselves confidently and we collaborate effectively.
- **Reflective** – we work to understand our strengths and weaknesses.
- **Open-minded** – we seek and evaluate a range of points of view.
- **Principled** – we act with integrity and honesty.

Lesson

1 *Students will work in learning groups. Ensure your room is set up to encourage effective discussion between the students. An effective arrangement is square tables with the four students sitting two either side facing each other. The tables could be arranged at a slight angle to ensure everyone can clearly see the board.*

Recap/introduce the different roles that the students work in for the learning groups: **manager**, **reporter**, **encourager** or **recorder**. Use cards or posters as in Figure 24 on page 86 if required. These roles can be allocated to different students when you use the learning groups or you could give a student a specific role for a sustained period to allow them to develop their skills. You could ask two students to share a role, depending on the number of students in your class. The encourager is an ideal role for sharing. The students may also wear badges to reinforce the roles that they are playing.

2 Show the students some pictures of prizes, as in Figure 89.

Ask them to discuss:

What do these things all have in common? (You might need to explain 'common' or replace the question with 'How are they all connected?')

How do you achieve them?

Look at the prizes: which is the most important one to achieve?

To be successful, do you need a prize?

Is a goal the same as a prize?

Select the questions that are appropriate for your students to focus them to reflect on their own motivation.

Figure 89 Examples of prizes

Debate time

3 Explain that the students are going to debate in their learning groups:

Was Rebecca Adlington a failure because she won a bronze medal in the Olympics?

Reveal the word '**debate**' on the board and recap with the students what happens in a debate and the behaviours they agreed on in Chapter 4 Lesson 3 (page 127).

Remind the students that they have to share their opinions but can also ask questions to challenge one another. Provide the students with question prompts to encourage them to develop their thinking. They can choose to record their work in their own format.

Share some images of Rebecca Adlington at the London 2012 Olympic Games or the headlines from the newspapers at the time, including 'Even Adlington is forced to settle for THIRD best as GB swimmers struggle to make waves'.

Encourage the students to reflect on the headlines. Build in some talk time to allow them to discuss:

How do the headlines portray her?

What image do they create?

How do you think she feels?

4 Ask the students to work in their learning groups to debate whether they believe Rebecca Adlington was a failure. You should act as a facilitator, observing the groups and intervening only when necessary. While listening to the group discussion, take note of any misconceptions or interesting ideas and feed these into the discussion by posing a question or returning to them at another point.

To probe and deepen the students' discussions, ask them to think about the following during their discussions. You could reveal these questions on the board once the discussions are under way to extend them further:

Can you think of reasons why she could be viewed as a failure or as a success?

Why do you think that …?

What evidence do you have to support your ideas?

Before you want the students to feed back, give them a five-minute warning to allow the reporter to prepare.

Reflection time – what have we learned?

Ensure the students are listening by reminding them that they should listen to each group and then they will be given the opportunity to ask questions. Ask the reporters to feed back on their discussion and their verdict. Key questions can be used as prompts:

What conclusion did you come to?

Why did you decide that?

What did you discuss?

Why did your group think that?

Can you expand on your idea further?

Was it a difficult decision to make? Why?

Ask each group to nominate a member who they think has improved and has put greater effort into their role and learning. Take feedback from the groups and ask them to explain why they have chosen that person.

Challenge

Ask the students to reflect further on what motivates them.

Introduce the vocabulary '**intrinsic**' and '**extrinsic**'. Explain what the words mean and ask the students to identify examples of behaviour that reflect them.

Further developments

The idea of someone being successful but being described as a failure can be identified in a range of contexts, particularly sports. Different scenarios could be debated that are more relevant to your class.

Another stimulating debate can be developed from a team that has lost and how they reacted to their defeat. Often football teams can be a great stimulus.

DOWNLOADABLE RESOURCES

- PowerPoint presentation showing prizes
- Video of students discussing what a debate is

www.hoddereducation.co.uk/ib-extras

Students' responses

- What do these things (prizes) all have in common?

'You can earn them; you have to do something good.'

'You can do different things to earn them.'

'You need to come first to get them.'

- Does everyone agree?

'No, it could be a reward for improving.'

'They all make you happy and encourage you.'

'Other people give you them.'

'It makes you feel that someone has appreciated you.'

- Which is the most important?

'Earning one.'

'Depends on you.'

'I wouldn't want any.'

- How do the headlines portray Rebecca Adlington?

'They say "just got third" like it's not the best.'

'I wonder if the people who wrote the headline could get a bronze medal in the Olympics.'

'I don't like "forced" and "struggled to make". Just think how many people she beat just to get through the heats.'

'If I won a bronze medal at the Olympics I might be a little disappointed but just to get there in the first place would be an achievement, never mind a bronze.'

'I wouldn't be happy if I was Rebecca and they wrote that.'

- Was Rebecca Adlington a failure because she won a bronze medal in the Olympics?

'Yes, she was a failure.'

'She let the fans down.'

'Did she try her best?'

'The fans and the public expected more of her.'

'She didn't reach her goal.'

'No, she wasn't a failure.'

'Perhaps some of the other swimmers performed better on that day.'

'She got a bronze medal and through to an Olympic final which is just absolutely brilliant.'

'Her goal was to do her best and she did.'

'She is not a failure as she tried hard and beat most people.'

'It isn't her getting worse; it is other people getting better.'

'You learn from your mistakes.'

'She should be happy that she got there.'

'People have too high expectations of her.'

'As she tried her best we believe she has won the greatest prize – self-satisfaction.'

6 The iceberg illusion

Learning objectives	Resources
• To explain what happens when you are learning • To create images to illustrate the learning process	• An image of an iceberg • The Iceberg Illusion (see Figures 90 and 91) • Tablets • Paper by Fifty Three app or an alternative app

IB Learner Profile

- **Communicators** – we express ourselves confidently and we collaborate effectively.
- **Reflective** – we work to understand our strengths and weaknesses.
- **Risk-takers** – we are resourceful and resilient in the face of new challenges.
- **Inquirers** – we learn with enthusiasm and sustain our love of learning throughout life.

Lesson

This lesson works best using a device and an app to create a sketchnote. Prior to the lesson, ensure the students are familiar with your chosen app and the devices. You need to have the Iceberg Illusion downloaded and ready to use. If you do not have access to devices or apps, the students could complete the lesson by creating a work of art to illustrate learning using an iceberg.

Sketchnotes are rich visual notes created from a mixture of words, drawings, shapes and images. If the students are unfamiliar with sketchnoting, you might need to spend a previous lesson exploring the different techniques.

This YouTube video provides examples and further information about sketchnoting: **www.youtube.com/watch?v=gY9KdRfNN9w**.

Sylvia Duckworth's excellent presentation 'Sketchnoting for Beginners' at **https://sylviaduckworth.com/presentations/** *is a great starting point.*

1 *Seat the students so they can see the board.*

Using a 'torch tool' allows you to reveal only part of the image of an iceberg, which can then be expanded to slowly reveal the whole image. Ask the students:

What can you see?

Why do you think that?

How would you describe it?

Look at the image. Are you seeing the entire iceberg?

What would it be like if you were stranded on an iceberg?

2 Share with the students the amazing sketchnote created by Sylvia Duckworth to illustrate learning. Explain that 'sketchnoting' is a way of creating visual notes by combining text and images using an app.

Figure 90 The Iceberg Illusion (1), Sylvia Duckworth, July 2015

My iceberg of learning

3 Tell the students that they are going to explain learning using the image of an iceberg and what happens beneath the water. Explain that the top of the iceberg above the water is what happens when you have learned successfully. Below the water is what people do not see, which is all the different factors that enable you to learn effectively.

Before the students begin the activity allow them some talk time and ask them to think about:

What happens when you are learning?

What don't people see when you are successful?

What do you need to do to be successful?

What images could you use to represent …?

4 Give the students time to create their sketchnote based on a blank copy of Sylvia Duckworth's original (see Figure 90), using an app.

Reflection time – what have we learned?

Randomly select students to share their icebergs and ask them to explain their creations. Once you have reviewed a selection ask the students to think about:

What are the key characteristics of learning?

Which image do you think illustrates … effectively?

Is there anything else you think you should add?

You could also share Sylvia Duckworth's original image (see Figure 91) and compare it to the students' ideas. Her original image is available to download from **https://flickr.com/photos/sylviaduckworth**.

Figure 91 The Iceberg Illusion (2), Sylvia Duckworth, July 2015

Challenge

Ask the students to think about how we could make the invisible aspects of learning (that is, the ones people do not always see, such as persistence) more visible in the classroom. Discuss how people can be helped to understand how important they are.

Further developments

The students' ideas could be collated and used to create a giant version of 'The Iceberg Illusion'.

The students could develop their sketchnoting skills to illustrate different aspects of their learning and mindsets.

DOWNLOADABLE RESOURCES

Blank version of Sylvia Duckworth's 'The Iceberg Illusion'

www.hoddereducation.co.uk/ib-extras

Students' responses

- Why is it an iceberg?

'Because it is very white like an iceberg.'

'It's an unusual shape.'

- How would you describe an iceberg?

'Rugged, uneven and very cold.'

'Icebergs can float.'

'When you look at an iceberg you don't see all of it. Most of it is under water.'

'A body of ice, half submerged in water and it has been broken off from a glacier.'

'It's like a giant iceberg.'

- What do you need to do to be successful?

'Sometimes you make mistakes and fail.'

'Put lots of effort in and try your hardest.'

'Try new challenges and work hard.'

'You need an inspiration.'

'Practise in different ways.'

- What images could you use to represent …?

'A shooting star could represent inspiration.'

'A superhero could represent inspiration.'

'A red cross could represent a mistake.'

'A brain working out could represent how you have to work hard.'

Figure 92 The Iceberg Illusion display

Figure 93 Student's version of The Iceberg Illusion (1)

Figure 94 Student's version of The Iceberg Illusion (2)

CHAPTER 7

Lessons for 10–11-year-olds

Lesson	Focus	IB Learner Profile	Page
1 'Don't say … Say …'	The impact of words and phrases on mindsets; creating effective phrases for learning feedback	• **Communicators** – we express ourselves confidently and we collaborate effectively. • **Reflective** – we work to understand our strengths and weaknesses. • **Thinkers** – we use critical and creative thinking skills.	213
2 Diamond minds	Identifying what is important for them as an individual learner; identifying barriers to their learning and how they might overcome them using the diamond nine array	• **Communicators** – we express ourselves confidently and we collaborate effectively. • **Reflective** – we work to understand our strengths and weaknesses. • **Thinkers** – we use critical and creative thinking skills.	219
3 Barriers to learning	Identifying and overcoming barriers to learning using a rock image	• **Reflective** – we work to understand our strengths and weaknesses. • **Thinkers** – we use critical and creative thinking skills. • **Risk-takers** – we are resourceful and resilient in the face of challenges.	225
4 Brain vs. calculator	Discussing whether a calculator is better than a brain; justifying their opinions and reflecting on the opinions of others	• **Communicators** – we express ourselves confidently and we collaborate effectively. • **Knowledgeable** – we develop and use conceptual understanding. • **Open-minded** – we seek and evaluate a range of points of view.	230
5 Mathematical mistakes	Describing how mistakes can help us learn; identifying how we should respond to them	• **Risk-takers** – we are resourceful and resilient in the face of challenges. • **Communicators** – we express ourselves confidently and we collaborate effectively. • **Knowledgeable** – we develop and use conceptual understanding.	235
6 Learning pathways	Defining learning; creating a way of explaining learning to younger children	• **Communicators** – we express ourselves confidently and we collaborate effectively. • **Reflective** – we work to understand our strengths and weaknesses. • **Thinkers** – we use critical and creative thinking skills.	239

Overview

Mathematical mistakes are a key focus in these lessons and this links closely to classroom learning. Students are encouraged to think about how they respond to these mistakes. They are also asked to reflect on the role of parents and the language used to encourage people to learn. The effective characteristics of a learner are revisited and students are encouraged to reflect on those that enable them to be a learner. Students are also given the opportunity to create their own way of illustrating learning, which could be used to explain learning to younger students.

1 ‘Don’t say … Say …’

Learning objectives	Resources
• To discuss the effects that different types of feedback can have • To create effective phrases for learning feedback	• YouTube video ‘Clever girl’ at www.youtube.com/watch?v=VAMQs1tjlM4 • Feedback grid (see Figure 95)

IB Learner Profile

- **Communicators** – we express ourselves confidently and we collaborate effectively.
- **Reflective** – we work to understand our strengths and weaknesses.
- **Thinkers** – we use critical and creative thinking skills.

Lesson

1 *Arrange the students so they are sitting with their talk partner and can clearly see the board.*

Watch the YouTube video ‘Clever girl’. Ask the students to think about:

What did you hear and see in the video?

Why do you think a parent would say ‘clever girl/boy’ to their child?

Explain to the students that you want them to think about and then to discuss with their talk partner:

Do you think it is a good idea to praise a baby by saying ‘Clever girl!’ or ‘Clever boy!’?

Why do you think that?

Explain that you are interested in their opinions and the reasons why they have those opinions. Remind the students that they might have different opinions but it is important to listen to different viewpoints.

When you feel the students’ discussion has reached an appropriate point, ask the students to feed back whether they think it is a good idea and to share their reasons.

2 Develop the discussion further by asking the students to think about the following questions:

What does the word ‘clever’ mean to you?

Should we tell someone they are clever?

Do you like being told you’re clever? Why?

Is it good to praise students?

It might be useful to display these key questions on a whiteboard to allow the students to focus their discussions on the key points. Take feedback from the students.

'Don't say … Say …'

3 Explain that research shows that 'false praise' or excessive praise has a negative effect on learners as it can lead to them needing large amounts of praise as the motivation to do anything, and they can also become extremely reluctant to make mistakes.

Ask the students to talk to their talk partners about alternative ideas:

What should we say instead of 'clever girl/boy' when someone succeeds at something?

Share examples of feedback.

4 Ask the students to discuss which of these helps them to be a better learner: **'Fabulous writing!'** OR **'Fabulous writing. You have carefully chosen words to describe the character.'**

During the talk time you should observe and listen to the students' ideas and any misconceptions. A useful strategy is to turn the misconceptions into questions to allow all students to reflect on and discuss them. This allows peer-to-peer support and is extremely powerful.

The following are examples of students' suggestions and ways that you can address them:

Possible misconception	Teacher's response
Intelligent girl	Is that the same as saying 'clever girl'?
Well done!	What are we praising them for? How have they been successful? Be specific! Well done, you have successfully used connectives to extend your sentences.
Great work!	How does this help you to be a better learner?

5 Provide each student with a feedback grid (Figure 95). Ask them to create a feedback phrase that promotes a growth mindset for each phrase they have been given. Explain to the students that there are no right or wrong answers, just their ideas.

Name:	**Date:**
Don't say …	Say …
	
Clever boy/girl	
Well done!	
Well done, you finished that work quickly.	
Wow, that was easy work!	

Figure 95 'Don't say … Say …' feedback grid

Reflection time – what have we learned?

Look at examples of the students' feedback. Then ask them to work in the two roles of teacher and student, and role-play giving both types of feedback to each other. Initially, you could model this yourself with a student or teaching assistant, especially if your students are unfamiliar with giving feedback to one another.

Ask the students to discuss and reflect on:

How do the different types of feedback make you feel?

Which do you think would be more effective? Why?

Challenge

Give the students the opportunity to review their books (possibly from the previous year) and to reflect on their own learning:

What was the best feedback you had? Why?

What was the worst feedback you had? Why?

Further developments

Create a display of feedback phrases for the students to use when working with a partner.

Create short video clips of students giving effective feedback. These can be used with younger students, shared with parents and given to staff to reflect on.

DOWNLOADABLE RESOURCES

'Don't say ... Say ...' feedback grid template

www.hoddereducation.co.uk/ib-extras

Students' responses

- Why would a parent say 'clever girl/boy' to their child?

'If you say clever girl, they will want to do it again.'

'They might say it if they do something they don't expect them to do.'

'It's good praise.'

'When they have learned something new.'

'To encourage them.'

- Is it a good or bad idea to say 'clever girl'?

'It's a good idea because ...'

'It helps them know it's a good thing.'

'We praised my baby sister this morning because she sat up on her own. We wanted her to do it again so we made a fuss.'

'It's a bad idea because ...'

'They may think they are clever when they are older and they could become boastful.'

'They might think they don't need to work.'

'In the story of the Hare and the Tortoise, everyone thought the hare was the fastest and he boasted how he was the best. He became too confident and stopped trying.'

What does the word 'clever' mean?

'Smart.'

'You're good at things and intelligent.'

'You know a lot of things.'

Name:	**Date:**
Don't say … 	Say … 
Clever boy/girl	Good try, next time you need to challenge yourself by … Begin with good try; then change your words as you improve. So you have feedback that shows how you are learning.
Well done!	Well done, you have used … in your writing. It's a bit empty; maybe try using more meaningful words that say why it was good. Well done on achieving …
Well done, you finished that work quickly.	Specific information on how to get better. Try saying something more beneficial, rather than encouraging them to rush.
Wow, that was easy work!	That's really good. Do you need something more challenging? You have learned to do this, we will find you a new learning challenge. This encourages them to pick easy work; try to encourage them to challenge themselves.

Figure 96 Example filled-in 'Don't say … Say …' feedback grid

2 Diamond minds

Learning objectives	Resources
• To identify what is important for them as an individual learner • To identify barriers to their learning and how they might overcome them	• YouTube clip of neurons firing at www.youtube.com/watch?v=t3TaMU_qXMc • The brain growing picture (see Figure 97) • Blank diamond nine (see Figure 98) • Characteristics of being an effective learner cards (see Figure 99)

IB Learner Profile

- **Communicators** – we express ourselves confidently and we collaborate effectively.
- **Reflective** – we work to understand our strengths and weaknesses.
- **Thinkers** – we use critical and creative thinking skills.

Lesson

1 *Arrange the students so they are sitting with their talk partner and can see the board.* Watch the YouTube clip, ensuring that the title of the clip is hidden. Ask the students to discuss with their talk partner what they think they have just watched. Then take feedback and, if necessary, explain that they have just watched the neurons inside the brain firing as they receive and send information during the learning process.

2 Develop this further by explaining to the students that, as you learn, the brain makes connections and grows. The brain's capacity increases and it becomes more complex as it learns new things: as if you were adding extra memory to a computer. In this case it was shown as buying extra memory for your brain. The more we learn, the more connections are made. For instance, look at Figure 97.

Did you know that people who learn to play a musical instrument have a larger auditory centre than normal?

The 'sound' area of the brain developed more connections as they learned new things.

Figure 97 The brain grows with learning

Diamond minds

3 Share with the students the blank 'diamond nine' as shown in Figure 98, explaining that it is a means of organizing information in order of importance. The most important item should be placed on top and then the next. Some items can be given equal importance and grouped in twos or a three.

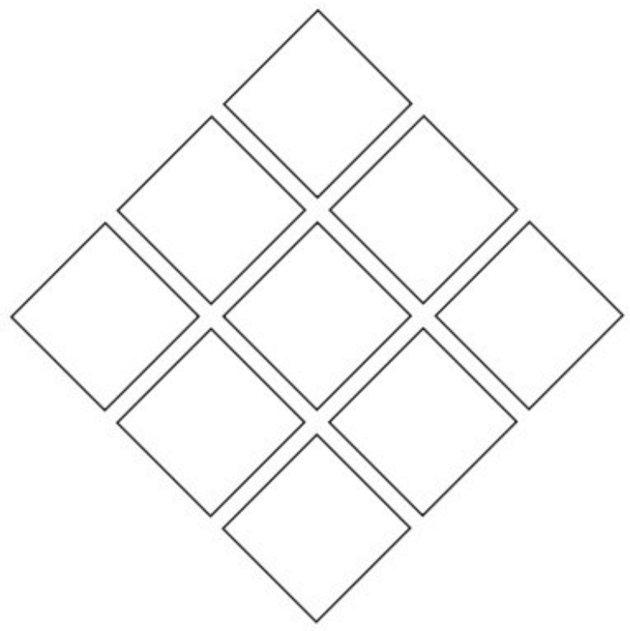


Figure 98 The diamond nine

4 Read through the nine potential characteristics of being an effective learner shown in Figure 99. Recap on the meaning of any words that might be unfamiliar.

teacher	feedback	resilience
challenge	effort	knowledge
a quiet classroom	making mistakes	growth mindset

Figure 99 The characteristics of being an effective learner

5 The students should now create their own 'diamond nine of learning' using a blank diamond nine and nine characteristics cards. Ask them to arrange the nine characteristics into their own order to show which is the most important for them as an individual to be an effective learner (see Figure 100).

It is helpful if the characteristics have been cut out ready so the students do not think they are in a preconceived order. The students can stick them on to the blank template to help them see the structure of a diamond nine clearly. You could add images to the vocabulary cards to support students' understanding.

Explain to the students that there are no right or wrong answers as everyone is a unique learner.

Reflection time – what have we learned?

Once the students have completed the task, ask them to share their diamond nine of learning with their talk partners. To encourage discussion, you could share some questions they can ask each other:

How did you feel about ordering the different aspects? Was it an easy task?

Why have you chosen this aspect as the most important?

Which was the hardest thing to decide?

Were there any elements that you thought were barriers to your learning?

How would you overcome them?

During the discussions you should act as a facilitator, listening to the discussions and collecting ideas to feed back to the whole class.

Ask some of the pairs to feed back on their discussions and how they created their diamond nines. Discuss with the class how the information can be used to help improve teaching and learning in the classroom.

Select a common aspect that the students have identified as important, such as knowledge or the teacher, and ask the students to discuss whether this is the most important factor.

Challenge

Remove the diamond nine template and ask students to again arrange the characteristics in order of importance. The opened-ended nature of this should allow the students creativity and encourage them to justify their opinions.

Ask the students to work in pairs and, between them, to decide which are the most important aspects. Remind them that they will need to negotiate, compromise and persuade.

Ask the students to select an aspect that is a barrier to their learning and represent it pictorially, for example as a rock. They can then identify ways to overcome this barrier as an aide-memoire to learning.

Further developments

Give the students a blank diamond nine and ask them to create their own for the different aspects of being an effective learner, trying to add some characteristics that have not been used in the lesson if possible.

Ask the students:

Is there anything you would want to change or add to the diamond nine?

Why is that an important aspect?

Which one do you think would be the most important for you as a learner?

Create a display board that reinforces the different characteristics of an effective learner and having a growth mindset.

Begin to praise students for their learning using the terminology for an effective learner. Praise the process and effort rather than the outcome.

DOWNLOADABLE RESOURCES

- PowerPoint presentation about the brain growing with learning
- Diamond nine template
- Characteristics of being an effective learner cards
- Video of students discussing what learning is

www.hoddereducation.co.uk/ib-extras

Students' responses

- What did you see?

'The messages in your brain telling you what to do, for example move your arm.'

'Neurons firing – they are things in your brain that send messages to your body.'

- What does resilience mean?

'Doing it again and again and never stopping until you succeed.'

'Showing determination, it doesn't necessarily mean you will succeed but you will keep trying.'

- How did you feel about ordering the characteristics? Was it an easy task?

'It was quite hard because they are all important. They are all things you need.'

'Difficult, as you have to think about learning and what you do. Often when I am learning I don't think about that, I focus on the task.'

Which is the most important characteristic?

'Making mistakes – if you make a mistake you can learn from it, you can overcome it.'

'Challenge – if you don't challenge yourself you are not learning.'

'Effort – I think even if you don't do well in a test or can't do something, if you've put effort into what you are doing, you can still be proud.'

What are the barriers to learning?

'Quiet classrooms because sometimes you need to talk about learning.'

'Yes, I want to share my thoughts, or listen to others and be inspired.'

Can you rearrange the characteristics in a different way to represent your learning?

'As a square, as they are all equally important.'

'In a line, in order of importance.'

'You could arrange them to show how they are connected.'

'As an upside-down triangle, with the most important factor at the bottom and then the others layered on top.'

Figure 100 What is important to be an effective learner

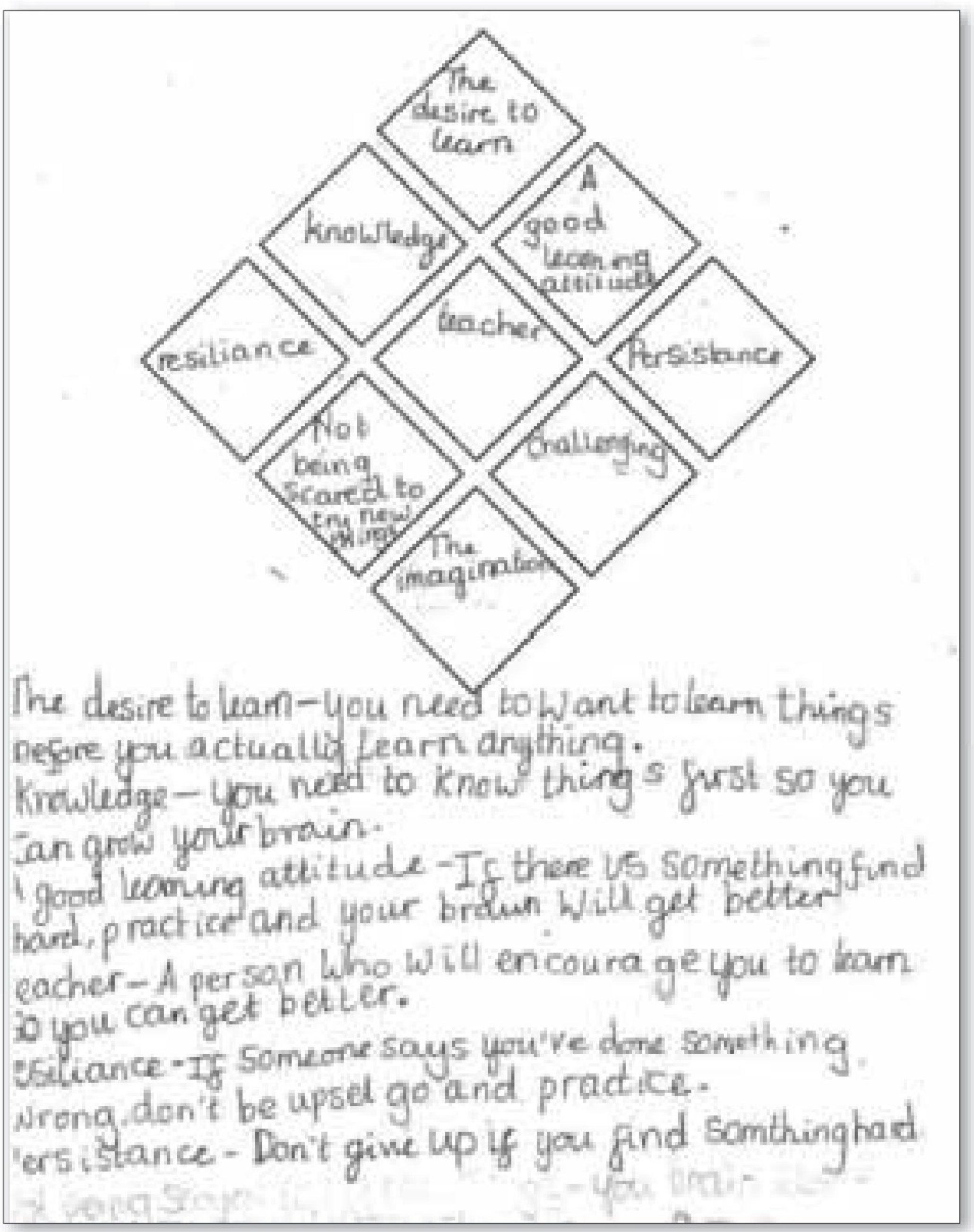


Figure 101 The desire to learn is most important

3 Barriers to learning

Learning objectives	Resources
• To identify barriers to learning • To identify strategies to help students overcome their barriers to learning	• A picture of a large rock (see Figure 102) • An example of a comic strip (see Figures 104 and 105) • Access to tablets or laptops to create a comic strip (see suggestions of apps below)

IB Learner Profile

- **Reflective** – we work to understand our strengths and weaknesses.
- **Thinkers** – we use critical and creative thinking skills.
- **Risk-takers** – we are resourceful and resilient in the face of challenges.

Lesson

1 *Seat the students with their talk partners, all with a clear view of the board.*

Together look at the image of a rock in Figure 102, which represents a barrier to a student's learning.

Ask the students to talk with their talk partner and think about:

Why has the rock been chosen to represent a barrier to learning?

What could the rock represent as a barrier for your learning? Why?

How can you overcome barriers to learning?

Take feedback from the students.

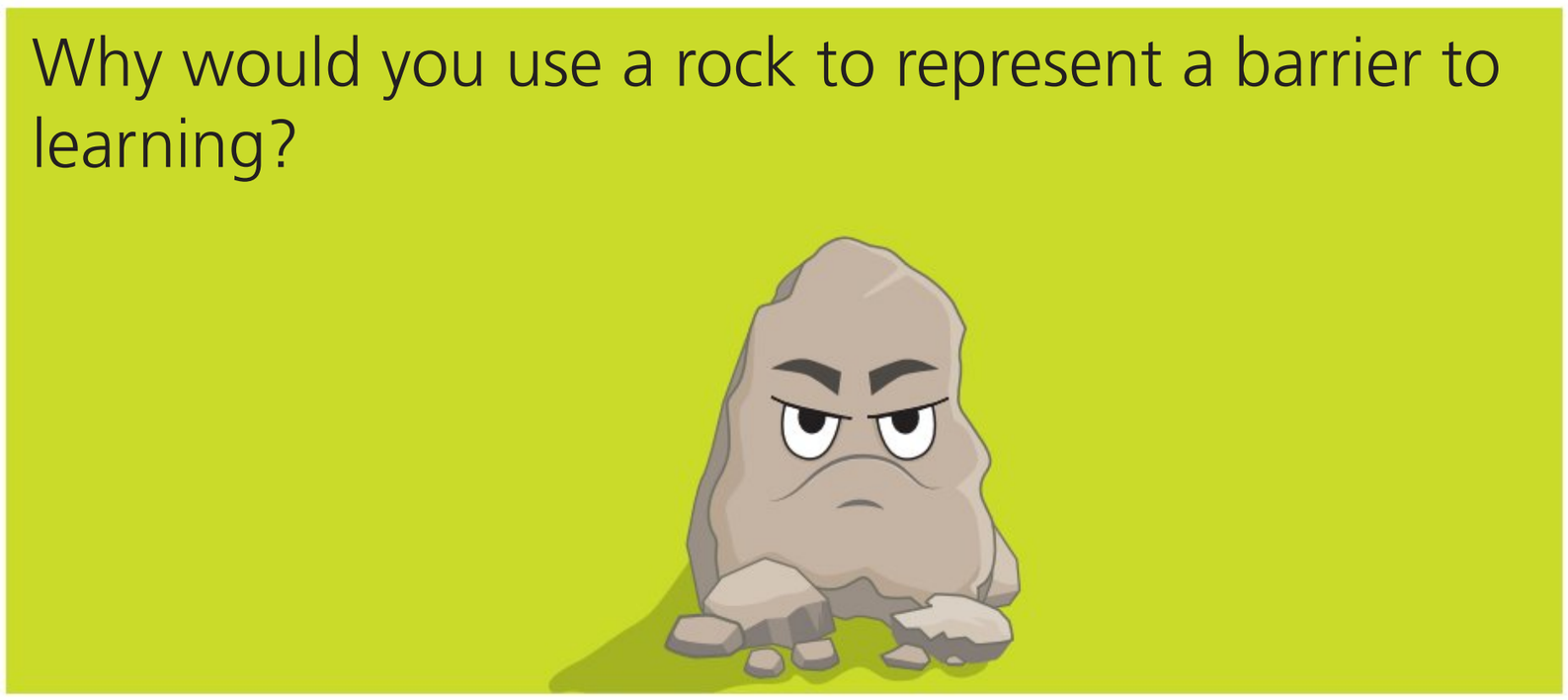


Figure 102 The rock barrier to learning

2 Next ask them to reflect on what might be a personal barrier to their own learning. Probe this further by asking them to think about:

Is the barrier related to a specific subject?

What strategies have you tried to overcome it?

Why do you think it's a barrier?

What other strategies could you try?

Again, take feedback from the students.

3 Now ask the students to think about whether the barriers to their learning are **internal** or **external**.

Visible thinking – you could provide the students with an example to highlight the differences. For instance, students often state that other people talking is a barrier to their learning. This is an external barrier and while you can discourage others from talking, you cannot necessarily stop them. An example of an internal barrier could be a student's reluctance to ask for help when they are stuck. They may be reluctant to ask for help, as they are afraid of looking bad in front of their peers.

Barriers to my learning

4 Explain to the students that they are going to create a comic strip to illustrate a barrier to their learning and ways they can overcome it. You could share a range of examples of students' ideas that they have set in different contexts, including the ones shown in 'Students' responses' on page 233.

The students can record their comic strips on a simple framework (see Figure 103) that they draw first, or they could use an app or website to create them.

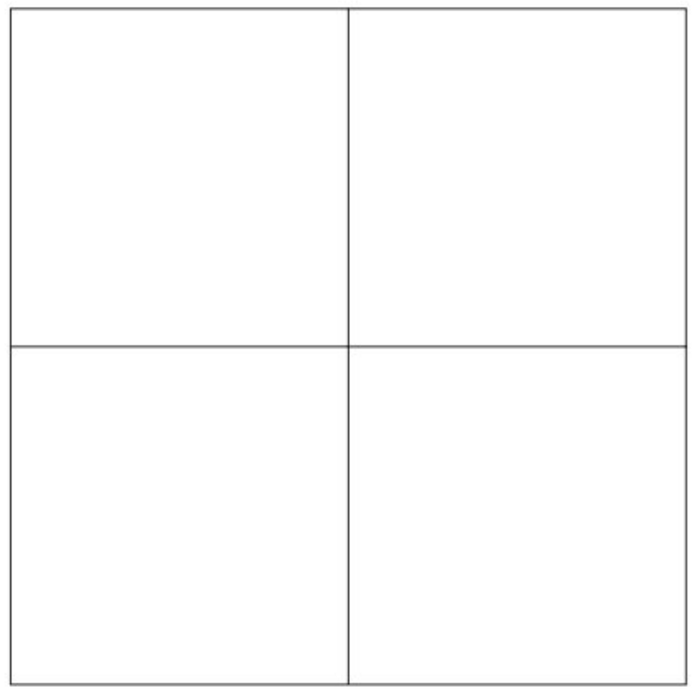


Figure 103 Framework for a comic strip

Possible apps and websites you could use:

- Make Beliefs Comix: **www.makebeliefscomix.com/**
- Toon Toolkit: available on the iTunes App Store
- Pixton: **www.pixton.com/**

Reflection time – what have we learned?

Review the students' comic strips and the different strategies they have used to overcome barriers to their learning. Encourage them to use a wide range of strategies by asking the class to discuss what other ways they can suggest to help their friends overcome their individual rocks/their barriers to learning.

Potential suggestions could include:

- Don't give up.
- Ask a partner for help.
- Understand it's part of the learning process.
- Try again.
- Learn a new strategy.
- Revisit your learning.
- Work in a small group to practise.
- Ask a teacher for help.
- Practise an earlier stage.

Challenge

Provide scenarios where the students make mistakes and fail. Then ask them to role-play what they would do. They could be given specific roles such as the teacher, student or friend. Use the context of school for some of the scenarios, but provide other real-life contexts as well.

Further developments

Create a class display of a comic strip featuring a student using a range of strategies to overcome barriers to learning. Include the students' creations.

DOWNLOADABLE RESOURCES

- PowerPoint presentation 'Why would you use a rock to represent a barrier to learning?'
- Framework for a comic strip
- Examples of students' comic strips

www.hoddereducation.co.uk/ib-extras

Students' responses

- Why would you use a rock to represent a barrier to your learning?

'Because rocks are very hard and you need to challenge yourself to move a rock.'

'Rocks can block pathways and some can be easier to move than others.'

- In your learning, what barrier to learning does a rock represent? Why?

'A person talking is a rock as it can distract me.'

'Your attitude can be a rock. As if you think you can't do something and don't try, this stops you learning. You're not in the right mindset.'

'If you are worried about making mistakes this can be a rock and a barrier to learning.'

Figure 104 Building confidence

Figure 105 What to do if I don't know the answer

Figure 106 Example of a student's comic strip, www.makebeliefscomix.com/

4 Brain vs. calculator

Learning objectives	Resources
• To discuss whether they think a calculator is better than a brain • To justify their opinions and reflect on the opinions of others	• Role badges (optional)

IB Learner Profile

- **Communicators** – we express ourselves confidently and we collaborate effectively.
- **Knowledgeable** – we develop and use conceptual understanding.
- **Open-minded** – we seek and evaluate a range of points of view.

Lesson

1 *The students should work in their learning groups. Ensure your room is set up to encourage effective discussion between the students. An effective arrangement is square tables with the four students sitting two either side facing each other. The tables could be arranged at a slight angle to ensure everyone can clearly see the board.*

Recap/introduce the different roles that the students work in for the learning groups: **manager**, **reporter**, **encourager** or **recorder**. Use the materials from Figure 24 on page 86 if required. These roles can be allocated to different students when you use the learning groups or you could choose to give a student a specific role for a sustained period to allow them to develop their skills. Two students could share a role, depending on the number of students in your class. The encourager is an ideal role for sharing. The students can also wear badges to reinforce the roles that they are playing.

2 Explain to the students that they are going to debate in their learning groups:

Is the calculator better than your brain? Why?

Reveal the word '**debate**' on the board and ask the students to discuss as a learning group what they think this word means and how you should behave when debating.

While the discussions are taking place, observe the students and when you think it is an appropriate moment bring the discussions to a close and ask the groups for feedback. Through careful questioning reach agreement on a shared definition of a debate. Possible questions to develop this are:

Do you agree a debate is where we …?

What should you do if you disagree with someone's ideas?

Do we have to agree with everyone's ideas?

Will there be a right or wrong answer?

This could be developed further by briefly creating a list of behaviours we should see when a debate is happening, such as sharing ideas, listening and responding to people's suggestions. If you have already made such a list, refer to it here.

Remind the students that they have to share their opinions but can also ask questions to challenge one another. You could provide the students with question prompts to encourage them to develop their thinking. Students can choose to record their work in their own format.

Brain vs. calculator

3 Ask the students to work in their learning groups and debate whether a calculator is better than their brain. You should act as a facilitator, observing the groups and intervening only when necessary. While listening to the group discussion, note any misconceptions or interesting ideas and feed these into the discussion by posing a question, or return to them at another point.

To probe and deepen the students' discussions, ask them to think about the following during their discussions. You could reveal these questions on the board once the discussions are under way to extend them further:

Can you think of ideas for and against?

Why do you think that …?

What evidence do you have to support your ideas?

Before you want the students to feed back, give them a five-minute warning to allow the reporter to prepare. If this is the first time the students have worked in these roles, you could model how to effectively report back to the class.

Reflection time – what have we learned?

Ask the reporters to feed back their discussion and their verdict. Key questions are:

What did you discuss?

Why did your group think that?

Can you expand on your idea further?

What conclusion did you come to?

Was it a difficult decision to make? Why?

Ask each group to nominate a member who they think has improved and has put greater effort into their role and learning. Take feedback from the groups and ask them to explain why they have chosen that person.

Challenge

Ask the students to think about how we could find out whether the brain or the calculator is better. They could create a plan for an investigation using the model they use in science lessons.

Further developments

If the students design a plan to investigate whether the brain or the calculator is best, you could then explore this as a class. For instance, using the idea of multiplying by 10: which is quicker, the calculator or the brain?

An alternative debate could be the brain versus the computer. Which is better?

DOWNLOADABLE RESOURCES

Video of students comparing a brain with a calculator

www.hoddereducation.co.uk/ib-extras

Students' responses

What is a debate?

'It's a civilized argument where you tell each other your points.'

'It's a competition where you try to make your point.'

Brain vs. calculator

Brain	Calculator
If you don't have a brain you can't work a calculator.	A calculator only knows about maths, it doesn't know about anything else.
The brain can do a simple calculation such as 7 × 7 quicker than a calculator.	A calculator can't read or write.
The brain invented the calculator.	A calculator is a lazy way of learning.
The brain can say things instantly but you have to type things into a calculator to come up with an answer.	A calculator is quick and fast.
You can learn and challenge yourself with a brain.	A calculator is always reliable.
A brain is more efficient.	It is small and light.
You can train your brain but not a calculator.	It doesn't get fatigued.
The brain can think more, it even lets you dream.	A calculator is useful if you don't have paper.
The brain can fix a calculator, a calculator can't fix a brain!	You need a calculator for more complex calculations.
Brains can grow and develop as you learn.	The calculator is faster.
	The calculator is easier, more efficient and quicker.
	A calculator doesn't change.

During the debate the students also posed questions as part of their response:

'Does a calculator understand or has it just learned a method?'

'Which came first, the brain or the calculator?'

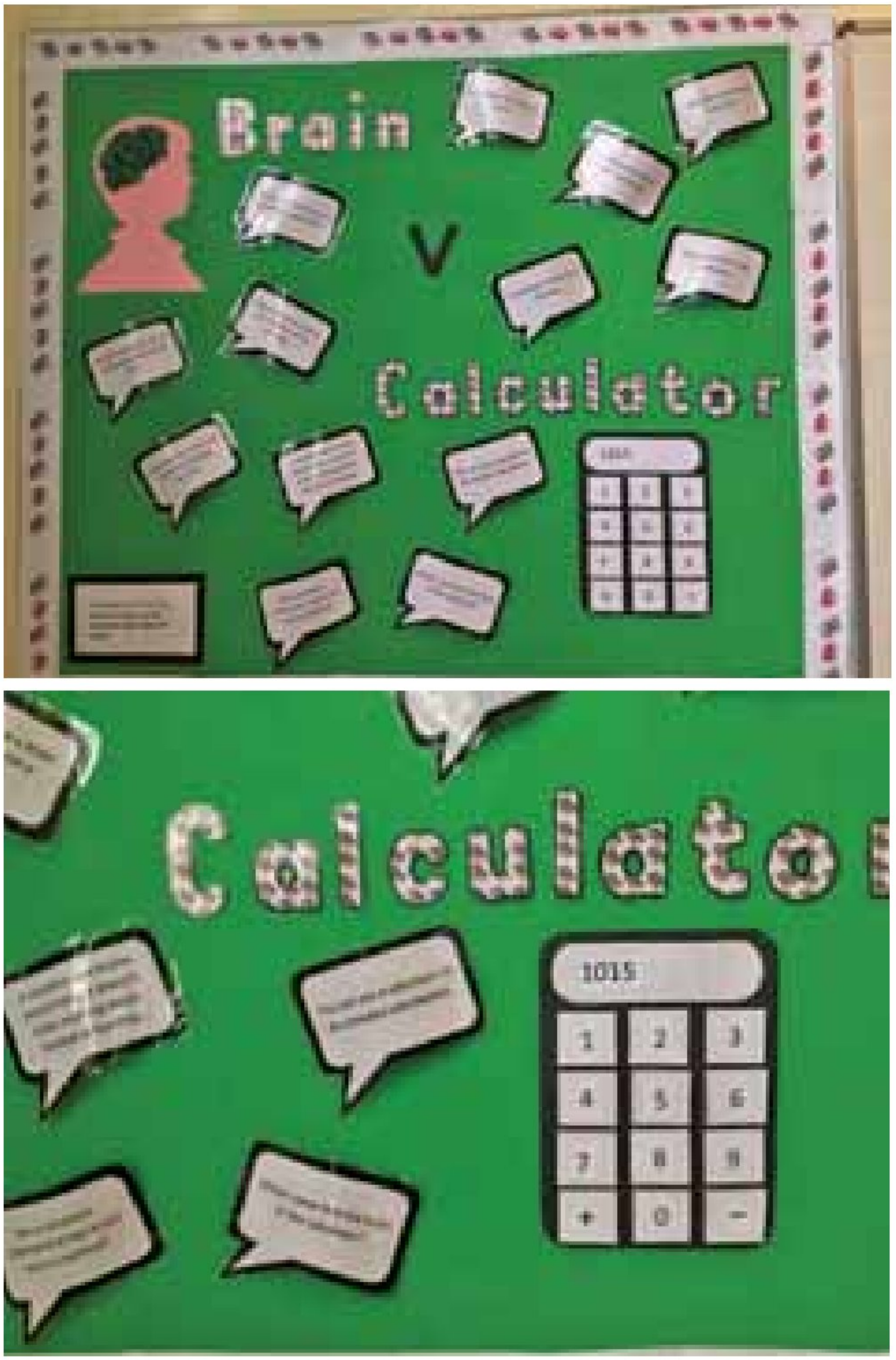


Figure 107 Brain vs. calculator display

5 Mathematical mistakes

Learning objectives	Resources
• To describe how mistakes can help us to learn • To identify how we should respond to a mistake	• Mathematical mistakes (see Figure 108) • Video of Dr Jo Boaler at **https://vimeo.com/103853269**

IB Learner Profile

- **Risk-takers** – we are resourceful and resilient in the face of challenges.
- **Communicators** – we express ourselves confidently and we collaborate effectively.
- **Knowledgeable** – we develop and use conceptual understanding.

Lesson

1 *Arrange the students so they are sitting with their talk partner and have a clear view of the board and the teacher.*

Share a calculation with the students and explain that you have completed it. You can use Figure 108 or make up your own to match what the students are learning at the moment.

Visible thinking – in the examples that you provide, it is important to model the steps that you have gone through to solve the calculation (ensure some aspects are correct and some include mistakes). This will stimulate discussion and allow the students to identify specifically where you went wrong. You could also share examples of mistakes that the students are making in their learning.

Ask the students to look at your calculation and to discuss and then feed back whether you have been successful or not. Probe their understanding further by asking:

What mistake did I make?

Why do you think I got the wrong answer?

How does this help you as a learner?

How can it help a teacher?

My maths

What is 27% of £180?
10% is £18
25% is £45 (20% is £36 and 5% is £9)
1% is £1.80
The answer is £46.80

My maths

Fred has £180 which is $\frac{2}{5}$ of his money.
How much money does Fred have altogether?
180 divided by 5 is 36
36 × 2 = 72
He has £72 altogether.

Figure 108 Examples of mathematical mistakes

2 Repeat for a different calculation.

Learning from mistakes

3 This lesson introduces Jo Boaler and her work to the students. Tell the students that Dr Jo Boaler is a British education author and a Professor of Mathematics Education at the Stanford Graduate School of Education in California. She is involved in promoting mathematics education reform and helping develop mathematical mindsets.

Watch the video clip of Dr Boaler discussing maths and mistakes.

Ask the students:

What did you learn from the video clip?

Do you think that you are born to be good at maths?

Do your parents believe that they were better at one subject at school?

Do your parents say there was a subject they found hard at school?

How do you feel about making mistakes?

Does your attitude to mistakes change depending on the subject?

4 Share the quote below from Jo Boaler in which she explains what happens when we make a mistake in our learning:

> When teachers ask me how this can be possible, I tell them that the best thinking we have on this now is that the brain sparks and grows when we make a mistake, even if we are not aware of it, because it is a time of struggle; the brain is challenged and the challenge results in growth.

Available at **www.youcubed.org/evidence/mistakes-grow-brain/**.

5 Revisit the mistakes that you shared with the students at the start of the lesson and ask them to discuss what type of mistake they think they were:

Were my mistakes part of the learning process or careless mistakes?

Then, at an appropriate point when the students are ready, ask them for feedback.

Probe the students' thinking further by asking them to think about the following questions. You could display them on a board and slowly reveal a question when it is appropriate or have them as a question prompt on the tables:

Which mistakes do you make?

Which type of mistake helps us to develop as a learner?

What can we do to avoid making careless mistakes?

Reflection time – what have we learned?

Explain that research shows that mistakes are an important part of the learning process and, depending on how we respond, they can help us learn. Ask the students to think about and discuss how we can ensure that our classroom culture and how we act allow us to make mistakes and learn from them. Ask the students to talk to their partner and discuss:

How can we create a classroom culture that supports mistakes as part of the learning process?

What can you do to help?

What could a teacher do to develop this?

What needs to change?

Challenge

You could widen the discussions and ask the students to think about how we can create a school culture that supports making mistakes as part of the learning process.

Further developments

Share some of the sayings that are used to explain how mistakes are part of the process of learning, for example '**fail and sail**', which can be written to form acrostics (see 'Students' responses').

Can the students create their own acrostics (see examples below)? You could develop this further by asking the students to illustrate them, for example as a sketchnote.

Create a class display analysing a mistake in maths and include QR codes that link to video clips of the students discussing mistakes.

Use mistakes in lessons: they can be a great warm-up to ignite students' thinking.

DOWNLOADABLE RESOURCES

PowerPoint presentation with examples of mathematical mistakes

www.hoddereducation.co.uk/ib-extras

Students' responses

- How does this mistake help you as a learner?

'When you make mistakes you learn and improve.'

'You can see what to do.'

'If you learn from mistakes, you have a growth mindset.'

- How can it help a teacher?

'If I make a mistake, you know what to teach me next.'

'Teachers can now help you.'

'If you copy, it doesn't help you learn.'

'They show teachers what you need help in to improve.'

- What can students do to develop a classroom culture that supports mistakes as part of the learning process?

'Students can share their mistakes. Don't hide them.'

'Some mistakes are careless ones and we should avoid making those.'

'Other people can support you by not laughing if you make a mistake.'

'Other students can explain how to do something and help you learn.'

'Don't show off!'

- Acrostics

Let's
Educate
And
Revise
Numeracy

Begin
Attempt
Numerous tries/**N**ever give up
Go again

6 Learning pathways

Learning objectives	Resources
• To give opinions on what we mean by the term 'learning' • To create a way of explaining learning to younger students	• The brain working as we learn (see Figure 109) • Forest pathway photographs (see Figure 110)

IB Learner Profile

- **Communicators** – we express ourselves confidently and we collaborate effectively.
- **Reflective** – we work to understand our strengths and weaknesses.
- **Thinkers** – we use critical and creative thinking skills.

Lesson

1 *Arrange the students so they are sitting with their talk partner and have a clear view of the board and the teacher.*

Ask the students to discuss with their talk partner what they think we mean by the word 'learning'.

If students require further scaffolding, ask:

Think of something you are good at – something that you know you do well. Discuss how you became good at this.

Think of something that you did in fact learn successfully, but at the time you did not want to learn it. Maybe it is something that you are now glad you learned. What kept you at it?

Take feedback and probe the students' thoughts further by asking questions such as:

Why do you think that?

Can you give a personal experience that reflects that?

Can you explain what happens in the brain when we are learning?

2 Explain to the students how the brain works when we are learning, using Figure 109. Explain that there are roughly 150 000 km (or more) of neural networks in the human brain and 150 000 km is similar to travelling approximately four times round the Earth, as it is approximately 40 000 km to travel around it once.

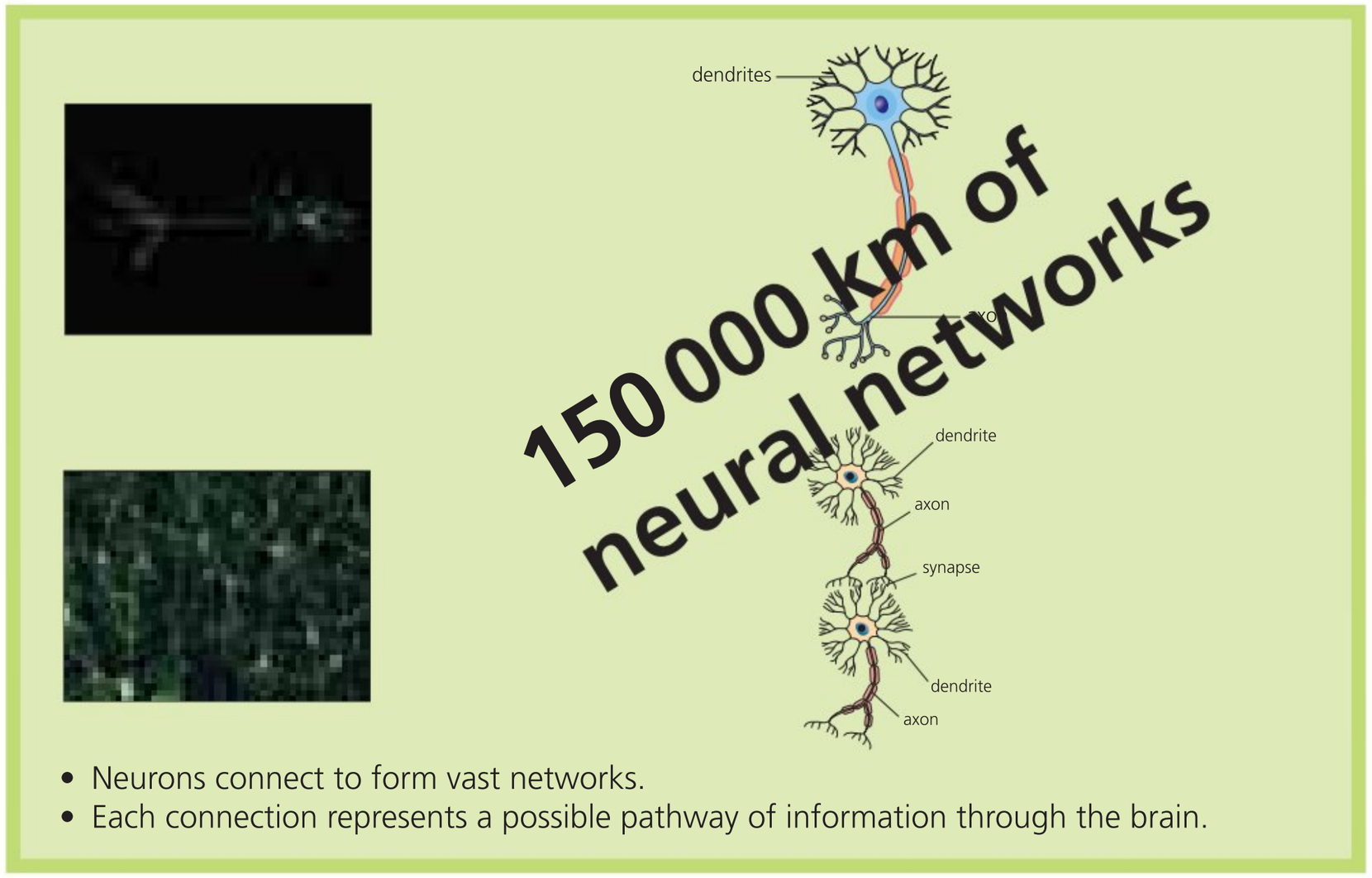


Figure 109 How the brain works when we are learning

Learning pathways

3 Show the students the images of a forest and how a pathway is created (Figure 110). The three images show the creation of a pathway through the wood over time.

Ask the students to discuss with their talk partner how these images relate to learning. Ask them to think about:

Do you think the images reflect learning effectively?

Why do the images represent learning effectively?

Is there anything you would add to illustrate learning more effectively?

Take feedback from the students and use questioning to probe the learning further.

Figure 110 Creating forest pathways

4 Explain to the students that, over a series of lessons, their task is to create a way of illustrating and explaining learning to younger students. Give them the time and materials to discuss and plan how they could do this. Allow the students to work independently and observe them discussing and creating their ideas.

Reflection time – what have we learned?

Ask the students to feed back their discussion and possible ways of explaining learning to younger students. Key questions are:

What did you discuss?

Why did your group think that?

How could you make sure it was accessible to students aged 7?

Ask each group to nominate a member who they think has improved and has put greater effort into their role and learning.

Challenge

Ask the students to think about any potential challenges to their ideas.

Further developments

This activity could also be linked to the students' transition to secondary school. They could reflect on the challenges they might face and how these might impact on their mindset.

DOWNLOADABLE RESOURCES

- PowerPoint presentation about how the brain works during learning, including forest pathways imagery
- Video of students discussing the creation of the forest pathway

www.hoddereducation.co.uk/ib-extras

Students' responses

What does learning mean?

'When you understand, you know what it is. Learning is the process you go through to learn, to understand something. It's not always an easy process.'

'You start off with a small circle when you're not really good at something. Every time you learn something new you get a bigger circle and you know it.'

'Learning means challenging yourself to do more. Practising what you are doing. The challenge is personal to you.'

'Developing new skills to make your brain bigger.'

'Learning is when if I've made a mistake I could unpick it, and then I would know not to make the mistake again.'

'Learning can be knowledge and a skill. Learning to ride a bike is a skill. Learning algebra is knowledge.'

- Looking at the images of the forest, can you explain how these can reflect learning and the learning process?

'When the trees are all tangles and it was messy and all over the place you could metaphorically speaking have a rope. That rope could be a skill to learn something new. You also need a growth mindset to conquer it. Because if you didn't and you just gave up, you'd be stuck in the mess of weeds.'

'At the end of the final image you could have a blockage and you have to clear it. Once you've cleared it, you may need to clear it again to ensure you learn. You keep doing that for the rest of your life.'

'An animation could be added. There's a baby on the path, it is a narrow path, as you get older and learn more the path gets bigger. You come to a fork in the road where there are two different paths. You can either go on the fixed mindset path and give up on the problem, or go down the growth mindset path and find out what you need to know.'

- How can you explain learning to younger students?

'Using Adobe Spark Video as we can have pictures and talk about it. You'd have a picture of a deflated balloon. Your knowledge begins like a deflated balloon, as you learn it becomes bigger. Basically the balloon represents the brain.'

References and resources

Books and articles

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Videos, web pages and apps

The following are arranged in the order in which they first appear in the book.

Videos

'*Sesame Street*: Big Bird sings about mistakes' by the cast of *Sesame Street*: **www.youtube.com/watch?v=GHkymY6yKM**

'Incy Wincy Spider' nursery rhyme: **www.youtube.com/watch?v=doyv0fL0YJw**

Episode of *Charlie and Lola* (2010) 'Too Many Big Words', *Charlie and Lola – The Absolutely Complete Collection* [DVD], BBC

Snail moving to music (titled 'Snail with Music – Sunrise – Richard Strauss'): **www.youtube.com/watch?v=Y9yffb7X9fk**

Neurons firing in the brain (titled 'Neurons by David K. Anderson'): **www.youtube.com/watch?v=TSwQOf4V3fE**

The scene about what happens in the brain when you learn, from *The Human Mind* (2003), BBC

More complex explanation of how the brain works: **https://vimeo.com/142378753**

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About three areas of the brain (titled 'Our Brain – Human Anatomy – Lesson for Kids – School Science Video'): **www.youtube.com/watch?v=bLHutEdVEH4**

About different parts of the brain in detail: **www.youtube.com/watch?v=JuJy1THhqSY**

Examples and further information about sketchnoting (titled 'Sketcho Frenzy: The Basics of Visual Note-taking'): **www.youtube.com/watch?v=gY9KdRfNN9w**

'Clever girl': **www.youtube.com/watch?v=VAMQs1tjlM4**

Neurons firing in the brain (titled 'Imaging reveals patterns in neuron firing'): **www.youtube.com/watch?v=t3TaMU_qXMc**

Dr Jo Boaler discussing maths and mistakes (titled 'Jo Boaler – Mindsets and Mistakes'): **https://vimeo.com/103853269**

Web pages

Activities to support *Rosie Revere, Engineer*: **www.andreabeaty.com/**

Information about Usain Bolt and his achievements: **www.biography.com/**

Inventions that were mistakes: **http://mag.amazing-kids.org/non-fiction/stories/inventions-that-were-mistakes/?**

'Sketchnoting for Beginners' (on the iPad) by Sylvia Duckworth: **https://sylviaduckworth.com/presentations/**

'The Iceberg Illusion' sketchnotes by Sylvia Duckworth: **https://flickr.com/photos/sylviaduckworth**

Apps

Random Name Picker: **www.classtools.net/random-name-picker/**

Random Student Selector: **www.ehyde.com/No%20Hands/**

Adobe Spark Video by Adobe Systems, Inc.: **https://spark.adobe.com/**

Top Trump It – Make Your Own Top Trumps Cards by Winning Moves UK Ltd is available on the iTunes App Store

Paper by FiftyThree – Sketch, Draw, Take Notes, Make Lists, Diagram and Wireframe by FiftyThree is available on the iTunes App Store

Apps for creating comic strips:

Make Beliefs Comix by Bill Zimmerman, Guarionex Press: **www.makebeliefscomix.com/**

Toon Toolkit by Alan Clifton is available on the iTunes App Store

Pixton by Pixton Comics: **www.pixton.com/**

To see the *Growth Mindset Lessons* videos (and many others) in full, book training courses and find out how to follow Shirley Clarke, go to **www.shirleyclarke-education.org/.**

Acknowledgements

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